



CALIFORNIA

PLUG-IN ELECTRIC VEHICLE  
COLLABORATIVE

# *Plug-in Electric Vehicles and Infrastructure*

Sacramento Clean Cities Board  
March 14, 2013

[www.PEVCollaborative.org](http://www.PEVCollaborative.org)

# Overview of Presentation

- About the PEV Collaborative
- Plug-in Electric Vehicle Market
- Plug-in Electric Vehicle Infrastructure
- California Activities
  - ARB's ZEV Regulation
  - Governor's ZEV Action Plan
  - Statewide PEV Infrastructure Plan
- PEV Incentives
- PEV Resource Center

# 2013 Membership

## State Government

- ARB
- CEC
- CPUC
- Legislature members
- Governor's office

## Automakers

- BMW
- Ford
- GM
- Honda
- Kia
- Nissan
- Tesla
- Toyota

## Regional Government

- CAPCOA, Sonoma
- BAAQMD
- SCAQMD

## Utilities

- LADWP
- PG&E
- SCE
- SDG&E
- SMUD

## Consulting / Research

- CALSTART
- EPRI
- ICCT
- UC Davis

## Advocacy Organizations

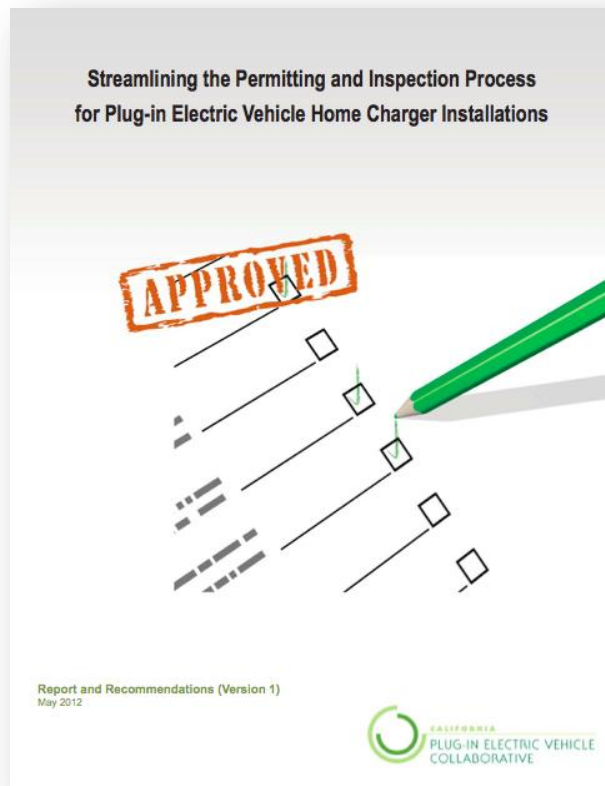
- American Lung A.
- CalETC
- CEERT
- NRDC
- Plug In America
- UCS

## Network Providers

- AeroVironment
- Clean Fuel Connection
- Coulomb
- ECOtality
- Greenlots
- NRG

# The PEV Collaborative

A California public-private partnership focused on addressing challenges in the PEV market in a multi-stakeholder forum



The infographic is titled "HOW DO COMMUNITIES BECOME PEV READY?" and is part of the California Plug-in Electric Vehicle Collaborative. It provides a comprehensive overview of the process, including key messages and stakeholder roles.

**HOW DO COMMUNITIES BECOME PEV READY?**

California is leading the nation in Plug-in Electric Vehicle (PEV) sales today, with dozens of new plug-in models coming to market. PEVs benefit local communities by bringing jobs, healthy air, a reduced carbon footprint, quieter streets, incentive funding and opportunities for leadership.

**KEY MESSAGES**

- PEV Ready Communities Take Action**
  - Streamline construction permitting and inspection processes for PEV charging installation; train permitting staff and building officials.
  - Offer first responder training to police and fire personnel.
  - Update building codes, zoning and parking rules to be PEV ready.
  - Address PEV charging needs in apartments and condos.
  - Create a plan to deploy public charging and participate in regional infrastructure planning.
  - Encourage local employers to offer customer and workplace charging.
  - Utilize the resources of the local electric utility to promote PEV education and training.
  - Communicate what's being done to be PEV ready, why it's good for the community, and quality of life benefits.
- Leadership "Walks the Talk"**
  - Identify a PEV champion in your organization or community to guide the process of becoming PEV Ready.
  - Purchase and drive a PEV and install workplace and public charging.
  - Establish incentives for home and commercial charging, as well as preferential PEV parking. Encourage green businesses.

**"It Takes a Village" to Become PEV Ready: Stakeholders and Roles**

<b>PEV Drivers</b> Encourage PEV Ready communities	<b>Electric Utilities</b> Offer special rates for PEVs. Advise on best rate options. Grid reliability	<b>Automakers</b> Roll out and market PEVs	<b>Employers</b> Encourage employees to drive PEVs. Offer workplace charging
<b>State Government</b> Regulations, policies, guidance, incentives to spur PEV market. Resources to local governments	<b>Electric Vehicle Supply Equipment (EVSE) Manufacturers</b> Offer charging solutions	<b>Residential Property Managers</b> Respond promptly and positively to PEV charging requests. Develop strategy to include PEV charging in Multi-unit Dwellings	<b>Local &amp; Regional Governments</b> Lead by example. Adopt a PEV Readiness Plan
<b>Fleets</b> Purchase PEVs. Support PEV car sharing, rentals, loans	<b>Environmental Advocates</b> Advocate for PEVs. Scientific studies on health impacts of air pollution		

Source: California PEV Collaborative (2008-11)

Communication Guide 5  
www.PEVCollaborative.org

# PEV Collaborative Resources

- **Communication Guides**
  - How do PEVs Benefit Californians?
  - What are the Benefits of Driving a PEV?  
What Cars are Available?
  - PEV Charging Where and When?
  - Fuel Costs: PEVs vs. Gasoline Cars?
  - How do Communities Become PEV Ready?
  - How do Multi-unit Dwellings Become PEV Ready?
  - Workplace Charging: Why and How?
  - PEV Batteries: Safety, Recycling and Reuse?
- **Community PEV Readiness**
- [www.pevcollaborative.org/policy-makers](http://www.pevcollaborative.org/policy-makers)

# PEVC 2013 Priorities

- Workplace Charging
- Governor's CEO Roundtable
- Charging at Multi-unit Dwellings

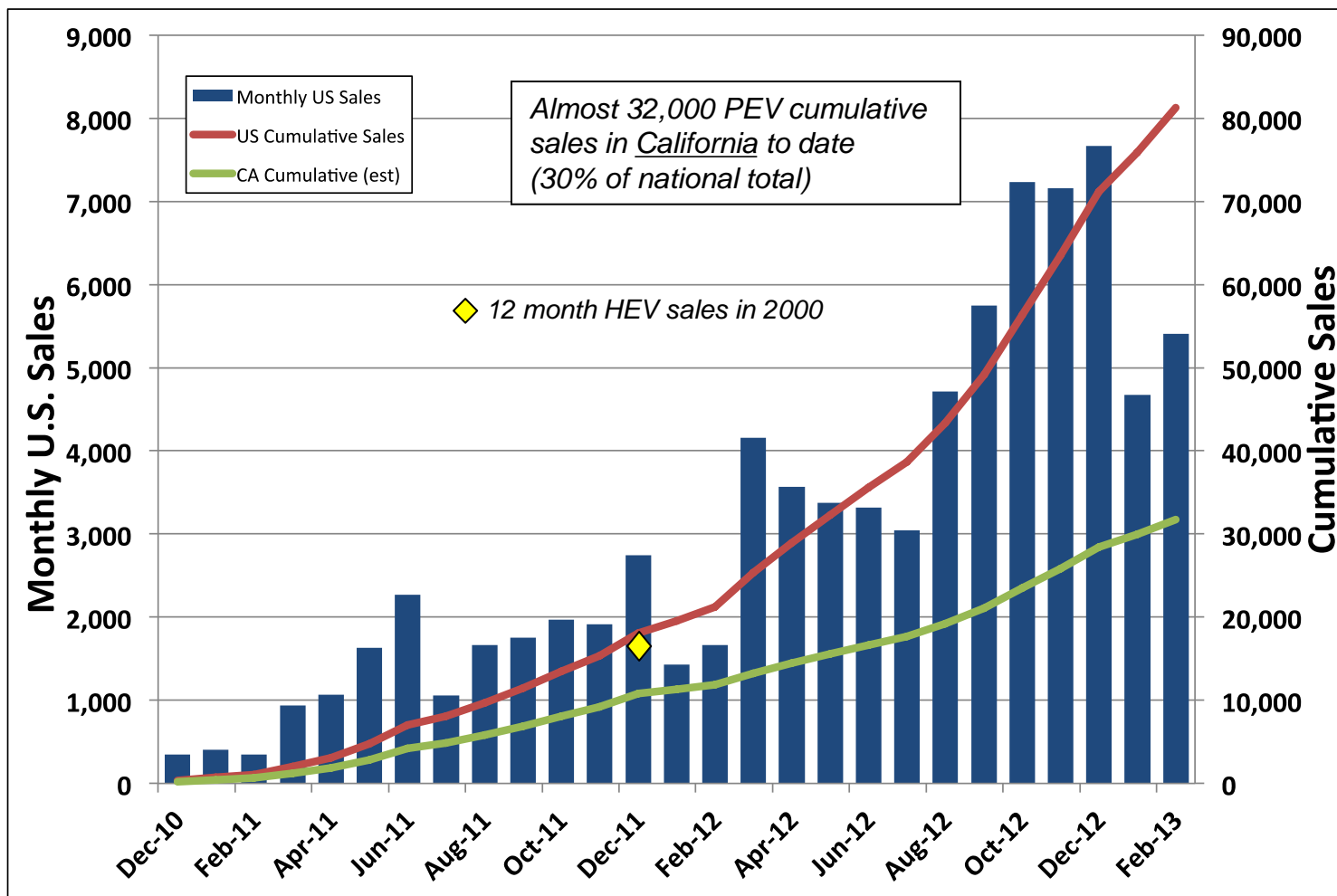
## MULTI-UNIT DWELLING CHARGING



Source: California PEV Collaborative (CG6-1)

# Plug-in Electric Vehicle Market

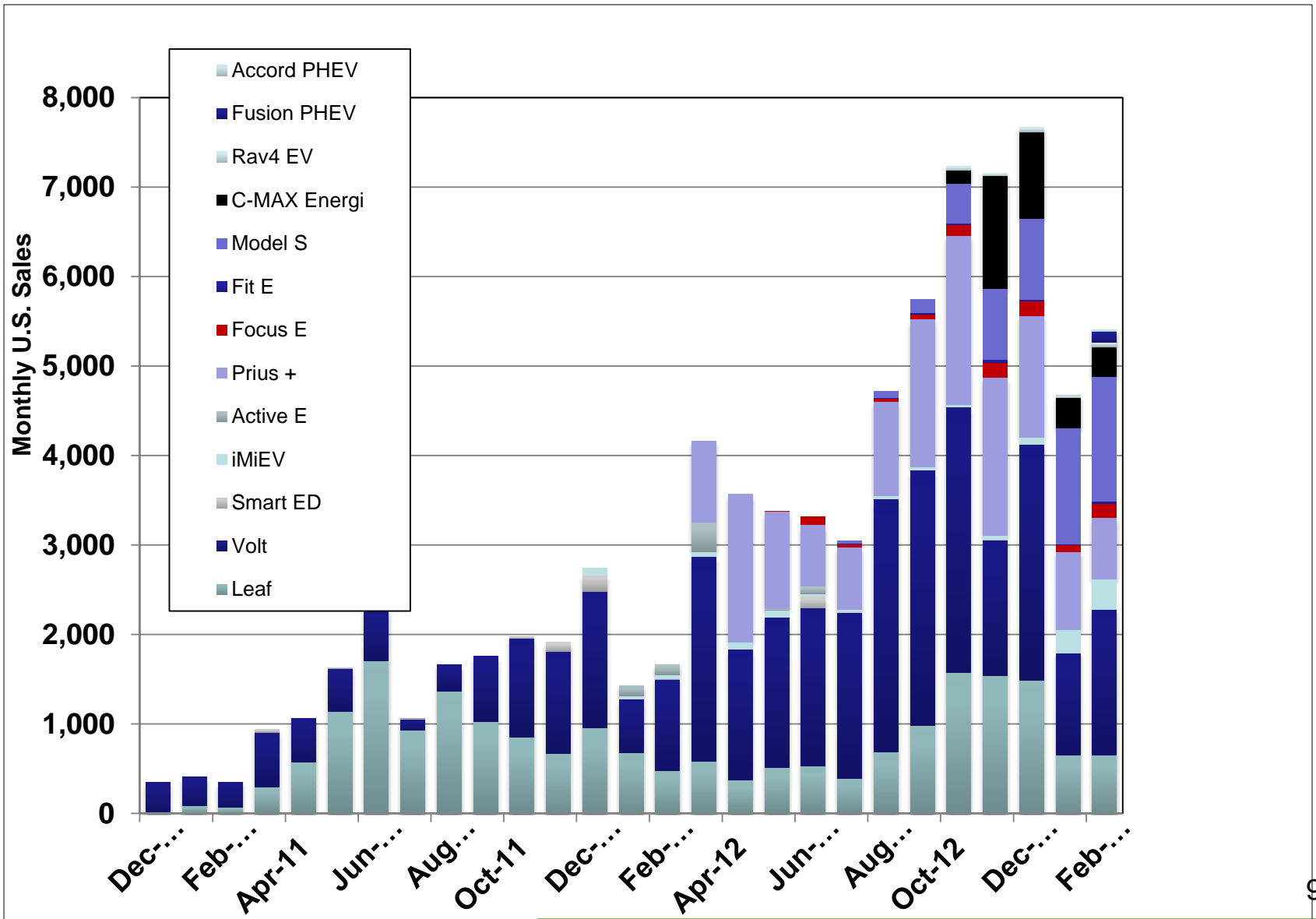
# PEV Market – Combined Sales



Note: Approximation assumes CA sales were 60% of U.S. sales in 2011 and 30% in 2012 and 2013.  
Reference: [www.hybridcars.com](http://www.hybridcars.com)



# PEV Market – by Make/Model



# Plug-in Electric Vehicles - 2013

Released: Dec 2010  
About 20,000 nationally



2011 Nissan LEAF



2011 Chevrolet VOLT

Released: Dec 2010  
About 34,000 nationally

Released: January 2012



2011 Mitsubishi i-MiEV



Prius Plug-in Hybrid

Released: March 2012  
About 14,000 nationally

Released: Spring 2012



2012 Ford Focus



2012 Tesla Model S

Released: Mid-2012

Released: January 2012



2011 BMW ActiveE



2012 Honda Fit EV

Released: 2012

# Plug-in Electric Vehicles - 2013

Fiat 500e  
Released January 2013



C-Max Energi  
Released: October 2012



Chevy Spark  
Coming: Spring 2013



Ford Fusion Energi  
Released: February 2013



Honda Accord Plug-in  
Released: January 2013



Smart ED  
Released: Mid-2012



RAV4 EV  
Released: Fall 2012



BMW i3 and i3 BEVx  
Coming late 2013



# Plug-in Electric Vehicles in Fleets

- Municipal/Capital Lease Program
- Standard financial product
- Benefits:

## Lower Capital Cost

- Federal tax credit pass-through
- Lower up-front cost
- Equal payments over fixed number of periods + \$1.00 residual (typical)
- Balance Sheet transaction

## Lower Risk than Operating Lease

- No mileage restrictions
- No wear and tear charges
- No prepayment penalties

# Plug-in Electric Vehicle Infrastructure

# Charging Infrastructure Location Goals

**3: Public**

**2: Work**

**1: Home**



# CEC Funded Public Charging (as of March 2013)

	Installed	Planned *	NRG Settlement w/ PUC
Residential	~ 2,119	~ 920	
Commercial **	~ 1,779	~ 1,432	10,000
DC Fast Charging	5	62	200

\* *Planned stations to be finished in next 1-2 years (NRG settlement over 4 yrs)*

\*\* *Commercial includes: workplace, public, industrial*

- *There are currently over 30 DC Fast Chargers in CA. Mostly Blink Stations. More expected at Nissan dealers as well.*

# Infrastructure Challenges being Addressed

- *Coordination of infrastructure rollouts*
- *DC Fast Charger connectors*
  - *cars coming to market with SAE combo connector while existing cars have Chademo connector*
- *Interoperability and Open Access*



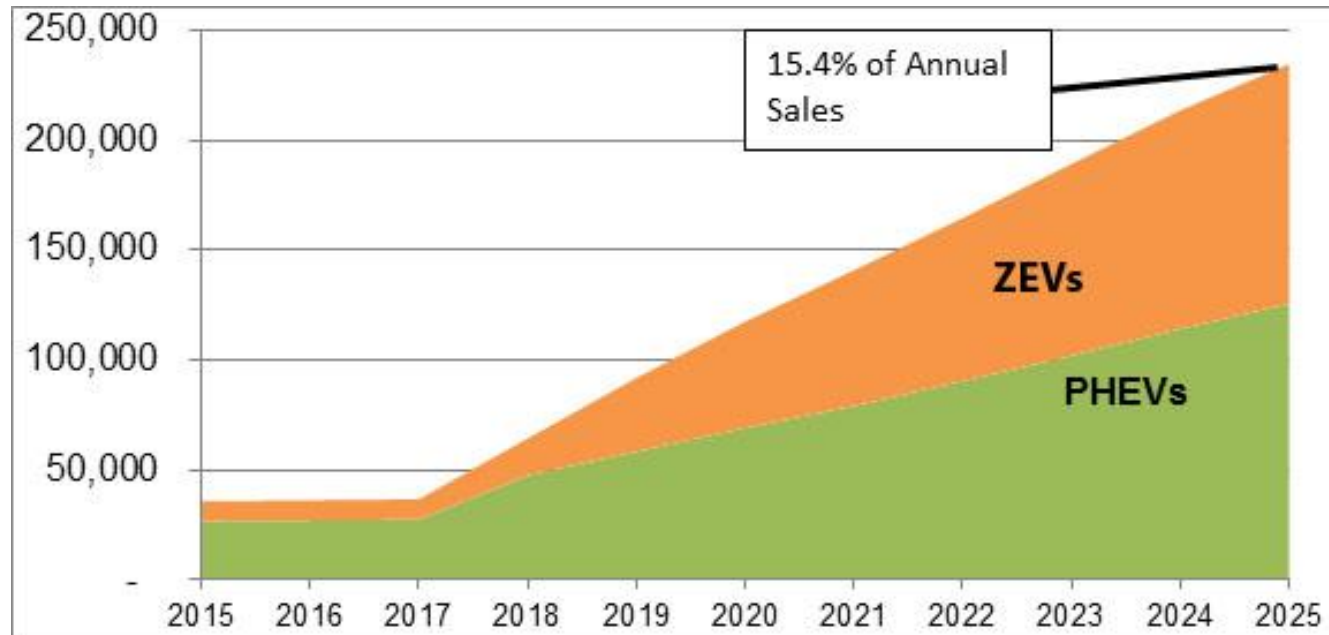
# California Activities

# ARB ZEV Program Meeting

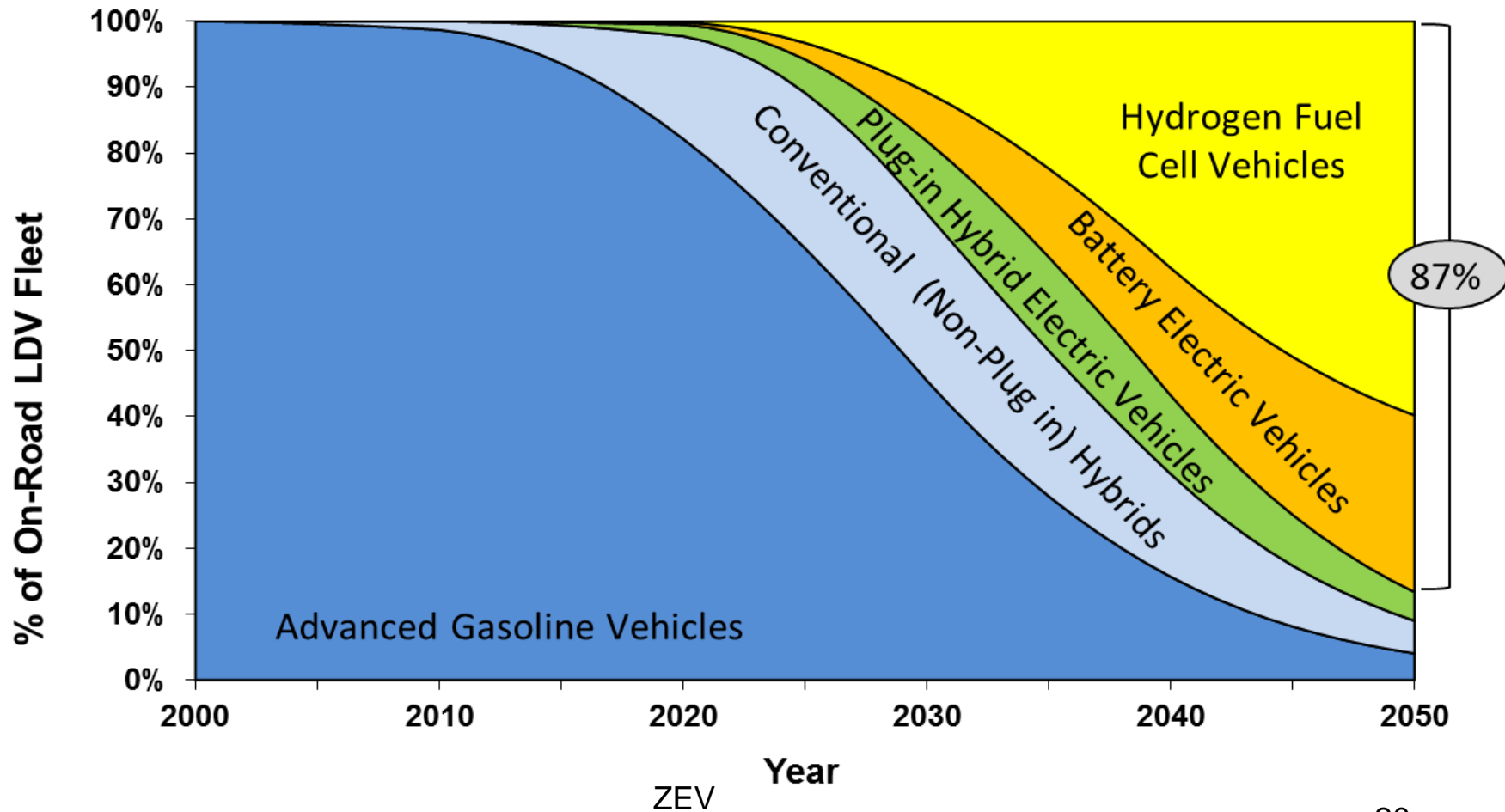
## GHG Goals

- Commercialize zero and near zero emission advanced technology vehicles
- Achieve dramatic reductions in greenhouse gases and criteria pollutants long term
- Targeted technologies are primarily plug-in electric and hydrogen fuel cell
  - Battery EVs, Fuel Cell Vehicles, Hybrid Electric Vehicles, Plug In Hybrid Electric Vehicles

# ARB ZEV Program Requirements

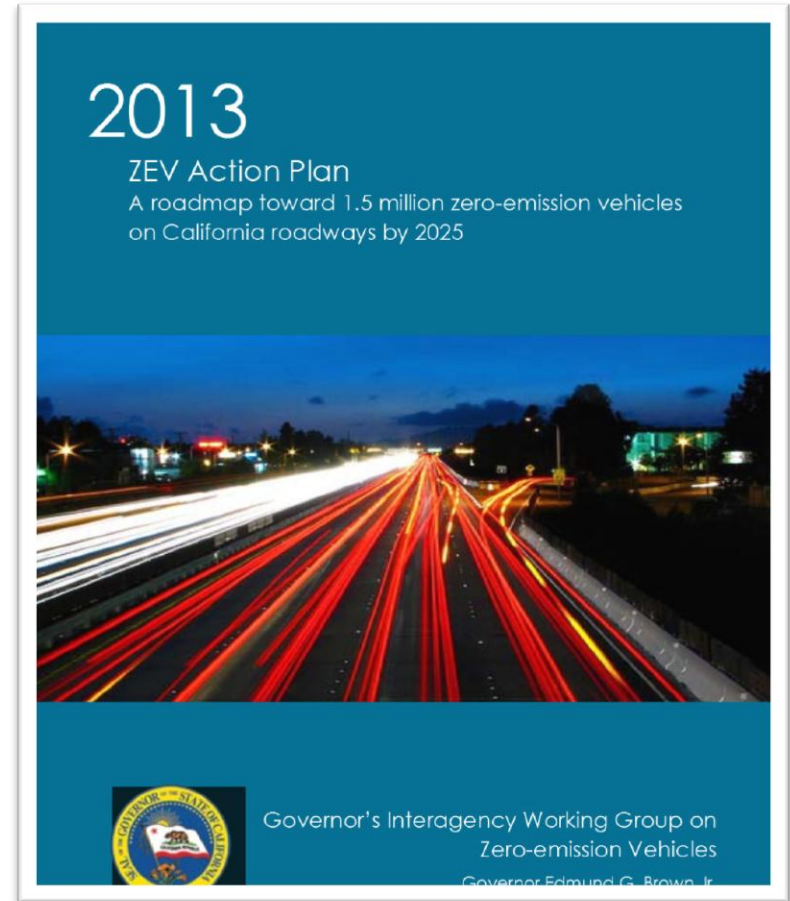


# ARB ZEV Program – Vehicle Mix Scenario



# Governor's ZEV Action Plan

- Support Governor's Office implementation of ZEV Executive Order
- Goals of EO:
  - 1.5 Million ZEVs by 2025
  - Infrastructure to support 1M ZEVs by 2020
  - State fleet adoption of ZEVs



# CEC Statewide Infrastructure Plan

## Ten regional PEV Coordinating Councils

- Developing Infrastructure Plans

## Statewide PEV Infrastructure Plan

- Inform CEC's investment plan and programs
- Provide guidance to local communities and regions
- Guide state level policy and convey public infrastructure plans

## Timeline

- Release of Draft Plan—end of April 2013
- Comments due on Plan—May 2013
- Final Plan released—June 2013

# ZEV Guidebook

- Governor's Office of Planning and Research
- Guidebook for PEVs and Hydrogen Fuel Cells
- Updated and Expanded Version of the PEVC Community PEV Readiness Toolkit
  - ADA, Signage, Templates, Model Ordinances
- Planned Release – Summer 2013

# PEV Incentives

- Clean Vehicle Rebate Project
  - 2,500 BEVs, \$1,500 PHEVs
- Federal Tax Credits
  - Up to \$7,500 BEVs and PHEVs
- Infrastructure tax credits
  - Up to 30% of the cost, not to exceed \$30,000
- Carpool stickers
- Local Incentives
  - Sacramento: Free Parking



# PEV Resource Center

- Help car buyers find the right PEV for them
- Certified Vehicles
- Charging
- Costs
- Incentives

The screenshot shows the DriveClean Plug-in Electric Vehicle Resource Center website. The header includes the DriveClean logo, the title "Plug-in Electric Vehicle Resource Center", and navigation links for "Back to DriveClean.ca.gov" and "Back to CA PEV Collaborative". A secondary navigation bar lists "PEVs & The Environment", "How PEVs Benefit You", and "Learn More".

The main content area features a "PEV Buying Guide" section with a placeholder image of a car being charged. Below this is a "Understand & Compare PEV Types" section with two categories: "Plug-in Hybrid Electric" and "Battery Electric", each with a brief description and a "More" link.

On the left side, there is a "Search & Explore" sidebar with links for Vehicles, Charging, Incentives, Costs, and Safety. Below that is a "PEV Resources For:" section with links for Dealers, Fleets, Businesses, Electricians, First Responders, Cities, Policymakers, and Media.

At the bottom of the main content area, there are two sections: "Answers to your Questions" with a list of questions and answers, and "True or Not?" with a list of true/false statements.

On the right side, there is a "Find a PEV" search form with dropdown menus for "All Makes", "All Models", and "Year", and a "SEARCH" button. Below this are "Checklists" for "PEV Buyers" and "PEV Owners", and a "Stories on the Street" section featuring a video player with a "Play Video" button and a "2:30" duration.

The footer contains links for "About This Site", "Contact Us", and "Sitemap".

# Conclusions

- The PEV market is growing with more makes and models continuing to come on-board
- California is committed to a successful PEV market