



# Solar + Electric Vehicles: consumer decision-making platform

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**Clean Power Research**

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# Today's Discussion

- Intro to Clean Power Research
- Project Overview
- Utility and Customer Benefits
- Tasks, Timeline, Deliverables



This material is based upon work supported by the California Solar Initiative RD&D Program.

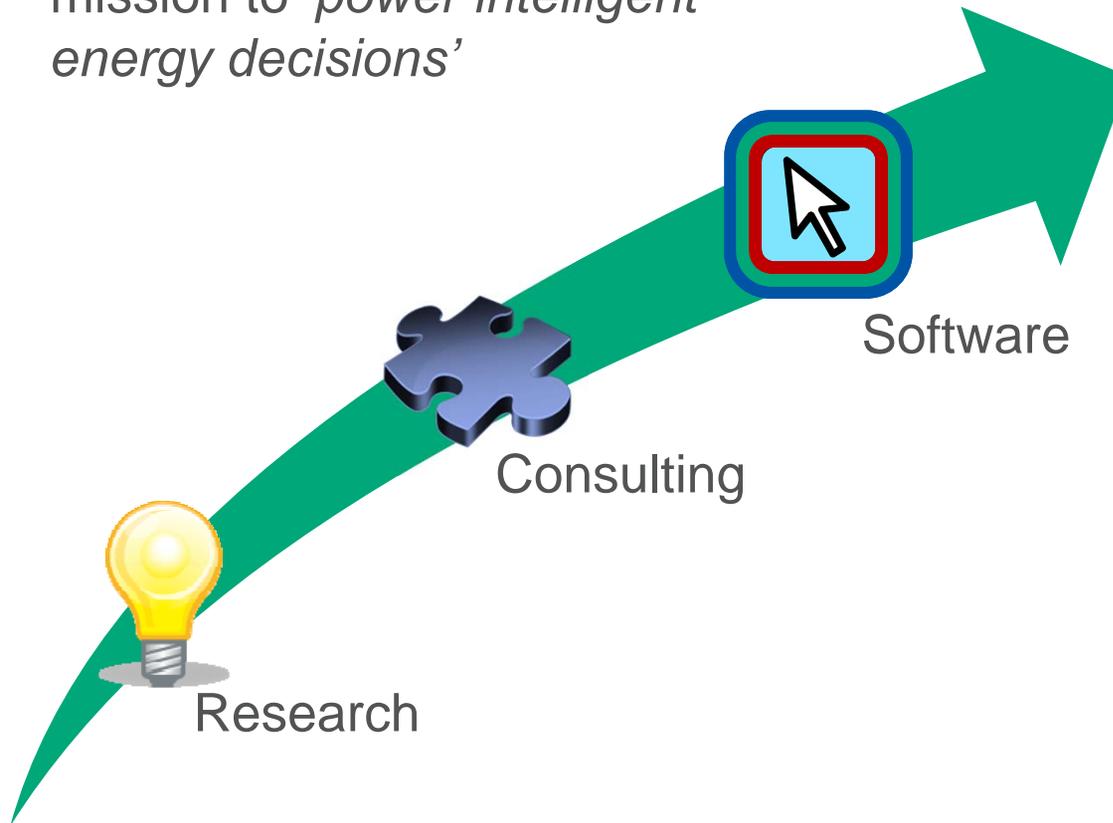
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# Clean Power Research®

Founded in 1998 with the mission to *'power intelligent energy decisions'*



## SOLAR PREDICTION

*Most widely used solar resource database*

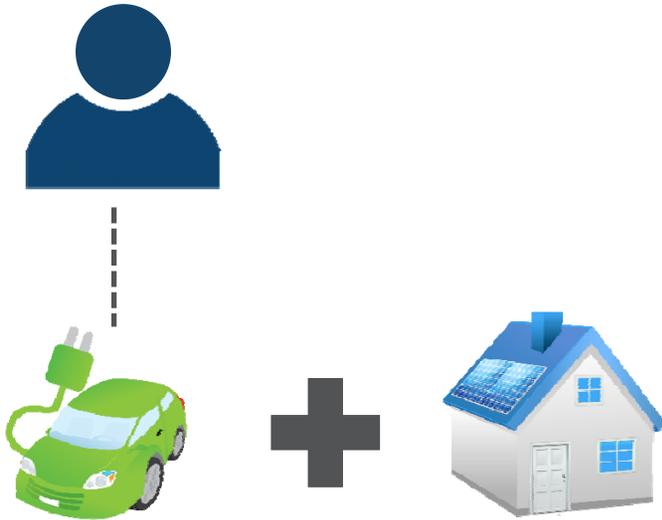
## ENERGY VALUATION

*~30 million solar estimations performed*

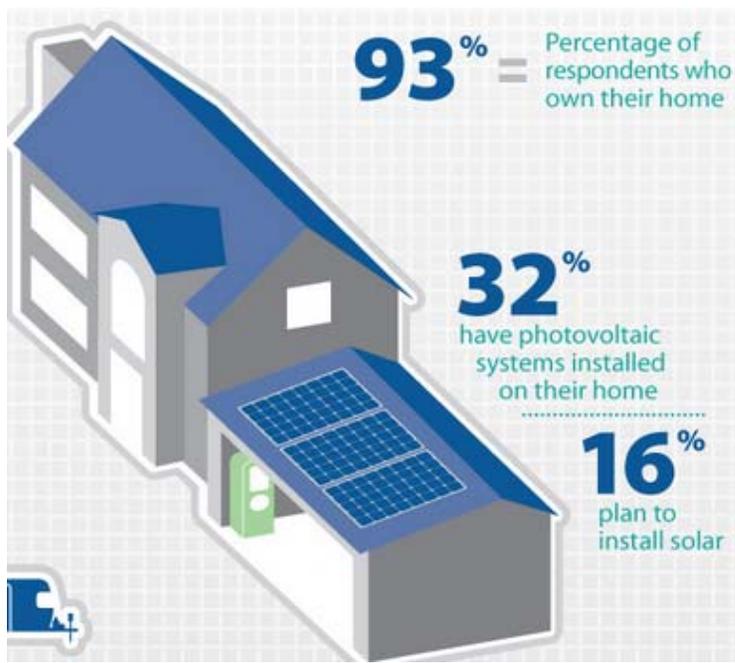
## PROGRAM OPTIMIZATION

*4.7 GW of renewable incentives processed*

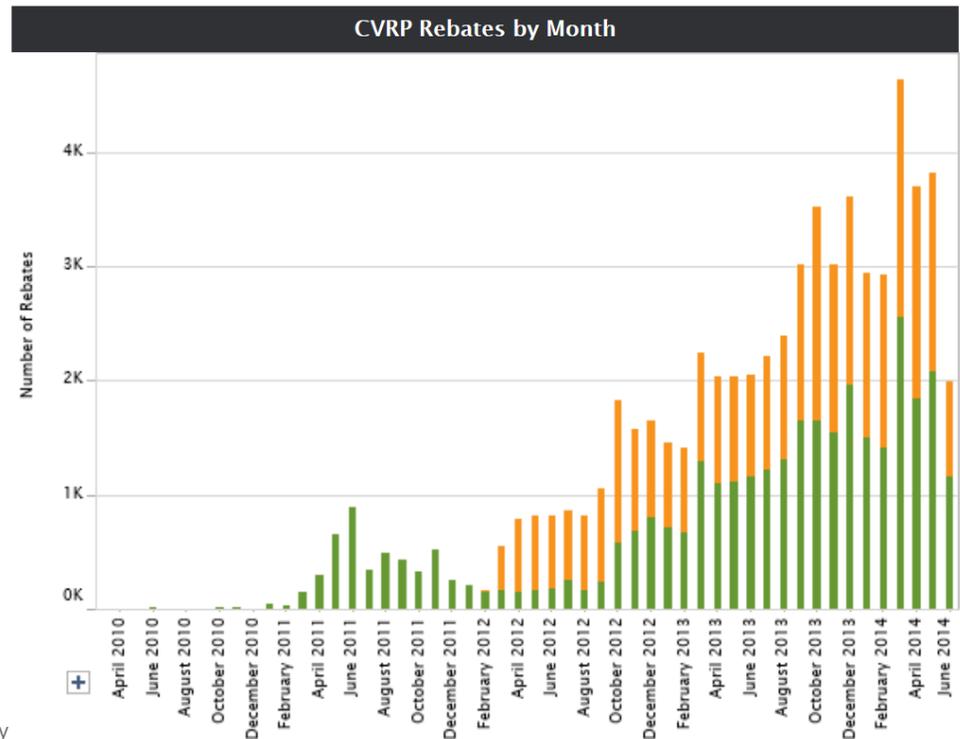
# Increase Solar Adoption: a Consumer-facing PV+PEV Decision-making Website

Consumer Scenarios	Advantages
 <p>The diagram illustrates a consumer scenario. It features a dark blue silhouette of a person at the top. A vertical dashed line connects the person to a green electric car (PEV) below. To the right of the car is a large black plus sign, followed by a white house with a blue roof and solar panels. This visualizes the combination of a consumer, a PEV, and a solar home.</p>	<p><b>Personalized</b> financial and energy impact analysis</p> <p><b>Optimized</b> PV specs, electric rate, and PEV charger</p> <p><b>Influenced</b> by nearby PV and PEV adoption</p> <p><b>Actionable</b> decision-making and next steps</p>

# California PEV Growth and PV Overlap



<http://energycenter.org/clean-vehicle-rebate-project/vehicle-owner-survey/feb-2014-survey>



ZEV PHEV

ZEV = Zero Emission Vehicle (all electric or fuel cell vehicle)  
 PHEV = Plug in Hybrid Electric Vehicle (powered by electricity and gasoline)

<http://energycenter.org/clean-vehicle-rebate-project/cvrp-project-statistics>

# Utility Opportunity with PV + PEV

- NEM PV customers with \$0 bill feel “lost” to utility
- PEV represents significant load *growth* (via fuel switching)
- Efficiency investments can reduce (inefficient) load
- Customers need “Trusted Energy Advisor” to proceed

*Zero electric bill ≠ zero opportunity for the utility*

# An Ideal for Utility Customer Engagement



Trusted source  
of objective  
information

The utility is a familiar  
brand and unbiased.



Convenient  
and timely  
information

Engage customers  
when they're thinking  
about their energy bill  
and consumption.



Customer-  
specific data  
and analysis

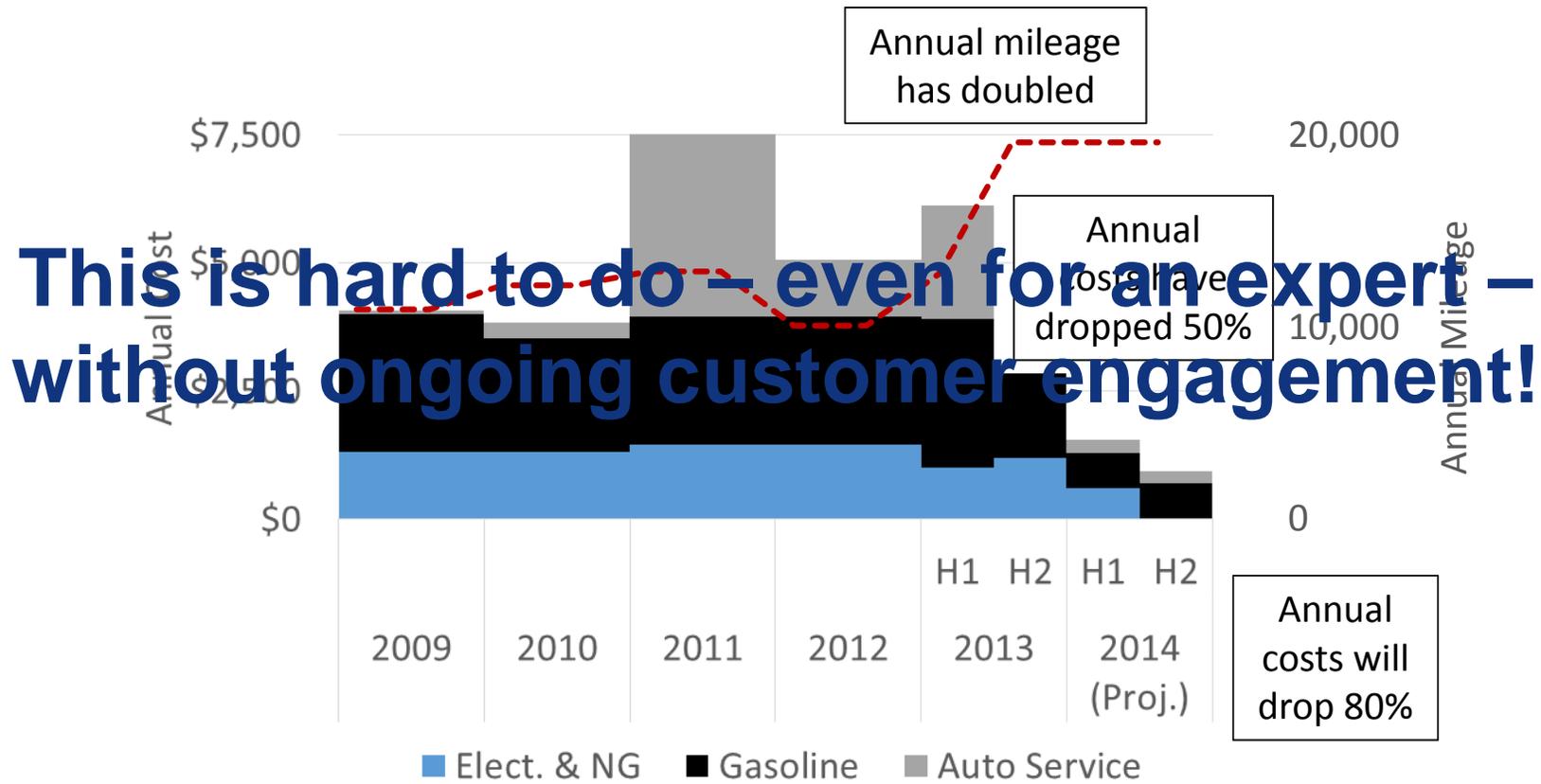
Leverage customer  
information to provide  
automated, personalized  
results.



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# Real World Example: PV + PEV (w/ Efficiency)

Annual Cost Savings: \$5K to \$6K



Note: Household went from two gasoline engine cars to one EV and hybrid.

# Product Development



**Energy Savings** | **Year 1 Bill Savings**

You make 80% of the electricity you need with solar  
Monthly Electricity Savings

Legend: Excess solar power (orange), Produced by solar (blue), Provided by utility (green)

Modify inputs below to confirm what options work best for you.

- Location and Electric Bill
- PV System
- Financing
  - Payment: Lease
  - Term: 20 years
  - Down Payment: \$ 0
  - Year 1 Monthly Payment: \$ 115

## Demo EV Calculator

Conventional Vehicle | Energy Efficient Vehicle

**Vehicle Specifications**

- Electric Range: 73 miles
- Battery Capacity: 24 kWh
- Charger Type: Level 2 (240V)
- Recharge Time: 7 hours

Gas Mileage: 25 mpg | Purchase Price: \$20,000.00

Make & Model: Nissan Leaf | Purchase Price: \$35,000.00

**Home**

LOCATION: Los Angeles, CA 90025

UTILITY: Los Angeles Department of Water & Power (LADWP)

ELECTRIC RATE: Net Metered Residential Service - Standard (Schedule R-1 Rate A Zone 1)

Average Electric Bill: \$100 per month

Annual Bill Increase: 1.0% per year

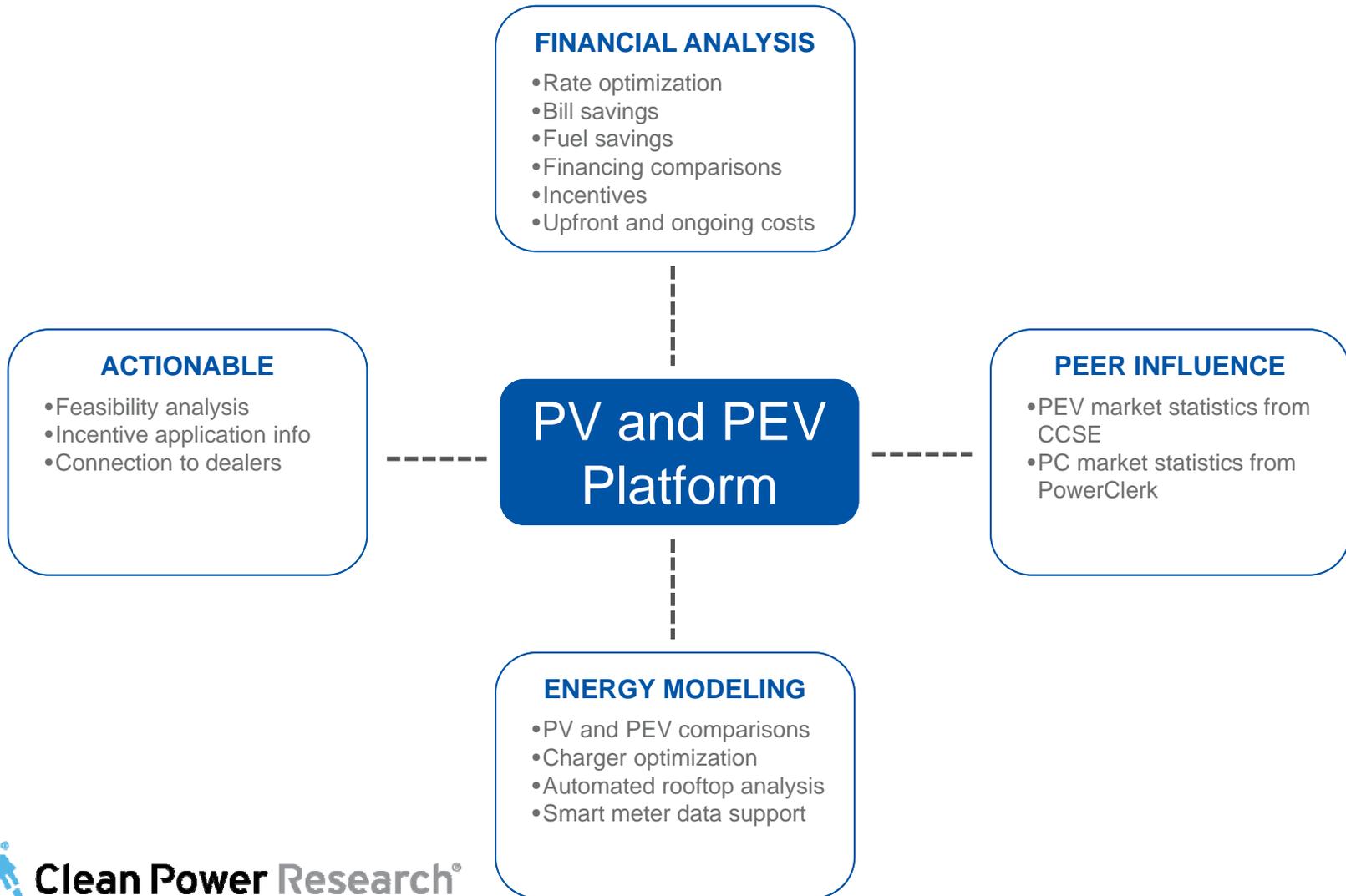
**Lifetime Savings** | Monthly Bill | Environment | Recharging | Fuel Cost | Summary

You'll save \$7,603 over the next 10 years with an Energy Efficient Vehicle.

**PV + PEV Platform**

UNDER DEVELOPMENT

# Product Features



# Tasks and Timeline

Task 1: Project Management: 7/14 – 6/15

Task 2: Enhance web service: 7/14 – 4/15

- Utility interval meter data and current rate
- Recommendation engine
- Advanced driving/charging behavior modeling
- EV and EVSE specs and incentive databases

Task 3: Develop application: 9/14 – 6/15

- Integrate enhanced web service
- Collate market statistics – PowerClerk and CCSE
- Develop intuitive interface
- Make it actionable

# Deliverables

- Detailed RESTful web service documentation
- Demo of PV+PEV web service integration
- Demo of PV and PEV market statistics integration
- Demo of UI adaption to tablets
- Launch platform into production
- **1 year software license**



## Q&A

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