

Low Carbon Transportation and Fuels Investments and Air Quality Improvement Program (AQIP)

Public Workshop on the
Fiscal Year 2016-17 Funding Plan

Sacramento, California
April 4, 2016

California Environmental Protection Agency
 **Air Resources Board**



Workshop Agenda

Time	Session
9:30 am – 10 am	Introduction and Overview of Project Category Funding Allocations
10:00 am – Noon	Light-Duty Vehicle Investments (SB 1275)
Noon – 1 pm	Lunch Break
1 pm – 2:30 pm	Truck, Bus, and Off-Road Equipment Investments (SB 1204 and AQIP)
2:30 pm – 4 pm	Very Low Carbon Fuels Incentives

Session 1: Introduction and Overview of Funding Allocations

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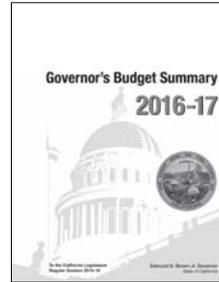
Funding Plan Development Progress

- ✓ 2 public workshops in December and January
- ✓ 14 work group meetings in February and March
- ✓ Discussion document released last week
- Today's workshop
 - Proposed Funding Plan to be released May 20 for 30-day public comment period
 - Board considers Funding Plan on June 23-24

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Governor's 2016-17 Low Carbon Transportation Proposal

- \$500 million to accelerate transition to low carbon freight and passenger transportation
 - \$460 million for low carbon vehicles and equipment
 - \$40 million for very low carbon fuels
- Continue disadvantaged community investment commitments
 - ≥ 50 percent to benefit disadvantaged communities
 - ≥ 10 percent in disadvantaged communities



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Governor's 2016-17 AQIP Budget Proposal

- \$28.6 million proposed appropriation to ARB based on projected motor vehicle fee revenues
 - Staff recommends \$25 million project allocation
 - Staff recommends \$3.6 million reserve to address revenue uncertainty

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Priorities for FY2016-17 Funding Plan

- Meet projected consumer demand for first-come, first-served projects
- Increase funding for light-duty low income/ disadvantaged community projects
- Carry forward unfunded projects from FY 2015-16
- Develop and implement new fuel production incentive project
- Develop long-term plan for CVRP and light-duty incentives as required by SB 1275

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Low Carbon Transportation: Light-Duty Vehicle Allocations (SB 1275)

Project Category	Funding (millions)	Disadvantaged Community Benefit
CVRP Remaining 2015-16 Demand: \$55M 2016-17 Demand: \$175M	\$230	≥33%
Pilot Projects to Benefit Disadvantaged Communities EFMP Plus-up (vehicle scrap and replace): \$30M Car Sharing: \$8M Agricultural Worker Van Pools for San Joaquin Valley: \$3M Increased Public Fleet Incentives through CVRP: \$3M	\$44	100%
Financing Assistance for Low-Income Consumers	\$6	≥50%

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Low Carbon Transportation: Truck/Bus/Off-Road Allocations (SB 1204)

Project Category	Funding (millions)	Disadvantaged Community Benefit
Advanced Technology Demonstrations	\$59	100%
Zero-Emission Freight Equipment Pilot Commercial Deployments	\$5	≥50%
Zero-Emission Truck Pilot Commercial Deployments	\$18	≥75%
Zero-Emission Truck Pilot Commercial Deployments	\$42	≥75%
Rural School Bus Pilot	\$10	to be determined
Low NOx Engine Incentives	\$23	≥50%
HVIP Remaining 2015-16 Demand: \$5M 2016-17 Demand: \$13M	\$18	≥60%

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Low Carbon Transportation: Fuels

Project Category	Funding (millions)	Disadvantaged Community Benefit
Very Low Carbon Fuel Production Incentive Project	\$40	to be determined

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AQIP: Heavy-Duty and Off-Road Allocations

Project Category	Funding (millions)
Truck Loan Assistance Program	\$22
Agricultural Equipment Trade Up Pilot for San Joaquin Valley	\$3
Reserve for Revenue Uncertainty*	\$3.6

*Funding Plan will include contingency provisions for allocating these funds to projects if revenue sufficient.

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Addressing Possible Changes to Budget Proposal

- Any changes in May revised Budget proposal would be reflected in proposed Funding Plan
- Any changes in final Budget would be reflected as modifications to proposed Funding Plan at the June Board meeting
- Contingency provisions in Funding Plan would address potential changes after Board adoption

Email questions or comments to coastalm@calepa.ca.gov

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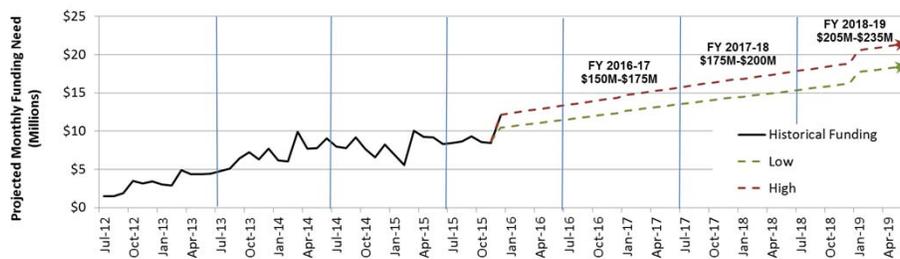
**Session 2:
Light-Duty Vehicle Investments**

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**Long-Term Plan for CVRP and
Light-Duty Vehicle Incentives**

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3-Year Forecast of Funding Needs



Fiscal year	CVRP	Pilot Projects	Total Funding Needs
FY 2016-17	\$150M - \$175M	\$50M	\$200M - \$225M
FY 2017-18	\$175M - \$200M	\$70M - \$90M	\$245M - \$290M
FY 2018-19	\$205M - \$235M	\$100M - \$130M	\$305M - \$365M

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Funding Projection Method for CVRP

- Data: Registration data, historical CVRP rebates
- Linear extrapolation of data by technology type
 - Assumes past trends continue into the future
 - Low Range: Baseline assuming program continues as usual with no program changes
 - High Range: Incorporates rise in participation that may result from the higher rebates for lower-income consumers

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Light-Duty Pilot Projects

3-Year Funding Projections (\$ in millions)			
	FY 2016-17	FY 2017-18	FY 2018-19
EFMP Plus-up	\$30	\$30 to \$40	\$40 to \$50
Car Sharing	\$8	\$20 to \$25	\$25 to \$30
Agricultural Worker Vanpools in San Joaquin Valley	\$3	\$3	\$3
Public Fleets Increased Incentives	\$3	-	-
Financing Assistance	\$6	\$20 to \$25	\$35 to \$50
Total	\$50	\$70 to \$90+	\$100 to \$130+

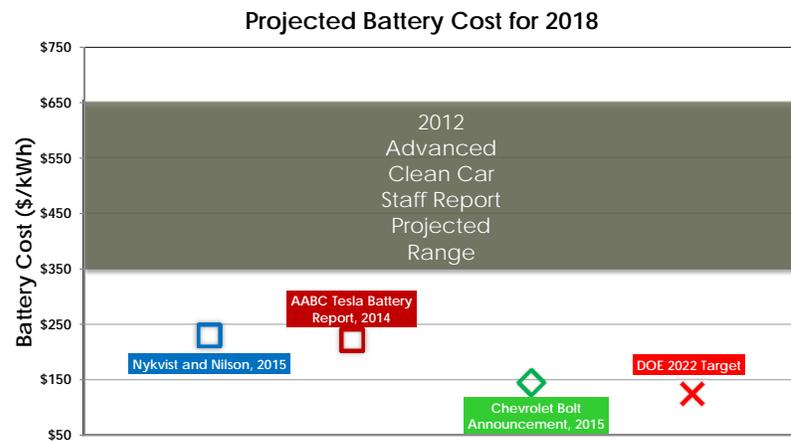
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Market and Technology Assessment

- Market continuing to grow
 - 2015 CA ZEV sales: 3.1 percent
 - 35 available models
- Technology improving and costs coming down
 - Technical Assessment Report (TAR) under development; publish in June
 - Mid-Term Review release later this year
 - Historical cost assessment conducted

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BEV Battery Cost Projections for 2018



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Sustainable ZEV Market

- Define ZEV sustainable market
 - Broad literature review
 - Evaluate self-sustaining market indicators
- Considering multiple indicators due to dynamic nature of the ZEV market
- Challenges:
 - Market still young
 - Data availability, reliability, and measurability

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Diffusion of Innovation: Theoretical Framework

- Widely approved and adopted among Academia
- Appropriate model: integrates well with market assessment
- Expanded version of the theory focuses on high tech products
 - Includes consumer adoption of technologies, including automobiles

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Technology Adoption Lifecycle



Transitioning Early Adopters to Early Majority

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Sustainable ZEV Market Indicators

- Annual new ZEV sales in CA
- Technology advancement
- Battery/fuel cost or vehicle price
- Vehicle choice diversity
- Secondary ZEV market
- Consumer awareness
- *Cost of avoided health impacts for each ZEV*
- *Consumer's willingness to pay*

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Sustainable ZEV Market: Annual ZEV Sales

- The challenge is crossing the chasm and reaching early majority adopters
 - 16 percent of annual new car sales in CA
 - Represents ~200,000 ZEV sales per year
- Current incentive structure needs to be maintained for several years

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Transitioning CVRP

- Transition CVRP slowly over next several years
 - Primary approaches:
 - Adjust income eligibility requirements
 - Lower the incentive amount
 - Secondary approaches:
 - Implement an MSRP cap
 - Phase out rebates for lower electric range
- Budget constraints may require changes sooner

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Alternatives to CVRP

- Effectiveness of incentives difficult to determine when multiple incentives exist
- Value of tax based mechanisms vary; require legislation
- Research supports direct purchase incentive mechanisms
- Bottom line: Maintain current incentive structure

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Clean Vehicle Rebate Project

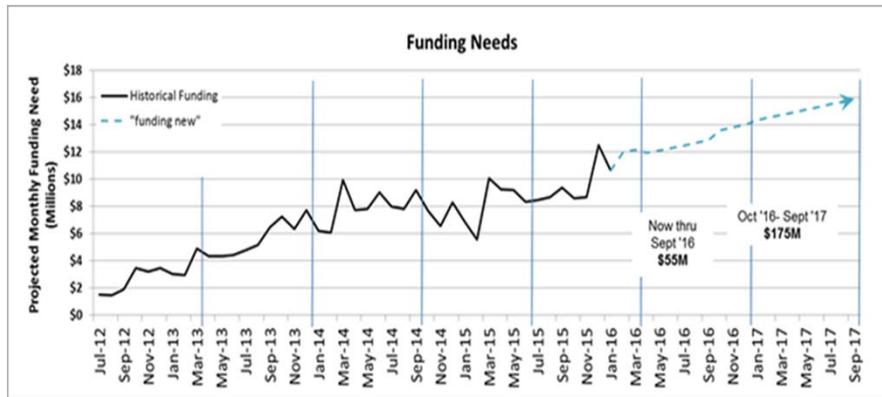
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Project Status

- Rebate demand and market continues to grow
 - 140,000 rebates issued at a cost of \$300 million
 - Over 35 eligible vehicle models available
- Higher rebates for lower-income consumers and income cap just launched
- Available FY 2015-16 funds exhausted early April
 - Continuing to accept applications
 - \$18.75 million additional available after May 2016 Cap-and-Trade auction
 - Rebates will be issued within 90 calendar days

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Projected Demand



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Draft Funding Allocation

- Recommended Low Carbon Transportation Allocation - \$230 million
 - FY 2015-16 demand (through Sept 2016) – \$55 million
 - FY 2016-17 (Oct 2016 – Sept 2017) – \$175 million
- Continue funding Increased Public Fleet Incentives as a set aside within CVRP

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Recommendations for CVRP Project Criteria

- Expand outreach in disadvantaged communities
- Prioritize rebate payment for lower-income consumers in event of funding shortfall
- Remove neighborhood electric vehicles
 - No CVRP-eligible vehicles currently in California market
- Retain temporary fuel cell electric vehicle provisions
 - Maintain \$5,000 rebate level
 - Continue temporary deferral of income cap

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Point of Sale and Pre-qualification Consideration

- Hope to implement pre-qualification mechanism during FY 2016-17 cycle
 - Committed to working through implementation challenges
 - Continuing discussion with stakeholders
 - Staff estimates 4-6 months to implement, once a project administrator is selected for FY 2016-17

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Solicitation Process

- Amend existing FY 2015-16 grant by \$55 million to meet projected demand through September
- FY 2016-17 CVRP/Public Fleet Pilot solicitation
 - Release as soon after start of fiscal year as possible
 - Solicit for project administrator for up to 3 years
 - Expect new grant in place by end of September

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Light-Duty Pilot Projects to Benefit Disadvantaged Communities and Lower-Income Consumers

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Overview

- Pilot projects employ new strategies to increase access to clean transportation options

Project Categories	Allocations Through FY 2015-16 (millions)	Recommended FY 2016-17 Allocation (millions)
EFMP Plus-up	\$12	\$30
Car Sharing and Mobility Options	\$2.8	\$8
Increased Public Fleet Incentives for CVRP-Eligible Vehicles	\$2.9	\$3
Agricultural Worker Vanpools in San Joaquin Valley (new for FY 2016-17)	-	\$3
Financing Assistance for Lower-Income Consumers (expand statewide for FY 2016-17)	\$0.9	\$6
Total	\$19	\$50

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Priorities for FY 2016-17

- Build on and scale up successful projects
- Encourage new project applications
- Fulfill SB 1275 goal to increase disadvantaged community and lower-income consumer access to zero and near-zero emission transportation
- Expand financing assistance opportunities for lower-income consumers statewide

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EFMP Plus-up Current Status

- Higher incentives for lower-income consumers living in or near disadvantaged communities to replace old cars with advanced technology cars
- \$12 million awarded to San Joaquin Valley and South Coast air districts
- \$2.6 million expended through December 2015
 - ~440 vehicles retired and replaced
 - Replacement vehicles include 20% battery electric, 24% plug-in hybrid, and 56% hybrids

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EFMP Plus-up Recommendations for FY 2016-17

- \$30 million allocation
 - \$10 million each for San Joaquin Valley and South Coast air districts (supports 1,500 vehicle replacements in each district)
 - \$10 million to expand to any other air district that implements a qualifying retirement and replacement program
- No changes to project criteria, such as voucher amounts, recommended

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Car Sharing and Mobility Options Current Status

- Help disadvantaged communities benefit from shared use of cleaner cars, vanpools, and other mobility options
- \$2.8 million awarded to 2 projects
 - City of Los Angeles
 - Sacramento Metropolitan air district
- Assist 8,000+ disadvantaged community residents
 - Projects to launch in Summer 2016

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Car Sharing and Mobility Options Recommendations for FY 2016-17

- \$8 million allocation
 - Award new projects through competitive solicitation
 - Allow existing projects to apply for more funds after highest-ranked new projects are awarded
- Add electric bike sharing as an eligible component
- Goal for regional balance of awarded projects within group of highest ranked project proposals

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Increased Incentives for Public Fleets Current Status

- Increased rebates for government fleets in and near disadvantaged communities to buy CVRP-eligible vehicles
- \$2.9 million awarded
 - Project launch in February 2015
 - \$2 million expended and 270 vehicle rebates reserved through December 2015

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Increased Incentives for Public Fleets Recommendations for FY 2016-17

- \$3 million allocation
 - Select one project administrator to run both CVRP and public fleet pilot via competitive solicitation
- No changes to project criteria recommended

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Agricultural Worker Vanpools in San Joaquin Valley

- New project to provide clean transportation for agricultural workers in the San Joaquin Valley
- Recommend \$3 million allocation
 - Zero-emission, plug-in hybrid, or hybrid passenger vans, vehicle conversions, and electric vehicle supply equipment to be eligible for funding
 - Award via competitive solicitation or through direct grant agreement with a public entity
 - Public work groups to develop project criteria

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Financing Assistance Current Status



- Provides financial assistance to enable lower-income consumers to purchase or lease advanced technology vehicles
 - Financial mechanisms such as loan loss guarantees, interest rate buy-downs, and vehicle cost buy-downs
- \$0.9 million award to California Housing Development Corporation for Bay Area project
 - Launched early 2016

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Financing Assistance Recommendation for FY 2016-17

- Propose to expand financing assistance for lower-income consumers statewide
- \$6 million allocation with two components:
 - \$5 million for statewide pilot project
 - \$1 million for local-based programs

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Session 3: Heavy-Duty Vehicle and Off-Road Equipment Projects

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Policy and Statutory Drivers Heavy-Duty and Off-Road Projects

- State Implementation Plan for ozone attainment
- 2014 Climate Change Scoping Plan
- Sustainable Freight Strategy
- ZEV Action Plan
- Mobile Source Strategy
- Cut Petroleum Use in Half by 2030
- Technology Assessments
- SB 1204

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SB 1204: Clean Truck, Bus, and Off-Road Vehicle Technology Program

- Allocates Low Carbon Transportation funds for zero- and near zero-emission vehicle and equipment projects with priority for projects benefitting disadvantaged communities
- Directs ARB to develop guidance through the existing funding plan process and address key requirements
 - Framework developed for FY 2015-16 will be carried over to FY 2016-17

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SB 1204: Overarching Vision

- Funding will support evolution of technology advancement (established under AQIP)
 - *Demonstration phase*: Field demonstrations and testing of pre-commercial vehicles and equipment
 - *Pilot phase*: Fund early commercial technologies to encourage production and purchase, bring down costs, and enable technology transfer
 - *Commercialization phase*: Fund vouchers to offset higher initial costs and encourage fleet acceptance
 - *Transition phase*: Expand clean technology adoption to new demographic segments

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SB 1204: Early Commercial Truck Deployments

- Allocations meet the 20 percent requirement for early commercial deployment of zero- and near zero-emission heavy-duty truck technology

Project	Recommended Low Carbon Transportation Funding (million)	Early Commercial?
HVIP	\$18	Yes
Low NOx Engines	\$23	Yes
Truck Pilot Commercial Deployment	\$18	Yes
Advanced Technology Demonstrations for On-Road Trucks	\$30	No
Percentage of truck funding for early commercial deployments: 66%		

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Approach for FY 2016-17

- Staff recommends carrying over unfunded FY 2015-16 project types
- Staff recommends continuing a comprehensive State funding portfolio approach
 - Alternatively fueled trucks: natural gas funding from Energy Commission
 - Renewable fuels: production incentives from the Very Low Carbon Fuels Incentive Project; facility funding from Energy Commission, Department of Food and Agriculture, and CalRecycle

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Advanced Technology Demonstration Projects



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Advanced Technology Demonstration Projects

- Accelerate introduction of advanced technologies
 - Validation of pre-commercial technologies breaks down barriers to commercial acceptance
 - Stimulates private investment in advanced technology development
- Reduce GHG and criteria pollutant emissions
- Support disadvantaged community investment commitments

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Demonstration Project Funding Recommendation

\$59 million from Low Carbon Transportation

Project Category	Recommended Projects	Recommended Allocation (million)
On-Road Trucks	<ul style="list-style-type: none"> • Intelligent Truck Systems & Connected Vehicles • Advanced Engines/Powertrains • Zero- and Near Zero-Emission Short & Regional Haul Trucks 	\$30
Off-Road Freight Equipment	<ul style="list-style-type: none"> • Zero-Emission Cargo Handling Equipment • Zero-Emission Ground Support Equipment • Advanced Port Equipment • Zero-Emission Locomotive Tenders/Switchers 	\$18
Off-Road Non-Freight Equipment	<ul style="list-style-type: none"> • Advanced Technologies & Efficiencies for Agricultural Equipment • Advanced Technologies & Efficiencies for Construction Equipment • Advanced Technologies for Passenger Transportation 	\$11

Allocations include \$2 million to support data collection and analysis

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Additional Potential Project

- If additional funds are available, recommend funding remaining, highest-scoring Multi-Source Facility Demonstration Project applications
 - Solicitation closed Fall 2015
 - Heavily oversubscribed



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Zero-Emission Freight Equipment Pilot Project



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Freight Equipment Pilot Funding Recommendation

\$5 million from Low Carbon Transportation

- Accelerate early commercial deployment of zero-emission technologies in off-road equipment used in freight applications
 - Cargo handling equipment
 - Transport refrigeration units
 - Ground support equipment
 - Supportive fueling infrastructure
- Located at freight related facility
- Benefit disadvantaged communities



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Zero-Emission Truck Pilot Commercial Deployment Project



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Background

- Truck and Bus Pilot Projects introduced in FY 2014-15 Funding Plan at \$25 million
- Additional allocations planned for FY 2015-16 (funding not appropriated)
 - \$40 million for buses
 - \$20 million for trucks
- Solicitation issued for combined \$85 million
 - Closed January 2016
 - Applications received for nearly \$290 million

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Zero-Emission Truck Pilot Funding Recommendation

\$18 million from Low Carbon Transportation

- Fund highest scoring truck applications from combined solicitation
- Accelerate early commercial clean truck deployments
- Help meet SB 1204 early commercial truck deployment requirement
- Benefit disadvantaged communities

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Zero-Emission Bus Pilot Commercial Deployment Project



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Zero-Emission Bus Pilot Funding Recommendation

\$42 million from Low Carbon Transportation

- Fund highest scoring bus applications from combined solicitation
- Accelerate early commercial clean bus deployments
- Benefit disadvantaged communities

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Rural School Bus Pilot Project



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Rural School Bus Pilot Project Funding Recommendation

\$10 million from Low Carbon Transportation

- Enhance turnover of the California school bus fleet to lower carbon options
 - Fuel cell and battery electric (zero-emission)
 - Plug-in hybrid
 - Charging/fueling to support zero-emission and plug-in hybrid
 - Internal combustion engine or hybrid with renewable fuel
- Funding priority to small and medium air districts
- North Coast Unified Air Pollution Control District as administrator

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Low NOx Engine Incentives



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Low NOx Engine Incentives Funding Recommendation

\$23 million from Low Carbon Transportation

- Encourage manufacture and purchase of engines certified to optional low NOx standards
- Implement with HVIP vouchers on a first-come, first-served, statewide basis
 - Up to \$15,000 per engine to cover incremental purchase and installation costs relative to a conventional natural gas engine
 - Renewable fuels required for GHG reductions; additional incentive amount to be determined by work group this fall
- \$2 million from FY 2015-16 AQIP will be available through HVIP this spring (no renewable fuel requirement)

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Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)



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Background

- Vouchers for California fleets on a first-come, first-served basis to increase clean truck and bus demand and lower costs
- Up to \$95,000 for zero-emission truck or bus
- Up to \$30,000 for hybrid truck or bus
- Up to \$15,000 for low NOx engine
- Increased voucher amount for zero-emission vehicles that benefit disadvantaged communities
 - Up to \$110,000 for zero-emission trucks and buses
- Zero-emission and hybrid conversions now eligible

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Status Update

- Since 2010 launch, HVIP has provided about \$70 million for advanced technology trucks and buses
 - About 450 vouchers issued for zero-emission vehicles
 - About 2,000 vouchers issued for hybrid trucks



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HVIP Funding Recommendation

\$18 million from Low Carbon Transportation

- Meet increased demand
- No changes to current per vehicle voucher amounts
- Help meet SB 1204 early commercial truck deployment requirement
- Benefit disadvantaged communities

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Agricultural Equipment Trade-Up Pilot Project in the San Joaquin Valley



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Agricultural Equipment Trade-Up Pilot Funding Recommendation

\$3 million from AQIP

- Build upon FY 2015-16 project currently in grant agreement phase
- Two-step transaction
 - Owner of Tier 0 or Tier 1 diesel engine scraps it in exchange for previously used and reconditioned Tier 2 or Tier 3 engine
 - Owner of the Tier 2 or Tier 3 engine from above receives incentive to purchase new Tier 4 engine
- Fund 40 to 60 equipment transactions
- Evaluate suitability as a new, eligible Carl Moyer incentive type

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Truck Loan Assistance Program



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Background

- Provides financing assistance to truckers subject to the In-Use Truck and Bus Regulation for purchasing newer trucks or exhaust retrofits
- About \$73 million State contribution to date
 - Leveraged to provide about \$594 million in financing
 - 9,300 trucks and trailers
 - 570 exhaust retrofits
- Helps small fleets

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Truck Loan Assistance Program Funding Recommendation

\$22 million from AQIP

- Meet growing demand and reduce funding gap
- Contribution rates reduced starting January 2016
- Consider additional options to improve leverage and slow rate of expenditure

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Session 4: Very Low Carbon Fuels Incentive Project

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Project Overview

- 2016/17 Budget for Low Carbon Transportation & Fuels included \$40 million for a New Very Low Carbon Transportation Fuels Program
- Would Be Used to Incentivize In-State Production
- Would Provide Additional Incentives for:
 - Use of In-State Feedstocks
 - Use of These Fuels in Disadvantaged Communities

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Investment Goals

- Increase volume of very low carbon fuels produced and used in California.
- Reduce GHG emissions and the criteria pollutants and air toxics emissions.
- Help accelerate transition to the use of very low carbon fuels.
- Fulfill related goals.
- Support vehicles and equipment that do not yet have commercially available zero-emission technology options.

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Supports Other Planning Efforts

- Reducing Greenhouse Gas Emissions and Other Pollutants
 - AB 32 Scoping Plan
 - Mobile Source Strategy
 - California Sustainable Freight Action Plan
 - Vision for Clean Air
 - Short-Lived Climate Pollutant Strategy
 - Low Carbon Fuel Standard
- Expand Supply of Cleaner Energy Sources
 - Low Carbon Fuel Standard & Renewable Fuel Standard
 - Bioenergy Action Plan
- 50% Reduction in Use of Petroleum

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Complementary State Programs

California Energy Commission	CalRecycle	California Department of Food & Agriculture
Biofuel Production and Supply	Organics Grant Program	Dairy Digester Research and Development Program
Up to \$6 million each	Up to \$3-4 million each	Up to \$3 million each
\$25 million available (proposed FY 16/17)	\$61 million available (proposed FY 16/17)	\$35 million available (proposed FY 16/17)

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Very Low Carbon Fuels Incentive Project Proposal

- Per Gallon Production Incentive
- Eligibility
 - In State Production
 - Certified Fuel Pathway
 - Carbon Intensity 40% or Less of Comparable Petroleum-Based Fuel
- Additional Incentives
 - In State Feedstocks
 - Use in Disadvantaged Communities

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Draft Base and Additional Incentive Proposal

Range of proposed incentives for production of very low carbon transportation fuels (\$/gallon)	Amount per GGE
Base incentive to vary depending on carbon intensity of fuel pathway	\$0.10 - \$1.00
Additional incentive for use of in-state feedstock	\$0.20 - \$1.00
Additional incentive for use of fuels in disadvantaged communities	\$0.20 - \$0.50
Total Range of Possible Incentives	\$0.10 - \$2.50

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Work Group Discussions

Work Group will convene to provide input on key issues:

- Incentive Amounts
- Disadvantaged Communities Component
- Project Implementation

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Next Steps

- Planning and Program Design
- Project Implementation- Subject to Legislative Approval of Program
- Future Updates
- Develop Timeline for Program
- Long-Term Investments

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