6 Key Goals for a PEV Market

- Consumer experiences with PEVs are overwhelmingly positive
- Ownership costs of PEVs are competitive with conventional vehicles
- PEV charging integrates smoothly into an increasingly clean, efficient, reliable, and safe electricity grid
- PEVs advance energy security, air quality, climate change, and public health goals
- Early strategic action creates jobs and economic benefits in California
- The PEV market moves beyond early adopters to mainstream consumers
Range of Potential CA PEV Sales

Approx. 2011 California sales:
- 3,500 Volts
- 4,500 Leafs

U.S. Sales to Date, all PEVs:
- 2011 total: 17,813
- 2012 thru May: 14,212

~ 15% of sales * (Aggressive scenarios)
~ 5% of sales * (~ ARB ZEV proposal)

Figure 4. A vision for sustained PEV market expansion in California
* Assumes 1.6 million CA LDV market sales in 2020
PEVs Available in 2012

Release: Spring 2012
20 – 30,000 world sales/yr
15 US launch states

Release: Dec 2010
7 - 10,000 2011 US sales

Release: January 2012
2,000 US sales 2012
Eventually 20 – 30,000 world sales

Release: Dec 2010
10 - 15,000 2011 US sales

Infrastructure needs vary

Release: January 2012
2012 Honda Fit EV

Release: Late 2011
2011 Ford Focus Electric

Release: Mid-2012
2012 Tesla Model S
5,000 sales in 2012, ramp up to 20,000/yr in 2013

Increasing Battery size, PHEV - BEV

Release: 2012
2012 Tesla Model S
## PEV Charging Infrastructure Levels

<table>
<thead>
<tr>
<th>Charging Level</th>
<th>Power Supply</th>
<th>Charger Power</th>
<th>Miles of Range for 1 Hour of Charge</th>
<th>BEV</th>
<th>PHEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>120VAC Single Phase</td>
<td>1.4 kW @ 12 amp (on-board charger)</td>
<td>~3 - 4 miles</td>
<td>~17 Hours</td>
<td>~7 Hours</td>
</tr>
<tr>
<td>Level 2</td>
<td>240VAC Single Phase up to 19.2 kW (up to 80 amps)</td>
<td>3.3 kW (on-board)</td>
<td>~8 - 10 miles</td>
<td>~7 Hours</td>
<td>~3 Hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.6 + kW (on-board)</td>
<td>~17 - 20 miles</td>
<td>~3.5 Hours</td>
<td>~1.4 Hours</td>
</tr>
<tr>
<td>DC Fast Charge</td>
<td>200 – 450 VDC (approximately 200 amp)</td>
<td>45 kW (off-board)</td>
<td>~50 - 60 miles (~80% per 0.5 hr charge)</td>
<td>~30 - 45 Minutes (to ~80%)</td>
<td>~10 Minutes (to ~80%)</td>
</tr>
</tbody>
</table>

*Charging Times From Empty to Full*

Source: California PEV Collaborative (CG3-2)
PEV Infrastructure Pyramid (Priorities)
PEV Infrastructure Locations / Types

- Typical Home Charging
- Apartments and other Multi-Unit Dwellings
- Workplace Charging
- Public (*not shown*)
Strategies to Leverage Types

- **Typical Home Charging**
  - Vast majority of charging
  - Use L1 where appropriate, especially if work charging

- **Apartments and other Multi-Unit Dwellings**
  - Use public L2 or DCFC
  - Charge at work

- **Workplace Charging**
  - Doubles EV range
  - Can be L1, shared equip
PEV Collaborative Background
Building on Existing Activities

Goal: Enable PEV Sales Growth

PEV Collaborative: Augment, Broaden, Communicate

- Customers
- Vehicles
- Electric Infra. & Supply
- Emissions & Energy Reductions

Identify gaps / needs

Existing Stakeholder Activities
# 2012 Membership

## State Government
- ARB
- CEC
- CPUC
- Legislature members
- Governor’s office

## Automakers
- BMW
- CODA
- Ford
- GM
- Honda
- 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
- Better Place
- Clean Fuel Connection
- Coulomb
- ECOtality
- Greenlots
- NRG
Additional PEV Material Online

www.pevcollaborative.org

www.DriveClean.ca.gov/pev