



CALIFORNIA ENERGY COMMISSION

Alternative and Renewable Fuel and Vehicle Technology Program: Program Overview

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Alternative and Renewable Fuel and Vehicle Technology
Program**



California Transportation: Nation-State Statistics

- Population: 37.7 million
- GDP: \$1.9 trillion - 9th largest global economy
- GHG Emissions: 440 MMT (2004)
 - 7.2% of U.S. Emissions (Pew Center)
 - 10th largest emitter on global scale
 - **Transportation accounts for 42 % of all GHG emissions**
- Vehicles: 26.5 million cars + 0.92 million trucks
- Annual Fuel Consumption: 18.8 billion gallons
 - 15 billion gallons gasoline
 - 3.3 billion gallons diesel



Alternative and Renewable Fuel and Vehicle Technology Program (AB118)

Purpose

To transform California's transportation market into a diverse collection of alternative fuels and technologies and reduce California's dependence on petroleum.

“...develop and deploy innovative technologies that transform California’s fuel and vehicle types to help attain the state’s climate change policies.” (Health and Safety Code Section 44272(a))

Up to \$150 Million in Annual State Funding Program

The Energy Commission will receive **\$100 million/year for 7 years** to implement the ARFVT Program: Fuel production, Infrastructure, Trucks

California Air Resources Board will receive **\$40 million/year for over 7 years** for *Enhanced Fleet Modernization and Air Quality Improvement*: Light Duty Vehicle, Buses and Trucks.



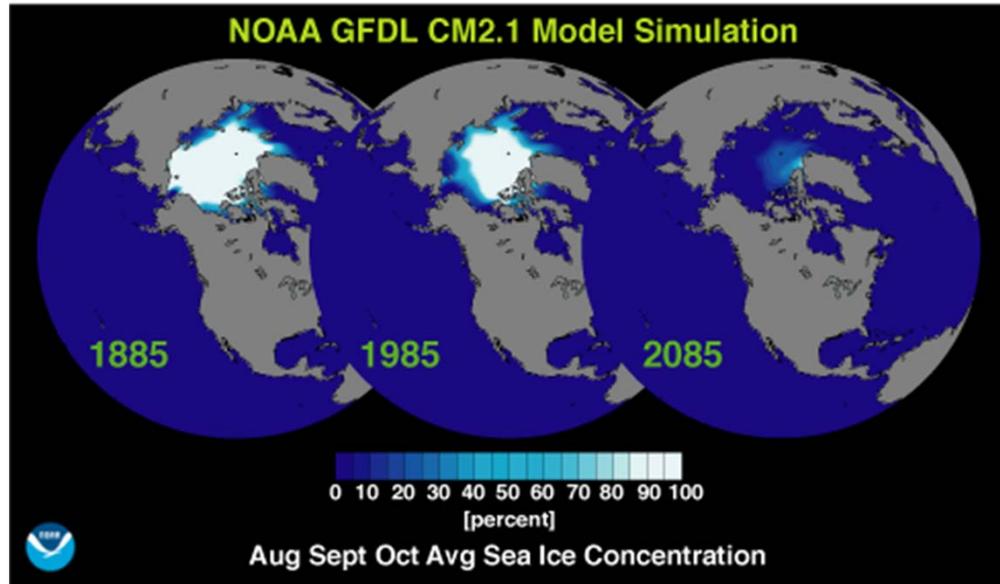
California's Policy Goals and Objectives

Policy Objectives	Goals and Milestones
GHG Reduction	Reduce GHG emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050
Petroleum Reduction	Reduce petroleum fuel use to 15% below 2003 levels by 2020
In-State Biofuels Production	Produce in California 20% of biofuels used in state by 2010, 40% by 2020, and 75% by 2050
Low Carbon Fuel Standard	10% reduction in carbon intensity of transportation fuels in California by 2020
RFS2	36 Billion Gallons of renewable fuel by 2022
Air Quality	80% reduction in NOx by 2023
ZEV Mandate	Accommodate 1 M EVs by 2020 and 1.5 M by 2025



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Climate Change

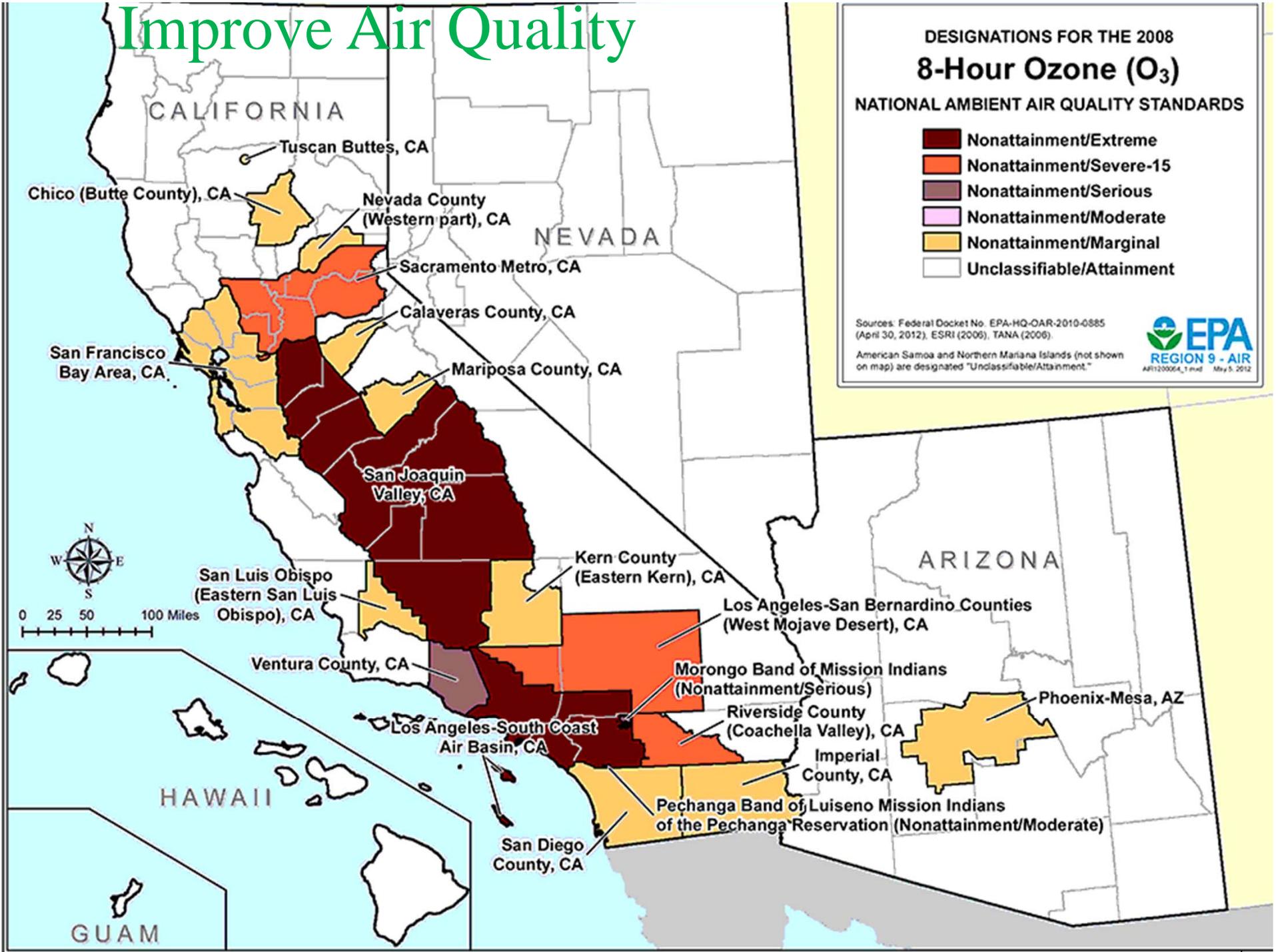




Reduce Petroleum Use



Improve Air Quality





Investment Plan

- Annual Investment Plan establishes funding priorities for ~\$100 million per year
 - Advisory panel provides guidance from broad cross section of California stakeholder groups
 - Allow members of the public to participate in funding allocation process
 - Direct program activities to assist in achieving state policy goals
 - Describes how funding will be used to complement other public and private investments



AB 118 Funding and Objectives

- Invest in a portfolio of alternative low-carbon and renewable fuels and advanced vehicles in California to help meet our energy, environmental, and economic goals.
- Alternative fuel production, distribution and dispensing
- Alternative technology vehicle development and manufacturing (EVs, CNG/LNG, Fuel Cell, Flex Fuel)
- Workforce training
- Education and outreach
- Environmental, market and technology assessments



Program Successes

- Promoting a diverse portfolio of clean, alternative transportation fuels and infrastructure
- Creating jobs and boosting manufacturing
- Leveraging public & private capital
- Reducing petroleum dependency
- Injecting \$700 million into the state's economy over seven years for next generation alternative fuels, vehicles and technologies
 - Leverages private funding at 2 to 1 ration



Program Allocations Over 5 Fiscal Years: \$456.6 Million

Funding Area	Amount (\$ millions)	Percent of Total Funding
Alternative Fuel Infrastructure	120.6	26.4
Biofuels Production	108.7	23.8
Vehicle & Component Manufacturing	55.9	12.2
Vehicle Deployment	62.9	13.7
Advanced Medium and Heavy Duty Vehicle Demonstrations	43.9	9.6
Workforce Training and Development	24.8	5.4
Program Technical Support	39.8	8.7
Total	456.6	



Encumbered Contracts by Funding Category Through June 2012

Fuel Type and Program Area	Total Funding Encumbered by June 2012 (\$ millions)	Percent of Total Funding	No. of Awards
Electric Drive	87.6	35.3%	46
Biofuels	70.5	28.4%	36
Gaseous Fuels (Natural Gas and Propane)	33	13.3%	19
Hydrogen	22.7	9.2%	5
Workforce Development	15.8	6.4%	3
Program Support & Other	18.7	7.5%	13
Totals	248.3		122



ARFVT Progress - UPDATE

(Funded through September 2012)

	Fuel Area	Existing 2009-2010 Baseline Levels	Additions from ARFVT Program Funding	Percent Increase
Alternative Fueling Infrastructure	Electric	1,270 charging stations	4,375 charging stations (public, fleet and workplace)	344%
	E85	39 fueling stations	186 fueling stations	477%
	Natural Gas	443 fueling stations	44 stations	10%
	Hydrogen	6 public fueling stations <i>(plus 5 more under construction)</i>	11 fueling stations	100%
Alternative Fuel Vehicles	Electric Cars	13,268	379	3%
	Electric Trucks	1,409	160	11%
	Natural Gas Trucks	13,995	1,472	10%



Goods Movement Strategic Focus

Issue

- MD-HD trucks account for 2% of total vehicle fleet, but use 16% of total fuel in California
 - Nearly 3 billion gallons of diesel
 - 16% of PM, Criteria Emissions and GHGs
- Disproportionate air quality impacts in communities near ports and freeways

CEC Response Through ARFVTP Funding

- Deployment funding for commercial natural gas trucks and ZEV trucks
- Development funding for ZEV & hybrid truck technologies
- Development funding for advanced biofuels



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Port of LA
and I-710
Truck Traffic





ARFVTP Goods Movement-Related Funding

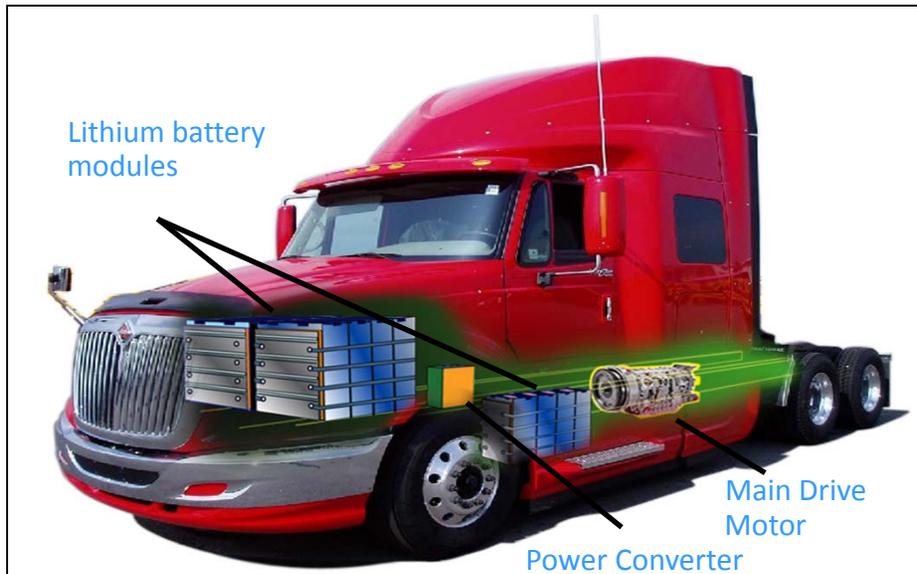
Technology	Funding (\$ Millions)	No. of Vehicles, Fueling Stations or Projects
Commercial Natural Gas Trucks	25.8	1,472 Trucks
Natural Gas Infrastructure	7.3	44 Stations
Commercial ZEV Trucks	4	160 Trucks
Demonstration ZEV & Hybrid Truck Projects	35	23 Projects
Advanced Biofuels: Biogas and Biodiesel	53.7	27 Projects
Total Funding	125.8	



Alternative Technology Trucks

Transpower's ElecTruck
Class 8 All-Electric Tractor

EVI Electric Truck



Navistar's Class 6 CNG Truck



On-Going Policy Discussions

- Finding proper investment balance between near-term and long-term benefits:
 - e.g. natural gas trucks and ZEV trucks
 - e.g. natural gas cars – electric cars – fuel cell cars
 - e.g. corn ethanol – cellulosic ethanol – algae-based renewable diesel
- When can we phase out of a technology or fuel area?
- Strategic focus with modest funding level:
 - A little bit across many areas = portfolio approach
 - Heavy funding for one to two areas to reach self-sustaining markets or tipping point?



Additional CEC Information

DRIVE Website

<http://www.energy.ca.gov/drive/>

Alternative and Renewable Fuel and Vehicle Technologies Program:

FY 2012-13 Investment Plan

<http://www.energy.ca.gov/2011-ALT-1/documents/index.html>