Heavy-Duty Zero-Emission Technologies: Drivers
California Air Quality

* Transportation is the largest source of many pollutants
  * 80% of NOx
  * 95% of diesel PM
  * 50% of GHG
* NOx and PM exposure has significant health impacts
* California is home to the busiest freight corridors – running through disadvantaged communities
GHG Emission Reduction Goals

* Reduce to 1990 levels by 2020
* Reduce 40 percent below 1990 levels by 2030
* Reduce transportation GHGs by 80 percent
* Statewide carbon neutrality by 2045
NOx and PM Reductions Are Critical

* Harmful smog precursor
* Extreme nonattainment with national air quality standards
  * >90% (34.6 million) of state’s population in nonattainment area
  * To reach National Ambient Air Quality Standards need 90% reduction in NOx from 2010 levels by 2030
* Disproportional impacts to Disadvantaged Communities (DAC)
State Implementation Plan commits actions for NOx and PM reductions

Mobile Source Strategy provides strategies to transform transport

Sustainable Freight Action Plan provides pathway for freight by zero emission everywhere feasible, and near-zero emission everywhere else
Transition to Zero-Emission: Incentives
Portfolio of Incentives

**Low Carbon Transportation**
- GHG reductions
- $455M for FY 18-19

**AQIP**
- Criteria pollutant and toxics reductions
- $28M for FY 18-19

<table>
<thead>
<tr>
<th>AB 617</th>
<th>Carl Moyer</th>
<th>Prop 1B</th>
<th>FARMER</th>
<th>VW Mitigation Trust</th>
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</thead>
<tbody>
<tr>
<td>Criteria and toxics reductions for community goals</td>
<td>SIP emission reductions</td>
<td>PM and NOx reductions in goods movement corridors</td>
<td>Criteria pollutant, toxics, and GHG reductions</td>
<td>NOx mitigation</td>
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<tr>
<td>$245M for FY 18-19</td>
<td>$78M for FY 18-19</td>
<td>Already Awarded</td>
<td>$132M for FY 18-19</td>
<td>$423M for 2017+</td>
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</table>
Strategic Investments-

- Identify and leverage key early markets
- Expand use in key early applications (Beachhead)
  - Advance technologies, increase production volume, and reduce costs
  - Support growth of core supply chain
- Transfer technology to other applications
- Each succeeding market builds greater volume
ARB’s Suite of Projects

**Advanced Technology Demonstration Projects**

- Zero-Emission Drayage Truck Demonstration Project
  - $25 million to demonstrate pre-commercial drayage truck technologies
- On-Road and Off-Road Advanced Technology Demonstration Projects
  - $32 million to demonstrate technologies in freight, marine, and locomotive applications

**Zero-Emission Truck and Bus Pilot Commercial Deployment Project**

- Over $80 million to deploy 146 zero-emission heavy-duty vehicles

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

- ~5,000 vouchers issued and over $200 million invested
Carl Moyer Program

Incentives and Technology Advancement Branch
Mobile Source Control Division
Carl Moyer Program

Core Features

• Joint venture between state and air districts
• Voluntary participation incentive program
• Funds cleaner than required technologies
• Cost-effective reductions of NOx, PM and ROG
• Projects must not be required by any legal mandate
There are a total of 35 air districts

- 22 Rural districts
- 8 Medium districts
- 5 Large districts
## State and Local Partnerships

### CARB’s Role
- Develops and adopts Program Guidelines
- Specifies project eligibility criteria
- Specifies program implementation criteria
- Manages and distributes program funds
- Oversees district implementation through
  - Liaison assistance
  - Data management
  - Program review
  - Financial audits

### Air District’s Role
- Districts have the flexibility to adopt more stringent Program Guidelines
- Performs program outreach
- Select projects based on local priorities
  - Solicits applications
  - Evaluate and approve projects
  - Award grants
  - Monitor and audit projects
  - Report progress to CARB
Funding Sources

California State Funds
- A $6-$12 per passenger vehicle fee included in the annual registration for vehicles 6 years and newer (Smog Abatement Fee)
- A $1.75 fee on the sale of new tires until 2023 (Tire Fee - Assembly Bill 923)
- These fees are collected by the Department of Motor Vehicles and distributed to the air districts

Local Air District Funds
- Can supplement projects with other funds up to the maximum cost of the project
Project Examples

Replacement
- Old high emitting vehicle/equipment replaced with a new and lower emitting
- Destroying the old high emitting vehicle/equipment

Repower
- Install a new emission-controlled diesel engine in an existing equipment
- Destroying the old high emitting engine

Retrofit
- Install a CARB-verified diesel emission control device on the exhaust system

Retirement
- Voluntary and early retirement of high polluting light-duty vehicle

Infrastructure
- Installation of fuel or energy infrastructure, e.g. battery charging unit
**Clean Air Reporting Log (CARL) – Tracking tool**

- Database for tracking project progress
- Districts report project status: e.g. contract execution, expenditure, liquidation of funds
- CARL calculates project emission benefits and cost-effectiveness
- Supports State Implementation Plan activities

**Accountability**

- CARB reviews air district incentive program implementation
- Ensures compliance with CARB statutes and guidelines
- California State Controller’s Office conducts fiscal audits
- Ensures appropriate use of public funds and integrity of the program
Investment and Benefits

**Program Funding**
- Over $980 million in State and local funds
- More than 60,000 engines and vehicles replaced

**Program Benefits**
- 183,000 tons of ozone reduced
- 6,700 tons of particulate matter reduced
Community Air Protection

**Background**

- Assembly Bill 617 established a program for new actions to reduce air pollution in impacted communities
- Community-level approach to air quality improvement complements traditional approach
- Supports early incentive funds for immediate benefits
Community Outreach:
- Assists in identifying community priorities
- Provides guidance for policy development
- Supports project selection

Community Priorities:
- Clean up freight activities near impacted communities
- Focus on zero-emission technologies and its infrastructure
- Increase zero-emission school bus population

Program Funding
- Assembly Bill 134 provides $250 million for immediate emission reductions
- Funds are to be spent through Carl Moyer Program or other similar programs
Community Air Protection Funds

Cleaner Air

Community Monitoring

Regulation

Emission Reduction Strategies

Incentive Funding
Additional Information

**Carl Moyer Program:**
https://www.arb.ca.gov/msprog/moyer/moyer.html

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**Community Air Protection Program**
https://www.arb.ca.gov/msprog/cap/capfunds.html

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