



**REDCLAY**

*Your Vision. Our Mission.*

# EMBRACING ELECTRIC VEHICLES WITHOUT BREAKING THE BANK

## A CASE STUDY ON DYNAMIC PRICING AND BILLING ON LEGACY SOFTWARE SYSTEMS

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**DATE**

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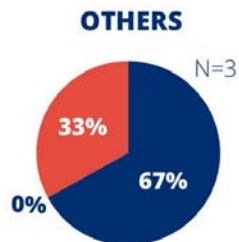
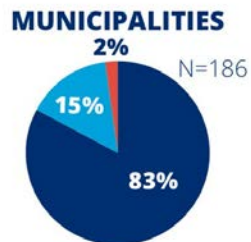
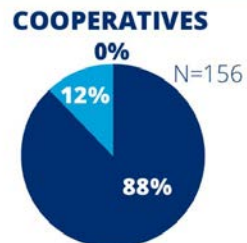
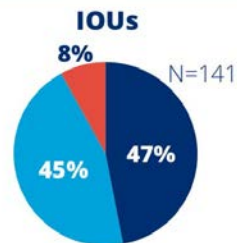
# ELECTRIC VEHICLES:

Ready or not, here they come!



# THE ELECTRIC VEHICLE BOOM: ARE YOU PREPARED?

## PERCENT OF UTILITIES BY STAGE AND BY UTILITY TYPE



■ EARLY STAGE ■ INTERMEDIATE STAGE ■ LATE STAGE

Source: Smart Electric Power Alliance, 2018. N=486. "Other" includes federal and state utilities.



# THE CHALLENGES OF PREPARING FOR ELECTRIC VEHICLES



Infrastructure



Software Systems



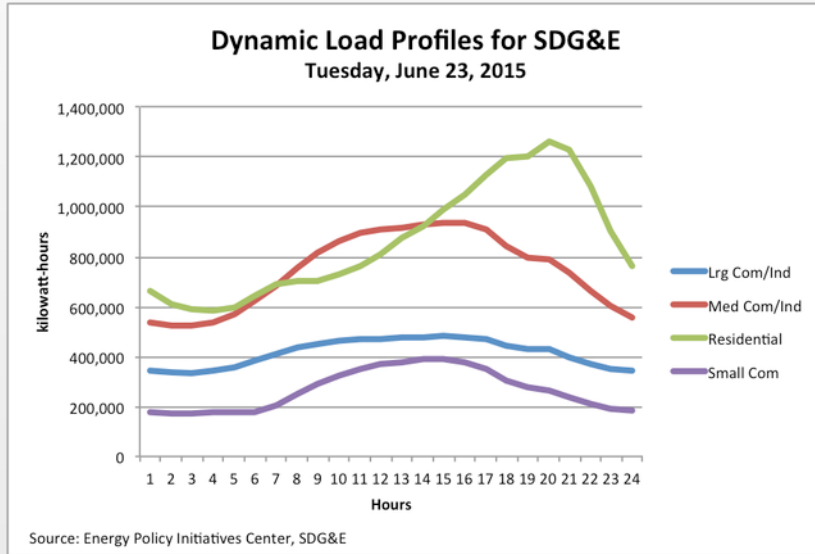
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# CASE STUDY:

Dynamic Pricing and Billing  
on Legacy Systems



# WHY DYNAMIC PRICING AND BILLING?



- Increasing number of EVs on the road means higher demand for electricity
  - Dynamic pricing can incentivize off-peak charging

## Customers want more info!



- Want to research the best rates
- Want more detail in their monthly bills
- Want to make changes to their behavior after reviewing electric bill

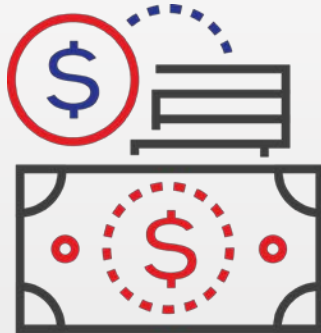
Customers want more information when it comes to electric vehicle programs, too.



# HOW DID THE TEAM DO IT?



Two Main Components:



Pricing Calculation Engine



Billing Calculation Engine





# DYNAMIC HOURLY PRICES



## Process day-of pricing in the system

Day-Of Price=a real time  
hourly price for today

## Add dynamic prices to the base rate

## Process day-ahead pricing in the system

Day-Ahead price=a forecasted  
hourly price for tomorrow

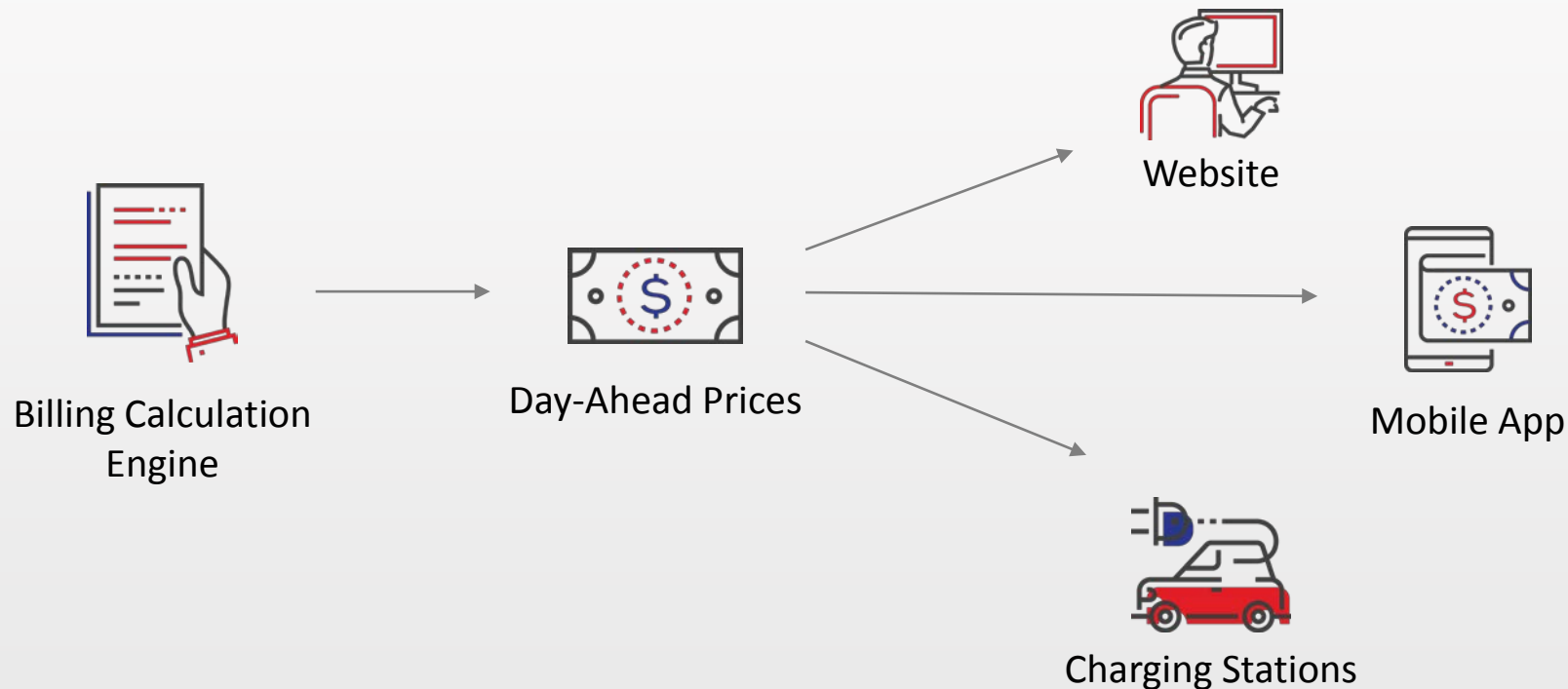
## Calculate the final prices to be published



# DYNAMIC HOURLY PRICES



# DYNAMIC HOURLY PRICES





## CUSTOMER SERVICE2.0



### **GIVING CUSTOMERS MORE TOOLS**

Customers can use website and mobile app to look up charging station prices in advance.



### **HISTORICAL DATA FOR PRICE COMPARISONS**

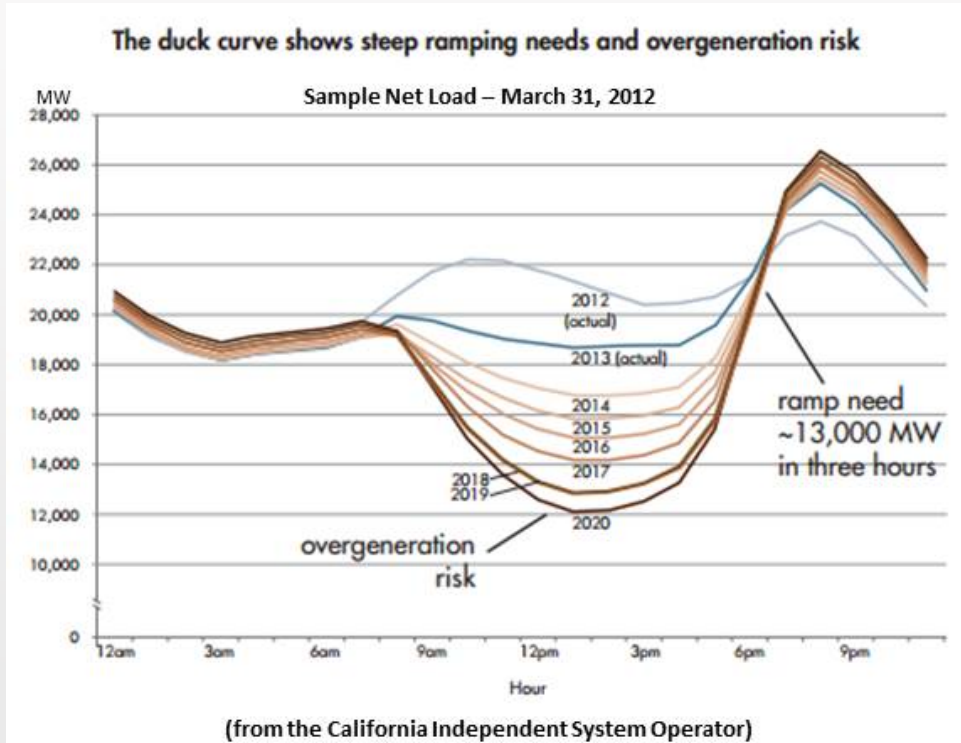
Website includes historical data on past prices, allows customers to research trends in prices.



### **THE SELF-SUFFICIENCY CUSTOMERS NOW DEMAND**

Easy-to-use, convenient channels for finding information

# INCENTIVIZING OFF-PEAK CHARGING



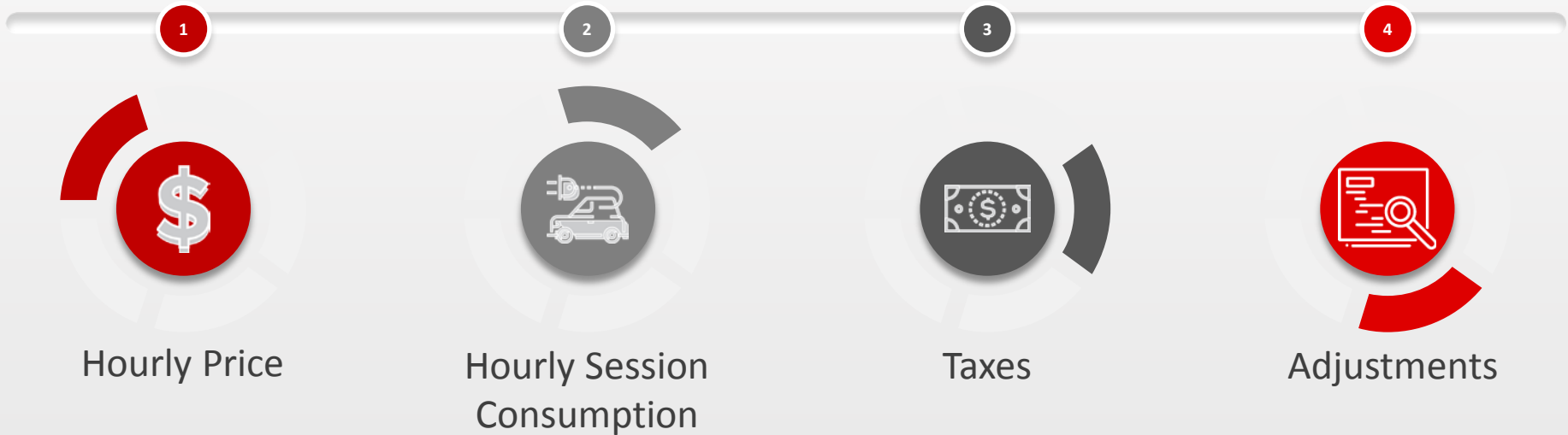
- Dynamic pricing=more off-peak charging
- Particularly useful for utilities with high amounts of solar generation



# MONTHLY BILLING FOR HOURLY PRICING



Solution can calculate Electric Vehicle Program bill determinants based on...



...to be delivered to the CIS.



## Cancel/Rebills:



**INDIVIDUAL**

*OR*

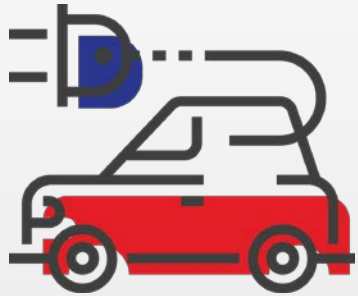


**MASS**

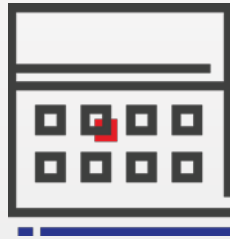


# THIRD PARTY CONSUMPTION DATA VALIDATION & PROCESSING R

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Incoming Session  
Consumption Data



Validations & Estimations

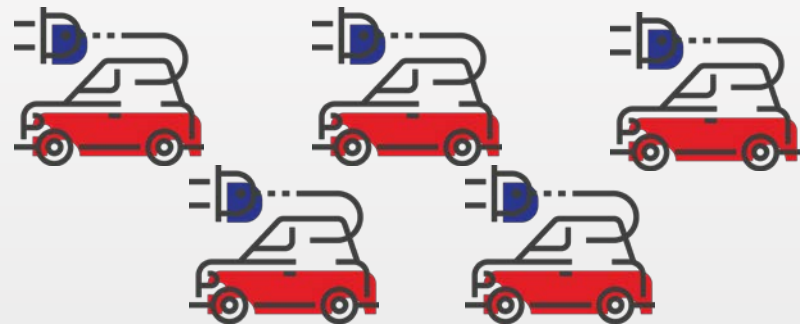
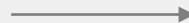


Billing Calculations

# TIMELINE & RESULTS



Successful Pilot!



Full-Scale Implementation

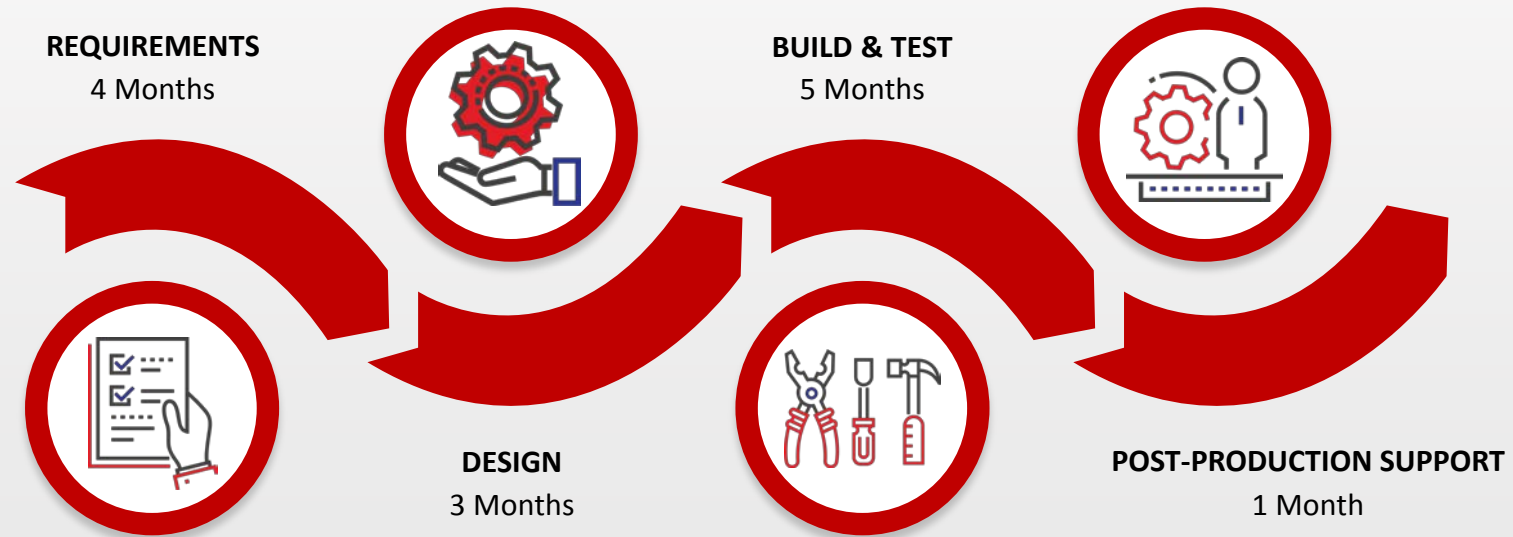




# TIMELINE & RESULTS



## Full-Scale Implementation - 13 Months Total







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# COMPANY OVERVIEW



— **BUSINESS AND TECHNICAL SOLUTIONS**

*Exclusively serving the energy and water industries*

— **18 YEARS OF EXPERIENCE**

From small municipal to large investor owned utilities

— **100+ EMPLOYEES**

And growing!

# CLIENTS



**QUESTIONS?**

