The Need for Cleaner Transportation Technologies

&

The Value of a Portfolio Approach

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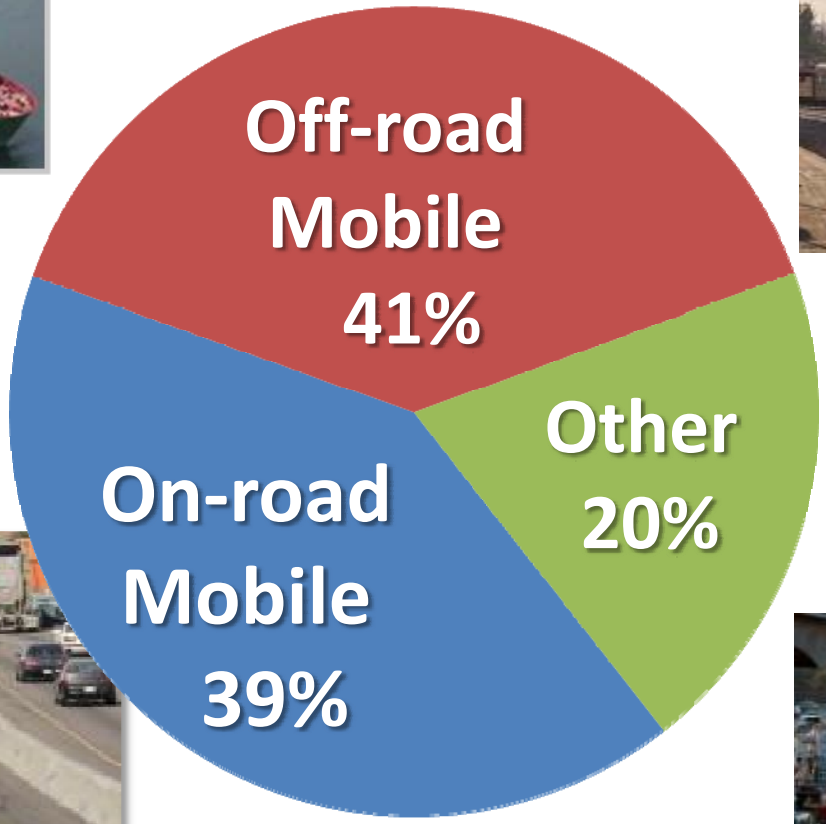
Integrated Solutions

Under Development

- CEC IEPR Update
- CARB AB 32 Scoping Plan Update
- CARB Sustainable Freight Strategy
- CalTrans California Freight Mobility Plan
- National Freight Advisory Committee recommendations
- 2016 Update to South Coast AQMP
- 2016 Update to South Coast RTP

Mobile Sources Cause 80% of Air Pollution in South Coast



The Relationship

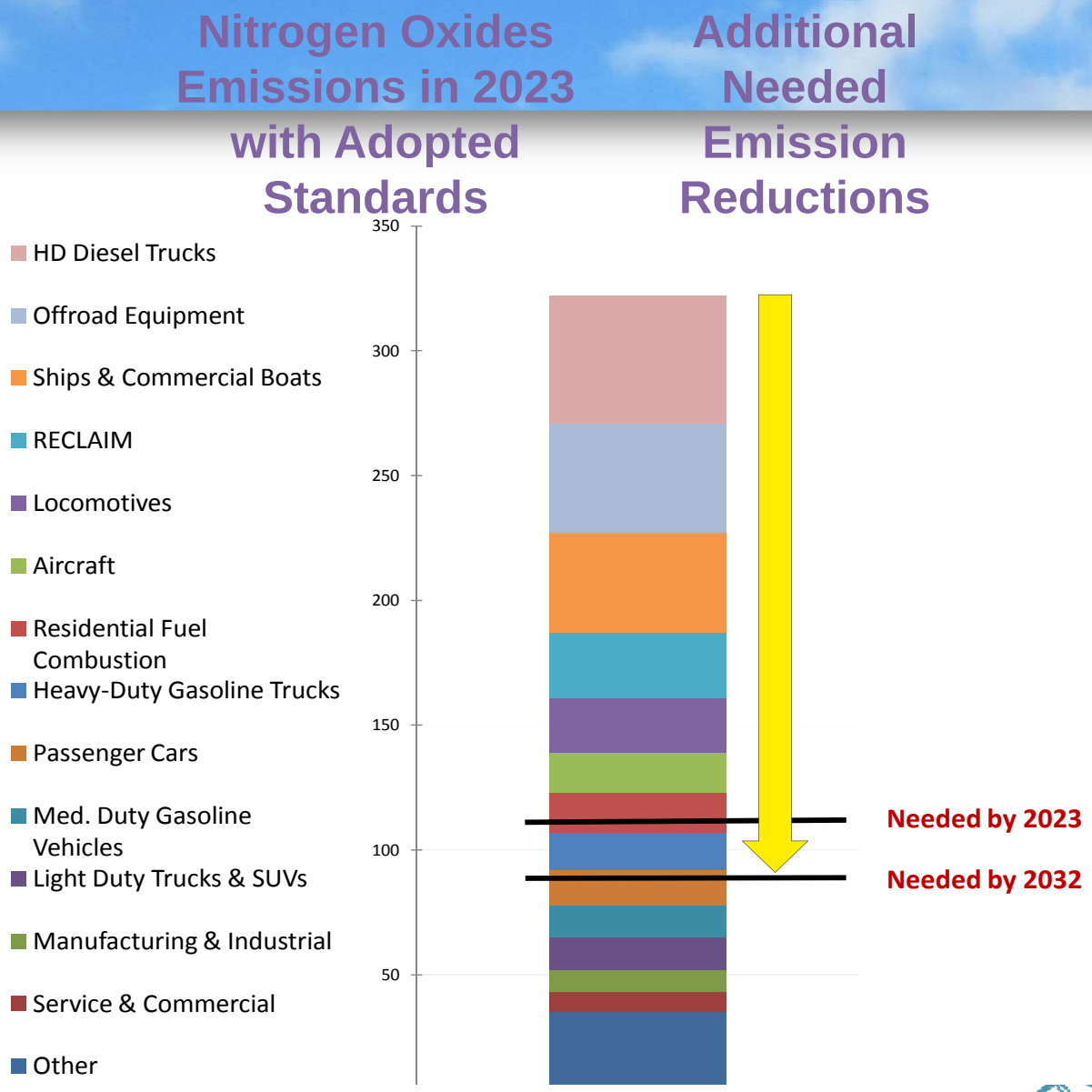
Energy Use **Air Quality** **Health**

Growing Body of Evidence Linking Traffic Indicators to Health Effects

- Asthma and allergic disease
- Reduced lung function growth
- Increased risk of adverse birth outcomes
- Cardiac effects
- Respiratory symptoms
- Premature mortality
- Lung cancer

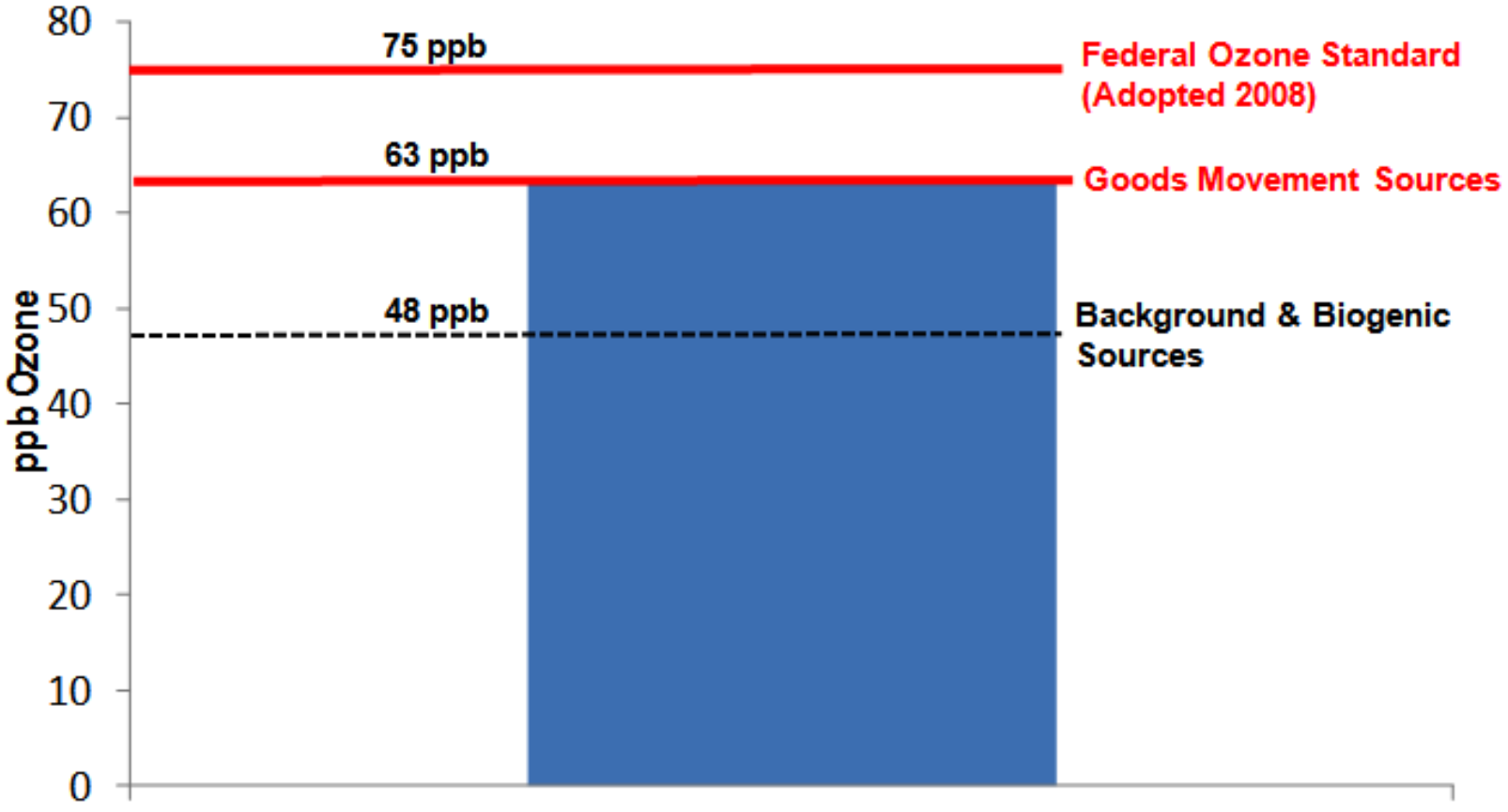
Samet, J.; Traffic, Air Pollution, and Health *Inhalation Toxicology*, 2007

Two-thirds to three-quarters reduction in NOx needed to attain ozone standards



* Source: Ambient ozone modeling conducted by SCAQMD, 2012; final data

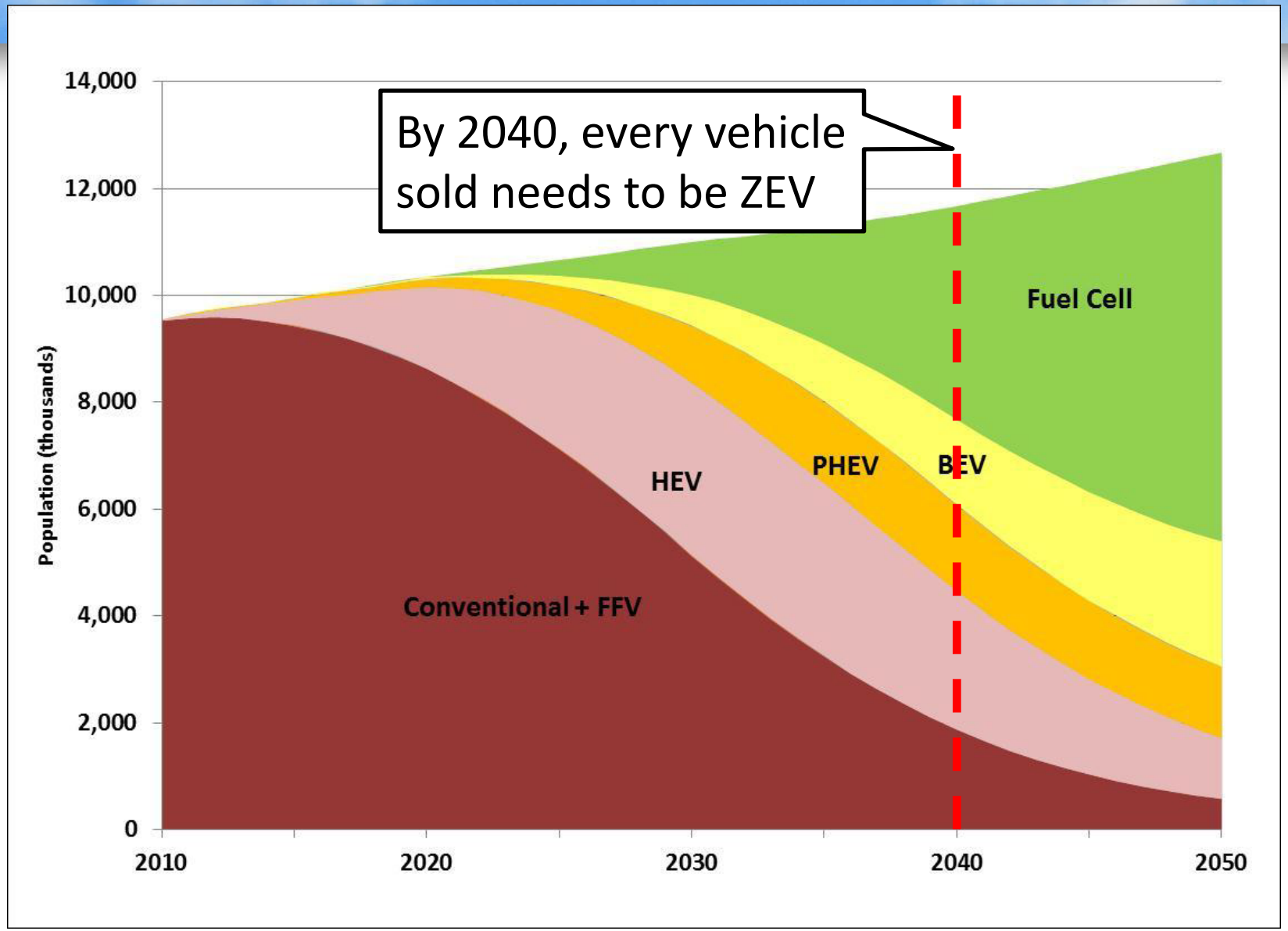
Goods Movement Contribution (2030)



"One Size Doesn't Fit All" Portfolio Needed!

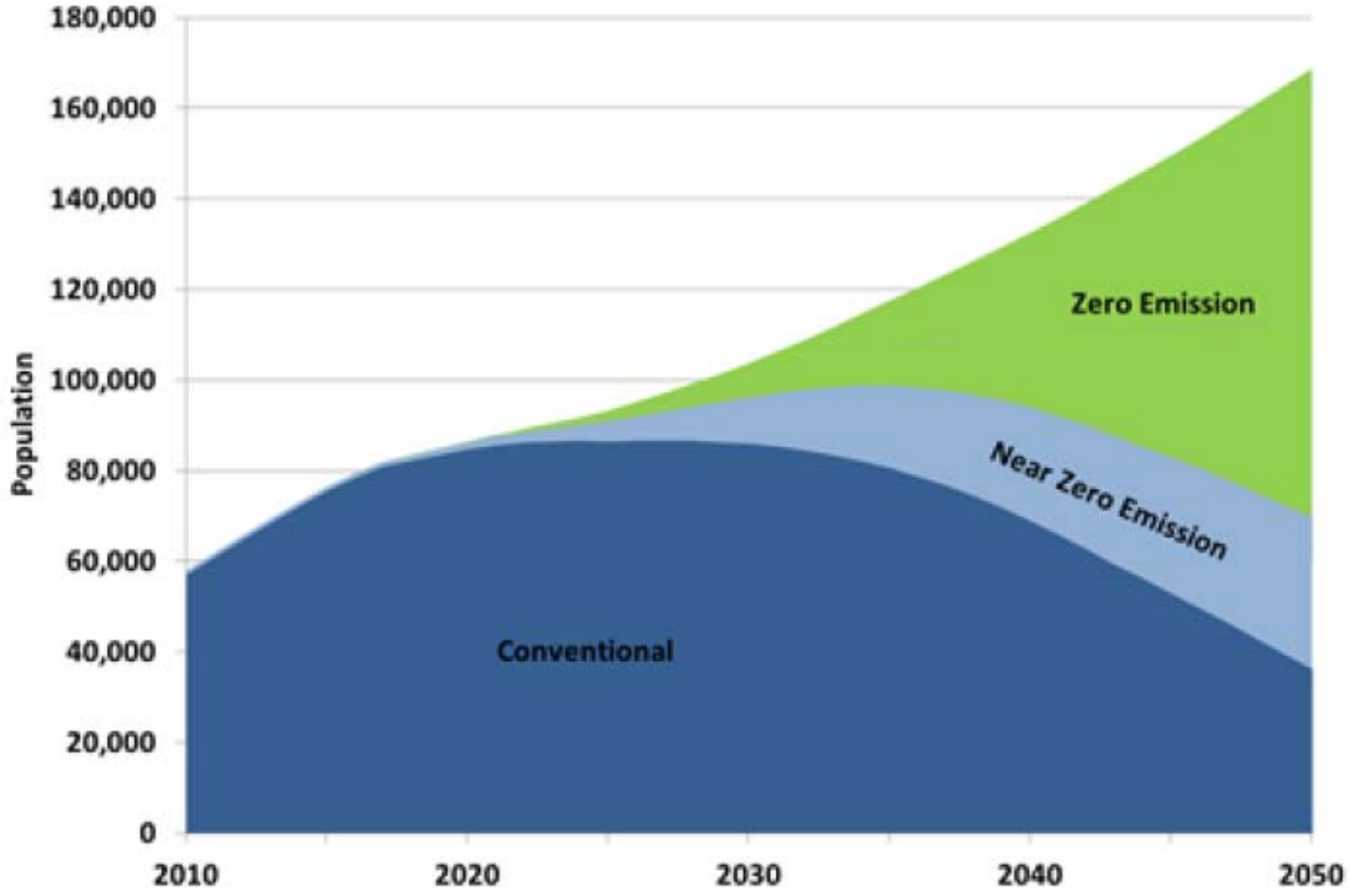
- Differing Needs
  - Vehicle/Transportation Type & Purpose
  - Duty Cycle (Horsepower, Range, etc.)
  - Capital & Operating Costs
  - Durability
  - Other Factors

Vision for Clean Air Light-Duty Scenario

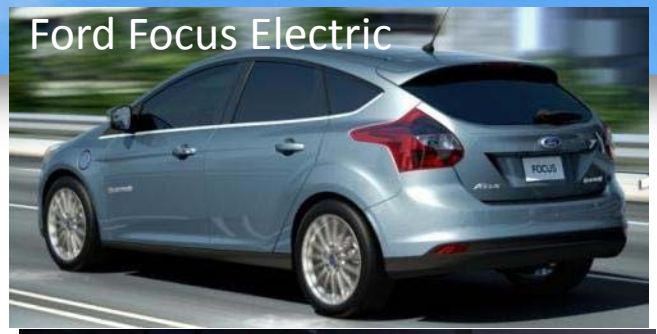


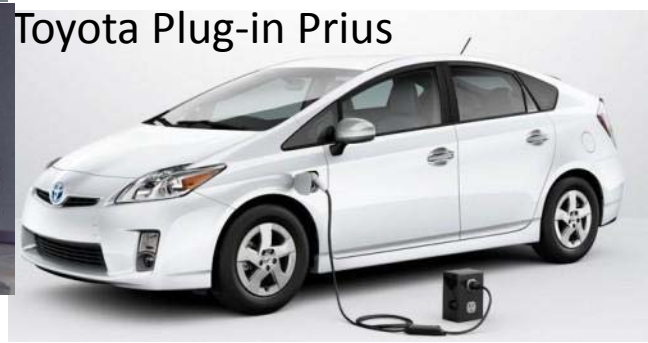
Vision for Clean Air, Figure 11 (June 27, 2012)

Vision for Clean Air Heavy-Duty Scenario



Plug-in Electric Vehicles Available Now





Heavy-Duty Electric Trucks Being Demonstrated

- Class 7-8 trucks
- All-electric miles
- Challenges
  - Range
  - Infrastructure
  - Cost

Wayside Power and Hydrogen

Vision Fuel Cell Truck

2012 RTP: Warehouse infrastructure

Heavy-duty Natural Gas Applications

- Economics driving turnover to NG
- Domestic fuel supply
- Develop power-plant equivalent tailpipe emission technologies
  - "Electric Vehicle Equivalent"

STATE OF CALIFORNIA ENERGY COMMISSION

South Coast AQMD

Southern California Gas Company®

DEPARTMENT OF ENERGY UNITED STATES OF AMERICA

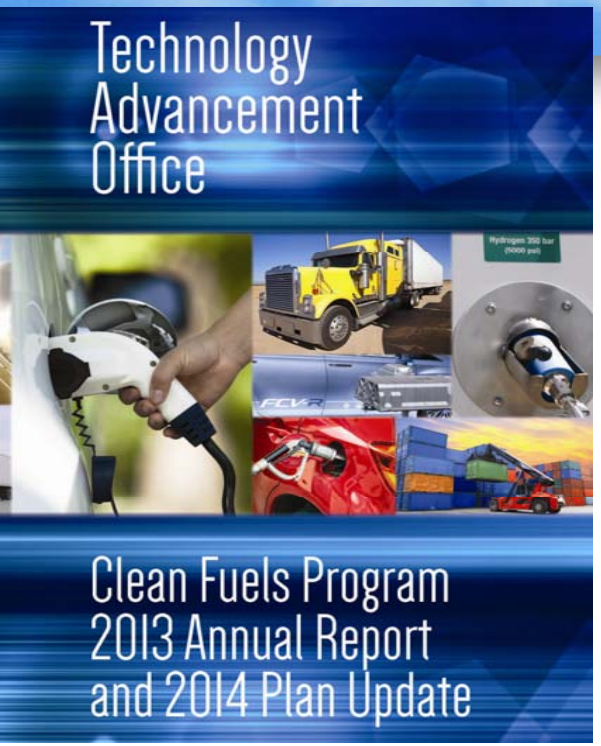
How to best tap market forces?

- Technology ↔ Market
- Vehicles ↔ Stations
- Regulation ↔ Incentives

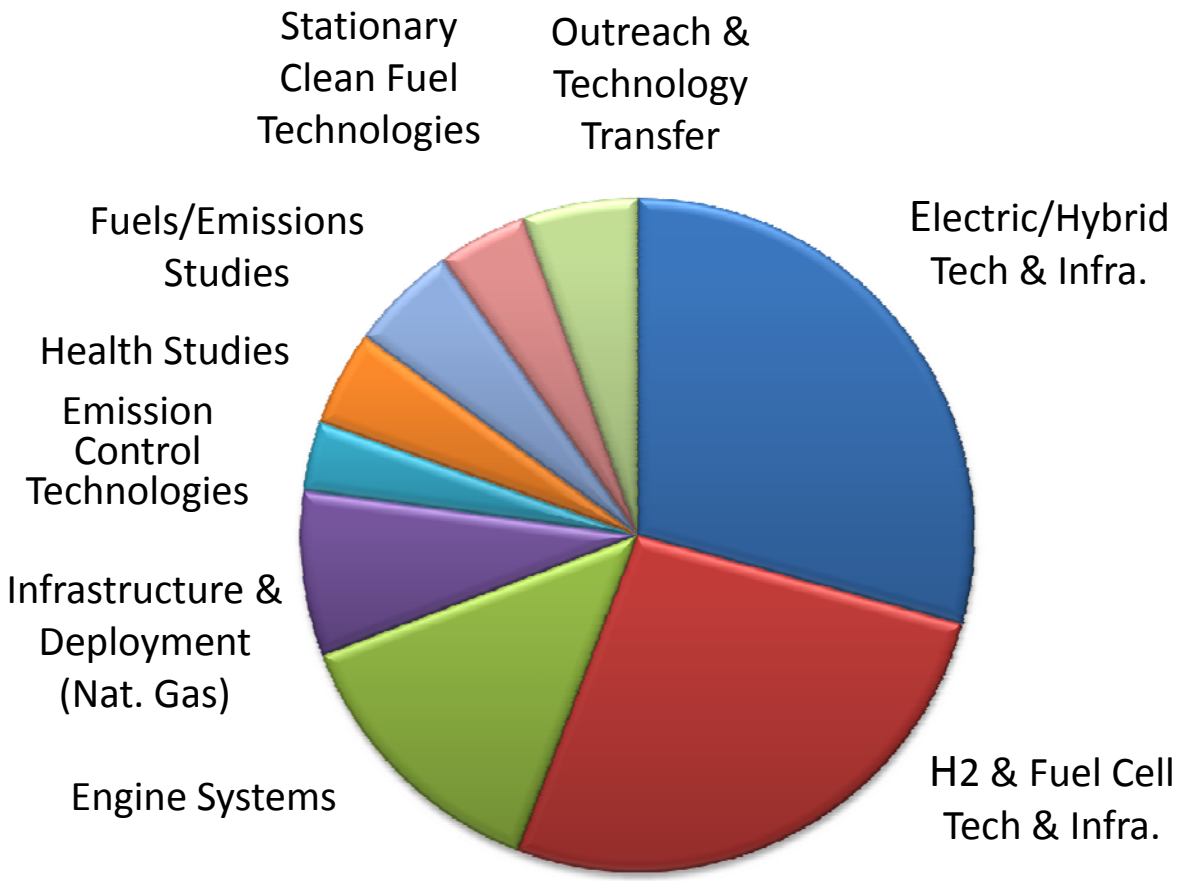
Improving Affordable Access to Cleaner Technologies

- First and foremost – need a product (low risk)
- "Waterfall" effect
- Address finance gaps:
  reliable loan guarantees and incentives;
  reduced "first-cost" investment barriers
- Two-way education process : recognize and address mainstream consumer priorities
  (e.g., carpool lane eligibility, family-size vehicles, fuel efficiency, fueling flexibility)
- Sustained effort, support, and lines of communication

2014 Update – Portfolio Approach



Key: Where can Program have greatest impacts?



$16.4M Total

What is needed?

- Maximizing co-benefits
- Policy and incentive certainty
- Infrastructure – Clean generation as well as electricity, NG & H2
- Business incentives for CA
- Leadership

Sunrise over Back Bay, Newport