



Connecticut Electric Vehicle Infrastructure Council

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Overview

- Background on Plug-in Electric Vehicles (PEV) Directives
- UI's Goal
- UI's Efforts and Findings
- EPRI's Customer Research
- Metering and Infrastructure
- Other Utility PEV Rates
- UI's Vision
- UI's Recommendation



Connecticut PEV Directives



- Letter from Chairperson Downes on July 30, 2008
 - Utilities to actively participate in EPRI's GM Utility Collaboration
 - "Ensure that the introduction of EV's does not have negative implications for Connecticut ratepayers or system capacity and reliability."
- Governor Rell's Executive Order No. 34 – EVIC
 - Establish performance measures for meeting infrastructure, funding, environmental, and regulatory goals
 - Align State goals with what is occurring on the national level of EVs
 - Make recommendations on the infrastructure and regulation needs of EVs



UI's PEV Goals

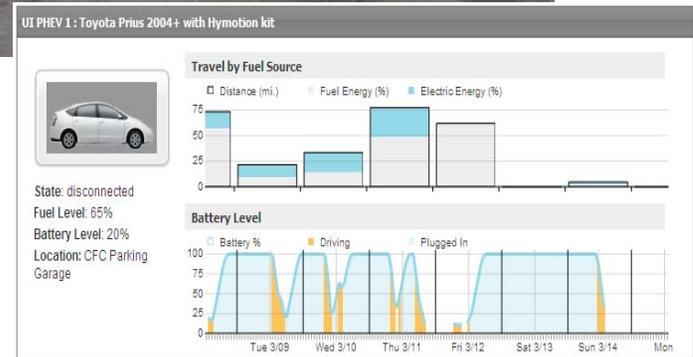
- Provide leadership of PEV technology from an economic and environmental perspective
- Reduce our dependence on foreign fossil fuel and greenhouse gas emissions
- Educate our customers on PEV technology and charging options
- Develop a business model and address regulatory issues associated with Electric Vehicle Supply Equipment (EVSE) infrastructure
- Standardize or provide open system for public charging stations
- Assess future opportunities, such as “Smart Charging” and “Vehicle-2-Grid”



UI's Efforts and Findings



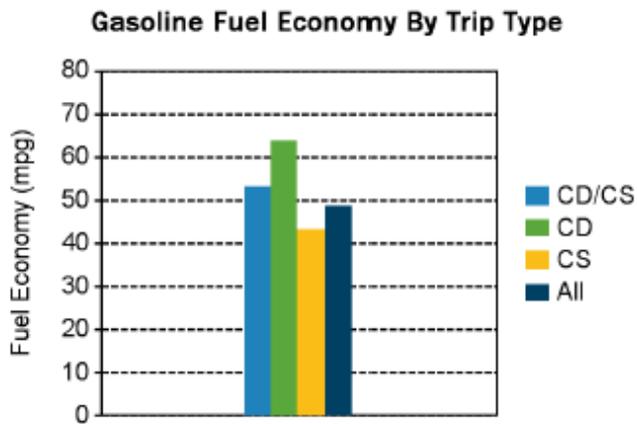
- Efforts
 - EPRI, EEI, EDTA, REVI
 - Converted Toyota Prius to a PHEV in 2008
 - Data collection and assessment of usage
 - 39 events in 2008-2010
- Findings
 - Customer knowledge and awareness
 - Charging costs, times, and infrastructure
 - MPG vs. kWh/mile



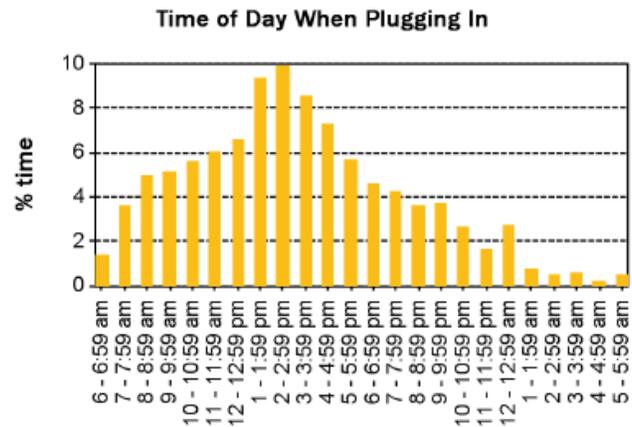
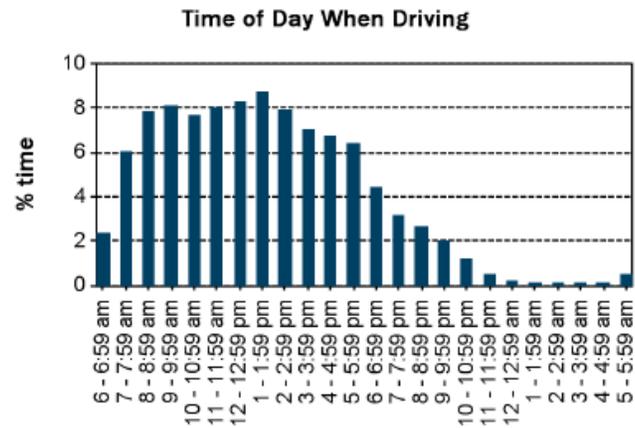
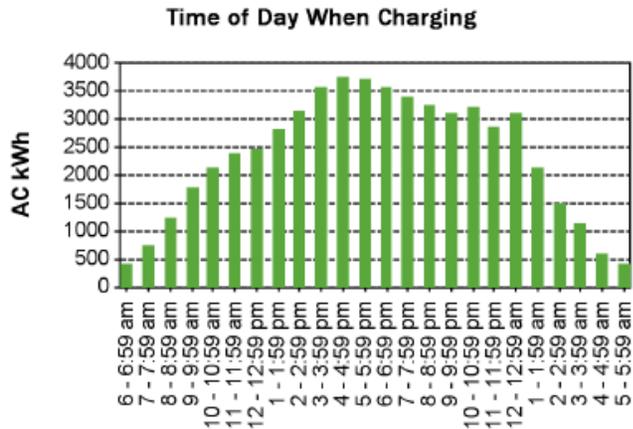


PHEV Data

**Average
48 MPG**



**No Smart
Charging**



Source: INL Hymotion Prius V2GreenApr08-Dec09



Metering Options

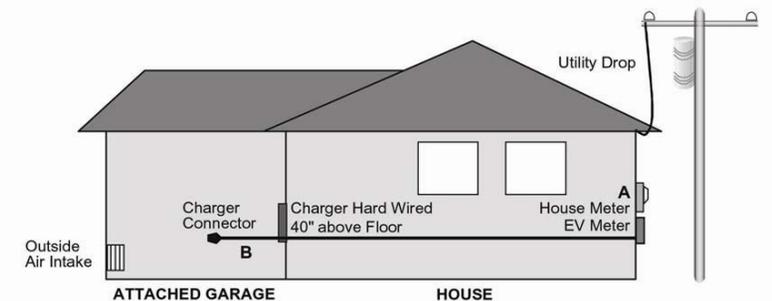
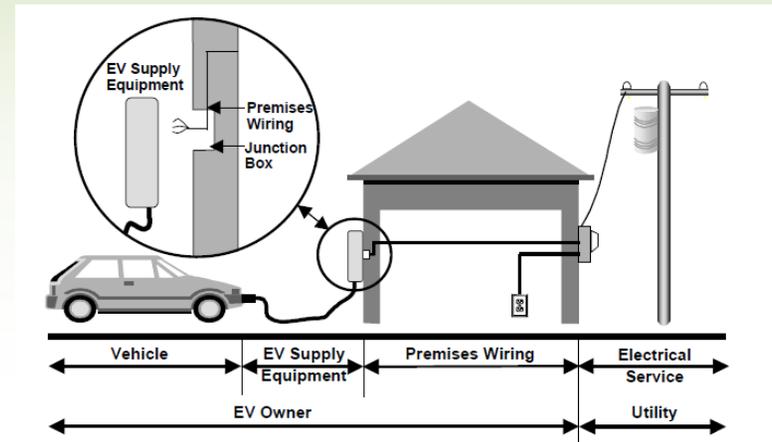


Option 1: No meter for PEV. Least expensive but PEV charging usage would have to be calculated or estimated based on usage patterns

Option 2: Charging station downstream of electric meter, with a second non-revenue meter

Option 3: Second meter with a pulse input to a separate channel of an advanced meter. Becomes expensive and impractical.

Option 4: Meter in the PEV



Source 1: PGE Website <http://www.pge.com/includes/docs/pdfs/about/environment/pge/electricvehicles/ev6pt4.pdf>

Source 2: U.S. DOE Vehicle Technologies Program-Advanced Vehicle Testing Activity. *Plug-in Hybrid Electric Vehicle Infrastructure*. Contract No. 58517, November 2008.



Rate Offerings



Southern California Edison

- [Rate Schedule TOU-D-TEV \(PDF\)](#) is designed for residential customers who combine lighting, heating, cooking and power, in a single family accommodation, with charging electric vehicle(s) on the same meter. Under this schedule, you may receive substantial savings if you charge your electric vehicle(s) during super off-peak hours.

On-Peak: 10:00 a.m. to 6:00 p.m. weekdays - all year, except holidays

Super Off-Peak: Midnight to 6:00 a.m. - all year, every day

Off-Peak: All other hours - all year, everyday

- [Rate Schedule TOU-EV-1 \(PDF\)](#) residential customers who charge their electric vehicle(s) at their primary residence, on a separate meter provided by SCE. Under this schedule, you receive substantial savings if you charge your electric vehicle(s) during off-peak hours:

On-Peak: 12:00 noon to 9:00 p.m. - all year, every day

Off-Peak: All other hours - all year, everyday

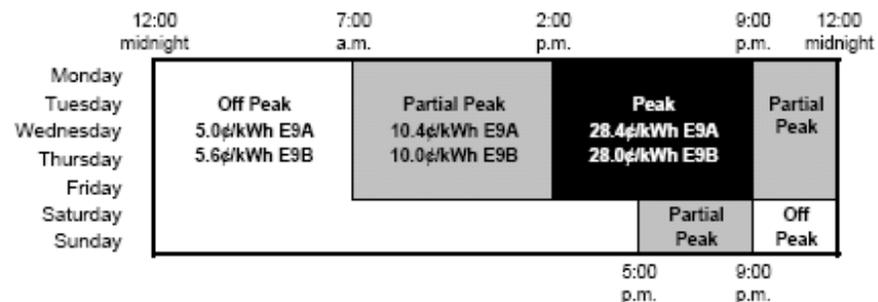


Rate Offerings

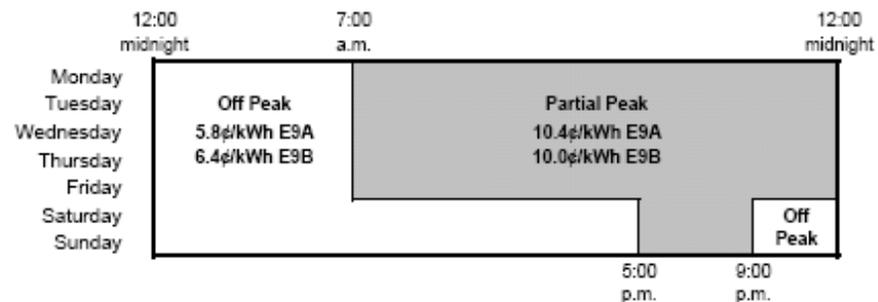
Pacific Gas & Electric

- E-9 A: metering the whole house
- E-9 B: just the charger
- PHEV-40 consumes ~2,500 kWhs per year.
- At peak prices, that is \$700/yr, equivalent to 233 gallons of gas at \$3.00/gallon, representing 8,000 miles of travel at 35 mpg.
- Therefore the EV owner charging at PG&E's peak times is still saving money compared to a highly efficiency gasoline car if they typically travel more than 8,000 miles per year.

Summer (May 1 through October 31)



Winter (November 1 through April 30)





UI's Vision

- TOU Rate, initially
- Residential EVSE Tariff
 - Modeled after UI's Water Heater Rental Rate that controls usage and shifts to off-peak
 - Lease program with 13,000 participants, most on a time of day rate
 - Revenue requirement (approx. \$12.50/month) paid for by participating customers
 - Available to all customers who have many other retail options
- Commercial EVSE Tariff – Similar Programs
 - Outdoor Lighting Program
 - Cell Phone Plan
 - Contractor Network in the Home Energy Solutions Program



UI's PEV Pilot

- Install charging stations 3rd and 4th Quarter of 2010
 - Residential (Up to 10 EVSE)
 - Public (Up to 6 EVSE)
 - City of New Haven and Parking Authority
 - Bridgeport and Fairfield locations
- Installation procedure
 - Review metering options
 - Assess communication capability and potential to integrate with UI smart meter rollout
 - Determine installation, operation and ongoing maintenance costs



UI's Recommendations



- Ensure that the introduction of PEV's satisfies all regulatory goals without negatively impacting system capacity or reliability
- Establish a DPUC Docket to address rate design, metering, and communication issues
- Support legislature initiatives to provide incentives for early market progress
- Defining the UI role and remaining engaged with various PEV stakeholders
- Proceed with pilot to assess residential EVSE tariff, charging behavior, installation channels, benefit-cost, and other concerns
- Consumer pricing protection and the "sale for resale" concern



Questions ?

