Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project

Bill Van Amburg, CALSTART

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“Switching to a cleaner, more efficient vehicle helps our business by reducing the cost of fuel and in doing our part in helping the environment.” - Marcie Rodriguez, Redwood Products

The California Air Resources Board (CARB) in partnership with CALSTART launched the Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and Low NOx Engine Incentives in 2009 to accelerate the purchase of cleaner, more efficient trucks and buses in California.

The greatest barrier to purchasing cleaner trucks and buses is the higher price tag.
$663 Million!! – Over $180M for HVIP
1 Year Low Carbon, Clean Transportation Funding - CARB

| Fiscal Year 2017-18 Funding Plan for Clean Transportation Incentives |
| Draft Project Allocations for Discussion at October 4, 2017 Public Workshop |

<table>
<thead>
<tr>
<th>Project Category</th>
<th>Draft Allocation by Funding Source (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Carbon Transportation</td>
</tr>
<tr>
<td>CVRP (standard rebates)</td>
<td>$140</td>
</tr>
<tr>
<td>Transportation Equity Projects</td>
<td>$100</td>
</tr>
<tr>
<td>EFMP Plus-Up</td>
<td>$10</td>
</tr>
<tr>
<td>Financing Assistance for Lower-Income Consumers</td>
<td>$10</td>
</tr>
<tr>
<td>Clean Mobility Options in Disadvantaged Communities</td>
<td>$17</td>
</tr>
<tr>
<td>Agricultural Worker Vanpools</td>
<td>$3</td>
</tr>
<tr>
<td>Rural School Bus Pilot</td>
<td>$10</td>
</tr>
<tr>
<td>CVRP Rebates for Low-Income Applicants</td>
<td>$40</td>
</tr>
<tr>
<td>To Be Allocated in Spring 2018 Based on Demand</td>
<td>$10</td>
</tr>
<tr>
<td>One-Stop-Shop for CARB’s Equity ZEV Replacement Incentives (new)</td>
<td>$5</td>
</tr>
<tr>
<td><strong>Light-Duty Vehicle and Transportation Equity Total</strong></td>
<td><strong>$240</strong></td>
</tr>
<tr>
<td><strong>HEAVY-DUTY VEHICLE AND OFF-ROAD EQUIPMENT INVESTMENTS</strong></td>
<td></td>
</tr>
<tr>
<td>Advanced Freight Equipment Demonstration and Deployment</td>
<td><strong>$140</strong></td>
</tr>
<tr>
<td>Zero- and Near Zero-Emission Freight Facilities (new)</td>
<td>$100</td>
</tr>
<tr>
<td>Zero-Emission Off Road Freight Voucher Incentive Project (new)</td>
<td>$40</td>
</tr>
<tr>
<td>Clean Truck and Bus Vouchers (HVIP + Low NOx Engine Incentives)</td>
<td><strong>$180</strong></td>
</tr>
<tr>
<td>Truck Loan Assistance Program</td>
<td>$20</td>
</tr>
<tr>
<td><strong>Heavy-Duty Vehicle and Off-Road Equipment Investment Total</strong></td>
<td><strong>$320</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$560</strong></td>
</tr>
</tbody>
</table>

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1CARB was appropriated $560 million for Carbon Transportation projects including CVRP, transportation equity projects, freight hubs/ports, and clean truck and bus vouchers in AB 134 (Committee on Budget, Chapter 254, Statutes of 2017).
What is HVIP?

- Streamlined, first-come-first-served “voucher” incentives – no proposal process
- Electric, hybrid, fuel cell, low-NOx natural gas
- Trucks and buses
- New vehicles and retrofits
- Operating now for 7 years
- 3,000+ vouchers

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Why Voucher Incentives?

- Point of purchase discount
  - *Fleets get immediate discount at sale*
- Dealers learn voucher system
  - *Fewer complications for fleets*
- Set-aside funding for each voucher
  - *Price certainty at time of request*
Zero-Emission trucks and buses:

Hybrid trucks and buses:

<table>
<thead>
<tr>
<th>GVWR (lbs)</th>
<th>Base Vehicle Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 to 100 vehicles 1</td>
</tr>
<tr>
<td></td>
<td>Outside DC 2</td>
</tr>
<tr>
<td>5,001 – 8,500</td>
<td>$20,000  $25,000  $12,000</td>
</tr>
<tr>
<td>8,501 – 10,000</td>
<td>$25,000  $30,000  $18,000</td>
</tr>
<tr>
<td>10,001 – 14,000</td>
<td>$50,000  $55,000  $30,000</td>
</tr>
<tr>
<td>14,001 – 19,500</td>
<td>$80,000  $90,000  $35,000</td>
</tr>
<tr>
<td>19,501 – 26,000</td>
<td>$90,000  $100,000 $40,000</td>
</tr>
<tr>
<td>&gt; 26,000</td>
<td>$95,000  $110,000 $45,000</td>
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<td>101 to 200 vehicles 2</td>
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| 6,001 – 8,500 (plug-in hybrids only) | $8,000  $6,000 |
| 8,501 – 10,000 (plug-in hybrids only) | $10,000 $8,000 |
| 10,001 – 19,500                  | $15,000  $10,000 |
| 19,501 – 33,000                  | $20,000  $12,000 |
| 33,001 – 38,000                  | $25,000  $15,000 |
| > 38,000                         | $30,000  $20,000 |

Low-NOx NG

$8,500 to $15,000
Can Combine HVIP Incentives

- Moyer Funding
- Prop 1B
- Cumulative incentives can’t exceed 90% of total cost of vehicle
- School and transit buses can go to 100% incentives

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### Eligible HVIP Vehicles

- **List expanding almost daily**
- Go to web site to see most current list of vehicles

### Low NOx Natural Gas Engine Vehicles

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Year</th>
<th>Engine Type</th>
<th>Horsepower</th>
<th>MPGe</th>
<th>Fuel Type</th>
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<td>Blue Bird</td>
<td>Vision</td>
<td>2018</td>
<td>Cummins ISB</td>
<td>250</td>
<td>6.3</td>
<td>Natural Gas</td>
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<td>Mack</td>
<td>Granite</td>
<td>2019</td>
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<td>Delivery Van</td>
<td>Ford</td>
<td>Transit</td>
<td>2020</td>
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<td>6.4</td>
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<tr>
<td>Coach Bus</td>
<td>New Flyer</td>
<td>Xcelsior</td>
<td>2021</td>
<td>Cummins ISB</td>
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### Hybrid and Zero-Emission Vehicles

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Go to the web site to see the most current list of vehicles.
HVIP Manufacturers

- Altec
- Amp/Workhorse
- Autocar
- BYD Motors
- Chanje
- Crane Carrier
- Cummins Westport
- ElDorado National
- EVI
- Gillig
- GreenPower Bus
- Hino
- Lion Bus
- Motive Power Systems
- New Flyer Bus
- Nova Bus
- Orange EV
- Peterbilt
- Phoenix
- Proterra
- XL Hybrids
- Zenith Motors

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Example Vehicles

Zero-Emission Trucks:

- AMP/Workhorse
- Chanje
- EVI
- Motiv
- Orange EV
- Phoenix
- Zenith

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Example: BYD ZE Trucks
New Entry: Chanje

- Electric Delivery & Shuttle, Class 4
- Built in China – 5 Dragons Group
- US HQ California – eventual assembly in US
- More models in future
- Ryder to provide service network
Example Vehicles

Zero-Emission Buses/Vans:

BYD

Motiv

New Flyer

Phoenix

Proterra

Zenith

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Example Vehicles

Hybrid Trucks:
- Autocar
- Hino
- XL Hybrids

Electrically-powered Utility Boom:
- Altec

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Example: XL Hybrids

- New and existing vehicle conversion to cost-effective hybrid electric on Class 2-6 chassis
- Solid payback in high mileage applications
- Fast conversion uses known QVM approach
Low NOx Natural Gas Engines

- Up to $15,000 voucher (this will be changing)
- Can be repower or new truck/bus
- Cummins Westport ISL G NZ 8.9L engine (12L coming)
- 10x lower NOx emissions

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COMING SOON:

12 Liter Low NOx NG Engine

- In final testing before production – expected Q1 2018
- 90% below 2010 standards
Example: Natural Gas Products - Freightliner

**Cascadia 113 Natural Gas**
- **Engine**: ISX12G
- **Transmission**: Manual
- **Allison 4000 Eaton US+ / Advantage
- **Cab Configuration**: DayCab, 48”, 60”, 72”

**M2 112 Natural Gas**
- **Engine**: ISLG / ISX12G / ISL G NZ
- **Transmission**: Allison 3000/4000
- **Segments**: Utility, Construction, Pickup/Delivery, Rolloff, Flatbed

**114 SD Natural Gas**
- **Engine**: ISLG / ISX12G / ISL G NZ
- **Transmission**: Manual
- **Allison 3000/4000
- **Segments**: Utility, Construction, Mixers, Rolloff, Flatbed
Emerging Product: GreenKraft 8L Low NOx Engine, Truck

GREENKRAFT 8.0 Liter
295 hp @ 4000 rpm
440 lb-ft @ 2900 rpm
Funding Categories

$35M minimum for Zero-Emission Buses
$8M minimum for 11.9-L Low NOx Engines for small fleets
$150M Additional for All Technologies
$193M Total

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FY17-18 Changes

- Increased voucher amounts for:
  - Zero-Emission Articulated Buses
  - Zero-Emission Class 8 Trucks
  - Zero-Emission School Buses
  - Hydrogen Fuel Cell Trucks and Buses
- Effective Dec 15, 2017

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FY17-18 Changes

• HVIP Rule Changes
  – Hydrogen Infrastructure Plus-Up
  – Remove fleet limits (had been 200 per year)
  – Expand ePTO eligibility
  – Increase hybrid and PHEV conversion vouchers from 25% of OEM voucher amounts to 50%

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FY17-18 Changes

• Low NOx Rule Changes
  – 8.9-L Low NOx engine: $10k incentive
  – 11.9-L Low NOx engine: $40k incentive
  – Waive RNG requirement for small fleets using 11.9-L engines

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HVIP New Funding Timing

Nov 2017 $40M

No more Waiting List!

Early 2018 Remainder of New Funds ($153M)

Total $193M

Low NOx funds available NOW: $10M in FY16-17

Low NOx funding

www.californiavip.org
Contact Us!

For Information on HVIP

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www.californiahvip.org