DOCKETED			
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Project Title:	2018-2019 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program		
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Document Title:	Presentation - Overview of the 2018-2019 Investment Plan Update for the ARFVTP		
Description:	Presentation overviewing the second revised staff report of the 2018-2019 Investment Plan Update for the ARFVTP, from the March 15, 2018 ARFVT Advisory Committee meeting and public workshop by Jacob Orenberg.		
Filer:	Jacob Orenberg		
Organization:	California Energy Commission		
Submitter Role:	Commission Staff		
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# Overview of the 2018-2019 Investment Plan Update for the ARFVTP

#### **Jacob Orenberg**

Fuels and Transportation Division California Energy Commission

March 15, 2018



### Meeting Agenda

10:00 am Introductions and Opening Remarks

10:15 am Presentation: Overview of the 2018-2019

Investment Plan Update for the ARFVTP

10:45 am Advisory Committee Discussion and Public Comment

12:00 pm Lunch break

1:00 pm Advisory Committee Discussion and Public Comment

(continued)



### California Transportation Statistics



VEHICLES

28.9 millions cars

1 million trucks

**GHG EMISSIONS** 

440.4 MMT CO<sub>2</sub>e (2015)

~50% from transportation

#### AIR QUALITY

Severe Non-Attainment for Ozone San Joaquin Valley & South Coast

#### PETROLEUM CONSUMPTION

13.9 billion gallons gasoline

3.3 billion gallons diesel



# ARFVTP Origins In Statute



#### Assembly Bill No. 118

CHAPTER 750

An act to add Article 11 (commencing with Section 44125) to Chapter 5 of to add chapter 8.9 (commencing with Section 44.770) to chapter 3.0 ft to add Chapter 8.9 (commencing with Section 44.770) to, Part 5.5 of Or, to add chapter o. J commencing with Section 4270 to Falt 5 of Division 26 of, and to add and repeal 44060.5 of, the Health and Safety Code, and to add and repeal Sections 9250.1, 9261.1, and 9853.6 of the Vehicle Code, relating to air pollution.

[Approved by Governor October 14, 2007. Filed with Secretary of State October 14, 2007.]

LEGISLATIVE COUNSEL'S DIGEST

AB 118, Nunez. Alternative fuels and vehicle technologies: funding

(1) Existing law imposes various limitations on emissions of air contaminants for the control of air pollution from vehicular and nonvehicular sources. Existing law generally designates the State Air Resources Board as the state agency with the primary responsibility for the control of vehicular air pollution. Under existing law, the State Energy Resources Conservation and Development Commission (Energy Commission), in conjunction with other state agencies, is required to develop and adopt a state plan to increase

ne use of anematic mens, as defined. Existing law establishes the Public Interest Research, Development, and the use of alternative fuels, as defined. Demonstration Fund in the State Treasury, and provides that the money collected by the public goods charge to support cost-effective energy efficiency and conservation activities, public interest research and development not adequately provided by competitive and regulated markets, be deposited in the fund for use by the Energy Commission to develop. implement, and administer the Public Interest Research, Development, and Demonstration Program to develop technologies to, improve environmental quality, enhance electrical system reliability, increase efficiency of energy-using technologies, lower electrical system costs, or provide other

The bill would create the Alternative and Renewable Fuel and Vehicle Technology Program, to be administered by the Energy Commission, to tangible benefits. provide, upon appropriation by the Legislature, grants, loans, loan provide, upon appropriation by the Legislature, grants, roads guarantees, revolving loans, or other appropriate measures, to public species, businesses and projects, public-private partnerships, vehicle and technology consortia, workforce training partnerships and collaboratives, fleet owners, consumers, recreational boaters, and academic institutions to nect owners, consumers, recreational obases, and academic management develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies.

Established by Assembly Bill 118 (Nunez, 2007)

"...to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies."

California Health and Safety Code 44272(a)



### Guiding Policies and Regulations



E.O. B-16-12 SB 1275 (2014) E.O. B-48-18

1 million ZEVs by 20231.5 million ZEVs by 20255 million ZEVs by 2030

250,000 EV chargers by 2025 200 hydrogen stations by 2025

CLEAN AIR ACT
NO<sub>X</sub> \$\bigs\\$ 80% by 2023



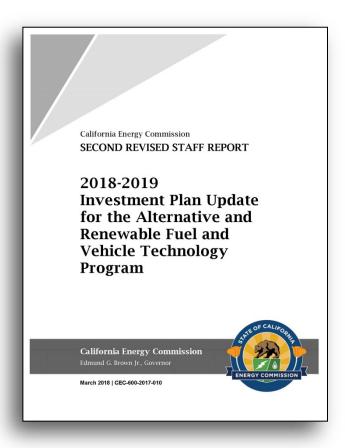
### Investment Plan Purpose



Basis for FY 2018-2019 solicitations, agreements, and other funding opportunities

Describes funding allocations for technologies, fuels, and supporting elements

Funding allocations for categories (not individual projects)





## **ARFVTP Funding To-Date**



Fuel Type	Cumulative Awards (in millions)	Percent of Funding	Cumulative Number of Agreements
Biomethane	\$62.7	8%	21
Ethanol	\$48.5	6%	20
Biodiesel	\$51.3	7%	19
Renewable Diesel	\$21.0	4%	8
Electricity	\$265.5	35%	181
Hydrogen	\$152.2	20%	96
Natural Gas	\$99.0	13%	151
Propane	\$6.0	1%	31
Multiple/Other	\$47.0	6%	89
Total	\$753.2		616



As of February 1, 2018

### Commitment to Diversity



The Energy Commission adopted a resolution on April 8, 2015 to firmly commit to increasing:

- Participation of women, minority, disabled veteran and LGBT business enterprises in program funding opportunities
- Outreach and participation by disadvantaged communities
- Diversity in participation at Energy Commission proceedings
- Diversity in employment and promotional opportunities



### Commitment to Diversity



Fairness – Increase funding accessibility to all Californians

**Inclusion** – Small businesses make up a significant portion of the U.S. economy

**Job Creation** – Projects can create jobs for residents of the underserved communities

Diversity of Ideas – Great ideas occur in a variety of areas

**Diversity in Communities' Needs** – Needs vary widely from one area to the next (air quality, socioeconomic, etc.)



### Investment Plan Update Schedule



Activity	Date	
Released Draft Staff Report	November 2, 2017	
1st Advisory Committee Meeting	November 7, 2017	
Released Revised Staff Report	January 10, 2018	
Released 2 <sup>nd</sup> Revised Staff Report	March 5, 2018	
2 <sup>nd</sup> Advisory Committee Meeting	March 15, 2018	
Release Lead Commissioner Report	April 2018	
Business Meeting Approval	May 9, 2018	



# Changes to Second Revised Staff Report



Executive Order B-48-18 (ZEV & infrastructure deployment)

Governor's draft California Budget for 2018-2019

\$235 million for zero-emission vehicle infrastructure

\$25 million for low-carbon fuel production

\$17.5 million for advanced freight and fleet technologies

Significant changes to allocations & layout



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### 2018-2019 Investment Plan Layout





Context of the Investment Plan Update



Zero-Emission Vehicle Infrastructure



Advanced Technology Vehicle Support



Alternative Fuel Production



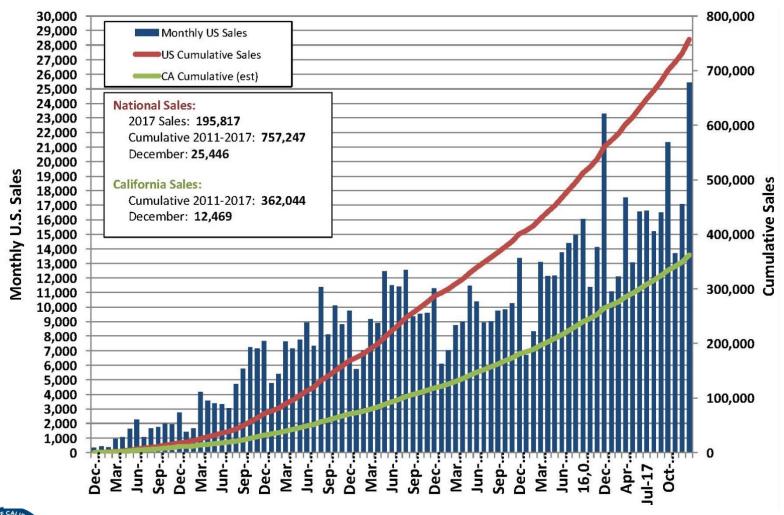
Natural Gas Vehicles and Infrastructure

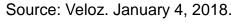


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### Electric Vehicle Deployment









## Electric Vehicle Charging Infrastructure



1.5 million Zero-Emission Vehicles by 20255 million Zero-Emission Vehicles by 2030

250,000 EV chargers needed by 2025 Including 10,000 fast chargers

About 14,000 public chargers installed statewide (As-of March 2018)



## Electric Vehicle Charging Infrastructure



# \$134.5 million

**Proposed Allocation** 

76,000 – 128,000 chargers installed by 2025

(Expected to be installed under a business-as-usual scenario; from all sources)

Shortfall of 122,000 – 174,000 chargers expected by 2025

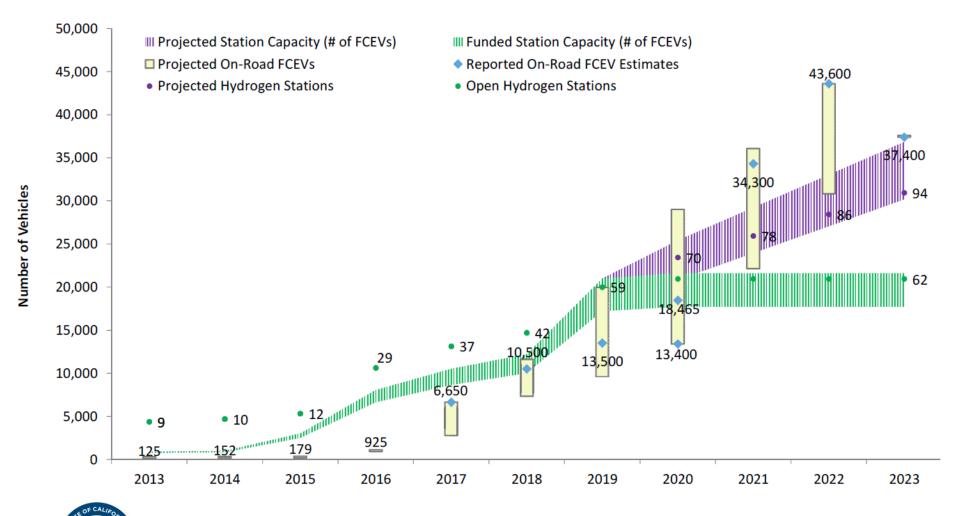
Estimated cost: \$963 million to \$2.89 billion

(In addition to currently planned and expected public and private investments)



## Hydrogen Refueling Infrastructure







## Hydrogen Refueling Infrastructure



# \$92 million

**Proposed Allocation** 

Funding support for additional 40+ refueling stations

Complete initial network of 100 stations

Provide sufficient fueling capacity into 2022

Enable further FCEV sales throughout the state

Continued funding for Operations & Maintenance support



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# Manufacturing & Workforce Development for Zero-Emission Vehicle Infrastructure



# \$8.5 million

Proposed Allocation

Support for ZEV infrastructure industry & workforce needs

Encourage new or expanded in-state manufacturing facilities

#### Goals Supported:

- Indirect support for other ARFVTP project types
- Equitable economic development



## Advanced Freight and Fleet Technologies



# \$17.5 million

**Proposed Allocation** 

Medium- and heavy-duty vehicles (10,000 lbs & up) Zero-emission and advanced technology powertrains

Freight transportation & goods movement

Dedicated fueling infrastructure for fleets



## Low-Carbon Fuel Production and Supply



# \$25 million

Proposed Allocation

Proposed funding source:

Greenhouse Gas Reduction Fund

Liquid and gaseous fuels (non-petroleum)

Focus on waste-based & renewable feedstocks

Pilot, demonstration, and commercial scale

Renewable hydrogen production

Biomass and renewable electricity feedstocks



### Natural Gas Infrastructure & Vehicles



#### Unencumbered funds still available

- \$2.4 million for natural gas fueling infrastructure
- \$9.7 million for natural gas vehicle incentives

### Continued support from existing & new sources

Natural Gas Vehicle Incentive Project

GFO-17-605 – natural gas vehicle funding for air districts

Clean Truck and Bus Voucher Project (ARB)

No allocation proposed for FY 2018-2019



### **Next Steps**



### Seeking feedback from all stakeholders

Comments requested no later than March 21, 2018

E-commenting available at:

http://energy.ca.gov/altfuels/2017-ALT-01/

Release Lead Commissioner Report in April 2018

Business Meeting approval expected May 9, 2018

Upcoming workshops to discuss funding allocations



### **Proposed Funding Allocations**



Category	Funded Activity	Proposed Allocation
	Electric Vehicle Charging Infrastructure	\$134.5 million
Zero-Emission Vehicle Infrastructure	Hydrogen Refueling Infrastructure	\$92 million
	Manufacturing & Workforce Development	\$8.5 million
Advanced Technology Vehicle Support	Advanced Freight and Fleet Technologies	\$17.5 million
Alternative Fuel Production	Low-Carbon Fuel Production and Supply	\$25 million*
Natural Gas Vehicles	Natural Gas Vehicles	-
and Infrastructure	Natural Gas Fueling Infrastructure	-
	Total	\$277.5 million

\*Funding expected from the Greenhouse Gas Reduction Fund

