Subnational Efforts to Reduce Transportation Emissions in North America

COP25 – Blue Zone, Area 4, Room 2

Thursday, December 12, 2019 (15:00 – 16:30 CET)

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Subnational Efforts to Reduce Transportation Emissions in North America

- Moderator: Matthew Goetz, Senior Associate, Georgetown Climate Center
- Christine Kirby, Assistant Commissioner, Massachusetts Department of Environmental Protection
- Jean Lemire, Emissary for Climate Change, Northern and Arctic Affairs, Government of Québec
- Tim Sexton, Assistant Commissioner and Chief Sustainability Officer, Minnesota Dept. of Transportation
- Andrew McAllister, Commissioner, California Energy Commission
- Anu Hittle, Climate Change Mitigation and Adaptation Coordinator, Hawaii Dept. of Land and Natural Resources
- Fan Dai, Director, California-China Climate Institute, University of California, Berkeley
- Mark Purdon, Professor, ESG-UQAM & Executive Director, IQCarbone

Electric Vehicle Programs and Policies

California Energy Commission

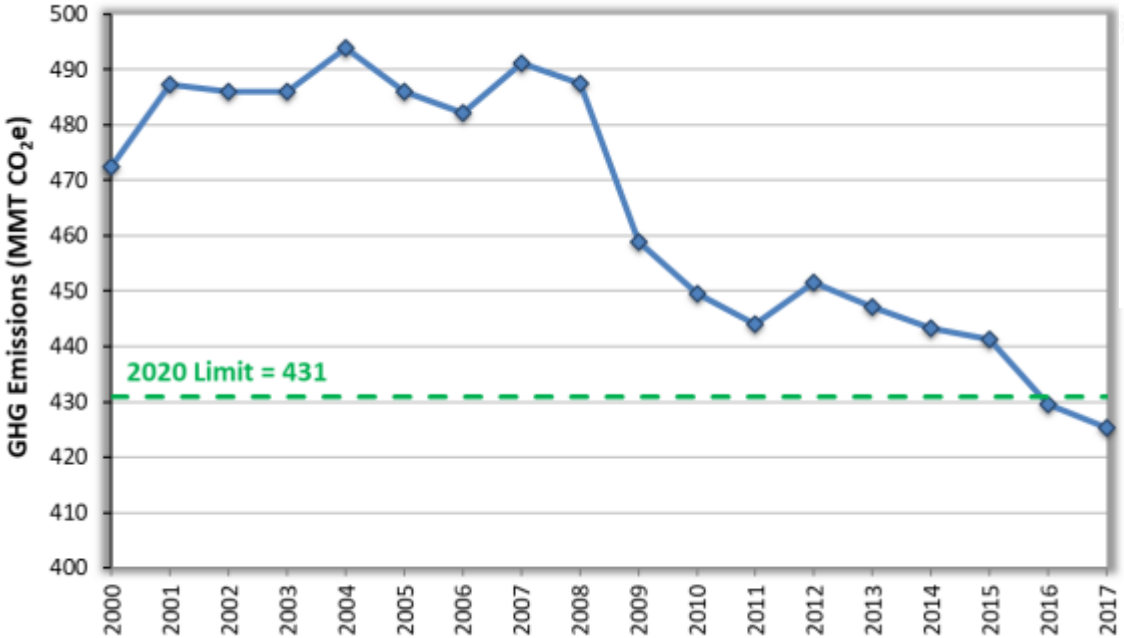
COP25 Chile - Madrid

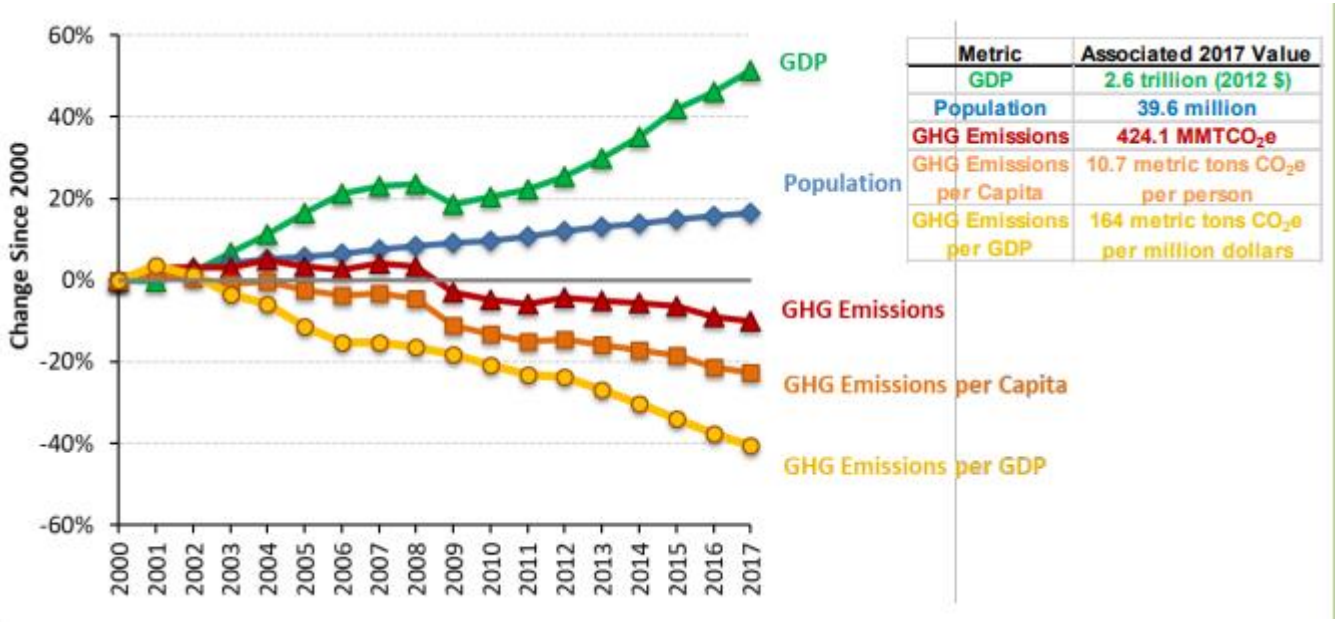
December 2019

California Energy Commission

California's Greenhouse Gas Emissions

California's GHG Emissions Accomplishes 1990-level Goal 4 Years Early

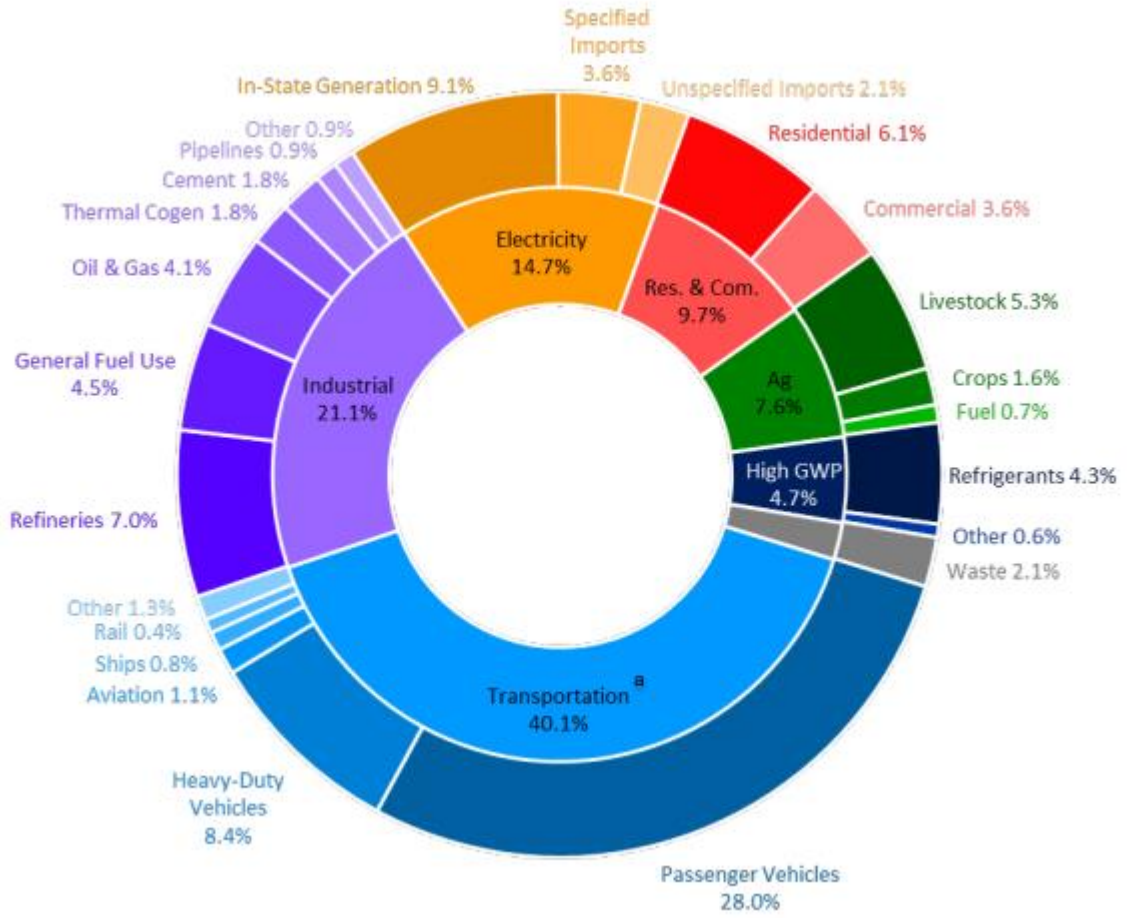




Metric	Associated 2017 Value
GDP	2.6 trillion (2012 $)
Population	39.6 million
GHG Emissions	424.1 MMTCO_2e
GHG Emissions per Capita	10.7 metric tons CO_2e per person
GHG Emissions per GDP	164 metric tons CO_2e per million dollars

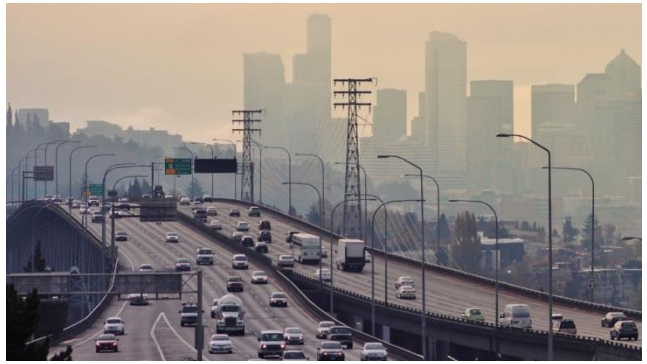
GDP and Population Increases and Total Emissions Decrease

Transportation Sector Emissions – 51 Percent of Total Economy Emissions



Direct Transportation Emissions	40.1%
Refineries	7.0%
Oil and Gas Production	4.1%

California Transportation Statistics



GHG Emissions (in-State)

50% from vehicles, oil extraction, and oil refining combined

Vehicles

28.1 million cars
1 million trucks

Petroleum Consumption

13.9 billion gallons gasoline
3.3 billion gallons diesel

Guiding Policies and Regulations

Policy Origin	Goals and Milestones
Executive Order S-3-05; Assembly Bill 32 (2006); Executive Order B-30-15; Senate Bill 32 (2016)	2020: Reduce greenhouse gas emissions to 1990 levels 2030: …40% below 1990 levels 2050: …80% below 1990 levels
Executive Order B-55-18	Achieving a carbon-neutral economy by 2045
Senate Bill 1383 (2011)	Reduce emissions of short-lived climate pollutants 40%-50% below 2013 levels by 2030
Low-Carbon Fuel Standard	Reduce carbon intensity of transportation fuels by 10% by 2020 and 20% by 2030
Clean Air Act	Reduce NOx by 80% by 2023
Executive Order B-16-2012; Executive Order B-48-18; Zero-emission Regulations	2020: 1 million zero-emission vehicles 2025: 1.5 million zero-emission vehicles; 250,000 chargers (including 10,000 fast chargers); 200 hydrogen refueling stations 2030: 5 million zero-emission vehicles
Executive Order B-32-15	Improve freight efficiency and transition freight movement to zero-emission technologies

Governor's Office ZEV Action Plan

ZEV Action Plan

Originally released in 2013
Updated in 2016 and 2018

Identifies specific actions state government should take in order to meet the goals of the executive orders.

Ensure convenient charging and refueling infrastructure for greatly expanded use of zero-emission vehicles

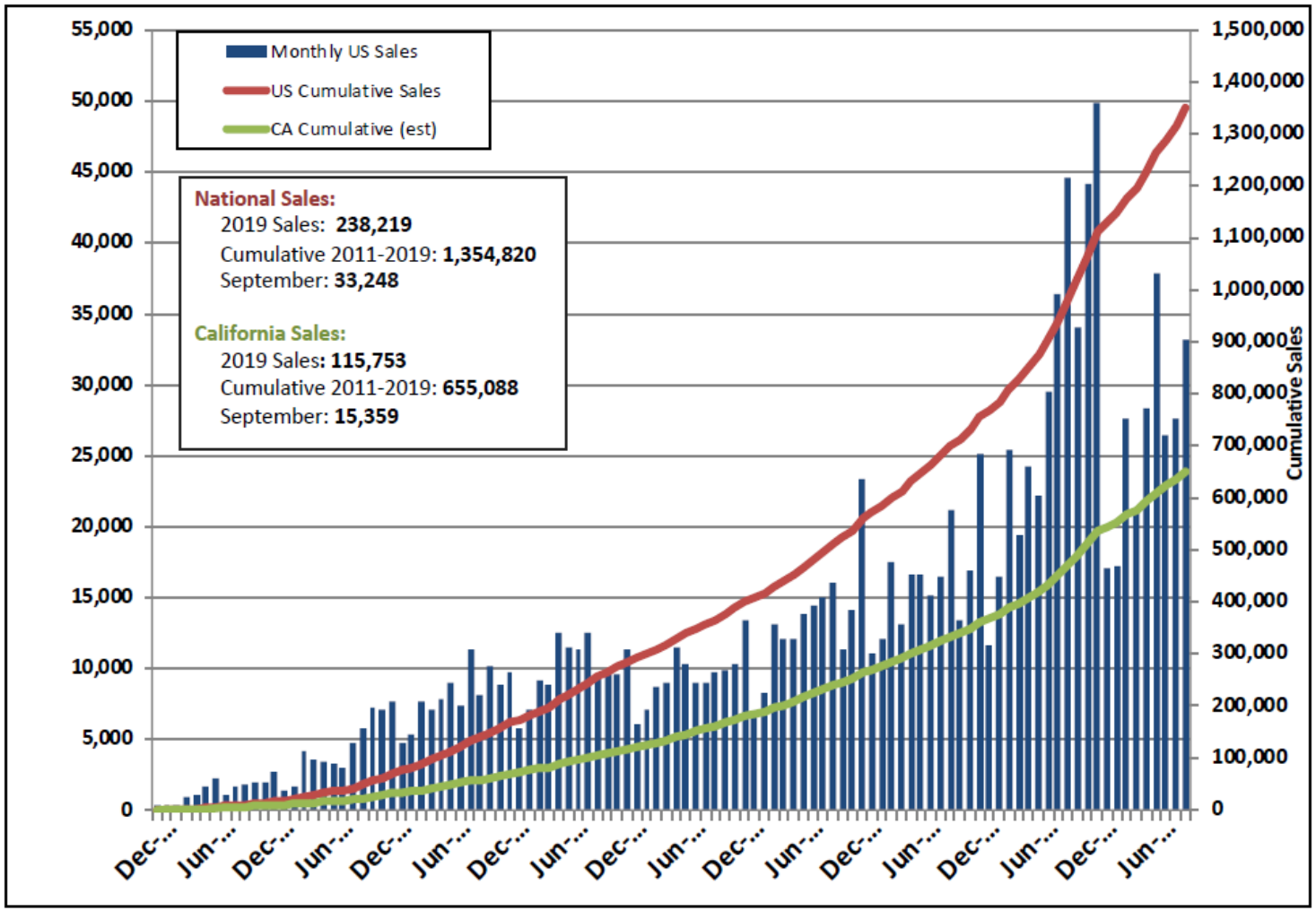
http://business.ca.gov/ZEV-Action-Plan

California Zero Emission Vehicle Sales

VELOZ

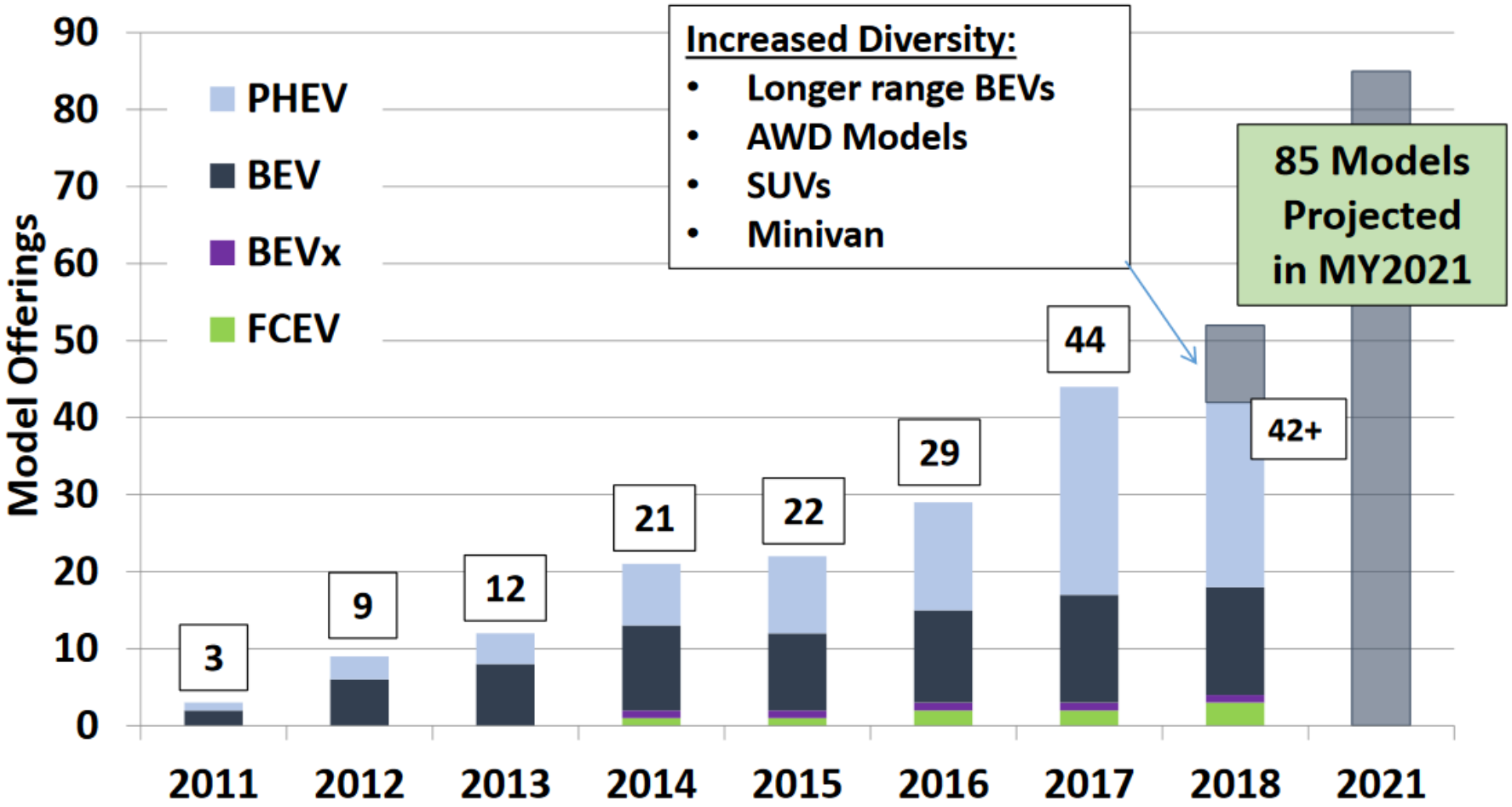
Note: Approximation assumes CA sales are 46% of national sales.

Reference: www.hybridcars.com



Source: Veloz: http://www.veloz.org/sales-dashboard/, Updated October 7, 2019

Light-Duty Electric Vehicles Coming Soon



Source: IHS Automotive Registrations and Assorted trade press reports

Clean Vehicle Rebate Project (CVRP)

CALIFORNIA CLEAN VEHICLE REBATE PROJECT℠

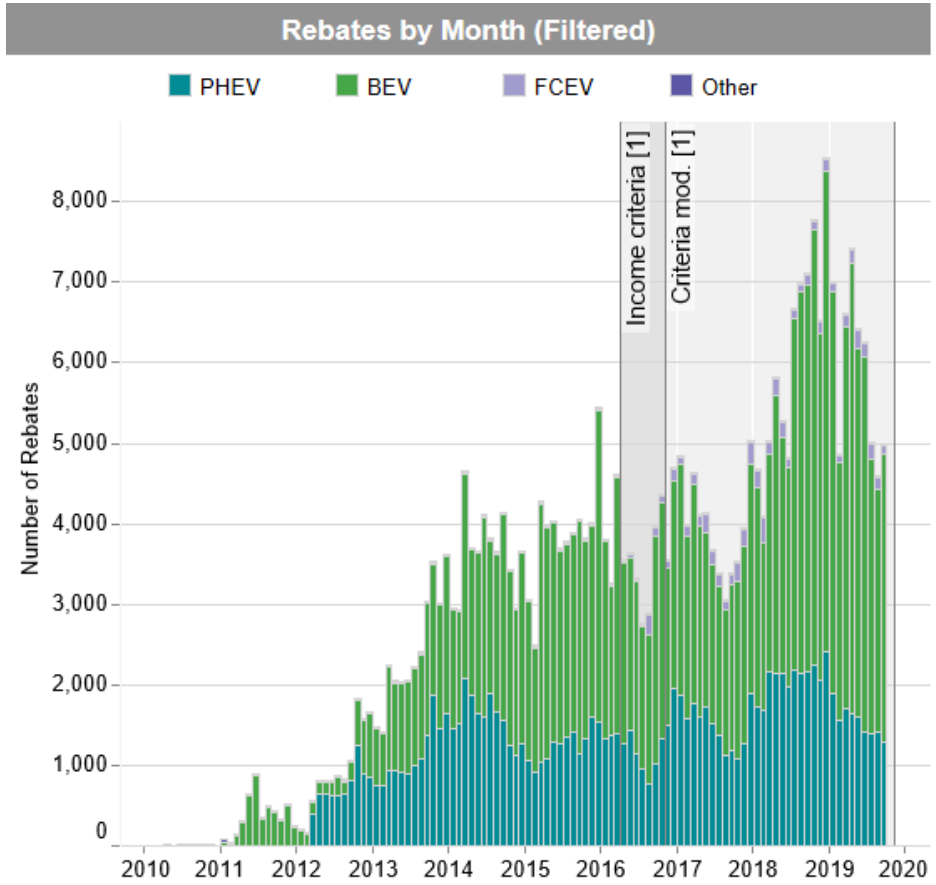
CALIFORNIA AIR RESOURCES BOARD

Rebate for purchase or lease of up to:

- $5,000 for fuel-cell electric vehicles
- $2,500 for all-battery electric vehicles
- $1,500 for plug-in hybrid electric light-duty vehicles
- $900 for electric motorcycles

Rebates & Rebate Funding Issued or Approved to Date* - Life of Project

	Rebates	Funding
PHEV	127,423	$205,178,312
BEV	219,000	$568,357,233
FCEV	6,603	$33,864,168
Other	1,038	$1,908,450
Grand Total	354,064	$809,308,163



Source: Center for Sustainable Energy (2019). California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics. Updated November 7, 2019.

Retrieved November 18, 2019 from https://cleanvehiclerebate.or/rebate-statistics

Clean Vehicle Assistance Program

clean vehicle assistance program

beneficial state foundation

CALIFORNIA AIR RESOURCES BOARD

- Provides grants and affordable financing to help low-income Californians purchase a new or used hybrid or electric vehicle.
- Grants for new or used clean vehicles
- $2,500 grant for a hybrid vehicle
- $5,000 grant for plug-in hybrid or electric vehicle
- Battery electric vehicles can also include a charging unit and its home installation

Clean Transportation Program

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 1
Secretary of State October

LEGISLATIVE COUNSEL'

AB 118, Nunez. Alternative fuels and
programs.
(1) Existing law imposes various lim
contaminants for the control of air pollution f
sources. Existing law generally designates
as the state agency with the primary responsib
air pollution. Under existing law, the State E
and Development Commission (Energy Co
other state agencies, is required to develop a
the use of alternative fuels, as defined.
Existing law establishes the Public Intere
Demonstration Fund in the State Treasury,
collected by the public goods charge to
efficiency and conservation activities,
development not adequately provided by con
be deposited in the fund for use by the En
implement, and administer the Public Intere
Demonstration Program to develop technolo
quality, enhance electrical system relial
energy-using technologies, lower electrical
tangible benefits.
The bill would create the Alternative an
Technology Program, to be administered b
provide, upon appropriation by the Leg
guarantees, revolving loans, or other app
agencies, businesses and projects, public-p
technology consortia, workforce training p
fleet owners, consumers, recreational boate
develop and deploy innovative technologies
and vehicle types to help attain the state's c

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, and 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

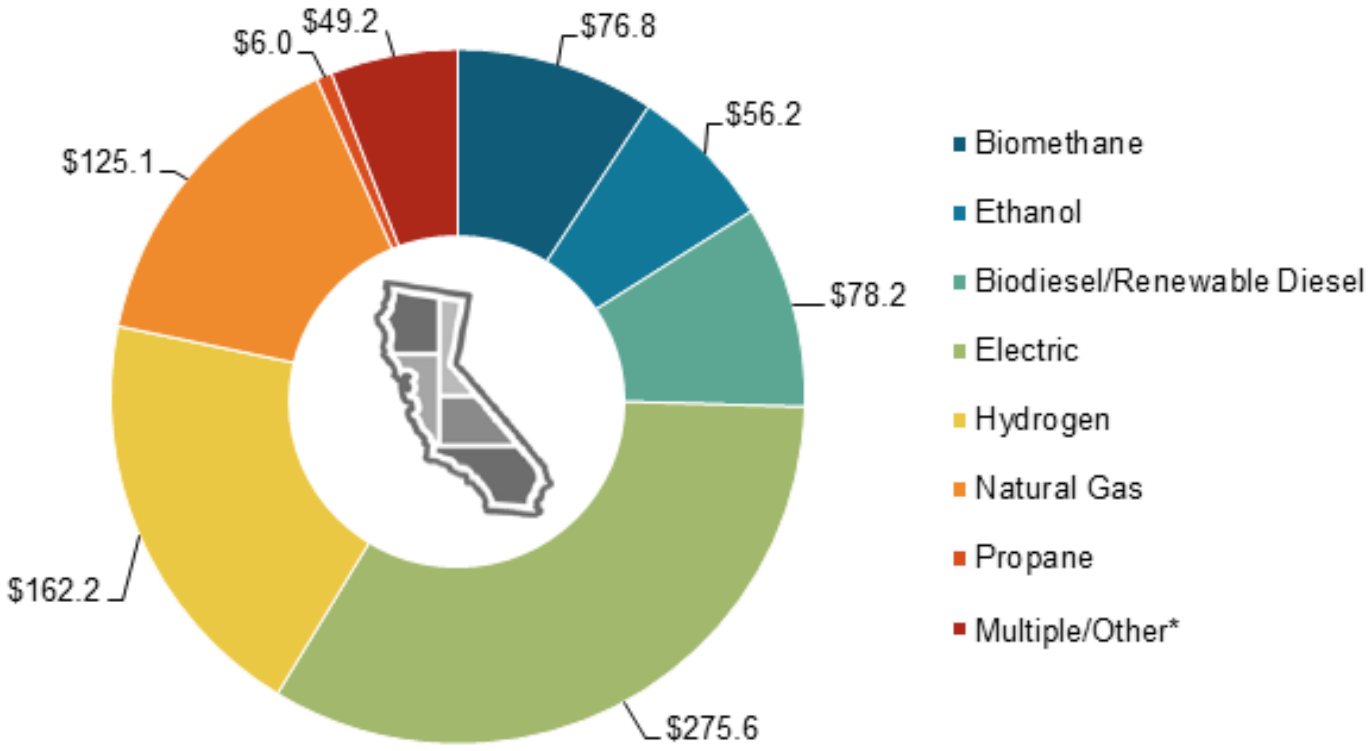
AB 8, Perea. Alternative fuel and vehicle technologies: funding programs.
(1) Existing law establishes the Alternative and Renewable Fuel and Vehicle Technology Program, administered by the State Energy Resources Conservation and Development Commission, to provide to specified entities, upon appropriation 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

Clean Transportation Program
(formerly the Alternative and Renewable Fuel & Vehicle Technology Program)

Established in 2007 by Assembly Bill 118 (2007).
Extended through January 1, 2024 by Assembly Bill 8 (2013)

Up to $100 million per year with
funds collected from vehicle registration fees

Program Funding by Fuel Type



As of March 1, 2019. Totals may not match due to rounding. *Some agreements, such as those focused on multiple fuels types, regional readiness plans, or workforce training, cannot be categorized by fuel type.

Innovative E-Mobility Projects

 ENVOY	**Envoy Technologies, Inc. ($1.5M)** • Battery-electric vehicle car-sharing program in San Francisco Bay and Sacramento Metro area • Multi-unit residential locations, including affordable housing developments and units within disadvantaged communities • $145,000 for charging infrastructure
BOLT TO COLLEGE CATCH A RIDE TO SCHOOL & SAVE	**CALSTART, Inc. ($750,000)** • Ride-sharing program with Chevrolet Bolts • For students attending Fresno City College from the rural Fresno County area
StratosShare	**StratosFuel, Inc. ($750,000)** • Fuel cell electric vehicle car-sharing platform in Riverside and Ontario • Use mobile applications to reserve and rent fuel cell electric vehicles

Anaheim Transportation Network E-Tuk Proposal

- Proposal to use CEC grant funds for 10 6-passenger E-Tuks
- Free of charge, fixed-route and demand-responsive hybrid fixed/flex route system
- Estimated 2 year total of 144,000 trips
- 50 miles between charges
- 4.5 hours to charge at 220V outlet

Source: CtrCity Anaheim Microtransit Service Proposal

Service Expense Breakdown

Service	Cost ($)
Vehicle purchase	220,496
Additional infrastructure installation	77,000
Subscription to e-hailing service	50,000 annually
First year demonstration operations	249,288*
Second year demonstration operations	334,152*
Project management in grant period	83,800*
Installation of real-time signage	50,000*
Marketing/advertising	66,500*
Sustainability planning	25,600*

Manufacturing Solicitations

- Solicitation (GFO-18-605) to fund zero-emission vehicle and infrastructure manufacturing
- Category A: $4.9 million for ZEVs and/or ZEV components
- Category B: $5 million for electric vehicle supply equipment

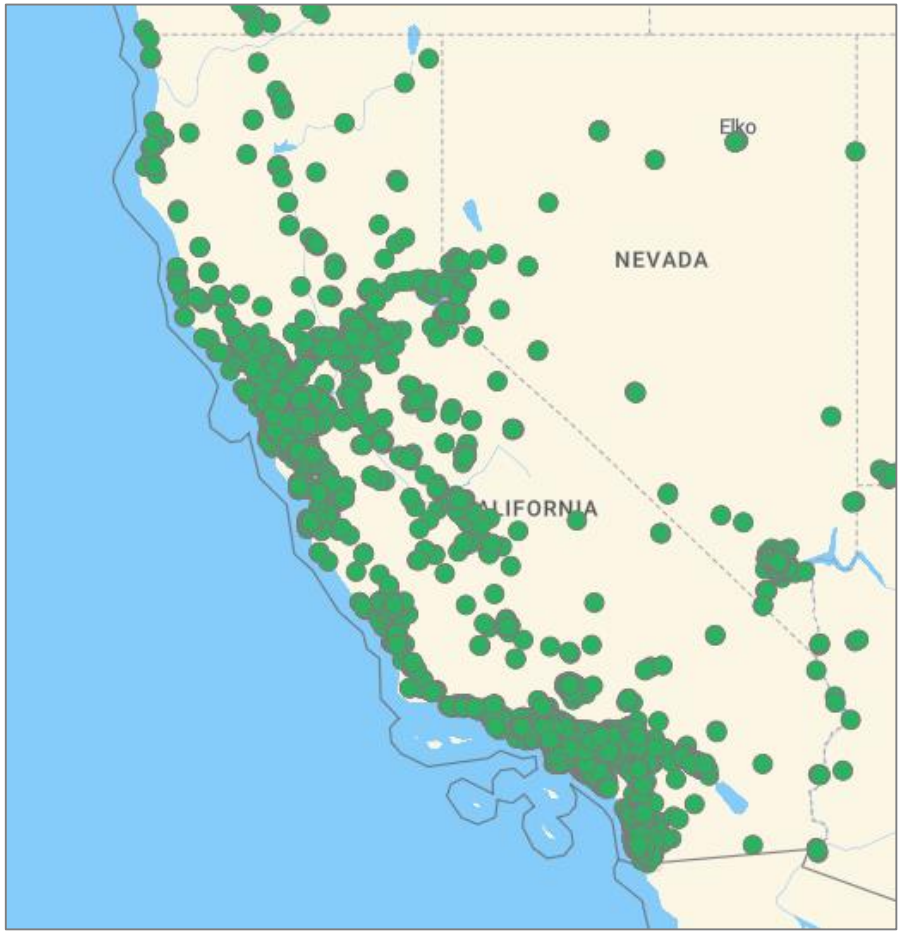
Applicant	Project Title	Funds Requested	Proposed Award	Match Amount	Score
Zero Motorcycles, Inc.	Electric Motorcycles and Electric Vehicle Powertrains	$1,898,370	$1,898,370	$1,921,866	77.8%
Proterra, Inc.	Scaling Zero-Emission Vehicle Manufacturing in California Project	$1,817,709	$1,817,709	$5,850,100	76.9%
Transportation Power, Inc.	Zero-Emission Vehicle Industrialization (ZEVI)	$1,966,746	$1,183,921	$2,376,368	74.2%
ChargePoint, Inc.	California ZEV Fast-Charging Infrastructure Manufacturing Expansion Project	$2,000,000	$2,000,000	$2,743,514	75.8%
Freewire Technologies, Inc.	FreeWire Rapid Access Charging for E-Mobility (California RACE) Project	$1,986,000	$1,986,000	$2,094,484	74.6%
Electric Motor Werks, Inc.	eMotorWerks Next-Generation EV Charging Manufacturing	$1,996,732	$1,996,732	$2,007,621	71.8%

Current Operational Public Charging

Current Operational Statewide (As of October 25, 2019)

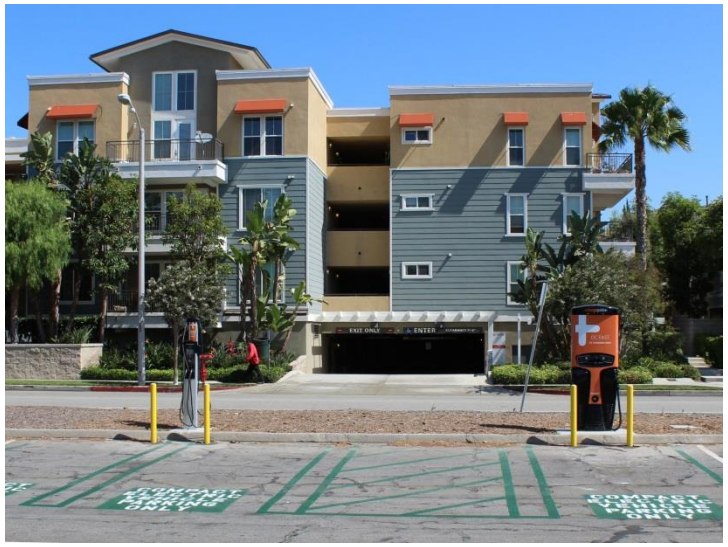
5,610 public charging sites
22,150 public charging outlets

- Chargers in California
- Publicly Accessible
- Outlets by type:
  - 18,577 Level 2 outlets
  - 3,214 DC Fast outlets



Map from US DOE Alternative Fuels Data Center
https://www.afdc.energy.gov/fuels/electricity_locations.htm

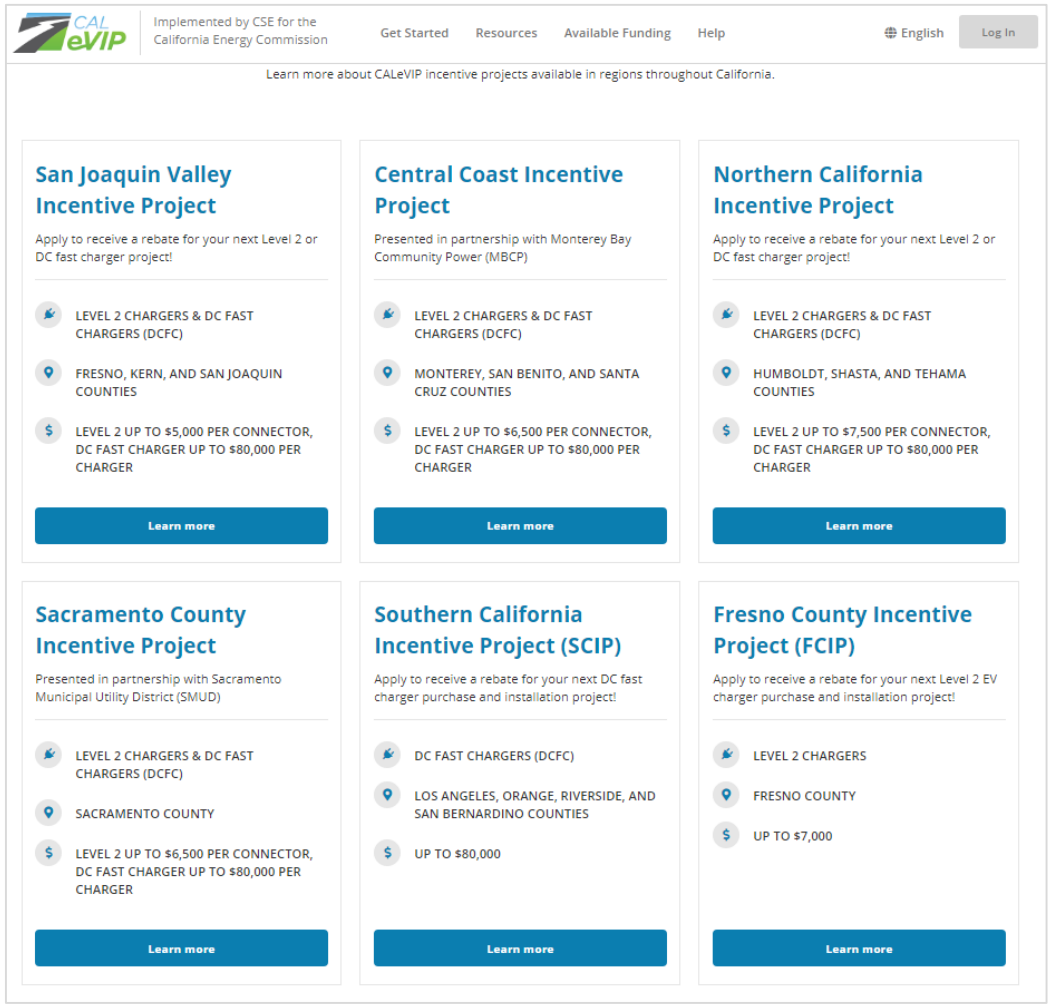
Electric Vehicle Infrastructure Support



- $94.9 M Cumulative Awards to Date for Electric Vehicle Charging Infrastructure
  - Deploy 9,655 charging connectors
    - 4,491 private access
    - 5,164 public access
  - California Electric Vehicle Infrastructure Project

- $11.4 M for regional readiness planning to help local regions prepare for and expedite the deployment of alternative fuel infrastructure and vehicles.

California Electric Vehicle Infrastructure Project (CALeVIP)



- Offers rebate incentives for the purchase and installation of electric vehicle chargers
- Streamlined online application process
- Will provide a total of $71 million in rebates for projects through 2019, with an additional $54 million scheduled for projects in 2020
- Visit https://calevip.org to learn more

Thank You!

More Information:

https://www.energy.ca.gov/programs-and-topics/programs/clean-transportation-program

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