

The Future is Electric: Plug In and Get There!

San Francisco | June 8 | 10:30 a.m. – 2:30 p.m.

Introduction

Introduce the topics, speakers and describe the format of the workshop

Colin Santulli, California Center for Sustainable Energy

Opening Remarks

Melanie Nutter, Director, San Francisco Department of the Environment

PEV 101 & Incentives

Environmental, public health and economic benefits of PEVs & an overview of available incentives

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PEV Planning & Infrastructure

Updates on regional public charging infrastructure led by BAAQMD

Karen Schkolnick, Bay Area Air Quality Management District (BAAQMD)

PEV Impact to Grid and Utility Bills

PEV programs including grid reliability, rate programs and how PG&E can help customers prepare their homes for PEV fueling

Paul Carreon, Pacific Gas & Electric (PG&E)

Lunch and PEV Drivers Panel

Hear about the PEV experience from your neighbors including motivations to purchase a PEV, home charger installation process and utility rate experience.

Local San Francisco Residents



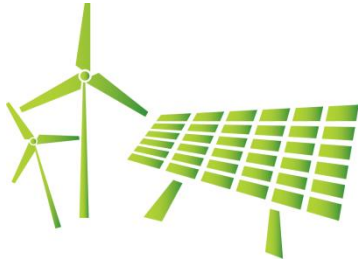
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Renewable
Energy



Building
Performance



Transportation



CLEAN VEHICLE
REBATE PROJECTSM

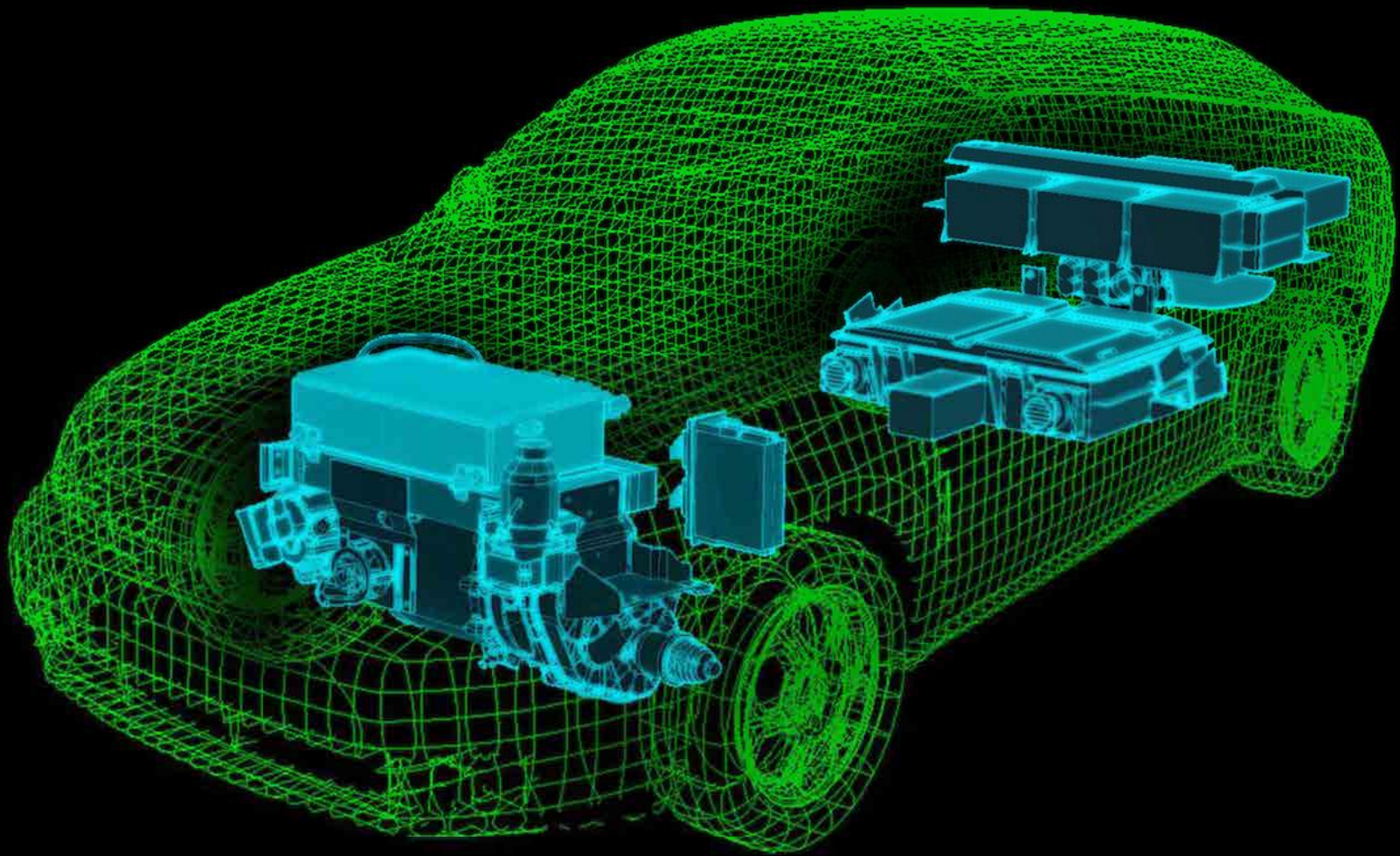




***Clean Vehicle Rebate Project
(ARB & CEC)***

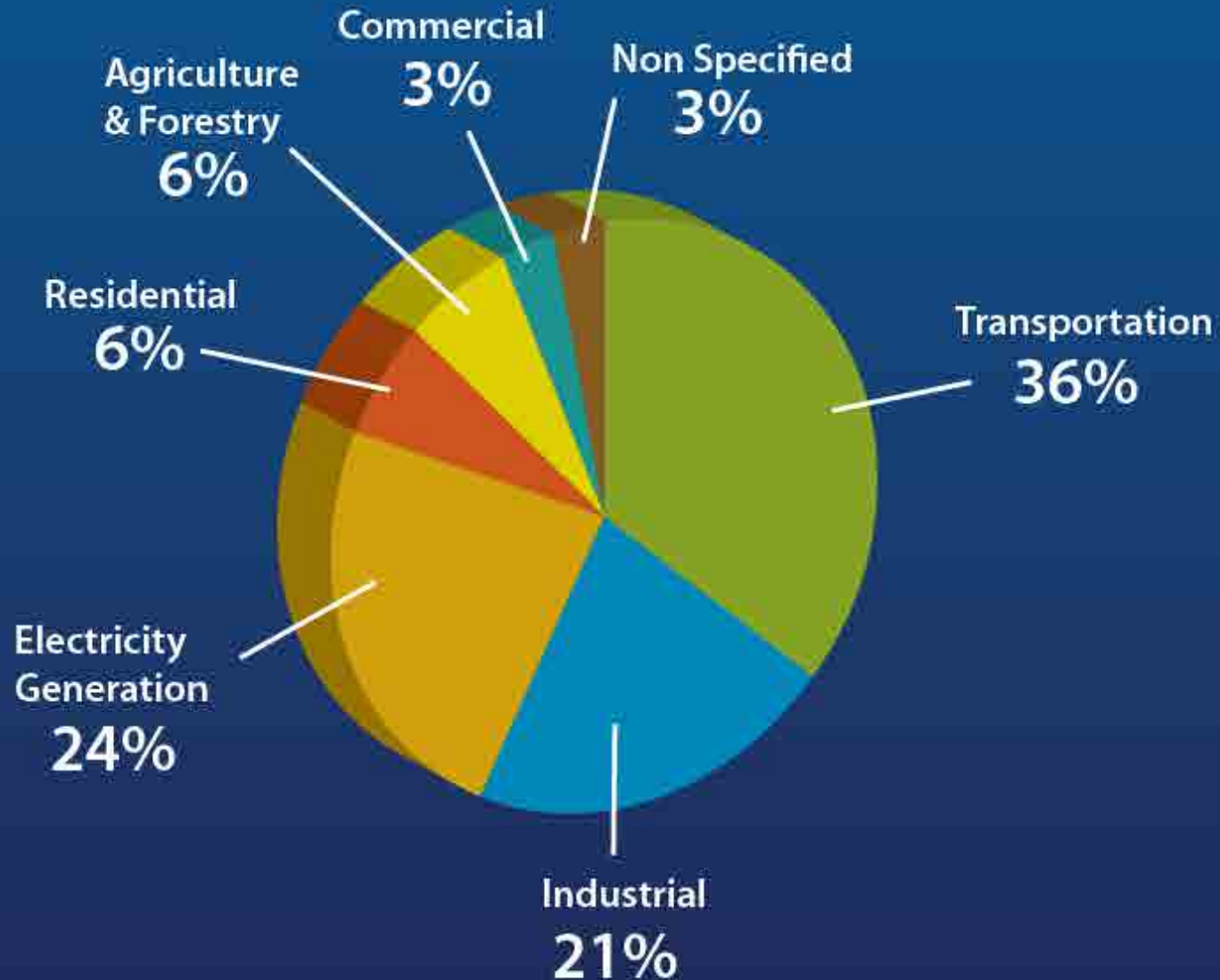


***Plug-In Electric Vehicle Readiness
Planning (CEC & DOE)***



***Plug-In Electric Vehicle Battery Research
(CEC & NREL)***

CALIFORNIA GREENHOUSE GAS EMISSIONS



Environmental



- Plug-in electric vehicles
 - ✓ Zero Tail Pipe Emissions
- CA grid cleanest in nation
 - ✓ 33% renewable by 2020
- Off peak charging
 - ✓ Lower carbon intensity → generation

Public Health



In 2008, pollution from diesel and gasoline vehicles resulted in:

- ✓ 9,000 premature deaths
- ✓ 7,700 hospitalizations
- ✓ 1,400,000 lost workdays
- ✓ 4,700,000 school absences

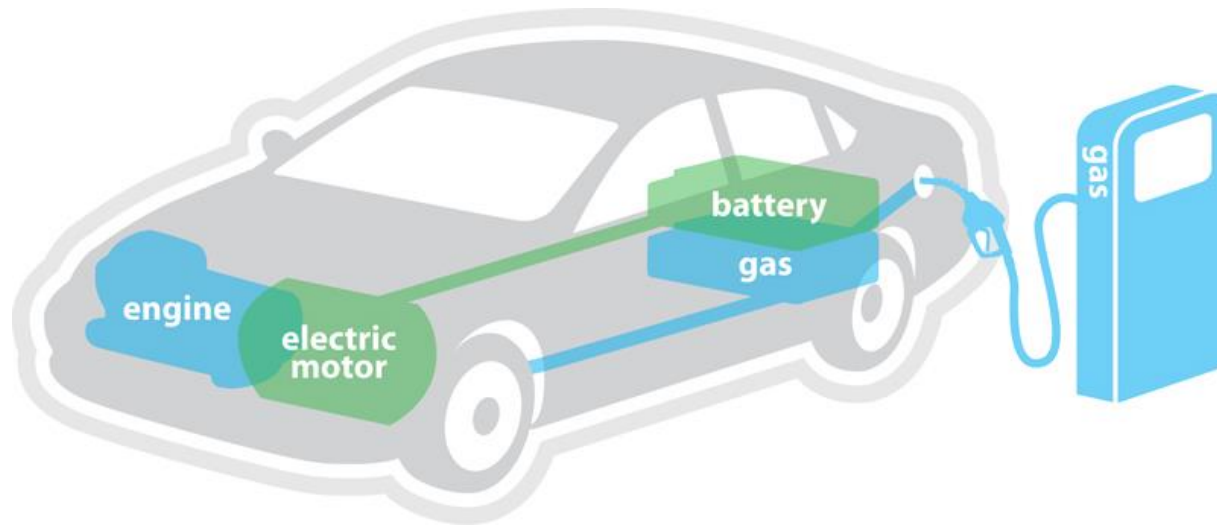
Economic



- Volatile Gas Prices
 - ✓ Reduce dependence on the pump
- Lower Fueling Costs
 - ✓ Off peak charging Time-Of-Use rates
- Lower Maintenance Costs
 - ✓ No more oil changes, reduced tune ups

Plug-In Electric Vehicle 101

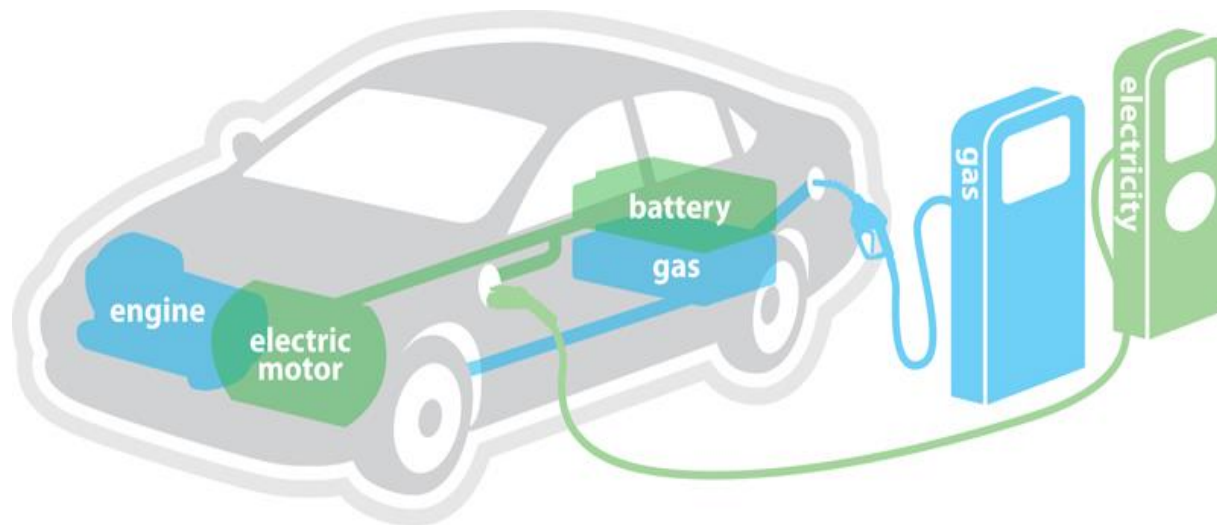
Hybrid Electric Vehicle



A vehicle that combines an internal combustion engine with a battery and electric motor.

Plug-In Electric Vehicle 101

Plug-In Hybrid Electric Vehicle (PHEV)



Hybrid vehicles that can plug in to the grid so they can operate on electricity as well as an internal combustion engine.



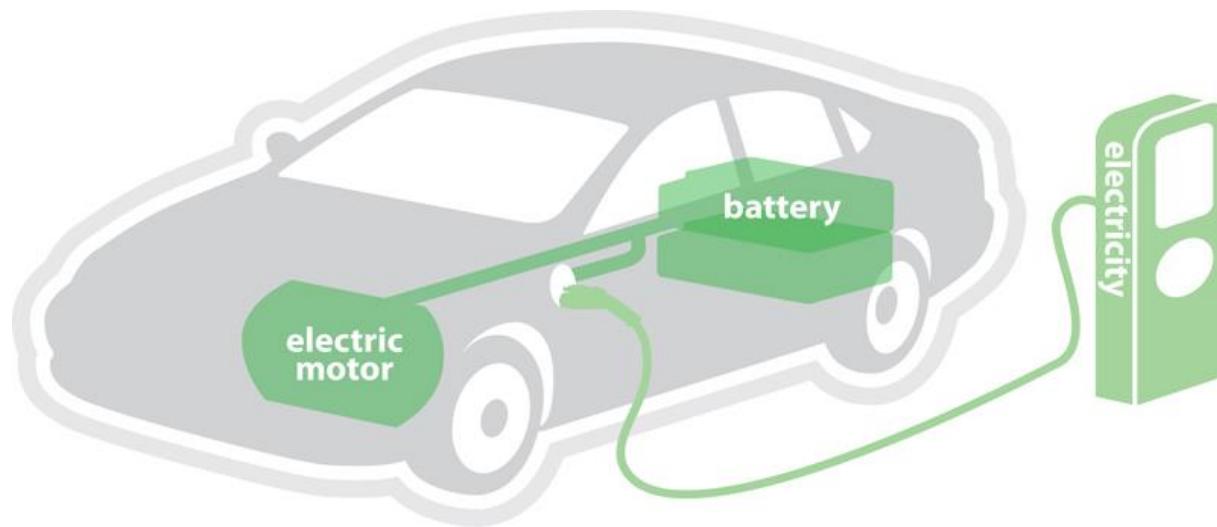




Focus
Electric

Plug-In Electric Vehicle 101

Battery Electric Vehicle (BEV)



A vehicle that runs on electricity stored in batteries and has an electric motor rather than an internal combustion engine.













Universal Plug/Port



Your new fueling station



Prototype model shown. Production model may vary.
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Vehicle Incentives

- State Rebate - Clean Vehicle Rebate Project (CVRP)
- Federal Tax Credits
- HOV Stickers



CLEAN VEHICLE
REBATE PROJECTSM

www.energycenter.org/cvrp



CLEAN VEHICLE REBATE PROJECT SM

The Clean Vehicle Rebate Project ([CVRP](#)) is funded by the California Environmental Protection Agency's Air Resources Board ([ARB](#)) and administered statewide by the California Center for Sustainable Energy ([CCSE](#)). A total of \$45.2 million has been appropriated for FY 2009-2013 to promote the production and use of zero-emission vehicles ([ZEV](#)), including electric, plug-in hybrid electric, and fuel cell vehicles. Rebates of up to \$2,500 per light-duty vehicle are available for individuals and business owners who purchase or lease new eligible zero-emission or plug-in hybrid electric vehicles:

Of this \$45.2 million, \$2 million was provided by the California Energy Commission on May 26, 2011. Funding from the Energy Commission is specifically dedicated to light-duty [ZEVs](#) capable of freeway operation and certified for four or more passengers. [Click here](#) to read a press release which provides more information about this funding announcement.

Rebate Applications are currently being accepted,
([read more...](#))

CVRP MENU

- [Clean Vehicle Rebate Project Home](#)
- [About CVRP](#)
- [Eligible Vehicles](#)
- [Program Statistics](#)
- [PEV Survey Results](#)
- [FAQs](#)
- [Events](#)
- [Contact Us](#)
- [CCSE Transportation](#)

CVRP RESOURCES

- [CVRP Rebate Map](#)
- [Implementation Manual](#)
- [Electric Vehicles 101](#)
- [High Performance Home for your EV](#)

Apply for a Vehicle Rebate

THE FUTURE IS ELECTRIC
Plug In and Get There



Like 2,009

ADDITIONAL INCENTIVES



Find rebates, discounts, tax breaks and other incentives available in your area.

CVRP News

- 16 Oct** Rebates Fund 10,000 Clean Cars
- 26 Sep** CCSE Hosts National Plug-In Day 2012
- 16 Aug** 24 Month Lease Terms NOT ELIGIBLE for CVRP

[more news >>](#)

Elements of Eligibility

1

Individual, business, nonprofit or government entity
based in California or has a California based affiliate

2

Purchase or Lease a NEW eligible vehicle

3

Vehicle must be **2011 model or NEWER**

4

MUST own/lease the vehicle for a **MINIMUM of 36 CONSECUTIVE MONTHS**

5

MUST be registered with the California DMV for a **MINIMUM of 36 CONSECUTIVE MONTHS**

Eligible Vehicles and Rebates



Light-Duty Zero Emission Vehicles
\$1,500-\$2,500



Plug-in Hybrid Electric Vehicles
\$1,500



Neighborhood Electric Vehicles
\$900



Zero Emissions Motorcycles
\$900

How do I apply?

Step 1

- Go to www.energycenter.org/cvrp
- Select vehicle and complete online application

Step 2

- Mail in signed application and supporting documents within 14 calendar days

Supporting Documents



Proof of temporary or permanent vehicle registration



Copy of the sales or lease contract signed by all parties



Individuals: Proof of California Residency - **Utility or cable bill** from within the last 3 months.

NOTE: California driver license is **not** an acceptable proof of residency



Business/Nonprofits: Copy of formation document filed with the CA Secretary of State.

Other Incentives: HOV Lane Access Sticker

- **White Clean Air Vehicle Stickers** are available to an unlimited number of qualifying Federal Inherently Low Emission Vehicles (ILEVs). Expires Jan 2015.
- **Green Clean Air Vehicle Stickers** available to first 40,000 applicants that purchase or lease cars that meet CA enhanced advanced technology partial zero emission vehicle (AT PZEV) requirements. Expires Jan 2015.



<http://www.arb.ca.gov/msprog/carpool/carpool.htm>

Other Incentives: Federal Tax Credit

- BEV/PHEV tax credits range from \$2,500 to \$7,500
- Based on battery capacity
 - Minimum of 4 kilowatt-hours (\$2,500)
 - In excess of 5 kWh additional \$417 per kWh
 - Nissan Leaf 24 kWh battery capacity (\$7,500)
 - Chevrolet Volt 16 kWh battery capacity (\$7,500)
 - Toyota Plug-In Prius 4.4kWh battery capacity (\$2,500)
- Phase out per manufacturer after 200K BEV/PHEV

DriveClean. ca.gov

A buying guide for clean and efficient vehicles
Brought to you by California Air Resources Board

[Do Your Research](#) [Know the Score](#) [Think Clean](#) [Find Special Resources](#) [Learn More](#)

[Home](#) | [Calculate Savings](#) | [Incentives](#)

Search & Explore

[By Make/Model](#)

[By Category](#)

[By Technologies
& Fuel Types](#)

[By Smog Score](#)

[By Global
Warming Score](#)

[By Engine Family](#)

Calculate Savings

[By Incentives](#)

[By Driving Habits
& Fuel Costs](#)

[By Vehicle
Comparison](#)

[Tools &
Calculators](#)

Define Your Incentives Search

Find rebates, discounts, tax breaks and other incentives available in your area for clean technology vehicles. Choose your incentive by Technology, Type, Category and/or by California Zip Code. Select the Submit button to view your Incentive Search Results below.

Technology

- Hybrid Electric
- Battery Electric
- Gasoline
- Hydrogen ICE
- Fuel Cell
- Electric - Neighborhood
- Electric - City
- Three-wheel zero emission motorcycle
- Plug-in Hybrid Electric
- Compressed Natural Gas
- Ethanol (E85) flex fuel
- Diesel
- Biodiesel
- Propane

Select Category

- Fueling & Charging Equipment
- Vehicles
- Utility Rate Discounts
- Special Decals & Permitting
- Parking
- Other
- Insurance Discounts

Select Type

- Federal
- State
- Local

Enter Your Zip Code

Zip Code:



SUBMIT

www.Driveclean.ca.gov

- **Fueling & Charging Equipment**
- **Vehicle Incentives**
- **Utility Rate Discounts**
- **Decals**
- **Parking**
- **Other**
- **Insurance Discounts**



Center for
Sustainable Energy
CALIFORNIA

Please use note cards for questions

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Bay Area PEV Infrastructure Deployment & Initiatives

The Future is Electric: Plug-In and Get There
Saturday, June 8, 2013



Karen M. Schkolnick
Air Quality Programs Manager
Bay Area Air Quality Management District
Strategic Incentives Division

Overview



- Introduction to the Bay Area
- PEV Readiness Plan
- Current and future PEV and EVSE Deployment
- Upcoming Incentives



Bay Area and BAAQMD



- Population – 7.2 million
- 9 Counties/5,340 square miles
- ~ 5 million on-road vehicles

BAAQMD:

- Established in 1955 by the Air Pollution Control Act
- Mission: to protect and improve public health, air quality, and the global climate





Regional PEV Readiness Plan



- **Phase I (completed):**

- Local Government Readiness (Building Codes; Permitting and Inspection Practices; Zoning and Parking Rules)
- Grid Utility Impacts
- Siting EVSE
- Training and Consumer Education

- **Phase II (by mid-2013):**

- PEV adoption in private and public fleets
- Attract PEV manufacturing, production, infrastructure and services
- Sustainable Communities Strategy (SCS)

Co-Funded By:



Available at: www.baaqmd.gov/EVready

Bay Area Current PEV and EVSE Deployment



Vehicles:

- **10,000+ PEVs** sold in Bay Area 2010 – 3/31/2013
- Bay Area PEV sales:
 - ❖ **~37% of CA market**
 - ❖ **~ 10% of US market**
 - ❖ **0.2% of Bay Area fleet**

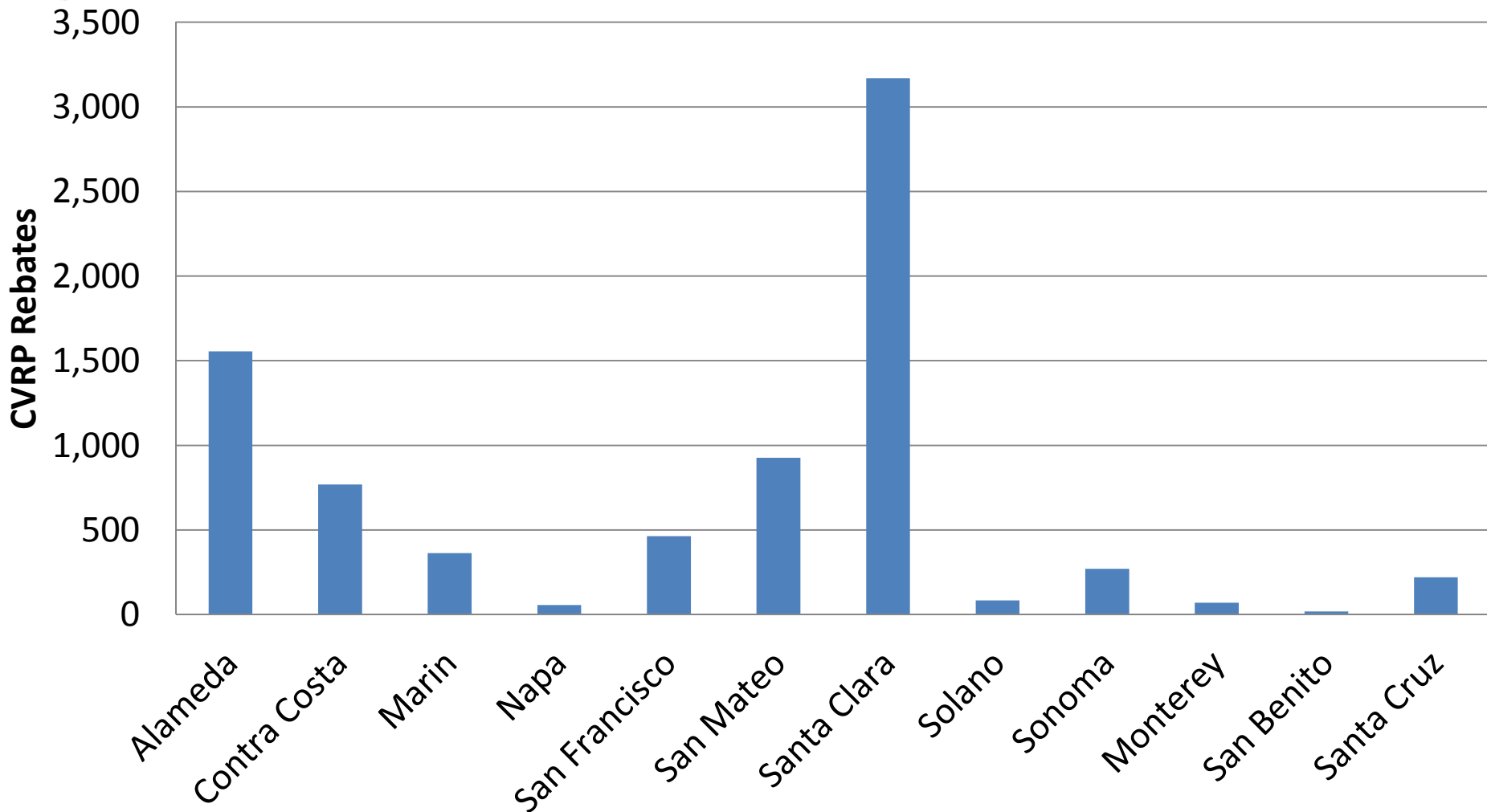


EVSE

- **~21 DC Fast Chargers (CHAdeMO)**
- **~ 1,200 publicly available Level 2 J1772 EVSE**

Bay Area PEVs by County

~10,000 PHEVs and BEVs (light-duty), as of March 2013



Forecast for Bay Area PHEVs and BEVs (light-duty):



As of March 31, 2013 ~ 10,000 PEVs



- **By 2015 - 25,000 PEVs**
(~0.5% of fleet)
- **By 2020 - 100,000 PEVs**
(~ 2% of fleet)
- **By 2025 - 160,000 PEVs**
(~ 3% of fleet)

Bay Area PEV Projects

EVSE Current Deployment



HIGHLIGHTS:

- **ChargePoint America/Coulomb Technologies** (DOE, CEC, BAAQMD)
 - ❖ ~ 525 L2 Chargers (242 locations)
- **ECOtality/Blink Network**
 - ❖ 1,500 L2 residential chargers (EV Project/ECOtality, DOE, BAAQMD)
 - ❖ 15 DC Fast Chargers (30 ports) (EV Project/ECOtality, DOE)
 - ❖ 166 L2 public and private chargers (EV Project/ECOtality, DOE)
- **Other EVSE funded projects (BAAQMD/CEC)**
 - ❖ ~250 L2 publicly available EVSE sponsored by public and private

Total: 1,200 Publicly Available EVSE



Bay Area PEV Projects

EVSE Planned



- **ECOtality**
 - ❖ 15 additional DC Fast Chargers installed by June 2013
- **Local Government EV Fleet Project** (BAAQMD, MTC and CEC)
 - ❖ 90 PEVs for municipal fleets and 90 L2 chargers accessible to government fleets and public
- **NRG Settlement with CPUC**
 - ❖ 55 Freedom Stations – (1 DC fast charger and 1 L2 EVSE)
 - ❖ 2,750+ Make-Readies

Upcoming BAAQMD Incentives

Fall 2013 - 2014



- ***Electric Vehicle Infrastructure Project - \$2.5 Million:***
For accelerated deployment of chargers in regional transportation corridors and other strategic locations
 - **Workplace and Multifamily Dwelling Level 1 and 2 EVSE**
 - **DC Fast Chargers**
- ***Electric Vehicle Incentive Program - \$3.75 Million:***
For data provided by new owners/lessees of PHEVs and BEVs
 - **Residents and Business Fleets**
 - **Public Agencies**



BAAQMD Contacts



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PG&E and Electric Vehicles

A Brief Overview

Customer Energy Solutions – Electric Vehicles

June 8, 2013





Agenda

- **Residential EV Policies**
- **Rates**
- **Rates (In Depth)**
- **Service Planning**
- **Current EV Activities**



PG&E And Electric Vehicles Overview

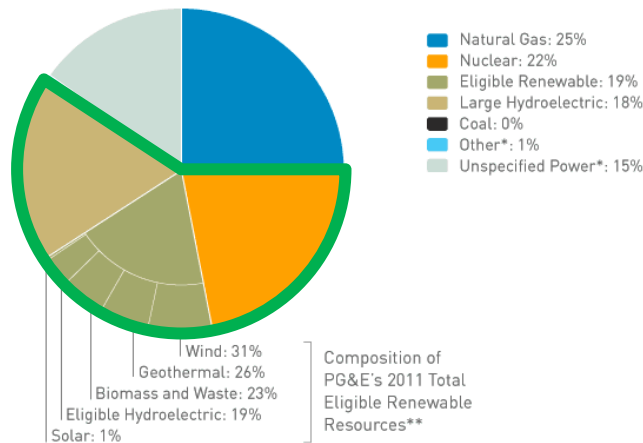
PG&E & Clean Driving

Almost 60% PG&E's electricity comes from greenhouse gas-free resources, which means that driving using PG&E's electricity emits less than half of the greenhouse gases as gasoline and we are getting even cleaner

California & Clean Driving

Even if you do not have PG&E's power, all of California has been cleaning up the grid with 20% renewables now and 33% by 2020

PG&E's 2011 Electric Power Mix Delivered to Retail Customers



* "Other" includes diesel oil and petroleum coke (a waste byproduct of oil refining) and "Unspecified Power" refers to electricity generated that is not traceable to specific generation sources by any auditable contract trail.

** As defined in Senate Bill 1078, which created California's Renewable Portfolio Standard, an eligible renewable resource includes geothermal facilities, hydroelectric facilities with a capacity rating of 30 MW or less, biomass, selected municipal solid waste facilities, solar facilities and wind facilities. These figures are preliminary and will not be finalized until verified by the California Energy Commission.

Residential EV Policies*



Cost of Upgrades

EV owner does not pay for residential distribution and service upgrades



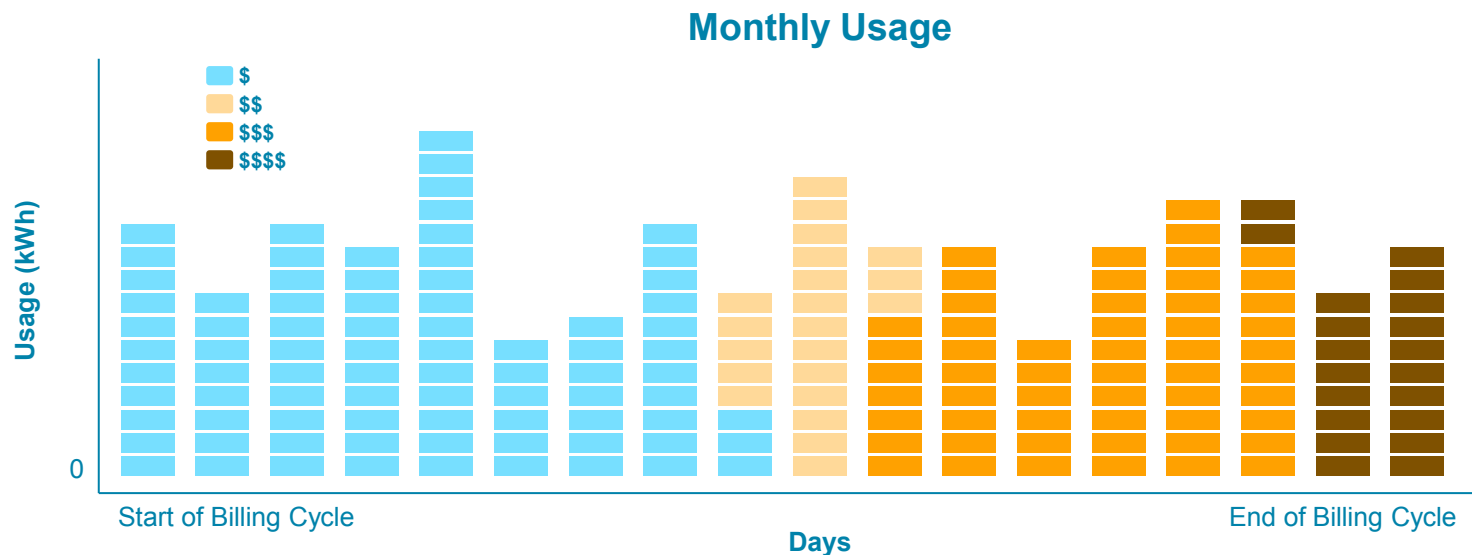
Rates

PG&E will offer non-tiered, TOU rates for EV service (explained in more detail later)

Tiered Rates (Overview)

Electric tiers work like many mobile phone plans – you get a low rate when your use stays within certain limits. If you go over your allotted kWh, you will be charged a higher rate.

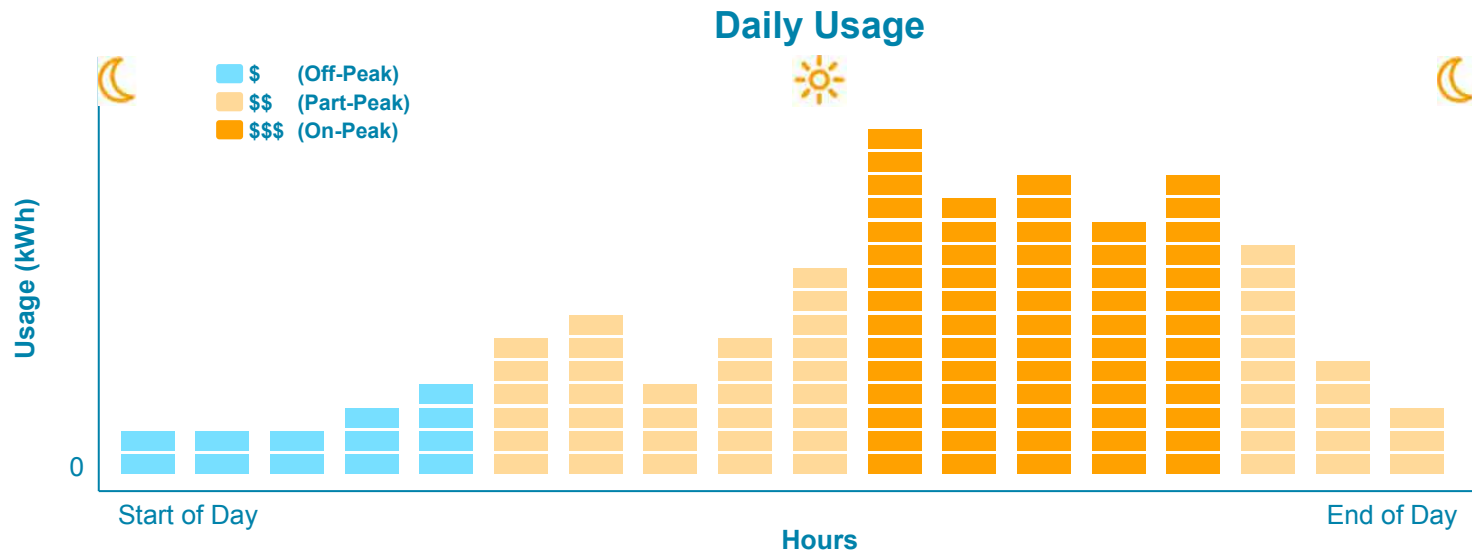
+ Encourages energy conservation.



Time-of-Use Rates (Overview)

Electricity costs vary by the time of day, with lower prices at night and higher prices during the day.

+ Encourages electricity usage at night when the electric grid is less stressed.





PG&E Residential EV Rate Options (Current)

E-1	General Residential Rate Tiered <p>This is the typical electric rate for PG&E residential customers. This rate is good for those customers that do not want to manage their charging and home usage behavior.</p>
E-6	General TOU Rate Tiered TOU <p>This is the typical electric rate that is designed to reward customers for shifting their electricity usage. This rate is good for those customers that want to manage their charging and home usage behavior.</p>
E-9A	EV Rate (One Whole-house Meter) Tiered TOU <p>This is the electric rate that is designed for electric vehicles and allows the EV and home to be charged at the same rate. This rate is good for those customers that want to manage their charging and home usage behavior.</p>
E-9B	EV Rate (Separate Meter for EV) Tiered TOU <p>This is the electric rate that is designed for electric vehicles and only allows the EV to be charged at the same rate. This rate is good for those customers that want to manage their charging.</p>



PG&E Residential EV Rate Options (Near Future)

E-1	General Residential Rate This is the typical electric rate for PG&E residential customers. This rate is good for those customers that do not want to manage their charging and home usage behavior.	Tiered
E-6	General TOU Rate This is the typical electric rate that is designed to reward customers for shifting their electricity usage. This rate is good for those customers that want to manage their charging and home usage behavior.	Tiered TOU
EV-A	New EV Rate (One Whole-house Meter) This is the electric rate that is designed for electric vehicles and allows the EV and home to be charged at the same rate. This rate is good for those customers that want to manage their charging and home usage behavior.	<input type="checkbox"/> TOU
EV-B	New EV Rate (Separate Meter for EV) This is the electric rate that is designed for electric vehicles and only allows the EV to be charged at the same rate. This rate is good for those customers that want to manage their charging.	<input type="checkbox"/> TOU

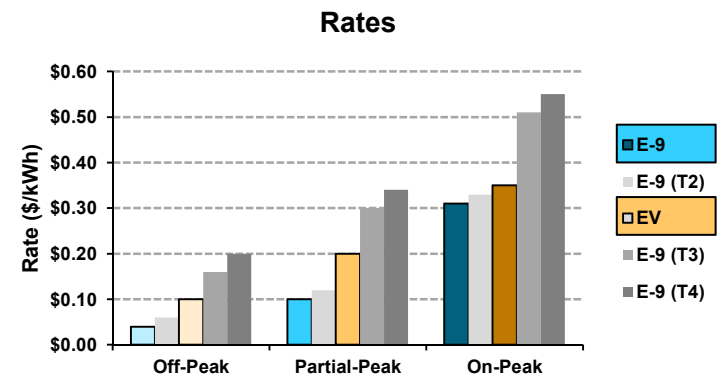
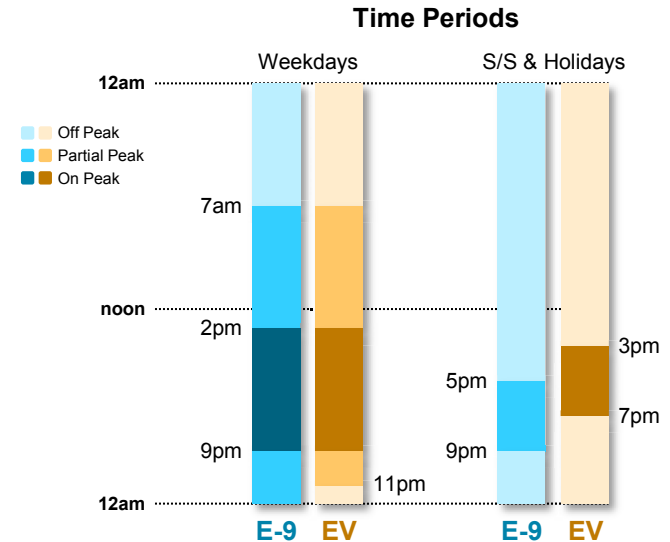
E-9 vs. EV

Same

- Both are optional rates.
- Both have A and B options.
- Both will be time-of-use.

Different

- Time Periods are slightly different.
- \$/kWh is different.
- EV kWh always has the same price during a season.
- EV is NOT tiered.





EV-A vs. EV-B: Should I get a second meter?

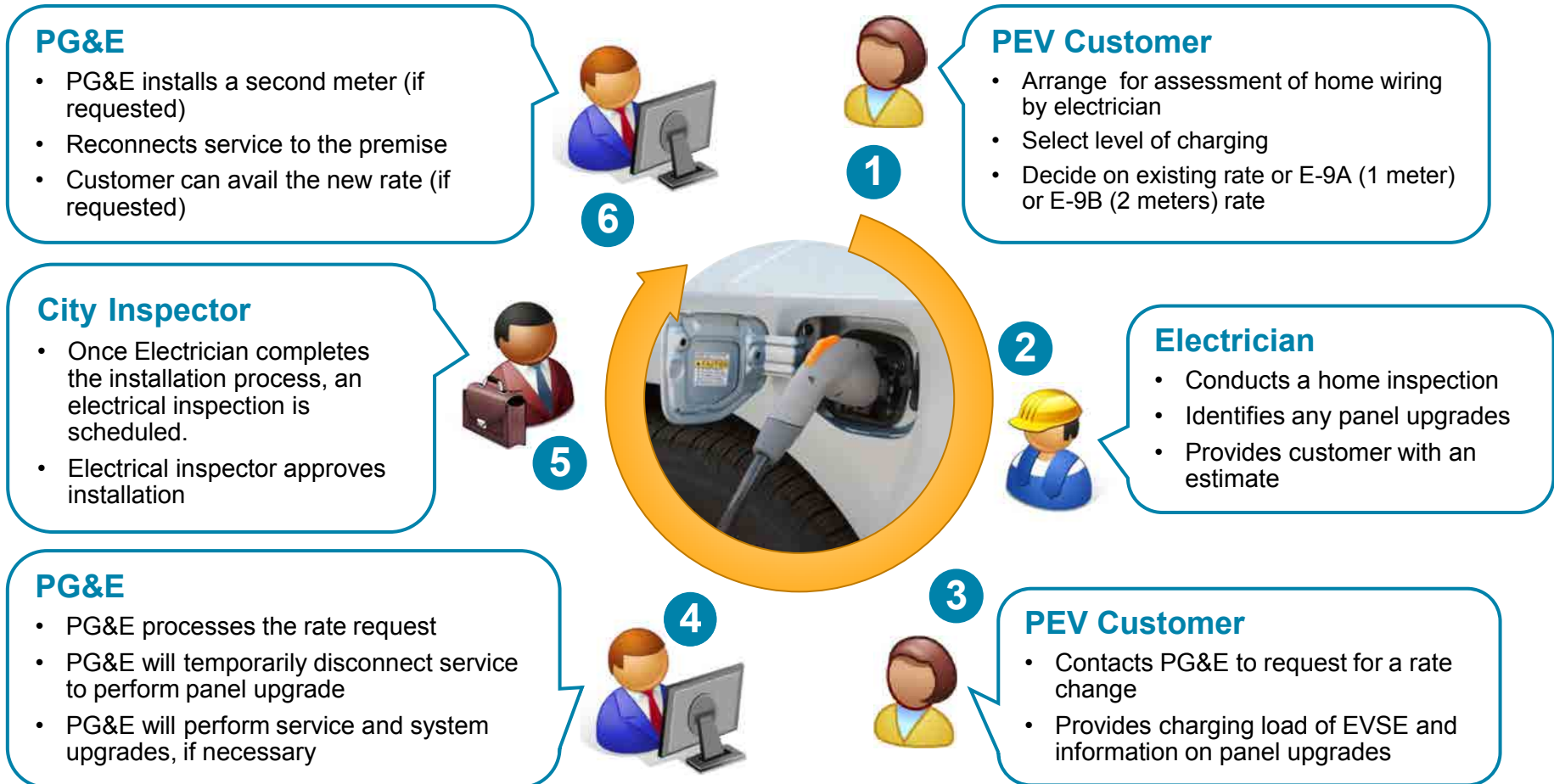
Option A

- Best suited for customers with most household usage during off-peak hours

Option B

- Best suited for customers with considerable household usage during on-peak hours
- Ability to separate household usage from EV usage
- Requires installation cost of second panel + \$250 one-time meter charge

Service Planning Process





Charger Installation Costs

Required

- Electric Vehicle Supply Equipment (the charger)
- Hire an electrician
 - Home assessment/wiring
 - Charger installation
- Permit fee

If Necessary...

- Panel upgrade (or new panel)
- One-time meter charge (for E-9B / EV-B options)

A PG&E distribution assessment and upgrade
is free-of-charge



Current PG&E Electric Vehicle Activities

- Outreach to local EV interest groups
- Engaged at the California Air Resources Board on the Low Carbon Fuel Standard
- Upgrading infrastructure as needed to support reliable charging of electric vehicles
- Over 4,000 customers on EV rates
- Purchasing EVs for PG&E's Fleet
- Piloting using PEVs for grid services (smart charging and second-life batteries)



Resources

PEV Homepage

www.pge.com/pev/

Electric Rates

www.pge.com/tariffs/

**Rate Comparison
Calculator**

www.pge.com/pevcalculator

Thank You

