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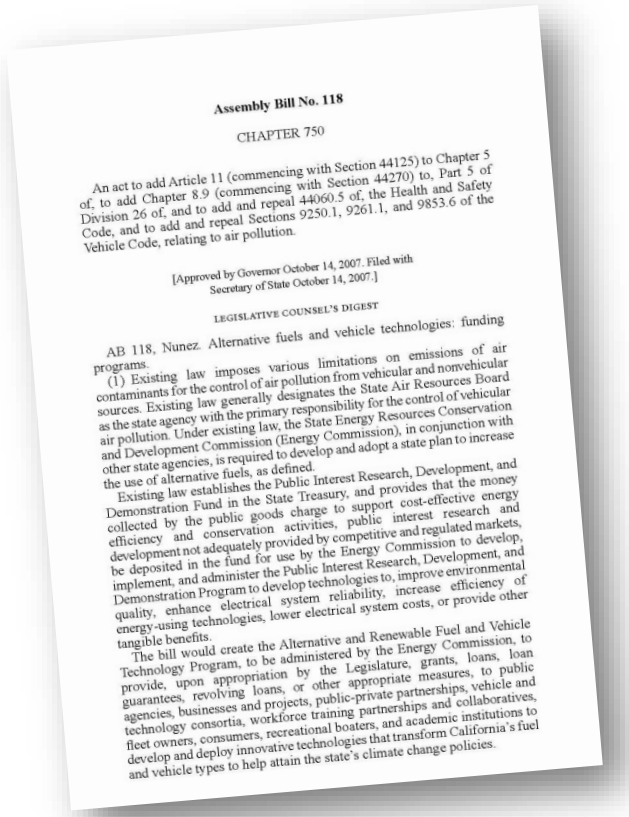
Manufacturing and Workforce Development Program Activities of the ARFVTP

Tami Haas and Tim Olson
Fuels and Transportation Division
California Energy Commission

August 6, 2018

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 44270) to, Part 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 programs.

(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 the use of alternative fuels, as defined.

Existing law establishes the Public Interest Research, Development, and 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 tangible benefits.

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

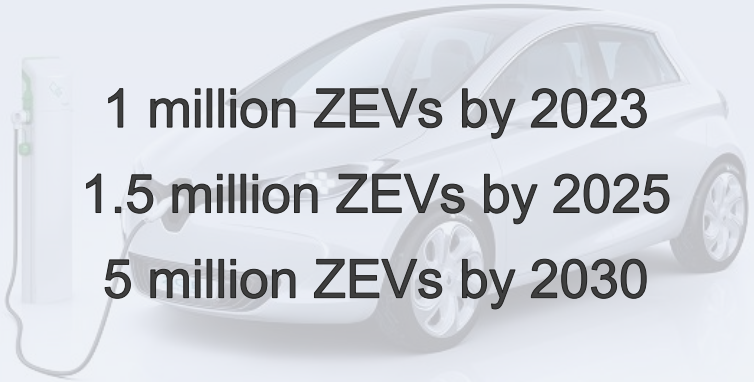
Established by Assembly Bill 118 (Nunez, 2007)

"…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 2023

1.5 million ZEVs by 2025

5 million ZEVs by 2030

250,000 EV chargers by 2025

200 hydrogen stations by 2025

SB 32 (2016)
E.O. S-3-05

GHG ↓ 40% by 2030

GHG ↓ 80% by 2050

(1990 baseline)

CLEAN AIR ACT

NO_X ↓ 80% by 2023

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
Manufacturing, Workforce and Other	$47.0	6%	89
Total	**$753.2**		**616**

As of February 1, 2018

Manufacturing & Workforce Development
for Zero-Emission Vehicle Infrastructure

$8.5 million
Proposed Allocation in FY 2018-19

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

Manufacturing and Workforce Development

Provides funding to support the in-state manufacturing of alternative-fuel vehicles, vehicle components, supporting infrastructure, and workforce development

Allocated in FY 2017-2018

- $4.9 million for manufacturing
- $3.4 million for workforce training and development

Bringing Zero-Emission Infrastructure Technology Manufacturing to California

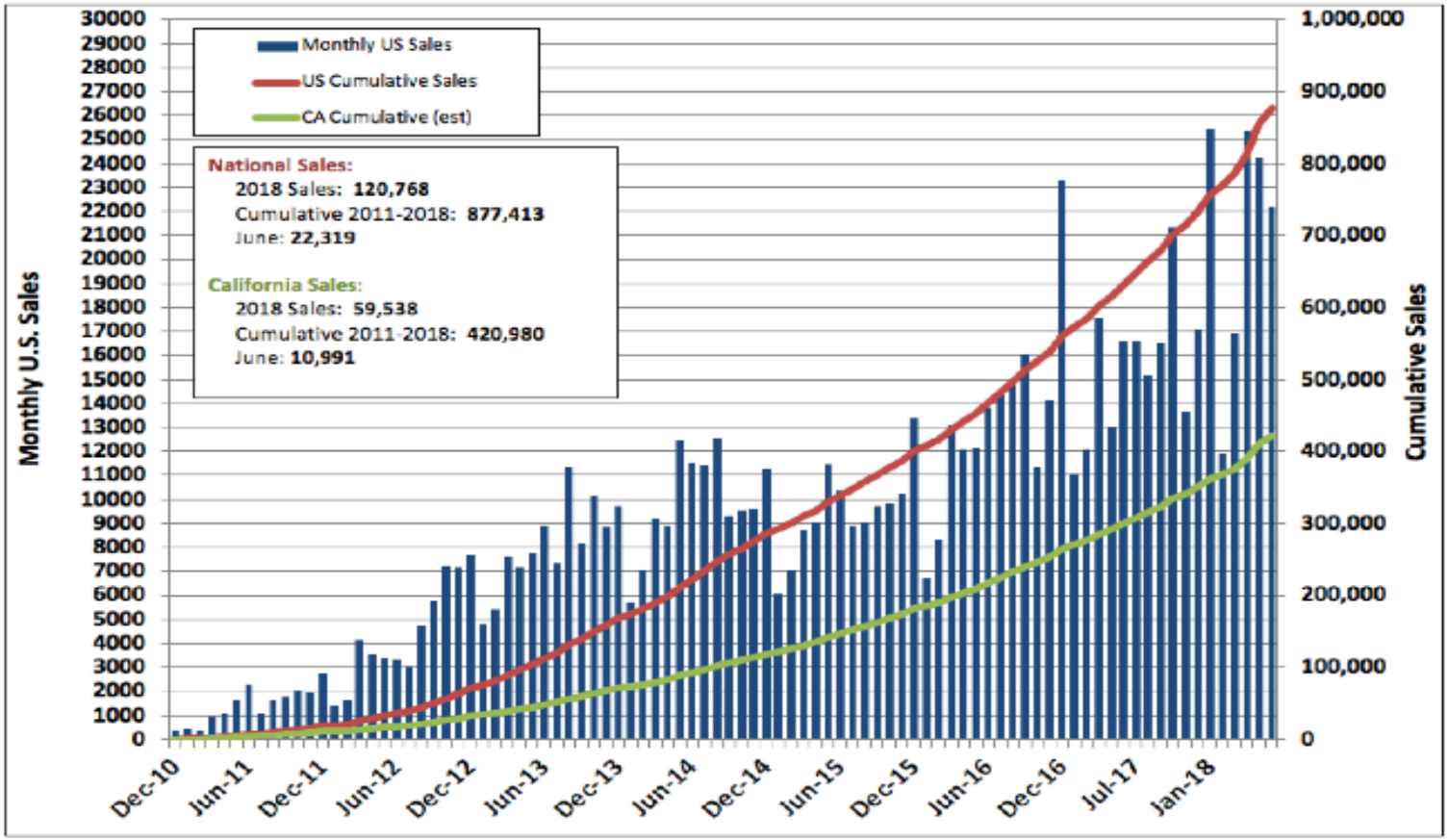
May 4, 2018 Energy Commission Roundtable Conclusions

NREL Clean Energy Manufacturing Analysis Center Studies: Factors Driving Manufacturing Growth

- Demonstrate Growth Demand for Products
- Achieve Economy of Scale Manufacturing Threshold to Optimize Price
- Gain Access to Affordable Capital for Manufacturing Investments

Passenger Electric Vehicle Growth

VELOZ



Note: Approximation assumes CA sales are 49% of national sales.
Reference: www.hybridcars.com

7/19/2018

Key Market Segments for California ZEV Infrastructure

- Renewable hydrogen fuel production and distribution
- Hydrogen fueling equipment assembly
- Software design and development
- Distributed energy integration
- Second life battery applications
- Service and maintenance
- Installation and power upgrades
- Design and engineering for support infrastructure

Lessons Learned from Successful Manufacturing in California

- Decide what makes most sense to manufacture in California (or even manufacture themselves vs. contract manufacturing)
- Establish a set of reliable suppliers
- Find and establish a manufacturing or assembly site to meet needs (which when scale is achieved, may prove to be a challenge)
- Partner with a community organization or school to ensure a steady pipeline of qualified workers

Key Barriers Impeding Growth Potential

- Cost to a manufacturer of commercial real estate, taxes, and regulations (especially CEQA)
- Skilled workforce supply and cost of living to attract a skilled labor force to relocate
- Access to capital
- Lack of long term planning and commitment of policies and incentives
- Inconsistency and slowness of local decision making/policies

Roundtable Recommended Actions

- Recognize California's competitive and comparative advantages over short and long term and consider shared facilities for rapid prototyping and smaller scale firm development
- Prioritize workforce training and certificate programs to develop a variety of skills, reflect a holistic perspective, increase diversification in workforce and support ZEV infrastructure manufacturing
- Create opportunities to attract in-state hydrogen production and maintain skill advantage gained through deployment of first hydrogen fueling stations
- Maintain commitments to long term state funding initiatives
- Develop concierge service to help companies navigate incentive programs and permit conditions – for manufacturers as well as fleet customers
- Include software and network development in definition of manufacturing supply chain