



The Road to Our Clean Transportation Future

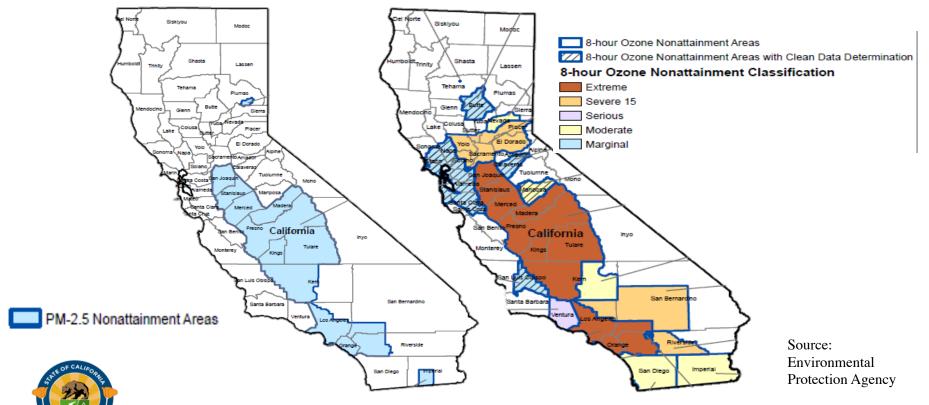
2018 SoCal Energy Water + Green Living Summit

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California Energy Commission
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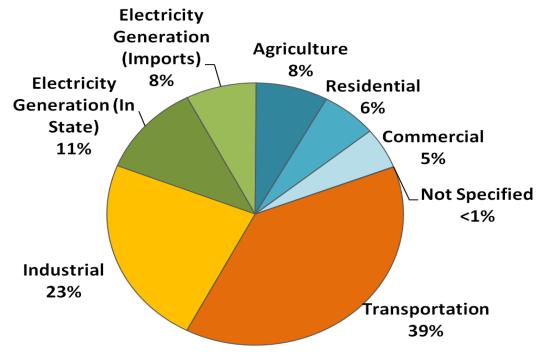
California: Nation-State Statistics

- Population: 39 million
- GDP: \$2.4 trillion 6th largest global economy
- **GHG** Emissions: 440 MMT (2015)
 - Transportation accounts for 37% of all GHG emissions
- Vehicles: 30 million cars + 1 million trucks
- Petroleum Consumption:
 - 15.8 billion gallons of gasoline
 - 3.7 billion gallons of diesel

Air Quality Nonattainment Areas *PM-2.5 and Ozone*

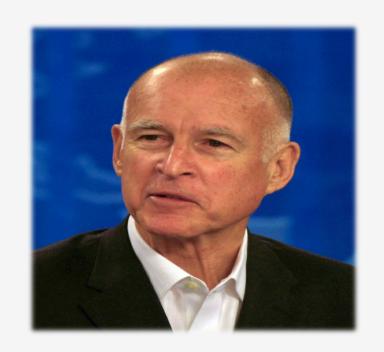


California's GHG Emissions by Sector





2015 Total CA Emissions: 440.4 MMTCO2e



"...climate change is unlike any other threat we humans face...It is subject to irreversible tipping points and vast unknowns. Combatting climate change, the existential threat of our time, will take heroic effort on the part of many people and many nations."

Governor Jerry Brown, 2016



California Policy Goals and Objectives

Policy Objectives	Policy Origin	Goals and Milestones	
Greenhouse Gas Reduction	California State Senate Bill 32 (2016)	Reduce greenhouse gas emissions to 1990 levels by 2020, 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050 in California	
Low Carbon Fuel Standard	California State Assembly Bill 32 (2006), California Global Warming Solutions Act	10% reduction in carbon intensity of transportation fuels in California by 2020	
Air Quality	Clean Air Act	80% reduction in NOx from current levels by 2023	
Zero Emission Vehicle Mandate	Executive Order B-16-2012	Infrastructure to accommodate 1 million ZEVs by 2020 and 1.5 million ZEVs on California roadways by 2025	
Increase Transportation Electrification (TE)	California State Senate Bill 350 (2015)	Encourages the state to take actions to accelerate widespread adoption of TE including increased access in disadvantaged communities and requiring utilities to address TE in Integrated Resource Plans.	
Short-Lived Climate	California Senate Bill 605 (2014), California Senate Bill 1383 (2016)	Develop a strategy for reducing short-lived climate pollutants including black carbon (50%), methane (40%), and hydrofluorocarbons (40%) by 2030.	



The California Energy Commission is the state's primary energy policy and planning agency

Established by the Legislature in 1974, seven core responsibilities guide the Energy Commission



Forecasting future energy needs



Setting the state's appliance and building energy efficiency standards



Supporting energy research development and demo projects



Developing renewable energy resources



Advancing alternative and renewable transportation fuels and technologies



Certifying thermal power plants 50 megawatts and larger



Planning for and directing state response to energy emergencies.

Alternative and Renewable Fuel and Vehicle Technology Program

"...to 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 44272(a)

Complementary state goals

- Improve air quality
- Increase alternative fuel use
- Reduce petroleum dependence
- Promote economic development

Assembly Bill No. 8

CHAPTER 401

An act to amend Sections 4 (1081, 44(96) 5, 44(125, 44(225, 44(229, 44(270, 44(271, 44(272, 44(273, 44(274, 44(275, 44(280, 44(281, 44(282), 44(281, 44(282), 44(281, 44(282), 44(281), 44(282), 44(281, 44(282), 44(281), 44(282), 44(281), 44(282), 44(281), 44(282), 44(281), 44(282), 44(281), 44(282), 44(281), 44(282), 44(281), 44(282), 44(281), 44(282), 44(281),

[Approved by Governor September 28, 2013. Filed with Secretary of State September 28, 2013.]

LEGISLATIVE COUNSEL'S DIGEST

AB 8. Perea. Alternative fuel and vehicle technologies: funding programs. (1) Existing law establishes the Alternative and Renewable Fuel and Vehicle Technology Program, administered by the State Energy Resources Conservation and Development Commission, to provide to specified entities, upon appropriation by the Legislature, grants, loans, loan guarantees, revolving loans, or other appropriate measures, for the development and deployment of innovative technologies that would transform California's fuel and vehicle types to help attain the state's climate change goals. Existing law specifies that only certain projects or programs are eligible for funding, including block grants administered by public entities or not-for-profit technology entities for multiple projects, education and program promotion within California, and development of alternative and renewable fuel and vehicle technology centers. Existing law requires the commission to develop and adopt an investment plan to determine priorities and opportunities for the program. Existing law also creates the Air Quality Improvement Program, administered by the State Air Resources Board, to fund air quality improvement projects related to fuel and vehicle technologies

This bill would provide that the state board has no authority to enforce any element of its existing clean fulso under regulation or other regulation that requires or has the effect of requiring any supplier, as defined, to construct, operate, or provide funding for the construction or operation of any publicly available hydrogen-fueling station. The bill would require the state board to aggregate and make available to the public, no later than June 30, 2014, and every year thereafter, the number of hydrogen-fueled vehicles that motor vehicle manufactures project to be sold or leased over the next 3 years, as reported to the state board, and the number of hydrogen-fueled vehicles resistered with the Denotiment of Monto Vehicles introuvals Auril



Alternative and Renewable Fuel and Vehicle Technology Program A Portfolio Approach



Alternative Fuel Production

Biofuel Production and Supply



Alternative Fuel and Advanced Technology Vehicles

- Natural Gas Vehicle Incentives
 - Med and Heavy-Duty Advanced Vehicle Technology Demo and Scale-Up



Alternative Fuel Infrastructure

- Electric Charging Infrastructure
- Hydrogen Refueling Infrastructure
- Natural Gas Fueling Infrastructure



Related Needs and Opportunities

- Emerging Opportunities
- Workforce Training and Development
- Regional Readiness

Alternative and Renewable Fuel and Vehicle Technology Program Funding

Category	Funded Activity	Cumulative Awards to Date (in millions)*	# of Projects or Units
Alternative Fuel Production	Biomethane Production	\$60.9	20 Projects
	Gasoline Substitutes Production	\$32.1	15 Projects
	Diesel Substitutes Production	\$75.1	25 Projects
Alternative Fuel Infrastructure	Electric Vehicle Charging Infrastructure**	\$79.9	7,698 Charging Stations
	Hydrogen Refueling Infrastructure	\$122.3	60 Fueling Stations
	E85 Fueling Infrastructure	\$13.7	158 Fueling Stations
	Upstream Biodiesel Infrastructure	\$4.0	4 Infrastructure Sites
	Natural Gas Fueling Infrastructure	\$21.9	64 Fueling Stations
Alternative Fuel and Advanced Technology Vehicles	Natural Gas Vehicle Deployment***	\$65.8	3,148 Vehicles
	Propane Vehicle Deployment	\$6.0	514 Trucks
	Light-Duty Electric Vehicle Deployment	\$25.1	10,700 Cars
	Medium- and Heavy-Duty Electric Vehicle Deployment	\$4.0	150 Trucks
	Medium- and Heavy-Duty Vehicle Technology Demonstration and Scale-Up	\$130.1	49 Demonstrations
Related Needs and Opportunities	Manufacturing	\$46.5	21 Manufacturing Projects
	Workforce Training and Development	\$31.7	17,440 Trainees
	Other	\$26.9	1 Project
Total		\$745.9	

Examples of ARFVTP Funded Projects















ARFVTP Project Benefits

(anticipated by 2025)



Petroleum Displacement

Displace 243 million gallons of petroleum annually



Economic Benefits

- Over 4,600 long-term jobs
- Over 5,100 short-term jobs





Environmental Benefits

- Reduce GHG emissions by 2 M metric tons of CO2e annually
- Reduce 25 tonnes of NOx and 7.5



Workforce Training

- 17,000 individuals have received training
- Over 255 businesses have received assistance





Thank You!

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