



The Road to Our Clean Transportation Future

2018 SoCal Energy Water + Green Living Summit

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California Energy Commission

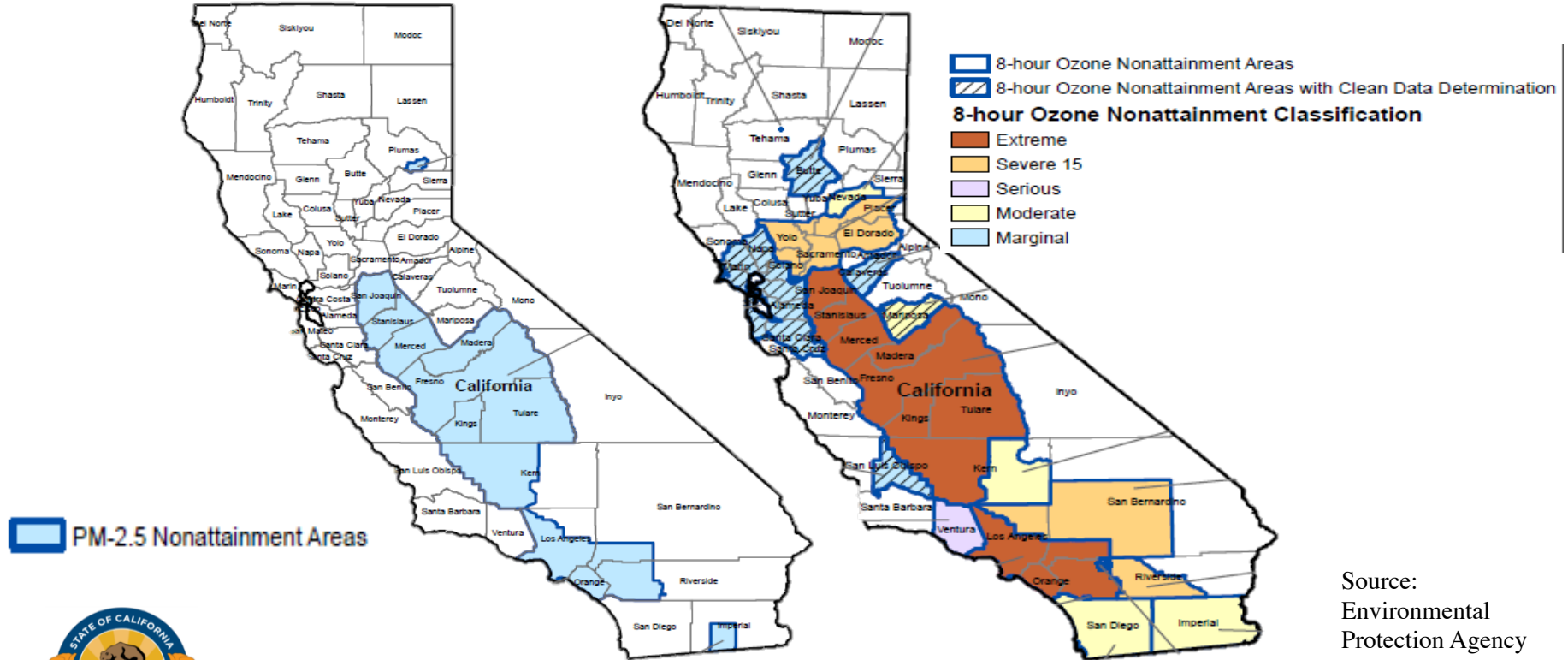
January 11, 2018

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**



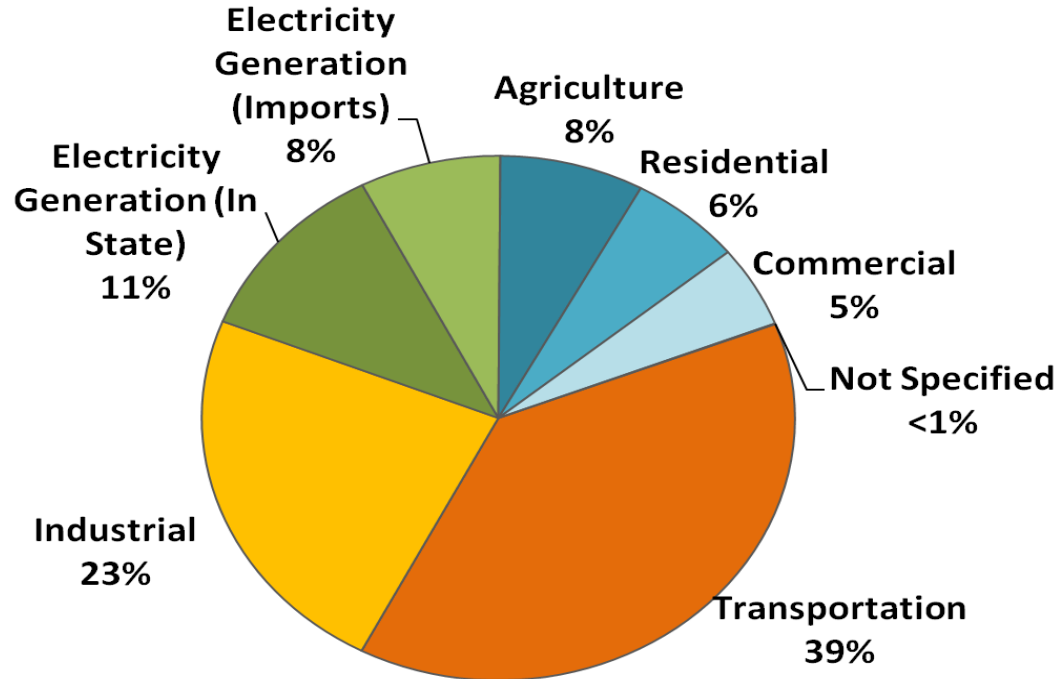
Air Quality Nonattainment Areas PM-2.5 and Ozone



Source:
Environmental
Protection Agency

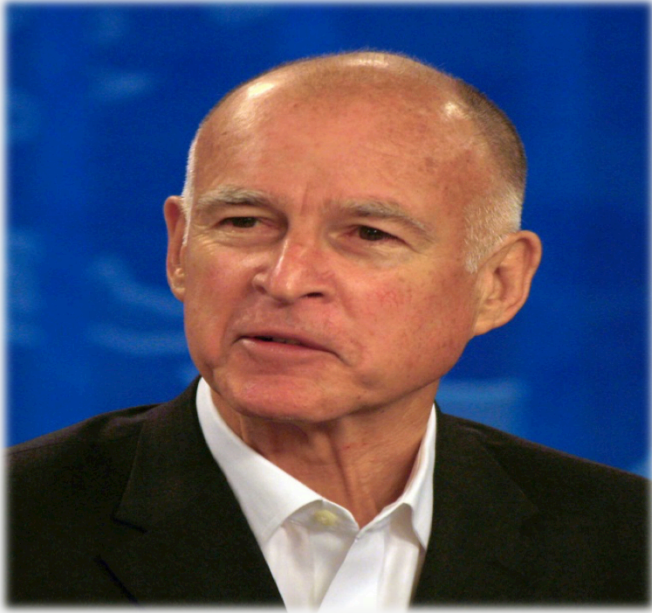


California's GHG Emissions by Sector



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 Pollutant Reductions	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



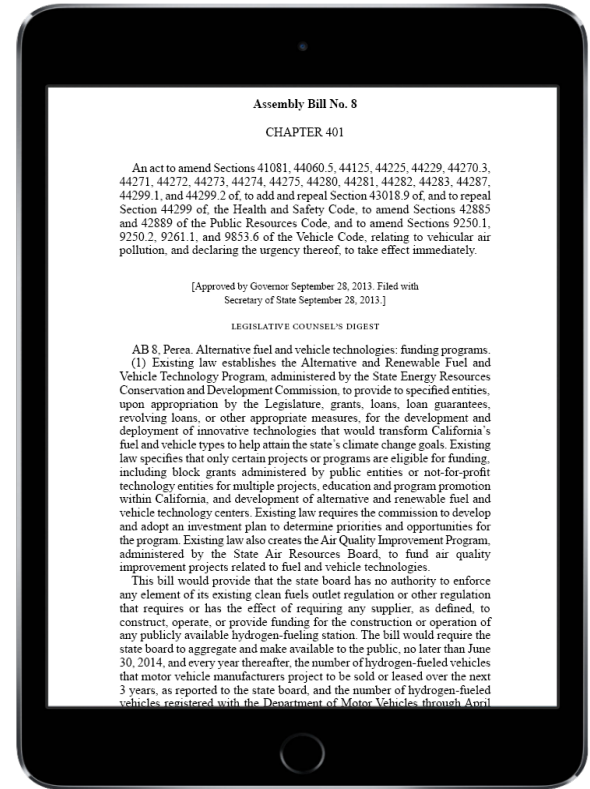
Planning for and directing state
response to energy emergencies.

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



Alternative and Renewable Fuel and Vehicle Technology Program

A Portfolio Approach



Alternative Fuel Production

- Biofuel Production and Supply



Alternative Fuel Infrastructure

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



Alternative Fuel and Advanced Technology Vehicles

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



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



CALIFORNIA ENERGY COMMISSION

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 NO_x and 7.5



Workforce Training

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





Thank You!

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