

Southern California Edison PEV Readiness Initiatives

Helping you get
plug-in ready
for electric
vehicles



The horse drawn wagon was the primary mode of transportation between 1800-1900's



The first successful electric car in the U.S. was built in Des Moines, Iowa by Wm. Morrison in 1891.



Integrated Planning & Environmental Affairs Transportation Electrification



SOUTHERN CALIFORNIA
EDISON[®]

An *EDISON INTERNATIONAL*[®] Company

Beth Neaman
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Mobility is shifting gears to electric drive. Be the driver of change.

**Plug-in
Electric
Vehicles**



The Revival of the Electric Vehicles

All roads lead to clean drive



EV-friendly ecosystems.

**EVSE
Manufacturers
and Installers**



**Electric Utility
Company**



**Local
Government and
Communities**



**Auto
Manufacturers
and Dealers**





**Your Electric Utility
helps you charge
smart.**

**Southern
California
Edison**



Current and Future PEV Ownership across Utilities in the Region

Utility	No. of PEVs in Utility's Territory	% Share	2017			2022		
			Low	Mid	High	Low	Mid	High
Burbank Water & Power	59	1%	1,260	1,406	1,540	5,083	6,836	8,965
Cerritos Electric Utility	53	1%	1,132	1,263	1,383	4,566	6,141	8,053
Glendale Water & Power	103	1%	2,200	2,454	2,688	8,874	11,934	15,650
Pasadena Water & Power	119	1%	2,542	2,836	3,106	10,253	13,788	18,081
Anaheim PU Department	99	1%	2,114	2,359	2,584	8,529	11,471	15,042
Imperial Irrigation District	59	1%	1,260	1,406	1,540	5,083	6,836	8,965
LA Dept of Water & Power	1,809	22%	38,636	43,105	47,213	155,856	209,603	274,864
Riverside Public Utilities	65	1%	1,388	1,549	1,696	5,600	7,531	9,876
Southern CA Edison	5,650	68%	120,672	134,628	147,459	486,781	65,4647	858,475

Source: UCLA Luskin Center, as of Summer/Fall 2012

Current and Future PEV Ownership across Utilities in the Region

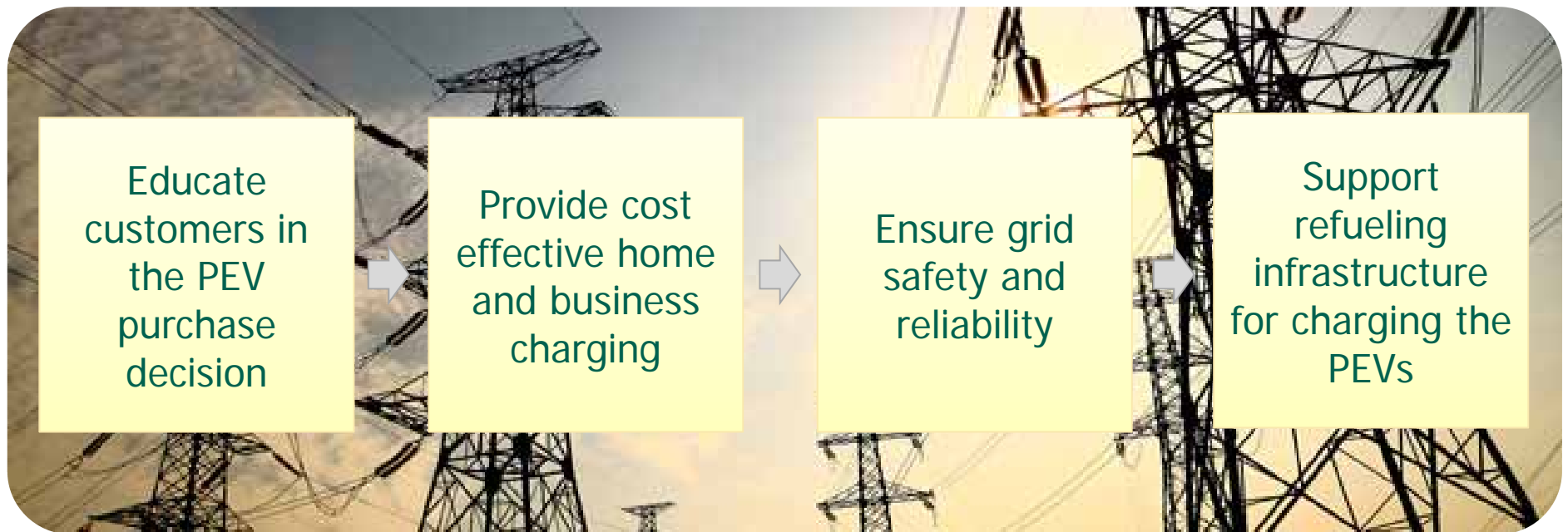
Southern CA Edison

5,650
No. of PEVs in
Utility's Territory

68%
Share

The Role of your Electric Utility

We're committed to support our customers' use of electric vehicles, just as we do with all other electric loads.





Paving the Way Together.


Educate customers in the PEV purchase decision

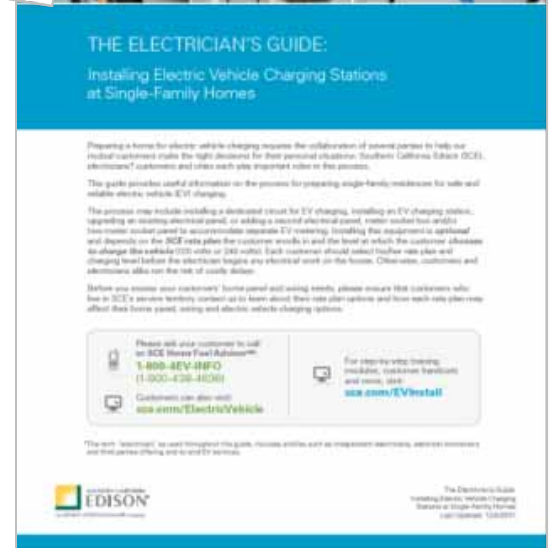
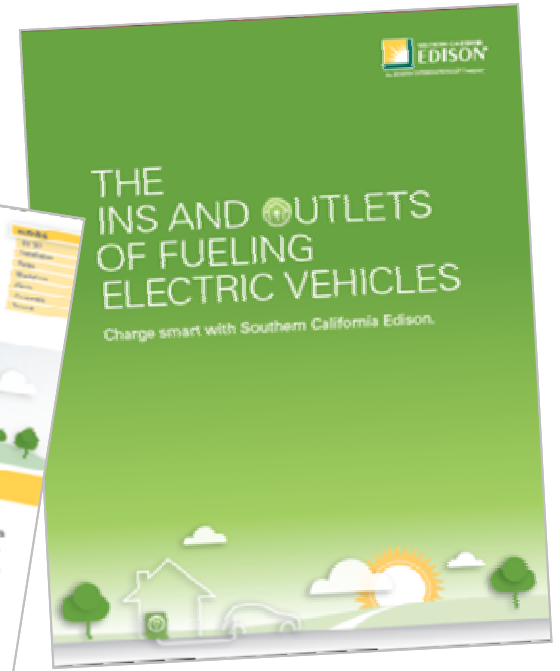


PEV Micro-site, Online Rate Calculator and Tools



SCE Home Fuel AdvisorSM

 1-800-4EV-INFO



Champion City Program



Events



**Committed to safe,
reliable, affordable
power for **EV**
drivers.**

**Provide cost effective
home and business
charging**



SCE Residential EV Rates

Rates current as of January 1, 2013

Rate Options	Structure	Energy Charge (cents per kWh)																									
Domestic Residential (D)	Single meter 5 usage tiers No hourly differentiation	<table border="1"> <tr> <td>Tier 1</td> <td>Tier 2</td> <td>Tier 3</td> <td>Tier 4</td> <td>Tier 5</td> </tr> <tr> <td>13</td> <td>16</td> <td>29</td> <td>33</td> <td>36</td> </tr> </table>	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	13	16	29	33	36															
Tier 1	Tier 2	Tier 3	Tier 4	Tier 5																							
13	16	29	33	36																							
Whole-House Time-of-Use (TOU-D-TEV)	Single meter 2 usage tiers On: 10 AM – 6 PM (weekdays) Super Off: Midnight – 6 AM Off: All other hours	<table border="1"> <tr> <td>Season</td> <td colspan="2">Summer</td> <td colspan="2">Winter</td> </tr> <tr> <td>Tier</td> <td>1</td> <td>2</td> <td>1</td> <td>2</td> </tr> <tr> <td>On-Peak</td> <td>19</td> <td>70</td> <td>13</td> <td>31</td> </tr> <tr> <td>Off-Peak</td> <td>14</td> <td>31</td> <td>13</td> <td>28</td> </tr> <tr> <td>Super Off</td> <td>11</td> <td>20</td> <td>11</td> <td>19</td> </tr> </table>	Season	Summer		Winter		Tier	1	2	1	2	On-Peak	19	70	13	31	Off-Peak	14	31	13	28	Super Off	11	20	11	19
Season	Summer		Winter																								
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On-Peak	19	70	13	31																							
Off-Peak	14	31	13	28																							
Super Off	11	20	11	19																							
EV-Only Time-of-Use (TOU-EV-1)	EV separately metered Non-tiered On: Noon – 9 PM Off: 9 PM – Noon	<table border="1"> <tr> <td></td> <td>Summer</td> <td>Winter</td> </tr> <tr> <td>On-Peak</td> <td>32</td> <td>25</td> </tr> <tr> <td>Off-Peak</td> <td>12</td> <td>12</td> </tr> </table>		Summer	Winter	On-Peak	32	25	Off-Peak	12	12																
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Note: Basic charges (fixed) not included, nor are potential up-front costs of setup

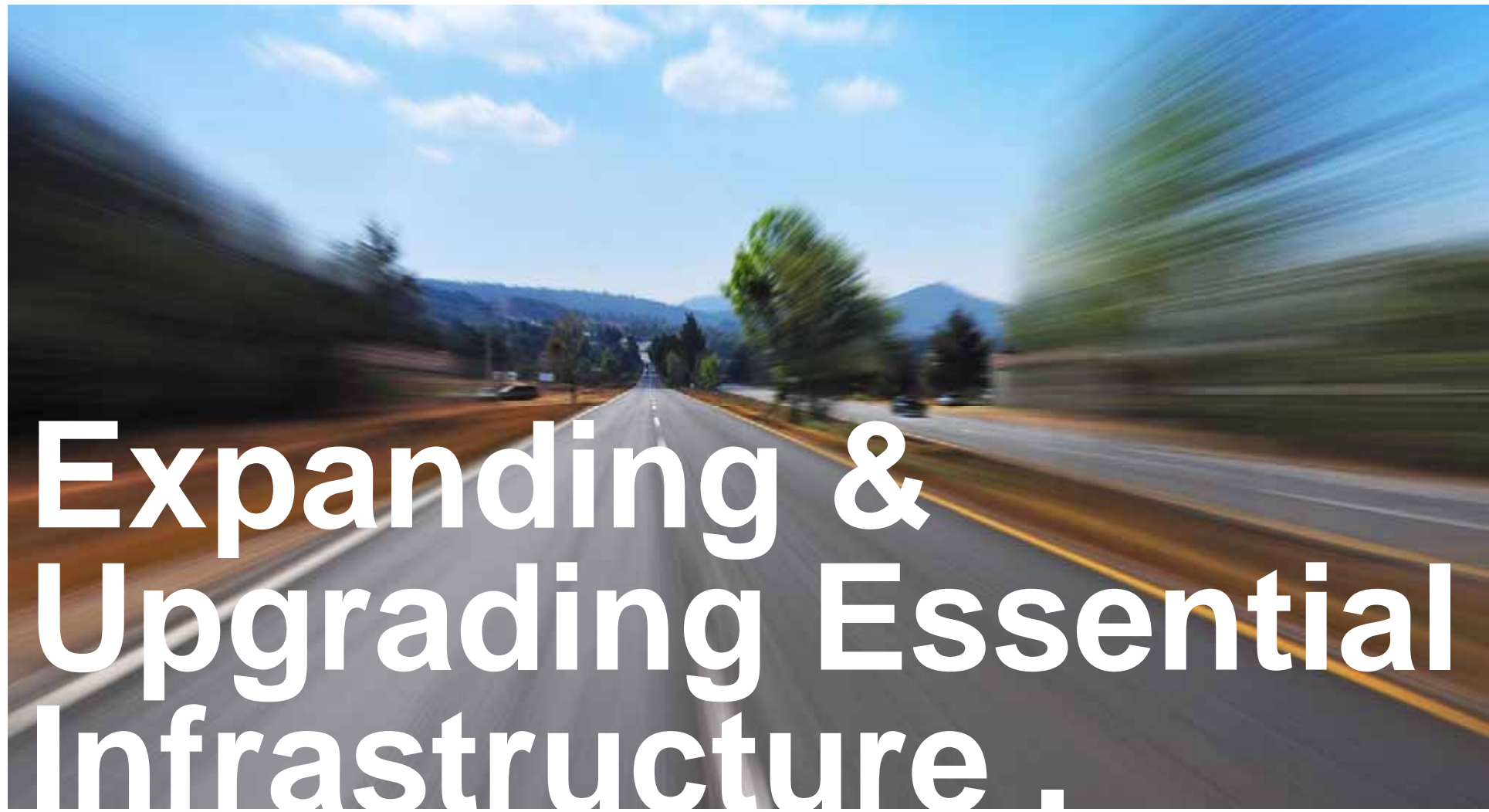
SCE Commercial EV Rates

Rates current as of January 1, 2013

EV Rate Options*	Structure	Energy Charge (cents/kWh)		Customer Charge	Demand Charge	
EV-Only Time-of-Use (TOU-EV-3) EV demand under 20kW	Single meter Non-tiered Seasonal differentiation*		Summer	Winter	80 cents per day	N/A
		On-Peak	33	17		
		Off-Peak	11	11	N/A	
EV-Only Time-of-Use (TOU-EV-4) EV demand between 20kW and 500kW	On: Noon – 9 PM Off: 9 PM – Noon		Summer	Winter	\$145.63 per month	\$13.94 per kW per month (Facility-Related)
		On-Peak	31	13		
		Off-Peak	6	5		

*For either commercial TOU-EV rate, the premises must be concurrently served on a General Service or Agricultural & Pumping rate plan.

Note: Basic charges (fixed) not included, nor are potential up-front costs of setup.



Expanding & Upgrading Essential Infrastructure

Ensure grid safety and reliability



Can SCE's Power Supply Accommodate PEV Charging?

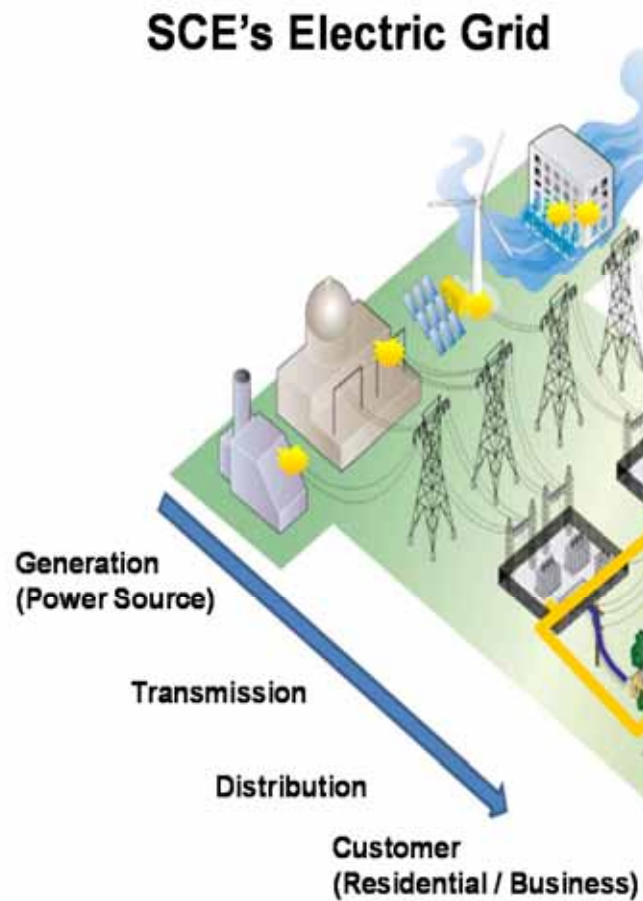


5 million
customers.

50,000 square
mile territory.

More than **180**
cities and
counties.

SCE does not expect any system-level grid issues during the early rollout of EVs, but continuous analysis and monitoring will be essential.



Before Cars Arrive

- Detailed system modeling
- Updated design standards (transformer, etc.)
- Monitoring metrics for grid

As Cars Arrive

- Inspection of local grid components for known EVs
- Grid system upgrades before vehicle delivery date

Down the Road

- Distribution system planning procedures for EVs
- Vehicle communication R&D
- Demand Response pilots for EVs

**We're energizing
the future and
helping **EV** drivers
charge smart.**

**Support refueling
infrastructure for
charging the PEVs**



Steps for Installing Single Family Residential Charging



Source: Adopted from "California Plug-In Electric Vehicle Collaborative", 2012

Electric Vehicle Charging

Comparison Chart for Charging Units¹

Charging Types	Voltage	Estimated time to full charge		Estimated Cost per Charging Unit
		Battery EV	Plug-In Hybrid EV	
Level I Charging	120 V	12-18 hours	6-8 hours	\$10 - \$1,000
Level II Charging	240 V	4-6 hours	3-4 hours	\$500 - \$6,000
DC Fast Charging	480 V or higher	10-30 minutes (80% full charge)	5-20 minutes (80% full charge)	\$25,000 - \$60,000

¹This comparison chart for charging units is provided for your general information and is not intended as a recommendation, endorsement or guarantee of any particular charging level, charging-unit type or charging-unit cost. Charging times presented may vary according to make and model of the vehicle being charged, charging settings and battery state. Charging-unit costs are estimates based on publicly available information and do not include cost of installation, electrical work, or additional equipment and/or services.



Thank You!

For electric vehicle resource information, please go to  www.sce.com/EV

SCE Home Fuel Advisor SM  **1-800-4EV-INFO**