

Third Public Workshop
on the Development of the Fiscal Year (FY) 2015-16 Funding Plan for the
Air Quality Improvement Program (AQIP) and
Low Carbon Transportation Investments

DISCUSSION DOCUMENT

Public Workshop Date and Location:

Thursday, March 26, 2015
10 am to 4 pm
California Environmental Protection Agency (Cal/EPA) headquarters building
Coastal Hearing Room, 2nd floor
1001 I Street
Sacramento, California 95814

Link to Workshop Notice:

<http://www.arb.ca.gov/msprog/mailouts/msc1505/msc1505.pdf>

Link to Webcast Information:

<http://www.calepa.ca.gov/broadcast/>

Workshop presentation will be posted on the morning of the workshop at:

<http://www.arb.ca.gov/aqip/>

Workshop Agenda

10 am – 10:30 am	Introduction and Overview of Project Category Funding Allocations
10:30 am – Noon	Light-Duty Vehicle Investments – Senate Bill (SB) 1275 <ul style="list-style-type: none">• Clean Vehicle Rebate Project• Pilot Projects to Benefit Disadvantaged Communities
Noon – 1 pm	Lunch Break
1 pm – 3 pm	Heavy-Duty Vehicle and Off-Road Equipment Investments – SB 1204
3 pm – 3:30 pm	Truck Loan Assistance Program
3:30 pm – 4 pm	Next Steps, Wrap Up, and Additional Comments

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INTRODUCTION AND BACKGROUND

The Governor's proposed 2015-16 budget contains a \$200 million appropriation to the Air Resources Board (ARB or Board) for Low Carbon Transportation investments from the Greenhouse Gas Reduction Fund (GGRF) and a \$23 million appropriation to ARB for the Air Quality Improvement Program (AQIP). ARB staff is developing the proposed *Fiscal Year (FY) 2015-16 Funding Plan for AQIP and Low-Carbon Transportation Investments* (FY 2015-16 Funding Plan) to describe how these funds will be spent. The Funding Plan will include ARB's vision for advanced technology mobile source investments, eligible project categories and criteria, project funding allocations, and program implementation details. The Funding Plan will also address the requirements of new legislation signed in 2014 that refines ARB's implementation of these incentive programs.

This discussion document presents draft staff recommendations on the project categories and funding allocations for the FY 2015-16 Funding Plan. Staff will present and seek comment on these recommendations at ARB's March 26, 2015 public workshop on the Funding Plan development. Based on public input provided at this workshop, along with previous public workshops, project-specific public work group meetings, written submissions, and individual meetings with stakeholders, staff will develop final proposed recommendations for Board consideration. Staff plans to release the proposed FY 2015-16 Funding Plan on May 22, 2015 for consideration at the June 25-26, 2015 Board meeting.

Background

AQIP: AQIP is a voluntary, mobile source incentive program that focuses on reducing criteria pollutant and diesel particulate emissions with concurrent reductions in greenhouse gas (GHG) emissions. AQIP was created in 2007 by Assembly Bill (AB) 118 Núñez, Chapter 750, Statutes of 2007), and the fees that support AQIP were through 2023 under the provisions of AB 8 (Perea, Chapter 401, Statutes of 2013). ARB focuses AQIP investments on technology advancing projects that support California's long-term air quality and climate change goals in addition to providing immediate emission benefits. In recent years, funding has included rebates for zero and near-zero emission passenger vehicles through the Clean Vehicle Rebate Project (CVRP), vouchers for hybrid and zero-emission trucks and buses through the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP), and the Truck Loan Assistance Program for small business truck owners in need of truck replacements or retrofits. Annual funding for AQIP projects is generally \$20-25 million.

Cap-and-Trade Auction Proceeds Low Carbon Transportation Funding: Cap-and-Trade auction proceeds provide an additional funding source for ARB's advanced technology, clean transportation incentive programs, thus expanding the types of projects ARB has funded through AQIP. The FY 2014-15 State budget appropriated \$200 million to ARB for Low Carbon Transportation projects to reduce GHG emissions with an emphasis on investments that benefit disadvantaged communities. These

investments are being used to expand CVRP and HVIP to meet demand and add new light-duty pilot projects to benefit disadvantaged communities, zero-emission truck and bus pilots to increase the use of the cleanest vehicles to benefit disadvantaged communities, and demonstration projects to accelerate the introduction of advanced emission reduction technologies for the freight sector with projects located in areas that benefit disadvantaged communities. An additional \$200 million is proposed by the Governor for FY 2015-16. ARB staff is developing a joint Funding Plan for AQIP and Low Carbon Transportation funding to ensure synergistic investments between these two programs.

New Legislation: Senate Bill (SB) 1275 (De León, Chapter 530, Statutes of 2014) establishes the Charge Ahead California Initiative with the goals of placing one million zero-emission and near-zero emission vehicles in California by 2023 and increasing access to these vehicles for lower-income consumers and consumers in disadvantaged communities. SB 1275 requires ARB to limit consumer eligibility for CVRP based on income, ensure that rebate levels can be phased down, and conduct various planning and technology assessment activities, among other provisions. SB 1204 (Lara, Chapter 524, Statutes of 2014) creates the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program, funded with auction proceeds from GGRF, to support the development, demonstration, pre-commercial pilot, and early commercial deployment of zero- and near-zero emission technologies with priority given to projects that benefit disadvantaged communities. SB 1204 establishes specific requirements related to how ARB prioritizes project categories and selects projects. ARB will start addressing the requirements of these new laws in the FY 2015-16 Funding Plan.

RECOMMENDED FUNDING ALLOCATIONS FOR FY 2015-16

The Governor's Proposed Budget for FY 2015-16, released on January 9, 2015, contains proposed appropriations to ARB for Low Carbon Transportation Investments and for AQIP. The Governor's proposals are summarized below. ARB staff will use these proposed funding totals to develop the proposed FY 2015-16 Funding Plan. However, the appropriations for these programs will not be finalized until later this year when the State Legislature approves and the Governor signs the State budget. If necessary, ARB will update the allocations in the Funding Plan to reflect any changes to these proposed appropriations in final State budget. Staff's recommended approach for addressing possible changes in the final appropriations for these programs is described later in this discussion document.

Governor's Budget Proposal for AQIP and Low Carbon Transportation

Low Carbon Transportation: The Governor's proposed 2015-16 budget contains \$200 million for ARB Low Carbon Transportation investments from GGRF, the same funding level contained in the FY 2014-15 State budget.¹

- This proposal would continue ARB's Low Carbon Transportation investments from the FY 2014-15 budget cycle by providing rebates, vouchers, and advanced technology freight demonstrations that accelerate the transition to low carbon freight and passenger transportation, with a priority for disadvantaged communities. This investment would also support the Administration's goal to deploy 1.5 million zero-emission vehicles (ZEV) in California by 2025 and to reduce petroleum consumption by up to 50 percent by 2030. Of the \$200 million total appropriation, approximately \$197 million would be available for GHG reducing projects and the remaining balance of about \$2.8 million is for State operations.
- At least 50 percent of the FY 2015-16 Low Carbon Transportation funds would be invested in projects that benefit the disadvantaged communities identified by the California Environmental Protection Agency, matching the disadvantaged community benefit investment target for ARB's FY 2014-15 appropriation. ARB's *Interim Guidance to Agencies Administering Greenhouse Gas Reduction Fund Monies* provides the criteria that will be used to evaluate whether projects benefit disadvantaged communities.²

¹ 2015-16 Governor's Budget Summary <http://www.ebudget.ca.gov/FullBudgetSummary.pdf> (pp 95-96)

² *Interim Guidance to Agencies Administering Greenhouse Gas Reduction Fund Monies*, ARB, release date November 3, 2014. <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final535-interim-guidance-11-3-2014.pdf>

AQIP: The Governor’s proposed budget for AQIP provides \$23 million for AQIP projects. This funding level, dictated by revenues from motor vehicle fees, is similar to recent years’ available funding.

- In the FY 2014-15 Funding Plan, ARB allocated \$20 million of its \$22 million AQIP funds to projects, and set aside \$2 million as a prudent reserve for revenue uncertainty. As the end of the FY 2014-15 budget cycle approaches and ARB has a more complete picture of AQIP revenues for the cycle, staff will evaluate whether this reserve is adequate to address revenue uncertainty for the FY 2015-16 budget cycle or whether an additional set aside is necessary. For now, staff is leaving open the possibility of an AQIP reserve of up to \$1 million for the FY 2015-16 budget as noted in Table 1 below.

Staff Draft Recommended Project Allocation

Based on the proposed \$200 million Low Carbon Transportation appropriation and \$23 million AQIP appropriation, staff recommends the project level allocations shown in Table 1. The details of each of these projects and rationale for these recommendations are described more fully in remaining sections of this discussion document.

Table 1: Draft Staff Recommended Project Allocations for FY 2015-16

Project Category	AQIP (millions)	Low Carbon Transportation ¹ (millions)
Light-Duty Vehicle Projects = \$125M		
• CVRP	\$5	\$111
• Pilot Projects to Benefit Disadvantaged Communities	-	\$9
Heavy-Duty Vehicle and Equipment Projects = \$98M		
• HVIP	\$5	\$5
• Incentives for Low Oxides of Nitrogen (NOx) Trucks Certified to Optional Standards (<i>new</i>)	\$2-3	\$5
• Truck Pilot Commercial Deployment Projects	-	\$10
• Bus Pilot Commercial Deployment Projects	-	\$20
• Advanced Technology Freight Demonstrations	-	\$40
• Truck Loan Assistance Program	\$10	-
Potential Reserve for AQIP Revenue Uncertainty	\$0-1	
Total	\$23	\$200^{1,2}

¹At least 50 percent of the Low Carbon Transportation allocation will benefit disadvantaged communities.

²The \$200 million Low Carbon Transportation appropriation includes \$197,266,000 for projects and \$2,734,000 for State operations (1.37% of the total). 1.37% will be deducted from each project total shown in the table to account for State operations prior to making project funding awards.

With the Governor's \$200 million Low Carbon Transportation proposal unchanged from last year, ARB staff recommends maintaining the same funding allocations for light-duty vehicles and heavy-duty vehicles in the Board approved FY 2014-15 Funding Plan, \$120 million for light-duty vehicle projects and \$80 million for heavy-duty projects. Like last year, at least 50 percent of these funds (at least \$100 million) would be invested in projects that benefit disadvantaged communities.

Staff Draft Recommended AQIP Projects and Benefit-Cost Analysis

With the AQIP funding, staff's draft recommendation is to continue the same CVRP, HVIP, and Truck Loan Assistance Program funding levels the Board approved for the FY 2014-15 cycle. The CVRP and HVIP funding levels serve as a base allocation to be augmented with Low Carbon Transportation funding based on an analysis of expected demand and other funding needs. Staff is also recommending a new AQIP project category, Incentives for Low NOx Trucks Certified to Optional Standards. Each recommended project is described more fully in remaining sections of this discussion document. The AQIP projects recommended for funding were selected based on the benefit-cost analysis required by AB 8 as was done in last year's Funding Plan. The full details of the benefit-cost analysis will be presented in the proposed FY 2015-16 Funding Plan.

Stakeholder Comments on Overall Funding Allocations

Funding Demand: While these project allocations would continue to support the development and deployment of cleaner technologies for both the light-duty and heavy-duty vehicle sectors, ARB staff acknowledges stakeholder comments received at the previous public workshops and project-specific public work group meetings that demand exceeds this budgeted amount in many project areas. Staff also acknowledges comments from numerous stakeholders that they are advocating that the Legislature and Governor increase the Low Carbon Transportation appropriation. Later in this discussion document, staff notes stakeholder suggestions for where additional funding should be directed if ARB's final budget appropriation is greater than the proposed level.

Funding for Low Carbon Fuel Production: At the previous public workshops, some stakeholders commented that a portion of ARB's funding should be directed to renewable, low carbon fuel production projects. ARB staff considered this recommendation and recognizes and supports the need to expand the availability of renewable fuels. However, staff does not believe ARB funding for these types projects out of the proposed Low Carbon Transportation appropriation is appropriate at this time for several reasons.

- First, funding for such projects has historically been provided through the California Energy Commission's (Energy Commission) Alternative and

Renewable Fuel and Vehicle Technology Program, and for FY 2015-16, Energy Commission staff has proposed \$20 million for biofuel production.³

- Additionally, with demand for vehicle and equipment demonstration and deployment funding exceeding the budgeted amount, ARB staff believes that maximizing funding for such projects should be a priority. In taking this approach, ARB staff expects that the continued expansion of deployment of low carbon transportation vehicles is consistent with the intent of the appropriation and will support the growth in the market for renewable low carbon fuels.
- The Cap and Trade Expenditure Plan included in the FY 2014-15 Budget explicitly directed that ARB's Low Carbon Transportation appropriation be spent to expand existing ARB incentive programs that provide rebates for zero-emission cars and vouchers for hybrid and zero-emission trucks and bus and to provide incentives for the pre-commercial demonstration of advanced freight technologies to move cargo in California with priority for disadvantaged communities.⁴ The budget did not direct ARB to fund renewable, low carbon fuel production projects. Instead, the Budget's Cap and Trade Expenditure Plan provided appropriations to the California Department of Resources Recycling and Recovery and the California Department of Food and Agriculture in part for waste diversion projects to produce renewable biofuels and bioenergy.⁵ ARB focused its FY 2014-15 funding on the vehicle and equipment projects consistent with this budget direction.

The proposed FY 2015-16 Budget continues each of these appropriations. In addition, two bills have been signed into law since the FY 2014-15 Budget which provide further direction from the Legislature how ARB's Low Carbon Transportation funds should be invested. SB 1275 establishes the Charge Ahead Initiative and provides direction on light-duty vehicle investments. SB 1204 establishes the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program and provides direction on heavy-duty vehicle and equipment investments. Neither of these two laws directs ARB to fund renewable fuel production projects. In light of this budget and Legislative direction, staff recommends continuing ARB's investment focus on vehicle and equipment demonstration and deployment projects for the Low Carbon Transportation appropriation.

³ 2015-16 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program, Revised Staff Report, California Energy Commission, CEC-600-2014-009-SD-REV, January 2015 <http://www.energy.ca.gov/2014publications/CEC-600-2014-009/CEC-600-2014-009-SD-REV.pdf>

⁴ Enacted California State Budget for 2014-15, Cap and Trade Expenditure Plan, <http://www.ebudget.ca.gov/2014-15/pdf/Enacted/BudgetSummary/CapandTradeExpenditurePlan.pdf>

⁵ Summary Table of All State Agencies 2014-15 Appropriations: <http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/summaryproceedsappropriations.pdf>

Addressing Budget Uncertainty

As noted in the introduction to this section, staff is developing a Funding Plan based on the proposed \$223 million appropriations for Low Carbon Transportation and AQIP contained in the Governor's Proposed Budget for FY 2015-16. These appropriations will not be final until the Legislature passes and the Governor signs the final State Budget. If necessary, ARB will update the allocations in the Funding Plan to reflect any changes to these proposed appropriations in final State budget.

At the two previous public workshops, numerous stakeholders commented that they are advocating that the Legislature and Governor increase the Low Carbon Transportation appropriation. These stakeholders have asked that ARB staff share its approach for how it would modify its proposal in the event that additional funding is ultimately provided for these programs. ARB's process for modifying project funding allocations to address budget changes is described below. Absent any Budget appropriation changes by the Governor or Legislature, staff will continue developing a Funding Plan for the \$223 million proposed for AQIP and Low Carbon Transportation.

- **May Revise:** The Governor's revised Budget for FY 2015-16 will be released on or before May 14, 2015. If there are changes to the proposed Low Carbon Transportation or AQIP appropriations for ARB in the May revised Budget, staff will reflect those changes in the proposed FY 2015-16 Funding Plan scheduled to be released on May 22, 2015 for a 30 day public comment period in advance of the Board consideration at the June 25-26, 2015 Board meeting.
- **Final Budget:** The State budget will be finalized close to the time of the Board's June 25-26, 2015 consideration of the proposed Funding Plan. If the Budget is finalized before ARB's June Board meeting and there are changes to ARB's appropriation in the final Budget, staff would propose modifications to the Funding Plan to reflect the revised Budget appropriation at the Board meeting. The Board would consider those modifications as part of its consideration of the full proposed Funding Plan. If the Budget is not final by the time of the June Board meeting, staff would propose contingency provisions at the Board meeting intended to address potential further changes to budget levels for these programs.

LIGHT-DUTY VEHICLE INVESTMENTS

Staff's recommended light duty vehicle investments are aimed at supporting the transformation of the light-duty fleet needed to meet California's long-term climate change and air quality goals. The 2014 update to the *Climate Change Scoping Plan* recognizes that meeting these goals will require a much deeper penetration of ZEVs into the fleet. Investments in CVRP and the associated pilot projects to increase the use of the cleanest vehicles in and near disadvantaged communities support this needed transformation of the fleet, the Administration's goal of deploying 1.5 million ZEVs in California by 2025, and ARB's ZEV regulation.

Charge Ahead California Initiative

SB 1275 creates the Charge Ahead California Initiative which reaffirms the Administration's ZEV goal and ARB's light-duty investments by formally establishing the following goals for ZEV deployment in California in Health and Safety Code Section 44258.4(b):

- Place in service at least 1 million zero-emission and near-zero-emission vehicles by January 1, 2023.
- Establish a self-sustaining California market for zero-emission and near-zero-emission vehicles in which zero-emission and near-zero-emission vehicles are a viable mainstream option.
- Increase access for disadvantaged, low-income, and moderate-income communities and consumers to zero-emission and near-zero-emission vehicles and increase the placement of these vehicles in disadvantaged communities.

SB 1275 also establishes specific requirements for CVRP and directs ARB to establish programs that further increase access to and direct benefits for disadvantaged, low-income, and moderate-income communities and consumers from electric transportation.

This statutory direction serves as a basis for staff's recommended light-duty investments which are discussed in the following sections of the discussion document.

CVRP

Recommended project allocation: Low Carbon Transportation – \$111 million AQIP – \$5 million
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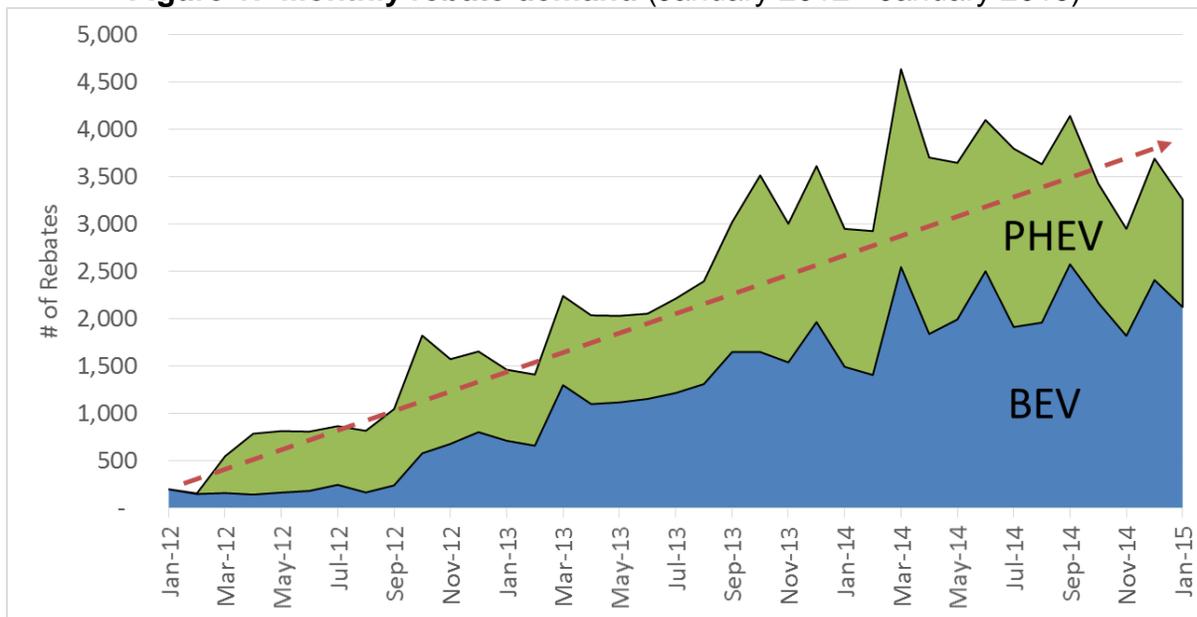
CVRP offers vehicle rebates on a first-come, first-served basis for light-duty ZEVs, plug-in hybrid electric vehicles (PHEVs), zero-emission motorcycles, and neighborhood electric vehicles. CVRP helps get the cleanest vehicles on the road in California by

providing consumer rebates to partially offset the higher initial cost of these advanced technologies. Current rebates range from \$5,000 for fuel cell electric vehicles (FCEVs), \$2,500 for battery electric vehicles (BEVs), \$1,500 for PHEVs, and \$900 for zero-emission motorcycles and neighborhood electric vehicles.

Program Status

Since the project’s launch in 2010, rebates for over 95,000 vehicles totaling over \$195 million have been issued. Figure 1 shows the monthly rebate demand and the significant growth of the project in the last three years. In the last quarter of 2014, staff observed a slowdown in rebate demand beginning in October. As the market for advanced clean vehicles is in the early stages of commercialization, external factors, such as fuel prices, introduction of new models, vehicle price changes, and availability of vehicles, may have significant impacts on the dynamic market. Because the plug-in electric vehicle (PEV) market is still in its early stages, it is unknown what affect these factors may have on advanced technology vehicle uptake and CVRP rebate demand.

Figure 1: Monthly rebate demand (January 2012 - January 2015)



There are now more than 25 models of eligible vehicles available to consumers and more vehicle introductions are planned. About 55 percent of rebates have been issued for the acquisition of BEVs. Growing consumer interest for PHEVs increased the popularity of the program and PHEVs now comprise almost 45 percent of total rebates. As the clean vehicle market grows, consumer choices in vehicle price and range options will continue to expand.

Addressing SB 1275 Requirements

SB 1275 directs ARB to adopt revisions to the criteria and other requirements for CVRP by June 30, 2015 to ensure the following:

- Rebate levels can be phased down in increments based on cumulative sales levels as determined by ARB.
- Consideration of the conversion to prequalification and point-of-sale rebates or other methods to increase participation rates.
- Eligibility is limited based on income.

SB 1275 also directs ARB to incorporate in the FY 2016-17 Funding Plan a forecast of the projected funding needs for CVRP and related programs for the immediate fiscal year and two subsequent fiscal years, a market and technology assessment to inform funding decisions, and an assessment of when a self-sustaining market is expected.

For this discussion document and the upcoming FY 2015-16 Funding Plan, the focus will be on addressing the three SB 1275 requirements for the FY 2015-16 funding cycle; the enhanced forecasting requirement will be addressed in next year's Funding Plan.

SB 1275 Requirement 1: Ensure rebate levels can be phased down in increments based on cumulative sales levels as determined by ARB

ARB already has the authority to modify CVRP rebate levels as needed and has used this authority on several occasions. For example, the Board lowered per vehicle rebate levels from \$5,000 for ZEVs to \$2,500 and from \$3,000 for a PHEV to \$1,500 in the FY 2011-12 Funding Plan. Similarly, the Board increased the per vehicle rebate level for fuel cell electric vehicles from \$2,500 to \$5,000 in the FY 2014-15 Funding Plan.

One pathway to ensure rebate levels can be phased down is through the technology evaluation milestones that were approved in the FY 2014-15 Funding Plan.⁶ Technology evaluation milestones were developed based on project goals and metrics for measuring success that could be used to guide decisions on phasing down rebate levels. The milestones were set with the purpose of evaluating the state of the three main eligible passenger vehicle technology types as they approach specific levels of consumer adoption in the commercialization process. The evaluation would include: the state of zero-emission vehicle market; household ownership patterns; and manufacturer achievements. The Board approved technology evaluation milestones of 150,000 rebates for BEVs, 150,000 rebates for FCEVs, and 75,000 rebates for PHEVs. These numbers are based on long-term projected rebate demand and total passenger car sales. The FY 2014-15 Funding Plan directs staff to begin evaluations once vehicle volumes reach the halfway point of the evaluation milestones. As these vehicles become more popular, phasing down rebate levels may be appropriate.

As noted above and consistent with the technology evaluation milestones, SB 1275 directs ARB to include a long-term plan in the FY 2016-17 Funding Plan that includes a market and technology assessment to inform the appropriate funding level, incentive

⁶ For full discussion, see pages 40-41 of the FY 2014-15 Funding Plan:
http://www.arb.ca.gov/msprog/aqip/fundplan/final_fy1415_aqip_ggrf_fundingplan.pdf

type, and incentive amount and an evaluation of how existing incentives may be modified to recognize expected changes in future market conditions.

Recommendation: Staff recommends retaining the Board-approved metrics and milestones from the FY 2014-15 Funding Plan. Consistent with these metrics, staff does not recommend lower rebate amounts in FY 2015-16. Instead, staff will continue to assess the state of the market and develop a long-term plan for CVRP in the FY 2016-17 Funding Plan as required by SB 1275. As part of that assessment, staff will reevaluate the milestone and metrics established in the FY 2014-15 Funding Plan and the appropriate time to reduce rebates.

SB 1275 Requirement 2: Consideration of the conversion to prequalification and point-of-sale rebates or other methods to increase participation rates

In developing past Funding Plans, ARB staff has previously considered transitioning CVRP to a prequalification or point-of-sales model, and continues to evaluate the merits of such changes relative to the current program. Participation in CVRP is high among California ZEV purchasers, and CVRP participants generally rate their experience positively in surveys. Based on data from the California Department of Motor Vehicles, CVRP has supported the purchase of approximately 70 percent of all PEVs in California, leaving around 30 percent of consumers who did not apply for a rebate. Possible reasons may be that consumers were not eligible because they did not meet the minimum CVRP ownership requirements, consumers decided they did not need the rebate, or consumers were not aware of the availability of the rebates.

Converting CVRP to a point-of-sale model would likely increase participation, but may lead to providing rebates to consumers who would have adopted the advanced technology vehicles without CVRP, further increasing the funding need of the program. In addition, CVRP is popular due to its simplicity and user friendliness. Modifying the program at this time will add complexities, such as consumer confusion, implementation challenges, and dealer responsibilities on top of other mandatory requirements such as the introduction of income limits as required by SB 1275.

Implementation of income eligibility limits will already introduce a significant change to CVRP. Staff believes the current centralized rebate application process provides the most effective approach to implement the income eligibility limit in its first year in order provide oversight and ability to make adjustments as necessary.

Recommendation: For these reasons, staff does not recommend making this modification for the FY 2015-16 funding cycle. ARB will reconsider converting to a prequalification or point-of-sale rebate model in future funding cycles. Staff will continue to investigate other approaches that further promote the sale of ZEVs and PHEVs at the dealer level and expand the opportunities for lower income consumers to participate.

SB 1275 Requirement 3: Eligibility is Limited Based on Income

To establish an income eligibility limit, staff reviewed other programs that defined income thresholds to determine eligibility for benefits or other purposes, analyzed CVRP survey data, and considered stakeholder feedback during the public process to develop the FY 2015-16 Funding Plan.

Staff used two guiding principles in developing its recommendation.

- The income eligibility limit should support continued growth of the ZEV market to meet the broader SB 1275 goal to deploy 1 million ZEVs by 2013 and establish a self-sustaining market. To meet this principle, staff is striving to set a limit at a level where those excluded from receiving CVRP rebates would likely still make a ZEV purchase, so the impact to the market is minimized and the project's effectiveness is improved.
- Take a simple approach for the first year. ARB has routinely heard that one of the keys to the success of CVRP is its simplicity. It is easy for consumers to access rebates, and the rules and requirements are easy to understand. Staff wants to design an income eligibility limit that will be simple to understand and straightforward to implement. If necessary, the income limit requirement can be modified in future years.

Based on the evaluation performed, staff recommends establishing income eligibility limits consistent with Proposition 30, a ballot initiative approved by California voters in 2012. Proposition 30 temporarily increased taxes on upper-income tax payers. The use of Propositions 30 tax thresholds was one approach to setting a CVRP income limit discussed during the development of SB 1275 as well as during ARB's Funding Plan development.

Based on Proposition 30, staff recommends setting income eligibility limits at the following thresholds for CVRP:

- \$250,000 for single filer's taxable income.
- \$340,000 for head-of-household filer's taxable income.
- \$500,000 for joint filers' taxable income.

By aligning with Proposition 30, staff is relying on an already established program to establish a CVRP income eligibility limit, consistent with the recommendations of some stakeholders. Additionally, at these income eligibility limits, the impact on CVRP's ability to support market growth may be minimal based on staff's analysis.

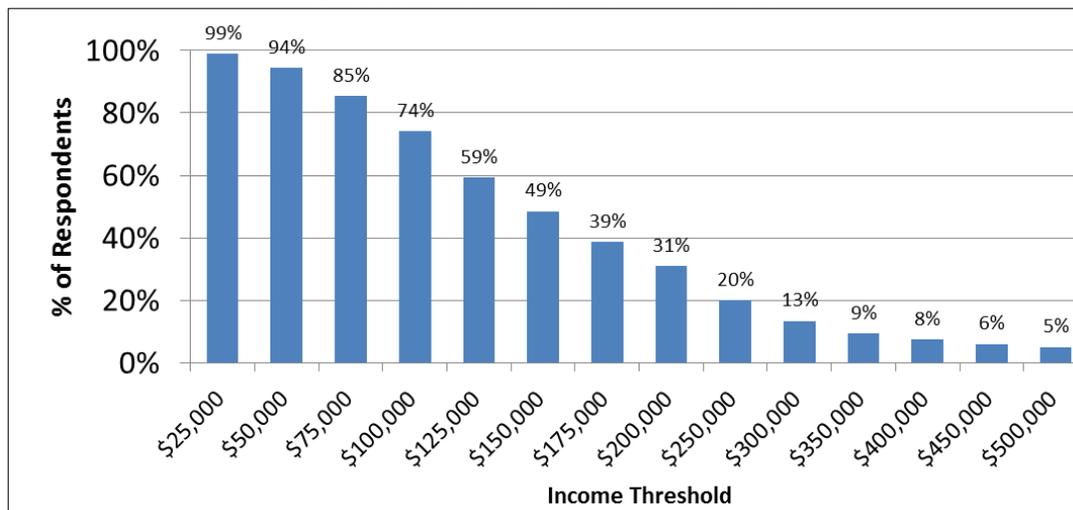
The income eligibility limit may be adjusted in future funding cycles, and staff will evaluate the impact after implementation when more data becomes available, as the current survey instrument is not able to estimate impact of the recommended income eligibility limits at the moment.

Supporting Analysis

In order to establish an income eligibility limit, staff estimated the impact by analyzing consumer income distribution and purchase motivations as reported in CVRP survey results and through internal analysis. Responses from more than 14,000 PEV drivers were gathered in the CVRP survey, providing a snapshot of demographics and vehicle purchase motivations of CVRP rebate recipients. About 15 percent of all CVRP participants (corresponding to 10 percent of all California PEV buyers) participate in the CVRP survey.

Staff analyzed demographics data and purchase motivation information provided by CVRP survey respondents. Staff observed that while there are variations in the data across different income levels, CVRP rebates are generally viewed as an important variable in influencing purchase decisions. Based on the analysis, the recommended income eligibility limits will not exclude a high percentage of CVRP participants to significantly impact potential market growth, as show in Figure 2. By minimizing the impact of the income eligibility limit and restricting a smaller percentage of consumers from the program, CVRP will continue to be effective in influencing the purchase of advanced clean vehicles.

Figure 2: Percentage of CVRP Survey Respondents with Household Income Greater than Income Threshold



Implementation of Income Eligibility Limit

SB 1275 directs ARB to adopt the income eligibility limit by June 30, 2015. The income eligibility limit would go into effect approximately 4 to 6 months after the adoption of the FY 2015-16 Funding Plan to allow ample time to make the necessary project adjustments. These include consumer outreach and education, dealer training on the new requirement, CVRP application and web site redesign, and development of data security procedures. During the 4 to 6 month period that programmatic changes

necessary for implementing income eligibility are being developed, CVRP will continue to operate without the limit.

As mentioned previously, staff recommends basing the income eligibility limit on annual gross income for individual and joint filers. Entities that are currently eligible for CVRP rebates include individuals, businesses, government entities, car share service providers, and rental car fleets. Staff is recommending to apply the income eligibility limit to individuals only. All other entities (businesses, government entities, etc.) would be exempt from income eligibility and may still apply for CVRP rebates without the income restrictions. About 96 percent of the CVRP rebates to date have been issued to individual consumers to date, so these exempt entities only account for about 4 percent of the CVRP participants.

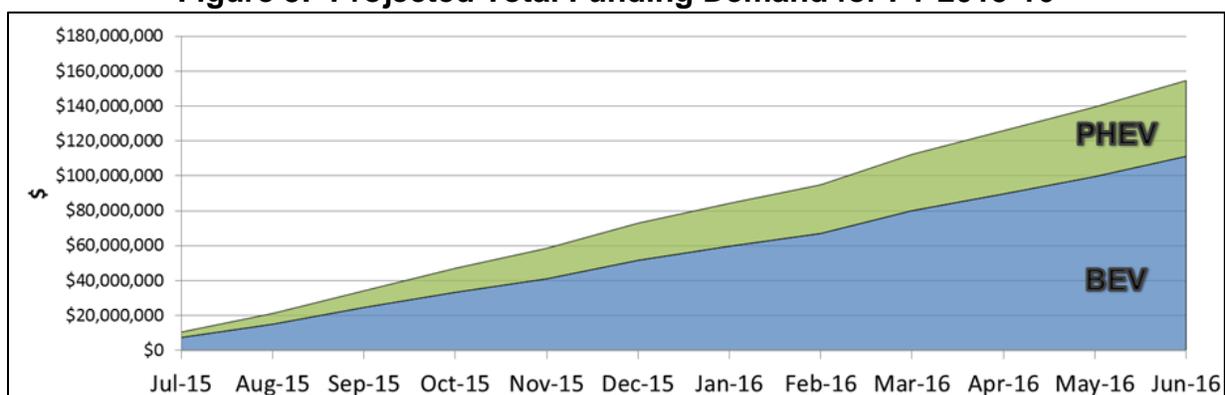
Staff considered several options for income eligibility verification. To verify income, staff recommends random income verification evaluations during the application process prior to issuing rebate checks. The CVRP grantee would conduct these random income verification checks as a part of their responsibilities and requirements for administering CVRP. This pre-rebate random verification approach is similar to the auditing approach the Bureau of Automotive Repair (BAR) uses in its Consumer Assistance Program.

In work group discussions, staff had considered other approaches such as requesting tax forms from all CVRP participants including the Internal Revenue Service Form 4506, *Request for Transcript of Tax Return* and Franchise Tax Board (FTB) Form 3516, *Request for Copy of Personal Income Tax or Fiduciary Return* which would allow for auditing after rebates are issued. However, staff believes the pre-rebate verification approach described above would be an effective, but less intrusive and burdensome approach. Staff is continuing to work BAR to understand its processes for verifying income.

Addressing Potential Budget Gap

Staff has projected rebate demand for FY 2015-16 using historical rebate demand data. The projections assume a linear growth in rebate demand and were adjusted in consideration of historical observed monthly fluctuations in the PEV market. External factors that may affect rebate demand were not included in the projection, creating uncertainty in ARB staff's projections. Based on this analysis, staff is projecting approximately 70,000 rebates totaling a funding need of between \$150 million and \$160 million at current vehicle rebate levels, without project modifications. Figure 3 shows the projected cumulative funding demand for FY 2015-16.

Figure 3: Projected Total Funding Demand for FY 2015-16



The establishment of income eligibility limits consistent with Proposition 30 may provide a minor reduction to funding need, but additional analysis will need to be performed once data become available after implementation. In addition, based on staff's examination of the rebate uptake of CVRP, there has been a slight reduction in the rate of growth of CVRP rebate demand over the last several months. Based on this recent slowdown, staff estimates that up to \$10 million in FY 2014-15 CVRP funds may be available to assist with the transition between funding cycles. However, with the proposed budget of \$116 million for CVRP, staff estimates that there would be still a project budget gap without additional project modifications.

As mentioned previously, the California clean car market is growing very dynamically and various external factors cause unpredictability in project demand. In order to reduce project interruptions that may impact potential market growth, staff recommends establishing a waiting list for FY 2015-16 in the event that CVRP runs short of funding prior to the end of the budget cycle. A waiting list, as implemented in previous years, extends the project until additional funding is available. However, a waiting list would impact the budget for the following year and would cause delays in consumers receiving rebates.

Staff does not recommend suspending the project when funding is depleted as suggested during the public process to develop the FY 2015-16 Funding Plan. Project suspension would create consumer uncertainty regarding rebate availability and may cause significant impact to market growth.

Staff acknowledges comments from numerous stakeholders at previous workshops and work group meetings that they are advocating that the Legislature and Governor increase the Low Carbon Transportation appropriation and with it increased funding for CVRP. As such, staff will defer additional recommendations on addressing potential CVRP funding shortfalls beyond consideration of a waiting list until ARB's budget is closer to being finalized. If additional Low Carbon Transportation funding is provided, staff recommends that a portion of it be directed to closing the projected CVRP budget gap for the FY 2015-16 funding cycle.

Potential Additional Approaches to Increase Access to CVRP

In the event additional funding beyond the estimated funding need is available, staff is considering the concept to increase rebate amounts for low- and moderate-income consumers. Better incentivizing low- and moderate-income consumers may increase the effectiveness of the program by supporting the purchase of advanced clean vehicles to consumers that value the rebates the most, while providing additional benefits that support the goals of SB 1275.

For example, when comparing survey data from the California Department of Transportation^{7,8} and CVRP, approximately 33 percent of new conventional car buyers in California have an annual household income level below \$75,000 compared to approximately 15 percent for CVRP participants. This analysis also indicated that approximately 50 percent of new conventional car buyers in California have an annual household income level below \$100,000 compared to approximately 25 percent for CVRP participants. Based on these data, an increase in rebate amounts for lower-income consumers may help incentivize a larger population of new vehicle consumers to increase the market penetration of near zero- and zero-emission vehicles. Additionally, this concept may provide additional benefits to disadvantaged communities as CVRP survey and rebate data showed that consumers with lower incomes are more likely to live in a zip code containing a disadvantaged community, further supporting the goals of SB 1275 to increase access and placement of advanced technology vehicles in disadvantaged, low-income, and moderate-income communities.

Light-Duty Pilot Projects to Benefit Disadvantaged Communities

Recommended project allocation: Low Carbon Transportation – \$9 million
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Staff recommends allocating \$9 million of FY 2015-16 funds to continue light-duty vehicle pilot projects that reduce GHG emissions in or to benefit disadvantaged communities. This is the same funding level provided in the FY 2014-15 Funding Plan. Staff recommends continuing each of the four pilot projects being launched with the FY 2014-15 appropriation.

The four projects are described below along with an overview of the current status and staff's draft recommendation for the FY 2015-16 funding cycle.

SB 1275 Requirement to Establish Disadvantaged Community Programs: ARB adopted a suite of light-duty pilot projects aimed at reducing GHG emissions in or to directly benefit disadvantaged communities as part of the FY 14-15 Funding Plan. In parallel, SB 1275 directs ARB to establish programs to increase access to zero-emission and

⁷ <https://catalog.data.gov/dataset/california-household-transportation-survey>

⁸ http://www.arb.ca.gov/html/ca_pevmarket_study_ucdits.pdf

near zero-emission vehicles for lower income Californians and the State's disadvantaged communities. Specifically, SB 1275 added Health and Safety Code Section 44258.4(c)(4)(A) which directs ARB to:

“establish programs that further increase access to and direct benefits for disadvantaged, low-income, and moderate-income communities and consumers from electric transportation...”

The pilot projects recommended below are intended to build upon last year's investment and fulfill statutory direction from SB 1275 to establish these types of programs. These targeted investments will allow ARB to investigate the viability of these types of projects in assisting lower-income households and disadvantaged communities.

Development Process: ARB staff held two light-duty pilot project-specific public work group meetings in addition to the two public workshops on the Funding Plan to receive input from stakeholders regarding funding allocations, project categories, and other considerations. At these meetings, many stakeholders commented that the recommended funding level will not expand these projects beyond the pilot stage and that additional funding is needed. If additional funding becomes available, these projects could be expanded to provide additional benefits. Specifically, stakeholders suggested that the Vehicle Retirement and Replacement Plus-up Pilot Project and the Car Sharing and Mobility Options Pilot Project should receive priority for additional funding and provided other suggestions for new project categories.

The remainder of this section provides an overview of each of the existing project categories staff recommends for continued funding in the FY 2015-16 funding cycle and the new projects suggested if additional funding becomes available.

Recommended Projects: Staff recommends maintaining the same funding levels for the four projects funded in the FY 14-15 Funding Plan. These projects are described below along with an overview of the current status and specific recommended FY 2015-16 funding allocation.

Increased Incentives for Public Fleets Pilot Project

Public fleets are not eligible for additional incentives, such as the federal tax credit, that bring down the higher prices associated with advanced clean cars. Because of this and other barriers, local and state government fleets make up a very small number of the total rebates reserved in CVRP. The Public Fleet Incentive Pilot Project offers rebates of up to \$15,000 for public fleets located in or near disadvantaged communities to reduce emissions in neighborhoods that are already disproportionately impacted by pollution. This pilot project will continue to be administered as set-aside within CVRP.

- Current status of FY 2014-15 project:
 - Grant Agreement executed in October 2014.

- Project launched mid-February 2015 with 43 rebates totaling \$235,250 reserved by the end of February.
- Recommended for FY 2015-16:
 - \$3 million allocation (same as FY 2014-15).

Car Sharing and Mobility Options Pilot Project

Car sharing allows individuals to benefit from the use of private automobiles without the responsibility of car ownership costs. The Car Sharing and Mobility Option Pilot Project provides funding to establish advanced clean car sharing fleets in or near disadvantaged communities to offer an alternate mode of transportation and encourage the use of advanced technology cars, including plug-in hybrid vehicles, battery electric vehicles and fuel cell electric vehicles. This pilot project will gather data that could help support future larger scale advanced technology car share programs.

- Current status of FY 2014-15 project:
 - Solicitation was released in February 2015 and will close in April 2015.
 - Project selection and executed grant agreements are expected in May 2015.
- Recommended for FY 2015-16:
 - \$2.5 million allocation (same as FY 2014-15).

Vehicle Retirement and Replacement Plus-up Pilot Project

This pilot project focuses on promoting advanced technology vehicle replacements (new or used) by providing additional financial assistance for the acquisition of cleaner vehicles under the Enhanced Fleet Modernization Program (EFMP). The Vehicle Retirement and Replacement Plus-up Pilot Project provides financial assistance for lower-income consumers living in and near disadvantaged communities who retire older, dirty cars and replace them with used or new hybrid, plug-in hybrid, or zero emission vehicles. For the FY 2014-15 funding cycle, this pilot will be operated in the South Coast and San Joaquin Valley air basins (California's two extreme non-attainment areas for the federal ozone standard).

- Current status of FY 2014-15 project:
 - Grant agreements with San Joaquin Valley Air Pollution Control District and South Coast Air Quality Management District expected to be executed in early Spring 2015 concurrent with EFMP grant agreements.
- Recommended for FY 2015-16:
 - \$2 million allocation (same as FY 2014-15).
 - Allow FY 2015-16 funds be available for all air districts that implement a scrap and replacement program that meets the minimum requirements established in the EFMP Guidelines.

Financing Assistance Pilot Project

Vehicle financing is a significant barrier to ownership for some lower-income individuals. The Financing Assistance Pilot Project is intended to provide financing assistance, such as a loan loss guarantee for financial institutions or programs that buy down interest rates, to improve financing options for lower-income individuals living in or near disadvantaged communities interested in acquiring a cleaner vehicle. These programs may help consumers that would not typically qualify for conventional financing to better afford an advanced technology vehicle. Further, as more hybrids and advanced clean cars enter the used car market, financing assistance for used vehicles may help to increase the number of cleaner vehicles in and near disadvantaged communities.

- Current status of FY 2014-15 project:
 - Solicitation release expected Spring 2015.
 - Project selection and executed grant agreements expected May 2015.
- Recommended for FY 2015-16:
 - \$1.5 million allocation (same as FY 2014-15).

Other Projects Considered

During the public work group meetings to discuss these light-duty pilot projects, stakeholders also recommended three additional pilot projects. The potential projects are described below along with staff draft recommendations.

- Separate funding for vanpools in the San Joaquin Valley for agricultural workers:
 - If additional funding becomes available, staff recommends funding this as a pilot project which would offer incentives for the fleet turnover of older, higher emitting vans with cleaner alternatives.
- Incentives for the purchase of low rolling resistance tires:
 - Staff considered, but does not recommend such a project at this time because low rolling resistance tires are not certified either nationally or in California (ARB does not have certification authority for this technology), so there is not a uniform standard in place to identify tires as low rolling resistant and to verify emission reductions. More study is needed to verify potential emission reductions and fuel savings (if any), and further analysis is needed regarding which vehicles are appropriate for low rolling resistance tires.
- Incentives for hydrogen canister fuel cell neighborhood vehicles:
 - Staff considered, but does not recommend this project because the vehicles are not currently certified for sale in California. Once these vehicle are certified, they may be eligible for rebates under CVRP.

HEAVY-DUTY VEHICLE AND OFF-ROAD EQUIPMENT INVESTMENTS

The heavy-duty vehicle and equipment investment strategy for the FY 2015-16 Funding Plan is being guided by the newly established provisions of SB 1204. SB 1204 creates the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program to fund the development, demonstration, pre-commercial pilot, and early commercial deployment of zero- and near-zero emission technologies with priority given to projects that benefit disadvantaged communities. This new program, funded with Low Carbon Transportation funding appropriated to ARB from GGRF, builds on AQIP and Low Carbon Transportation investments from prior funding cycles.

SB 1204 establishes specific program planning and project eligibility requirements and directs ARB to use the existing AQIP Funding Plan process to develop the guidance necessary to implement the program. ARB will coordinate AQIP and Low Carbon Transportation investments in the heavy duty sector, while implementing the specific statutory requirements that apply to each program.

Addressing SB 1204 Requirements

SB 1204 establishes 10 goals for California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program in Health and Safety Code Section 39719.2(d) that should be addressed in ARB's guidance for the program. These include:

1. Outline performance criteria and metrics for deployment incentives. The goal shall be to design a simple and predictable structure that provides incentives for truck, bus, and off-road vehicle and equipment technologies that provide significant greenhouse gas reduction and air quality benefits.
2. Ensure that program investments are coordinated with funding programs developed pursuant to the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (Chapter 8.9 (commencing with Section 44270) of Part 5).
3. Promote projects that assist the state in reaching its climate goals beyond 2020, consistent with Sections 38550 and 38551.
4. Promote investments in medium- and heavy-duty trucking, including, but not limited to, vocational trucks, short-haul and long-haul trucks, buses, and off-road vehicles and equipment, including, but not limited to, port equipment, agricultural equipment, marine equipment, and rail equipment.
5. Implement purchase incentives for eligible technologies to increase use of the cleanest vehicles in disadvantaged communities.

6. Allow for remanufactured and retrofitted vehicles to qualify for purchase incentives if those vehicles meet warranty and emissions requirements, as determined by the state board.
7. Establish a competitive process for the allocation of moneys for projects funded pursuant to this section.
8. Leverage, to the maximum extent feasible, federal or private funding.
9. Ensure that the results of emissions reductions or benefits can be measured or quantified.
10. Ensure that activities undertaken pursuant to this section complement, and do not interfere with, efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

In addition to these 10 goals, Health and Safety Code Section 39719.2(e), added by SB 1204, identifies the criteria that ARB shall use in identifying projects to fund. These are discussed further below.

Furthermore, Health and Safety Code Section 39719.2(f) directs ARB to create an annual framework and plan for implementation the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program. The plan must include a vision for technology development and deployment and outline the projects eligible for funding.

As required by SB 1204, the recommended heavy-duty project allocations ensure that at least 20 percent of truck funding from Low Carbon Transportation supports early commercial deployment of existing zero- and near-zero emission heavy-duty truck technology. As described in Table 2 and the detailed heavy-duty project descriptions later in this section, a total of \$40 million is recommended for heavy-duty truck projects, and \$20 million of that total, 50 percent, is recommended for early commercial truck deployment:

Table 2: Investments in Early Commercial Truck Deployments

Project	Recommended Low Carbon Transportation Funding (million)	Early Commercial?
HVIP	\$5	Yes
Low-NOx Trucks	\$5	Yes
Truck Pilot Commercial Deployment	\$10	Yes
Advanced Technology Demonstrations: On-Road Trucks	\$20	No

The remainder of this section of the discussion document describes how ARB will address each of these requirements either by continuing procedures and processes that

have been in place for previous AQIP or Low Carbon Transportation funding cycles or through new requirements staff is recommending for the FY 2015-16 Funding Plan.

SB 1204 Requirement 1: Outline performance criteria and metrics for deployment incentives. The goal shall be to design a simple and predictable structure that provides incentives for truck, bus, and off-road vehicle and equipment technologies that provide significant greenhouse gas reduction and air quality benefits.

As the AQIP and Low Carbon Transportation programs evolve, there is a clear need to evaluate the effectiveness of program investments. Staff will continue the process of working with stakeholders to identify appropriate metrics of success for each project funded under AQIP and the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program, and staff will include these in the FY 2015-16 Funding Plan.

To achieve the pace of technology advancement needed to meet long-term air quality and climate goals, this funding should spur increasingly low-emission and low-carbon technologies as they are introduced and achieve market acceptance. The addition of significant new Low Carbon Transportation funding will enable the progression of advanced heavy duty technologies toward commercialization at a faster pace. Similar to how light-duty vehicles transitioned from basic hybrids to plug-in and fuel cell electric vehicles, basic hybrid trucks are a precedent to advanced hybrids, and finally to the ultimate goal of zero-emission trucks (or trucks that achieve zero-emission miles in specific duty cycles). While today's heavy-duty vehicle incentives typically fund hybrid and zero-emission urban package and delivery trucks, California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program funding will expedite widespread deployment of zero-emission urban buses, freight and line-haul trucks, and off-road equipment, which are responsible for the bulk of emissions from the heavy duty sector. Investments in HVIP, truck and bus pilot projects, and freight demonstrations all play a critical role in transitioning the entire freight and passenger transportation sector to utilize zero-emission technologies, while at the same time providing benefits to disadvantaged communities.

Performance Criteria

Staff's recommended performance criteria for evaluating projects funded through AQIP, California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program, or both, fall under two general categories:

- Potential for statewide and local emission reductions and health benefits
 - Near-term reductions in both GHG and criteria emissions
 - Long-term reductions in GHG emissions
 - Long-term reductions criteria emissions
 - Emission reductions in non-attainment areas
 - Emission reductions in and benefiting disadvantaged communities

- Potential for technology viability
 - Cost parity compared to conventional technology
 - Reliability and durability in chosen application
 - Ability to transfer technology to other vehicle or equipment types
 - Fueling infrastructure support
 - Ability to integrate renewable fuels

These criteria are also intended fulfill the SB 1204 direction outlined in Health and Safety Code Section 39719.2(e) that ARB give priority to projects that meet one or more of the following characteristics:

- Benefit to disadvantaged communities pursuant to Sections 39711 and 39713.
- The ability to leverage additional public and private funding.
- The potential for cobenefits or multiple-benefit attributes.
- The potential for the project to be replicated.
- Regional benefit, with focus on collaboration between multiple entities.
- Support for technologies with broad market and emissions reduction potential.
- Support for projects addressing technology and market barriers not addressed by other programs.
- Support for enabling technologies that benefit multiple technology pathways.

Consistent with the FY 2014-15 Funding Plan, projects funded entirely or in part with AQIP revenue are also evaluated based on benefit-cost criteria consistent with the requirements of AB 8.⁹ A benefit-cost score is determined for each potential project, and funding preference must be given to projects with higher benefit-cost scores that maximize the purposes and goals of AQIP.

SB 1204 Requirement 2: Ensure that program investments are coordinated with funding programs developed pursuant to the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (Chapter 8.9 (commencing with Section 44270) of Part 5).

One of the benefits of developing a joint Funding Plan that covers both AQIP and Low Carbon Transportation funding sources is to ensure coordinated investments between these two programs. The California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program complements and enhances the AQIP planning process by directing additional funding for the development, demonstration, pre-commercial pilot and early commercial deployment of zero- and near-zero emission truck, bus, and off-road vehicle and equipment technologies.

In addition, staff from ARB and the Energy Commission meet routinely during the development of each agency's funding/investment plans for these respective programs to ensure that investments are coordinated. ARB has a representative on the Advisory Committee that assists with the development of the Energy Commission's Alternative

⁹ Health & Safety Code Section 44274(b)

and Renewable Fuel and Vehicle Technology Program. Similarly, Energy Commission staff participate in the public workshops and work groups that are part of ARB's annual Funding Plans. Results of this coordinated approach can be seen in the approach to vehicle deployment incentives in past funding cycles, where the Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program has focused on natural gas vehicle incentives while ARB's AQIP and Low Carbon Transportation funding has been directed to electric drive vehicles. There is similar coordination with demonstration funding to ensure each agency is targeting different, but complementary projects.

SB 1204 Requirement 3: Promote projects that assist the state in reaching its climate goals beyond 2020, consistent with Sections 38550 and 38551.

Starting with the FY 2014-15 Funding Plan, heavy duty projects focused on vehicles and industry sectors that, if transitioned to zero-emission, would have a significant impact on reducing climate change emissions. The FY 2014-15 Funding Plan included \$80 million in Low Carbon Transportation funding allocations for multi-source and drayage demonstrations and ongoing deployment of commercially available vehicles through HVIP and truck and bus pilot projects.

- Up to \$50 million in Low Carbon Transportation funding was allocated to demonstrate the application of zero- and near zero-emission drayage trucks and various types of vehicles and applications used in distribution centers, ports, and other industrial facilities.
- Up to \$25 million in Low Carbon Transportation funding was allocated to pilot projects that place commercially available zero-emission transit buses and school buses in service while building out the manpower, service, and fueling infrastructure to support increasing numbers of these vehicles.
- Up to \$5 million in Low Carbon Transportation funding was allocated to HVIP to encourage and accelerate the deployment of new commercially available hybrid and zero-emission trucks and buses into California fleets.

By continuing to develop promising zero-emission technologies for use in industry sectors that (1) are significant GHG emitters, and (2) hold promise for technology expansion and transfer to other sectors, these investments will help the state reach long-term climate goals. Some of the key performance criteria listed above are "potential for long-term GHG reductions" and "ability to transfer technology to other vehicle or equipment types." These criteria help to promote projects that will contribute to meeting post-2020 climate goals.

SB 1204 Requirement 4: Promote investments in medium- and heavy-duty trucking, including, but not limited to, vocational trucks, short-haul and long-haul trucks, buses, and off-road vehicles and equipment, including, but not limited to, port equipment, agricultural equipment, marine equipment, and rail equipment.

Since the inception of AQIP, funding has been provided for the types of projects identified by SB 1204, and staff recommends continuing and expanding those investments. The 2014-15 Funding Plan included \$80 million in Low Carbon Transportation funding allocations for multi-source and drayage demonstrations and ongoing deployment of commercially available vehicles through HVIP and truck and bus pilot projects. Staff is recommending a continued \$80 million for the FY 2015-16 Funding Plan for demonstrations, pilots, and deployment projects in the truck, bus, and off-road vehicle and equipment sectors. These investments continue to play a critical role in meeting California's goal of placing 1.5 million zero-emission vehicles on the road, and will serve to meet this SB 1204 requirement.

SB 1204 Requirement 5: Implement purchase incentives for eligible technologies to increase use of the cleanest vehicles in disadvantaged communities.

The FY 2015-16 Funding Plan will continue ARB's commitment that at least half of the total Low Carbon Transportation appropriation be invested in projects that provide benefits to disadvantaged communities. This will ensure that ARB's heavy-duty vehicle incentives increase the use of the cleanest vehicles in these communities.

Over past funding cycles, ARB has provided AQIP and Low Carbon Transportation funding for purchase incentives for clean vehicle technologies, reducing emissions in the heavy-duty sector and in disadvantaged communities. To date, nearly 2,000 vouchers have helped fund hybrid and battery electric delivery trucks and buses through HVIP. In addition, new Truck and Bus Pilot Commercial Deployment projects that ARB will launch later in 2015 will also increase use of the cleanest vehicles in disadvantaged communities.

SB 1204 Requirement 6: Allow for remanufactured and retrofitted vehicles to qualify for purchase incentives if those vehicles meet warranty and emissions requirements, as determined by the state board.

ARB is allowing conversions of existing in-use vehicles to zero-emission as an eligible vehicle category in the multi-source facility demonstration project, zero-emission drayage truck demonstration projects and the truck and bus pilot projects being funded as part of the FY 2014-15 Funding Plan.

In addition, staff recommends that eligibility for zero-emission conversions and hybrid upfits of original engine manufacturer (OEM) vehicles be added to HVIP as part of the FY 2015-16 Funding Plan. Additional details are provided in the HVIP section of this discussion document.

SB 1204 Requirement 7: Establish a competitive process for the allocation of moneys for projects funded pursuant to this section.

ARB has used an established process for awarding AQIP funding through competitive solicitation since 2009. This process is serving as the basis for allocating Low Carbon Transportation funding in the FY 2014-15 funding cycle, and staff recommends using the same process moving forward to solicit and award California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program funding.

SB 1204 Requirement 8: Leverage, to the maximum extent feasible, federal or private funding.

Most grant solicitations require a minimum level of match funding, and projects that offer more match funding will score better. Proponents are encouraged to seek additional funding from federal, state and local public sources, as well as private sources. Staff recommends using the same process moving forward to solicit and award California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program funding.

SB 1204 Requirement 9: Ensure that the results of emissions reductions or benefits can be measured or quantified.

All grant solicitations for these projects require that the project proponent report various metrics associated with vehicle operation and fuel consumption. Emissions from vehicles certified to a cleaner standard (i.e., low NOx) will be compared to the diesel baseline to determine emission reductions. Fuel consumption will be used to quantify GHG emissions benefits from hybrids, battery electric and fuel cell electric vehicles compared to their conventional counterparts. All program-level emission reduction benefits will be quantified by comparing to conventional technologies on a well-to-wheel basis. In addition, telematic devices will be used when possible to monitor in-use data and provide information on usage in disadvantaged communities and other designated areas. Staff is recommending to contract with a third party to collect and analyze operation and maintenance data associated with funded projects.

SB 1204 Requirement 10: Ensure that activities undertaken pursuant to this section complement, and do not interfere with, efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

The technologies funded in California Clean Truck, Bus, and Off-Road Vehicle and Equipment Program provide GHG reductions as well as criteria pollutant and toxic air contaminant reductions. Zero- and near zero-emission technologies operating in and near disadvantaged communities will reduce levels of NOx and toxic diesel particulates, contribute to criteria pollutant emission reductions in non-attainment areas, and reduce GHG emissions in the heavy duty transportation sector.

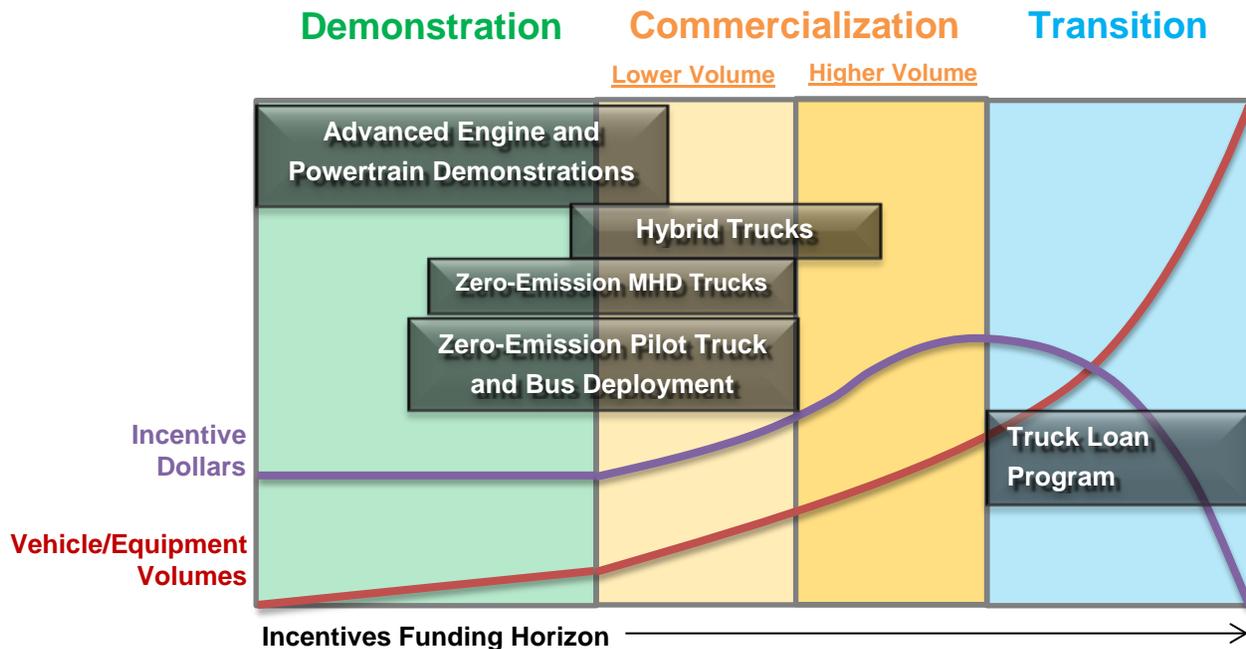
SB 1204 Requirement for Overarching Vision

SB 1204 directs that the annual framework and plan required under Health and Safety Code Section 39719.2(f):

Articulate an overarching vision for technology development, demonstration, precommercial pilot, and early commercial deployments, with a focus on moving technologies through the commercialization process.

ARB described a vision that identifies how incentives support these phases of technology advancement in the FY 2014-15 Funding Plan. Staff recommends carrying forward that vision and applying it to the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program. This evolutionary role of incentives – through demonstration, commercialization, and transition – is described below, and shown in Figure 4. It is also described in the FY 2014-15 Funding Plan.¹⁰

Figure 4: Heavy Duty Advanced Technology Investments



In the *demonstration phase*, manufacturers are developing, testing, and piloting technologies. Incentives are provided to help fund the development of these advanced technologies through demonstration projects focused on single vehicle prototypes or small volume vehicle demonstration and testing projects. In the demonstration phase, per-vehicle incentives are high because manufacturing is not standardized and is focused on smaller batches of vehicles. Higher levels of incentives per vehicle are needed to help entrepreneurs cover the costs of technology development. While per

¹⁰ See pages 7-11 of the FY 2014-15 Funding Plan:
http://www.arb.ca.gov/msprog/aqip/fundplan/final_fy1415_aqip_ggrf_fundingplan.pdf

vehicle incentives are larger for demonstration projects, these investments are crucial because advanced technologies often would not evolve into pilot projects and migrate to the commercialization phase without this public funding. Examples of ARB-funded demonstration projects include the zero-emission drayage and multi-source demonstration projects from the FY 2014-15 Funding Plan. Additional demonstration projects are recommended for FY 2015-16 as described later in this document.

Funding is also provided for *pilot projects* to help the technology evolve in the early commercialization phase by deploying a larger volume of vehicles and equipment. Pilot projects bridge the demonstration and commercial phases of a technology's evolution. In this stage, vehicles and equipment are ready to be sold commercially, but in such small numbers that they would not be able to compete without incentive support. The FY 2014-15 Funding Plan's zero-emission truck and bus pilot project from the is an example of a pilot project for early commercial deployments of larger vehicle volumes.

In addition, many zero-emission demonstration and pilot projects would not advance to commercialization without the appropriate fueling infrastructure. For this reason, SB 1204 includes funding eligibility for fueling infrastructure supporting pre-commercial demonstrations and early market deployments.

In the *commercialization phase*, incentives are provided to encourage consumer adoption of advanced technologies. The commercialization phase can be broadly separated into lower volume and higher volume production phases. In the lower volume commercialization phase, sales volumes generally start out low, but grow over time as consumer acceptance increases and manufacturing costs decrease with economies of scale. In the lower volume commercialization phase, per vehicle incentives are high. Most of AQIP's heavy duty funding to date has been focused in this phase of advanced technology deployment, with HVIP spurring market growth of hybrid and zero-emission trucks. However, AQIP funding alone is no longer sufficient to meet market demand. Providing additional funding for HVIP vouchers through the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program will help increase production volumes beyond what could be funded through AQIP alone, and enhance the process toward commercialization. HVIP incentives will support zero- and near-zero emission heavy-duty vehicles that benefit disadvantaged communities.

As sales grow and economies of scale are achieved, incentive funding levels and vehicle eligibility requirements can be adjusted to reduce per vehicle funding to ensure maximum incentive efficiency by better targeting incentive funding to motivate consumer decisions. In this higher volume commercialization phase, while per vehicle incentives are decreasing, total sales are increasing and total incentive funding commitments increase as a result. As a technology moves from lower volume commercialization to a fuller more mature higher volume, the incentive funding goals shift from a focus on technology development to a more specific focus on moving the technology from early adopters to mainstream consumers, disadvantaged communities, and the secondary market.

As a technology moves from commercialization into the transition phase, incentives can be adjusted to focus specifically on moving the technology into new consumer demographic segments and on building upon earlier benefits in disadvantaged communities (as well as to support other technology sectors). In the transition phase, incentives are targeted to foster technology adoption in these communities. While SB 1204 does not focus on funding for this phase of a technology's evolution, the AQIP-funded Truck Loan Assistance Program is an example of this type of incentive, providing loan assistance to help small fleets access financing to upgrade their trucks.

As part of the overall vision the California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program, there is a clear need to evaluate the effectiveness of program investments. Staff will continue to work with stakeholders to identify appropriate metrics of success for each funded project. Metrics of success should convey concepts such as: level of market penetration, manufacturer diversity, technology cost, consumer acceptance, or other indicators of market health.

HVIP

Recommended project allocation: Low Carbon Transportation – \$5 million AQIP – \$5 million
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HVIP is intended to encourage and accelerate the deployment of new hybrid and zero-emission trucks and buses in California. HVIP provides vouchers of up to \$95,000 for California purchasers and lessees of zero-emission trucks and buses, and up to \$30,000 for eligible hybrid trucks and buses on a first-come, first-served basis. In addition, HVIP provides increased incentives for vehicles that provide benefits to disadvantaged communities. These fleets qualify for vouchers up to \$110,000 for zero-emission trucks and buses.

Program Status

Since its launch in 2010, HVIP has provided over \$56 million to help California fleets purchase 380 zero-emission trucks and buses, and 1,632 hybrid trucks. HVIP is also structured to enable leveraging of local, State, and federal funding. The Energy Commission (\$4 million), South Coast Air Quality Management District (AQMD) (\$2 million), and Sacramento Metropolitan AQMD (\$500,000) have all previously provided voucher enhancements to accelerate fleet demand for hybrid and zero-emission trucks and buses. Most recently, the San Joaquin Valley Air Pollution Control District has provided \$2 million for an HVIP “bump-up” for zero-emission and hybrid trucks and buses deployed in the San Joaquin Valley. These investments enable air districts to accelerate hybrid and/or zero-emission technology deployment within their region, while maintaining the streamlined, statewide HVIP structure needed to drive production economies of scale and accelerate market penetration.

Projected Demand and Funding Allocation

Based upon current market demand projections, staff projects that existing funding will meet program demand into early 2016. Staff expects demand to remain consistent; therefore, staff recommends an allocation of \$10 million for FY 2015-16.

HVIP will continue to be implemented on a first come/first serve, statewide basis, so it is difficult to estimate in advance how much of this funding would benefit disadvantaged communities. As part of the reporting requirements associated with the Low Carbon Transportation, ARB will track where these funds are spent, so it can calculate the portion that benefits disadvantaged communities.

Changes to Project Criteria

Staff is recommending that hybrid upfits of new vehicles (Class 2a and larger vehicles) become eligible for funding on a limited basis. No hybrid upfits of existing in-use vehicles would qualify due to uncertainty about durability and continued emissions reduction performance. Initially, hybrid upfits would be required to have aftermarket parts certification. If the proposed Innovative Strategies Regulation is approved by the Board later in 2015, upfit vehicles would follow requirements within the regulation for pathway to certification.

Additionally, staff is recommending eligibility for zero-emission conversions. New or in-use vehicles with any fuel type would qualify, but must be less than ten years old at the time of conversion to ensure durability.

Staff recommends the Board make hybrid upfits and zero-emission conversions eligible effective for the FY 2014-15 HVIP funding cycle. Staff recommends conducting a public workgroup during summer 2015 to establish fiscal year limits for the number of vehicle conversions and upfits, and the total conversion and upfit voucher funding.

Hybrid Vehicle Certification

For the FY 2015-16 Funding Plan, staff is not recommending full vehicle certification for HVIP eligibility because of the early market stage for hybrid trucks and buses. Staff expects, however, that full vehicle certification will be a requirement within the next few funding cycles.

Truck and Bus Pilot Commercial Deployment Projects

Recommended project allocation: Low Carbon Transportation – \$30 million

Project Goals

Zero-emission medium- and heavy-duty vehicle deployment must be significantly accelerated for California to meet its post-2020 air quality and climate goals. While HVIP has enabled early market deployments of zero-emission technology to be widely deployed, the Zero-Emission Truck and Bus Pilot approved in the FY 2014-15 Funding Plan takes the next step by helping drive down per vehicle costs via large, location-specific deployments.

These projects would place a significant number of zero-emission trucks and buses in a handful of strategic “hubs”, encouraging advanced technology clusters with infrastructure, marketing, workforce training, and other synergies. The technology hub or ecosystem concept, when fully implemented, can help address many of the deployment challenges we see today by supporting economies of scale in manufacturing, workforce training and vehicle maintenance and repair, and infrastructure/grid issues. This concept would also help achieve the California ZEV Action Plan goal of encouraging zero-emission vehicle deployment in public and private fleets by “providing funding support, keeping fueling affordable (and) increasing coordination and communication among fleet users...”¹¹

Recommended Pilot Project for FY 2015-16

The FY 2014-15 Funding Plan allocated up to \$25 million from Low Carbon Transportation investments for Zero Emission Truck and Bus Pilot Projects Benefitting Disadvantaged Communities. In February 2015, staff held the first work group meeting for these projects and anticipates releasing a solicitation in April 2015. Due to the significant amount of early interest and the strong possibility that high quality project applications for the current funding cycle will exceed the allotted \$25 million, staff recommends that the FY 2015-16 Funding Plan provide \$20 million from Low Carbon Transportation investments for Zero-Emission Bus Pilots and \$10 million for Zero-Emission Truck Pilots. Although this funding is significant, it may not be sufficient to meet demand, and additional funding, if made available, could go to these pilot projects.

For the FY 2015-16 Funding Plan, staff recommends the following eligibility criteria:

- Projects that include early-commercial zero-emission vehicles, such as fuel cell electric and battery electric heavy duty vehicles, as well as near-zero emission

¹¹ Brown, E. (2013). ZEV Action Plan: A roadmap toward 1.5 million zero-emission vehicles on California roadways by 2025; Governor’s Interagency Working Group on Zero-Emission Vehicles.

vehicles with the ability to operate in zero-emission mode for a significant number of miles.

- Project fleets operating within concentrated, well defined geographic areas or “hubs” supported by common charging or refueling stations, energy storage devices, communications systems, and support networks.
- Refueling and charging infrastructure that supports the ability for vehicles to operate with zero-emission miles within disadvantaged communities or other designated areas.
- Conversion of vehicles from conventional fuels to zero-emission technologies.
- Projects that focus on maximizing operational efficiencies and targeting zero-emission operation where it is most needed.

Staff recommends the following categories of eligible vehicle projects:

- Zero-emission transit bus projects including urban transit buses, as well as urban rubber-tired trolleys and shuttle buses serving public or private facilities such as airports, educational institutions, and employment campuses. As early demonstrators of advanced technologies, transit agencies help accelerate clean technology availability and migration to the heavy-duty truck market. Increasing zero-emission bus populations will reduce overall transit-related emissions, with great potential to target benefits to disadvantaged communities. Projects may also help support updates to the Zero-Emission Bus regulations currently under development.
- Zero-emission school bus projects including fuel cell and battery electric school buses, as well as bus sharing projects that benefit disadvantaged communities. These projects provide an opportunity to accelerate the rate of technology deployment, reduce GHG emissions, and eliminate children’s exposure to diesel particulate, especially in disadvantaged communities. School bus projects that include a vehicle-grid integration component will be encouraged as they provide emission reduction benefits as well as potential support for the electricity grid.
- Zero-emission vocational trucks including fuel cell and battery electric truck fleet or fleets served by common fueling infrastructure, maintenance facilities and staff, and other shared resources.

Staff recommends that the Funding Plan allow flexibility to combine all or a portion of FY 2015-16 funding with existing FY 2014-15 funding to help meet demand in the upcoming Zero-Emission Truck and Bus Pilot Project solicitation. If funding remains available after projects are selected, new individual solicitations would be issued for Zero-Emission Bus Pilots and/or Zero-Emission Vocational Truck Pilots. Staff recommends separating truck and bus funding to better ensure that project applicants

are competing against like projects, and to ensure that both technology markets are supported.

Low NOx Engine Incentives

Recommended project allocation:
Low Carbon Transportation – \$5 million
AQIP – \$2-3 million

In December 2013, the Board approved optional low NOx standards that allow manufacturers the ability to certify engines to NOx emission levels that are 50 percent, 75 percent, or 90 percent lower than today's mandatory emission standards. To date, no engines have yet been certified to the optional standards. In order to encourage manufacturers to produce these engines and fleets to purchase them, staff is recommending for FY 2015-16 to include up to \$8 million of incentive funding, up to \$3 million from AQIP and \$5 million from Low Carbon Transportation Investments, for heavy-duty trucks (greater than 14,000 pounds gross vehicle weight rating or GVWR) with engines certified to any of the lower NOx standards.

Staff anticipates that low NOx truck incentives would also be implemented on a first come/first serve, statewide basis. This is the model that is used for CVRP and HVIP, as well as natural gas vehicle incentives provided by the Energy Commission. As such, it is difficult to estimate in advance how much of this funding would benefit disadvantaged communities. As part of the reporting requirements associated the Low Carbon Transportation, ARB will track where these funds are spent, so benefits to disadvantaged communities can be determined.

Contingency Provisions: Staff anticipates that qualifying engines may be certified and available during FY 2015-16, and will monitor demand throughout the year. However, since availability and demand are uncertain, staff will propose contingency provisions to carry the funding forward into FY 2016-17 if necessary. Staff intends to provide these incentives over a multiple year period, so any contingency to redirect funding in the FY 2015-16 budget cycle would be accompanied by a staff recommendation to provide funding for low NOx truck incentives in the FY 2016-17 Funding Plan.

Renewable Fueling Requirement: In order to maximize the GHG emission benefits of low NOx vehicles, staff is recommending an additional incentive for use of renewable fuels. Vehicles funded by AQIP would be eligible for an optional renewable fuel incentive, and vehicles funded by Low Carbon Transportation would be required to use renewable fuels (and would qualify for the additional incentive). Fueling these vehicles with renewable fuels would not only provide additional GHG emission benefits, but would support the goals of the Low Carbon Fuel Standard (LCFS) program by furthering development of renewable fuels. However, requiring the use of renewable fuels has implementation challenges. Additionally, the Energy Commission already provides purchase incentives for alternative fuel vehicles, with more than \$47 million awarded to

conventional natural gas vehicles above 14,000 pounds GVWR to date.¹² ARB staff continues to work with the Energy Commission to ensure that our programs are well coordinated.

Questions for Workshop: At the workshop, staff would like to discuss the following questions and issues as they relate to those challenges and recommends seeking additional input through the work group process during summer 2015:

- What level of per vehicle funding is appropriate? The incremental cost of an advanced technology vehicle can vary significantly by engine size and supplier, and low NOx engines have yet to appear on the market. For comparison purposes, the HVIP vouchers provided an average of about \$23,000 per advanced technology vehicle last year.
- What level of renewable fuel use should be targeted? The percentage of renewables in the fuel, along with the overall total amount of renewable fuel to be used, should be considered. Additional factors may also be considered, such as the origin of the fuel (inside or outside of California), and how the funding for fuel that supports a low NOx vehicle project may interact with Low Carbon Fuel Standard (LCFS) credits.
- How does ARB verify the use of renewable fuel while reducing the administrative burden? While vehicle usage reporting is a common requirement for AQIP and Low Carbon Transportation projects, determining the elements that should be required to ensure that renewable fuel use and contents are being achieved is challenging for both the administrator and end user. Staff is considering that fueling contracts and logs be reported semi-annually, with a record keeping component that requires maintaining copies of receipts or invoices.
- How should the funding level vary by certification level? Since the optional low NOx certification has three emission levels that are cleaner than the current diesel standard of 0.20 grams per brake horsepower-hour (g/bhp-hr) – 0.10 g/bhp-hr, 0.05 g/bhp-hr, and 0.02 g/bhp-hr), staff recommends that the vehicle funding amounts vary accordingly based on certification level and incremental cost.

¹² California Energy Commission Revised Staff Report: 2015-2016 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program, Table 22, January 2015. ARB also provided about \$20 million in funding for natural gas trucks through the Proposition 1B Goods Movement Emission Reduction Program, matched with another \$20 million from local funding.

Advanced Technology Demonstration Projects

Recommended project allocation: Low Carbon Transportation – \$40 million

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 GHG reductions, as well as criteria pollutant and toxic air contaminant reductions, 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.

The FY 2014-15 Funding Plan provided funding for the demonstration of zero-emission drayage trucks and advanced technologies that operate at multi-source facilities such as distribution centers, warehouses, and intermodal facilities. Staff expects that competitive solicitations for these projects will be released in April 2015. To continue California's transition toward a low-carbon transportation future, a sustained multiyear investment strategy is critical to bring new advanced technologies to the commercial market.

The projects recommended for funding this year build on the freight demonstration investments already underway. Consistent with the vision and funding priorities identified in the FY 2014-15 Funding Plan, this year's recommended projects include freight locomotives, cargo handling equipment, and on-road line-haul and regional haul truck demonstrations. New investments are recommended to achieve advancements in the heaviest on-road trucks, such as advanced engines and powertrains in Class 8 trucks, and efficiency improvements with intelligent truck systems and connected vehicles. These investments are intended to support the development of the Sustainable Freight Strategy, and staff anticipates that future funding will be coordinated with that strategy.¹³ Staff would also recommend other demonstrations, if additional funding becomes available, for advanced technologies in applications such as passenger transportation as well as agricultural, freight, and construction equipment. All demonstration projects will continue to show the potential for widespread commercialization that will significantly transform the industry while maintaining the objective of providing GHG, criteria pollutant, toxic emission reductions.

Staff's recommendation is to allocate \$40 million from FY 2015-16 Low Carbon Transportation investments in the following project categories:

On-Road Trucks: \$20 Million

- Intelligent Truck Systems and Connected Vehicles: Technologies to increase efficiencies by allowing communications between trucks and their environment.

¹³ <http://www.arb.ca.gov/gmp/sfti/sfti.htm>

- Demonstration of real-time communications between individual trucks while on the road to allow for more efficient logistics scheduling and traffic avoidance.
 - Demonstration of increased efficiency with multiple groups of trucks working in tandem to allow for efficient braking, acceleration, accident avoidance, and other strategies.
 - Demonstration of technologies that can autonomously adjust to hills and grades and traffic anticipation strategies.
 - Demonstration of other advanced strategies that increase trucking efficiency.
- **Advanced Engines and Powertrains:** Advanced technologies employed in the generation of motive power and delivering power to the roadway.
 - Demonstration of advanced engines such as microturbine, opposition piston engines, or other engine efficiency improvements for use in long range class 7 and 8 (>26,001 pounds GVWR) trucks when compared to modern conventional diesel engines.
 - Demonstration of waste heat recover technologies, auxiliary electrification, and other strategies to reduce engine load and recover lost energy.
 - Demonstration of advanced technologies such as electric drive, advanced transmissions, differentials, and other drivetrain components used in heavy-duty trucks.

Freight Locomotives: \$10 Million

- **Zero-Emission Tender Technologies:** Use of locomotive tenders for energy storage technologies to facilitate zero-emission operation for part of a locomotives duty-cycle.
 - Battery or other technologies for storing electrical power from charging events or dynamic braking for use to propel the locomotive in zero-emission mode during some part of the locomotive duty cycle utilizing a tender car.
- **Zero-Emission or Near Zero-Emission Switchers:** Use of energy storage systems on-board a switch locomotive to reduce or eliminate emissions.
 - On-board battery or other technologies that provide motive power for a switch locomotive allowing for zero-emission operations for most or all of its duty cycle.

Off-Road Freight Equipment: \$10 Million

- **Zero-Emission Cargo Handling Equipment:** Advanced zero-emission technologies in cargo handling equipment.

- Demonstrations that use zero- and near zero-emission technology for cargo handling equipment that significantly advances the state of the technology. Some such projects would have the potential for broad applicability to many industries in the State. Projects will need to significantly reduce or eliminate tailpipe emissions from equipment compared to conventional technologies now employed.
- Zero-Emission Ground Support Equipment: Expanding the use zero-emission ground support equipment technologies and strategies utilized at airports beyond the current state of the technology.
 - Demonstrations of zero-emission technologies utilized with ground support equipment that significantly advance the state of the technology and allow zero-emission technologies to penetrate into a wider breadth of freight airport applications. Technologies such as battery, fuel cell, and flow batteries may be employed along with strategies that can reduce emissions from aircraft while being loaded/unloaded, taxiing to and from the runway, and while waiting in queue to take off.
- Advanced Port Equipment: Demonstration or pilots of advanced technologies and strategies for use in California's ports that reduce or eliminate emissions.
 - Zero-emission equipment for use at State ports and other strategies that can reduce or eliminate emissions from port operations such as automated container movement technologies and advanced logistic strategies to gain efficiencies in California's ports.

Data Collection and Analysis: Of the \$40 million total for advanced technology demonstrations, staff recommends that approximately \$2 million be used for independent third party data collection and analysis to support the demonstration and pilot commercial deployment projects, and help identify opportunities for continued market development. This would ensure a uniform approach to collecting data across all the projects, so that results are more directly comparable.

Potential Other Heavy Duty and Off-Road Equipment Projects if Additional Funds Become Available:

- Zero-Emission or Near-Zero Emission Short and Regional Haul Trucks: Building upon the advances in zero-emission drayage trucks into short and regional haul trucking service.
 - Projects that demonstrate the use of zero-emission on-road truck technologies in short and regional haul Class 7 and 8 (> 26,001 lbs. GVWR) heavy-duty truck applications. Technologies can include battery

electric vehicles, fuel-cell power plants, electric drive with range extenders or other advanced technologies.

- Off-Road Passenger Transportation: Advanced technologies to reduce emissions from in-state freight and passenger rail and ferry service.
 - Demonstration of emission reducing or eliminating technologies in passenger movement from ferries such as fuel cell and/or the use of fixed wing sails to reduce fuel usage on ferries and technologies in the freight and passenger rail sector such as hybridization and energy storage tenders to reduce emissions and decrease fuel usage.
- Off-Road Near-Zero Agricultural and Construction Equipment: Expand use of near-zero emission agricultural and construction equipment.
 - Expand the deployment of hybrid and other near-zero-emission construction and agricultural equipment that reduce emissions of GHG and criteria pollutants, while increasing operational efficiency and reducing maintenance and operational costs.

TRUCK LOAN ASSISTANCE PROGRAM

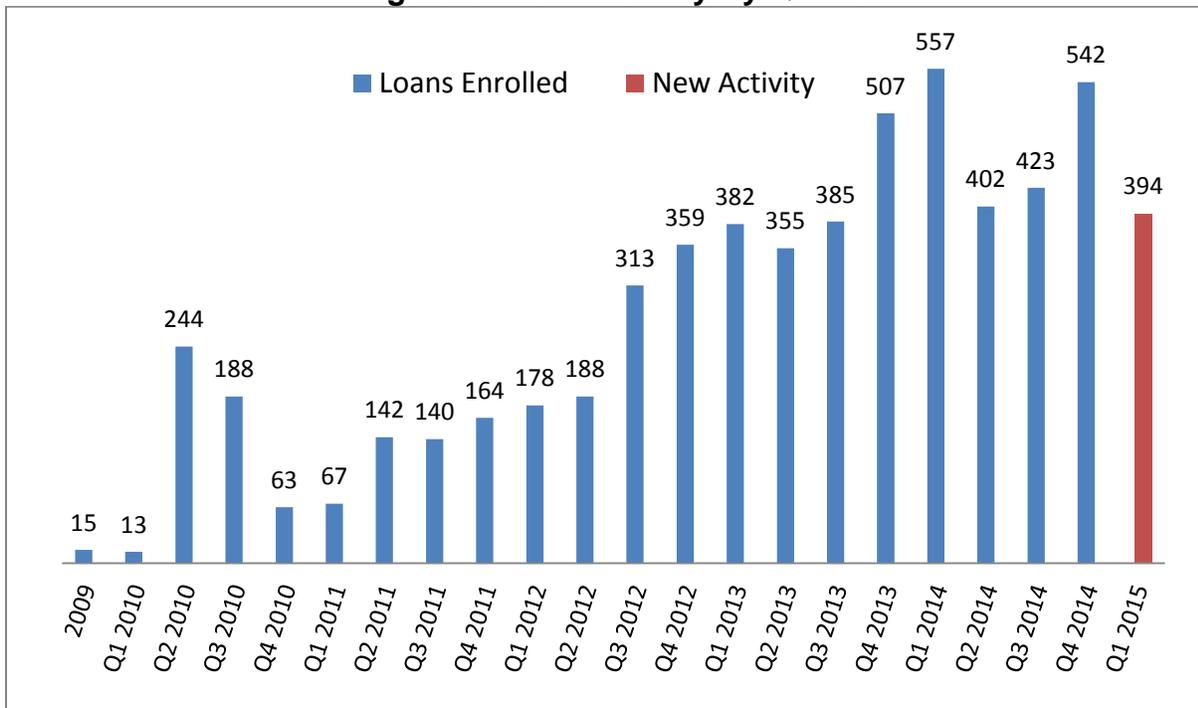
Recommended project allocation:
AQIP – \$10 million

The Truck Loan Assistance Program aids small business truckers affected by ARB’s In-Use Truck and Bus Regulation by providing financing assistance for fleet owners to upgrade their fleets with newer trucks or with diesel exhaust retrofits. The program is specifically tailored to truck owners that experience challenges obtaining conventional financing because they don’t conform to traditional underwriting standards.

Program Status

Participation in the Truck Loan Assistance Program has increased steadily since its inception in April 2009 in response to regulatory compliance deadlines as shown in Figure 5. As of February 24, 2015, about \$52 million in Truck Loan Assistance Program funding has been leveraged to provide about \$401 million in financing to small business truckers for the purchase of over 6,700 cleaner trucks, exhaust retrofits, and trailers. The FY 2014-15 Funding Plan provided \$10 million for the Truck Loan Assistance Program of which about \$8.7 million remains because prior years’ funding carried the program through January 2015.

Figure 5: Loan Activity By Quarter¹



¹ For Q1 2015, the data are through February 24, 2015 (not a complete quarter).

Table 3 provides a breakdown of financing offered. Historically, nearly 80 percent of enrolled loans have been issued to owner operators with one truck, and nearly 90 percent of enrolled loans have been issued to fleet owners with 10 or fewer employees.

Table 3: Truck Loan Assistance Program Status - Vehicles/Equipment Financed

Program	Number of Loans Issued ¹	Number of Projects Financed	Project Type	\$ Spent	Total Amount Financed
ARB/California Pollution Control Financing Authority (CPCFA) Truck Loan Assistance Program	6,014	6,222	Truck Purchases	\$52M	\$401M
		437	Exhaust Retrofits		
		48	Trailers		

¹As of February 24, 2015. Total number of loans issued does not equal the number of projects financed because some loans included multiple projects.

Funding Recommendation for FY 2015-16

Staff recommends an allocation of \$10 million from the FY 2015-16 Funding Plan to continue program operation. Projections based on funding demand over the past two years indicate an annual funding need of about \$14 million. However, staff anticipates that the combination of the recommended \$10 million allocation for FY 2015-16 and the remaining available funding from the current budget cycle would be sufficient to meet this estimated Truck Loan Program through the full 2015-16 funding cycle.

With ongoing regulatory deadlines through 2023 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.