



# **Draft 2014 Integrated Energy Policy Report Update**

Presented by Heather Raitt  
November 24, 2014



## Background

- The Energy Commission prepares IEPR every two years, an update in intervening years. The Energy Commission:
  - Adopted Order Instituting Information Proceeding for *2014 IEPR Update* and *2015 IEPR* in January 2014
  - Issued *2014 IEPR Scoping Order* on April 3, 2014
  - Held 10 workshops on *Scoping Order* topics
  - Focused on transportation sector
- Staff reports, workshop presentations, and transcripts available at:  
[http://www.energy.ca.gov/2014\\_energy\\_policy/](http://www.energy.ca.gov/2014_energy_policy/)



## Assembly Bill 8 (Perea, Chapter 401, Statutes of 2013)

- Makes \$2 billion available for public investment
- Extends Alternative and Renewable Fuel and Vehicle Technology Program funding through January 1, 2024
- The program was created 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 Section 44272[a])

Assembly Bill No. 8  
CHAPTER 401

An act to amend Sections 41081, 44060.5, 44125, 44225, 44229, 44270.3, 44271, 44272, 44273, 44274, 44275, 44280, 44281, 44282, 44283, 44287, 44299.1, and 44299.2 of, to add and repeal Section 43018.9 of, and to repeal Section 44299 of, the Health and Safety Code, to amend Sections 42885 and 42889 of the Public Resources Code, to amend Sections 9250.1, 9250.2, 9261.1, and 9853.6 of the Vehicle Code, relating to vehicular air pollution, and declaring the urgency thereof, to take effect immediately.

[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 fuels outlet 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 manufacturers project to be sold or leased over the next 3 years, as reported to the state board, and the number of hydrogen-fueled vehicles registered with the Department of Motor Vehicles through April 30. The bill would require the commission to allocate \$20 million annually, as specified, until there are at least 100 publicly available hydrogen-fueling



## Transformation of Transportation Technologies and Fuels Needed to Meet California's Climate and Clean Air Goals

Policy Objectives	Policy Origin	Goals and Milestones
Greenhouse Gas (GHG) Reduction	AB 32, California Global Warming Solutions Act	Reduce GHG emissions to 1990 levels by 2020
	Executive Orders S-3-05 and B-16-2012	Reduce GHG emissions to 80% below 1990 levels by 2050 in California
	Low Carbon Fuel Standard	10% reduction in carbon intensity of transportation fuels in California by 2020
Petroleum Reduction	<i>California State Alternative Fuels Plan</i>	Reduce petroleum fuel use in California to 15% below 2003 levels by 2020
In-State Biofuels Production	<i>California Bioenergy Action Plan</i>	Produce in California 20% of biofuels used in state by 2010, 40% by 2020, and 75% by 2050
Federal Renewable Fuel Standard	Energy Policy Act of 2005, Energy Independence and Security Act of 2007	36 billion gallons of renewable fuel by 2022
Improved Air Quality	Clean Air Act	80% reduction in NO <sub>x</sub> from current levels by 2023
Zero-Emission Vehicle Mandate	California Executive Order B-16-2012	Accommodate 1 million electric vehicles by 2020 and 1.5 million by 2025 in California

## Hydrogen Fuel Cell Technology is Poised to Become a Zero-Emission Option

- AB 8 directed the Energy Commission to invest up to \$20 million per year on infrastructure for hydrogen vehicles
- Key role in Governor's *Zero-Emission Vehicle Action Plan* goal of 1.5 million zero-emission vehicles in 2025
- More directed research and innovative funding partnerships are needed





## The Plug-in Electric Vehicle is Another Zero-Emission Vehicle Option

- Market is growing steadily
- More than 100,000 PEVs sold in California as of September 2014—about 40% of national sales
- Additional incentives and innovations are needed
- Continued strategic investments in charging infrastructure at:
  - residential
  - workplace
  - multi-unit dwellings
  - public sites
- Regional readiness plans are also needed





## **Proactively Plan for Integrating Electric Vehicle Charging into the Grid**

- Electric vehicles can help grid operators manage the growing use of solar and wind electricity generation
- Smart charging technology will be key
- Further collaboration is needed on:
  - Research
  - Demonstration
  - Deployment
  - Planning
  - Market facilitation activities related to vehicle-to-grid projects

## Zero- and Near-Zero Emission Medium- and Heavy-Duty Vehicles are Needed

- Medium- and heavy-duty vehicles:
  - Represent 3.7% of California vehicles
  - Use more than 20% of the total fuel
  - Create about 25% of criteria and GHG emissions
- Fuel pathways for zero- and near-zero vehicles include:
  - Natural gas
  - Electric drive
  - Hydrogen fuel cell electric drive
  - Hybrid and range extender combinations
- Targeted incentives are needed
- More work needed on methane leakage





## **Biofuels Have the Potential to Provide Immediate Emission Reduction Benefits**

- Biofuels blended with gasoline and diesel are being spurred by regulations and government incentive funding
- Biodiesel and renewable diesel are making tremendous gains
  - Feedstock limitations on waste-based oils and greases may prove to be the limiting factor
- Biogas production in California is also proceeding
  - Challenges remain to ensure that biogas can be safely and economically injected into pipelines



## **Leveraging Funding May Help Achieve Deeper Benefits Faster**

- Government capital can accelerate technology adoption
- The long-term benefits from investment will far exceed costs
- The earlier investments are made, the bigger the net benefits over time
- The ARFVTP has primarily distributed funding through competitive grants
- Different forms of incentives such as loans, loan support, or rebates may become more appropriate as technologies mature



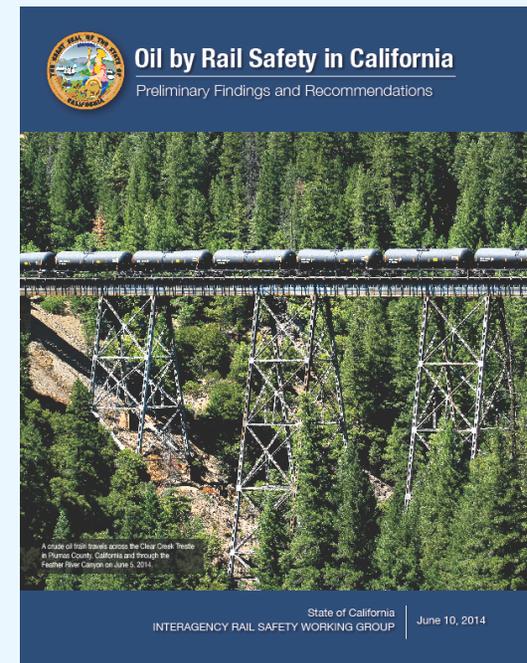
## **The ARFVTP Benefits to Date and Continuing Efforts to Measure Its Benefits**

- The National Renewable Energy Laboratory assessed the benefits from roughly \$500 million invested by the ARFVTP since May 2014
- Expected annual benefits by 2025 include:
  - GHG emissions reduced 2.8 - 4.2 million tons
  - Gasoline/diesel displaced by 338 - 566 million gallons
  - Small particulate matter emissions reduced 100 - 178 tons
- Market transformation is underway
- Over 6,000 new jobs in California, trained over 13,600 technicians and maintenance personnel
- Energy Commission will continue to find ways to measure benefits



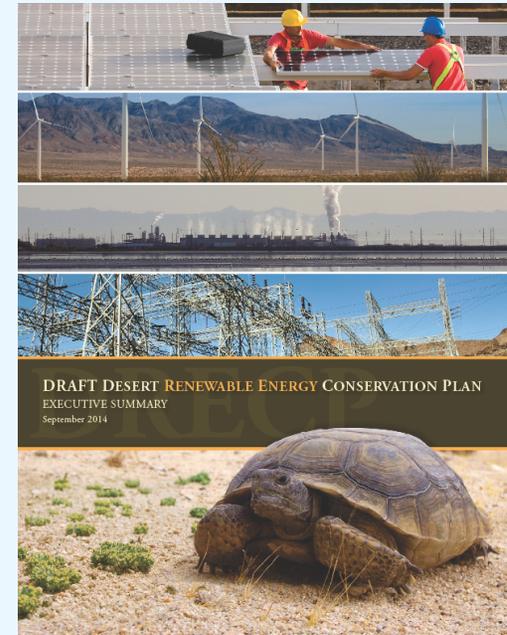
## Changing Trends in the Sources of California's Crude Oil

- 92% of California's transportation fuel use is petroleum based
- Increased oil production and lack of pipelines
- Discounted prices make transport by rail economically viable
- Governor's Office formed an interagency rail safety working group and published *Oil by Rail Safety in California* in June 2014
- The state needs to be vigilant in protecting its ability to address safety concerns and for collection of additional data



## Environmental Information in Renewable Energy Planning Processes

- The Desert Renewable Energy Conservation Plan (DRECP)
  - Advance state and federal conservation goals in the Mojave and Colorado desert regions
  - Facilitate the timely permitting of renewable energy
- Recommendations
  - Finalize and implement the DRECP
  - Continue to improve renewable energy and transmission planning and coordination
  - Advance the state's capabilities in performing landscape scale analysis





## **Electricity Infrastructure in Southern California**

- Electricity infrastructure needs
  - Once-through cooling retirements
  - Permanent closure of San Onofre
- Recommendations
  - Continue the multiagency Southern California Reliability Project
  - Enhance monitoring and data sharing among agencies
  - Continue to develop contingency plans and potential mitigation strategies



## Update to Electricity Demand Forecast

- Part of ongoing process alignment
  - Update economic and demographic drivers
  - Add a year of historical electricity consumption and peak demand data
- December 8, 2014 workshop on *2014 IEPR Forecast Update*
- The Energy Commission will continue efforts to align planning processes



## Next Steps

- Comments due December 8
- Instructions on submitting written comments are on the notice for the November 24 workshop available at: [http://www.energy.ca.gov/2014\\_energypolicy/documents/](http://www.energy.ca.gov/2014_energypolicy/documents/)
- Release proposed final *2014 IEPR Update* anticipated January 28, 2015
- Proposed adoption February 11, 2015