

ET Summit 2024

Presented by



DRET– Residential and SMB Load Management Studies

Albert Chiu

Expert Product Manager

Pacific Gas & Electric®



*Pacific Gas and
Electric Company®*



Pacific Gas and Electric Company

About us

We are focused on providing safe, reliable, clean and affordable natural gas and electricity to our customers.

Service Area

70,000
SQUARE MILES



Service area population

16 million
CALIFORNIANS

(That's 1 in 20 Americans!)



25,000

EMPLOYEES WHO
LIVE AND WORK

in the communities we serve



MORE THAN

715,000

SOLAR CUSTOMERS

representing **>6,900 MW**
of solar energy generated



NEARLY

500,000

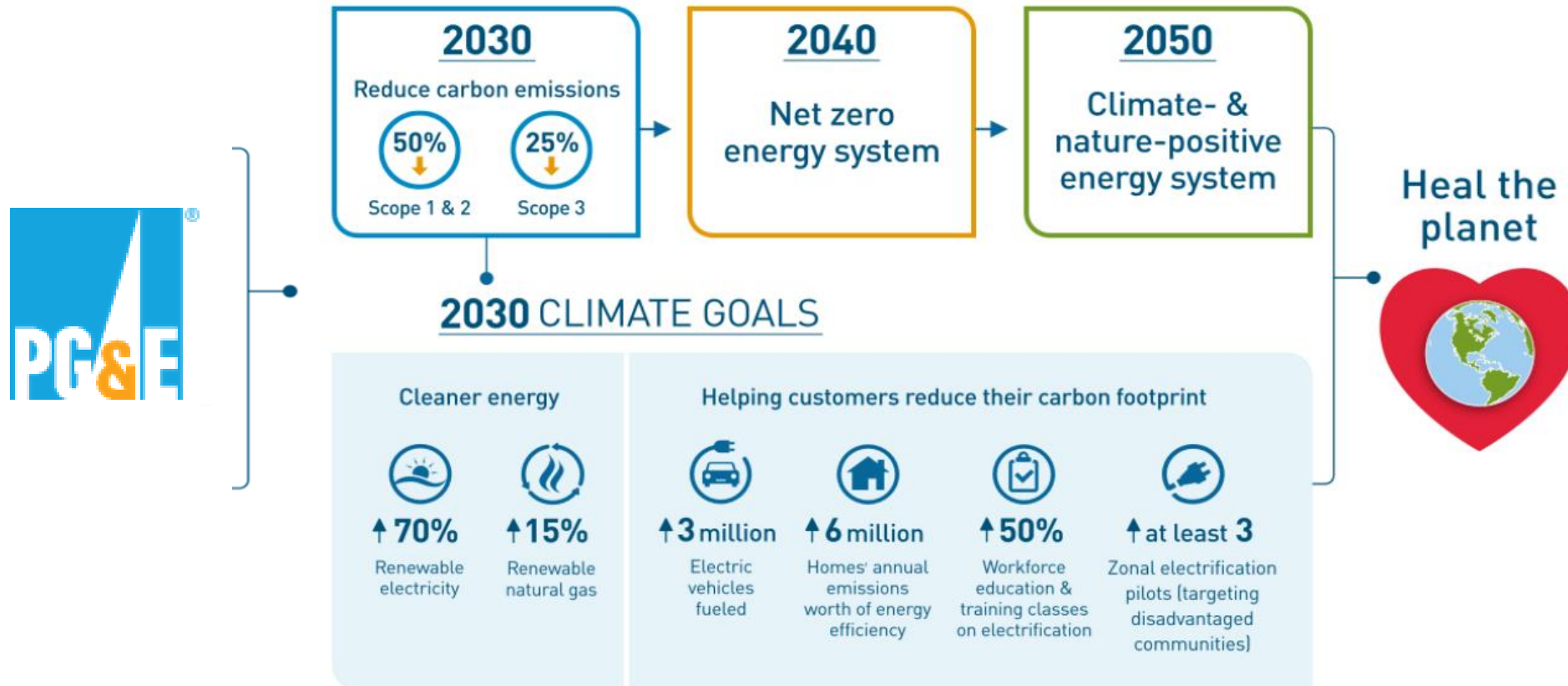
ELECTRIC VEHICLES

registered in our service area



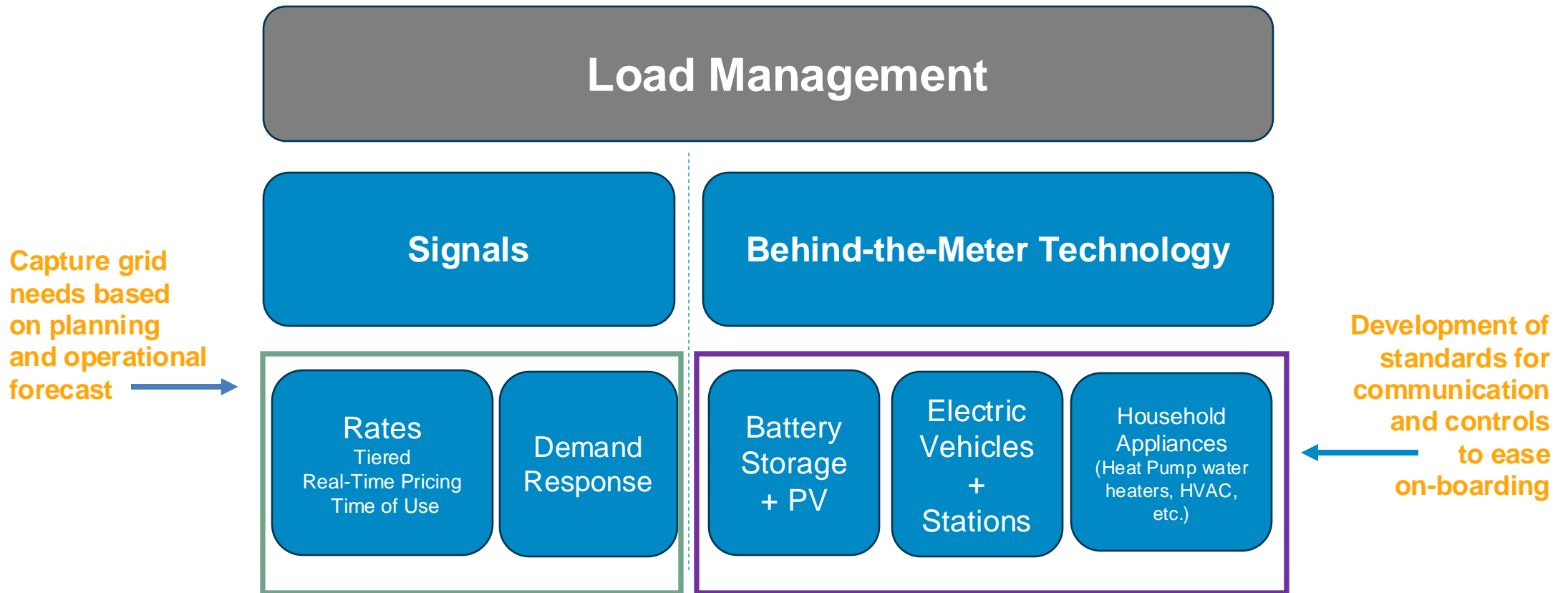
PG&E's Contribution to Healing the Planet

California's decarbonization plan requires us to achieve carbon emission reductions of 85% below 1990 levels, be carbon neutral, and achieve 100% renewable and GHG-free resource supply by 2045. PG&E plans to achieve this by 2040.



PG&E's Load Management Strategy

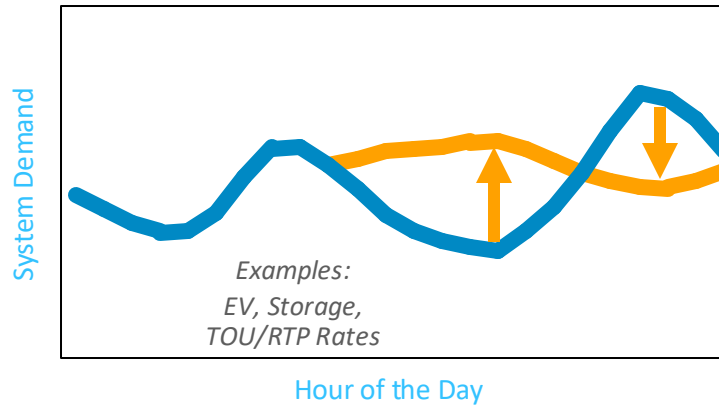
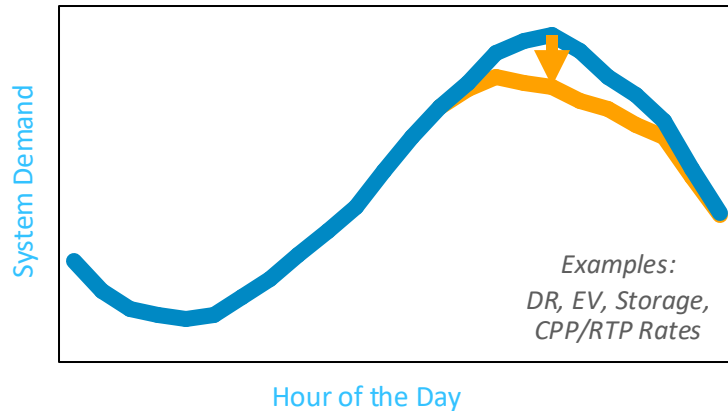
PG&E's load management strategy recognizes the many options for shaping customer load and help balance the grid while meeting the customer's energy agenda.



Different Types of Load Management

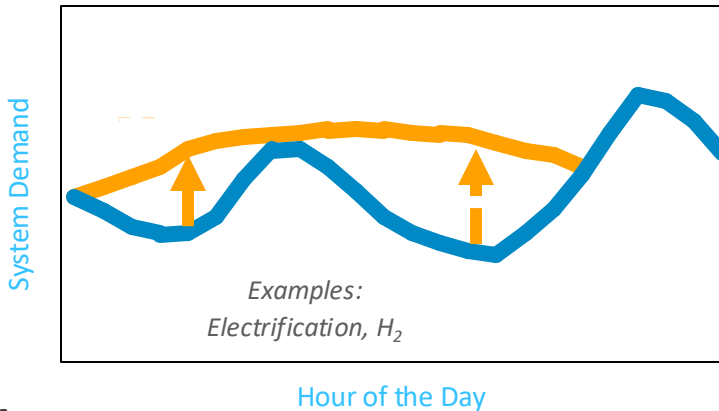
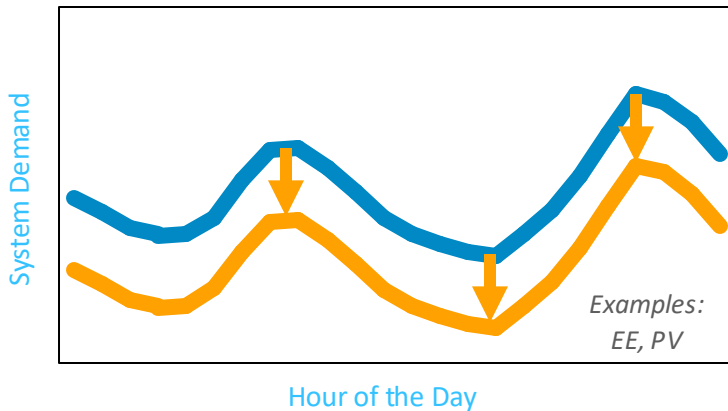
Traditional demand response (DR) provides load reduction during peak times and high price periods, and often helps to prevent power interruptions due to supply shortages. Today load management programs and rates have become important tools for flattening the load curve.

Peak Load Shed:
MW of load reduction during annual/monthly peak conditions



Daily Load Shift:
MWh shifted from peak hours to non-peak hours

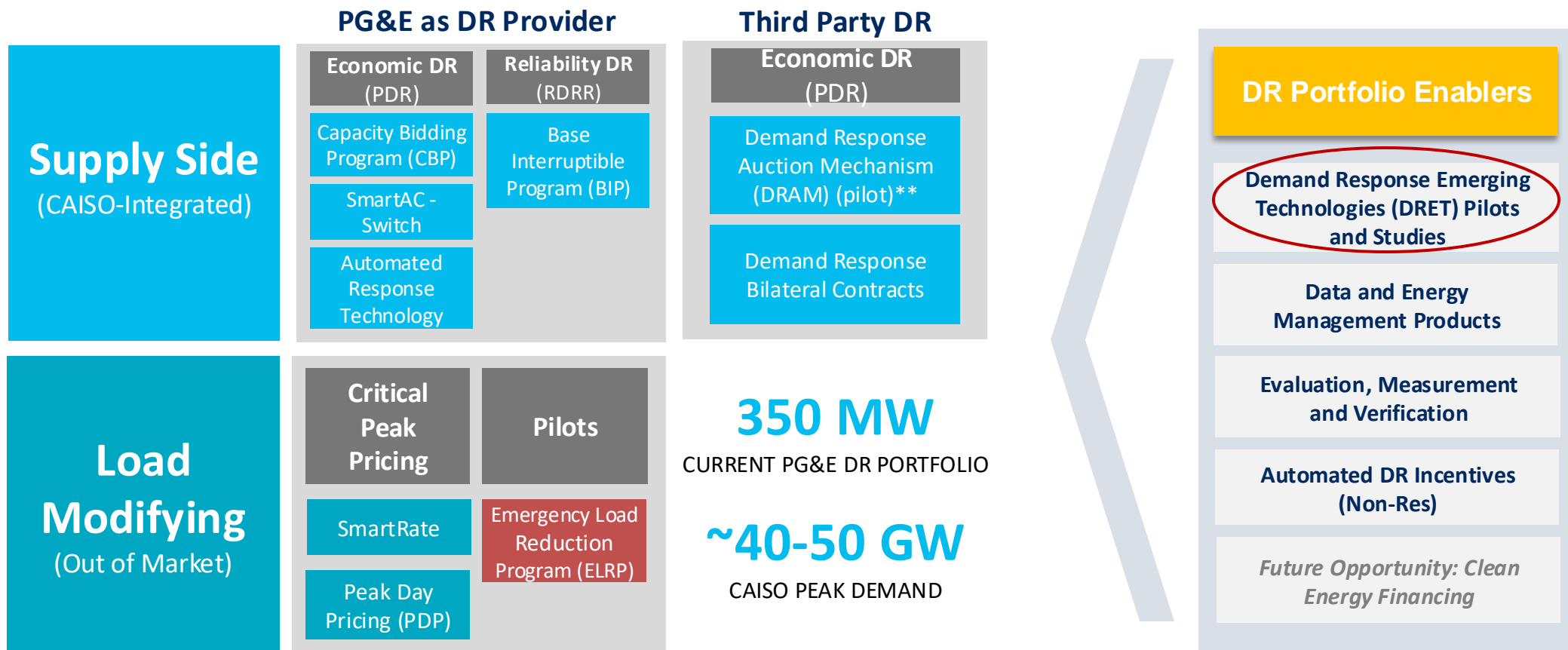
Permanent Load Reduction:
MWh reduced relative to a baseline



Strategic Load Growth:
MWh increased in non-peak hours

PG&E's Demand Response Portfolio

Today, our DR portfolio caters to generation capacity and energy shortfalls offered via a range of CAISO* market-integrated and load modifying programs. Portfolio “enablers” facilitate data and insights driving portfolio modernization and continuous improvement.



*California Independent System Operator [Today's Demand Outlook | CAISO \(caiso.com\)](https://www.caiso.com)

**Ending 12/31/2024

Voice Automation Technology for Load Management Study Phase 2

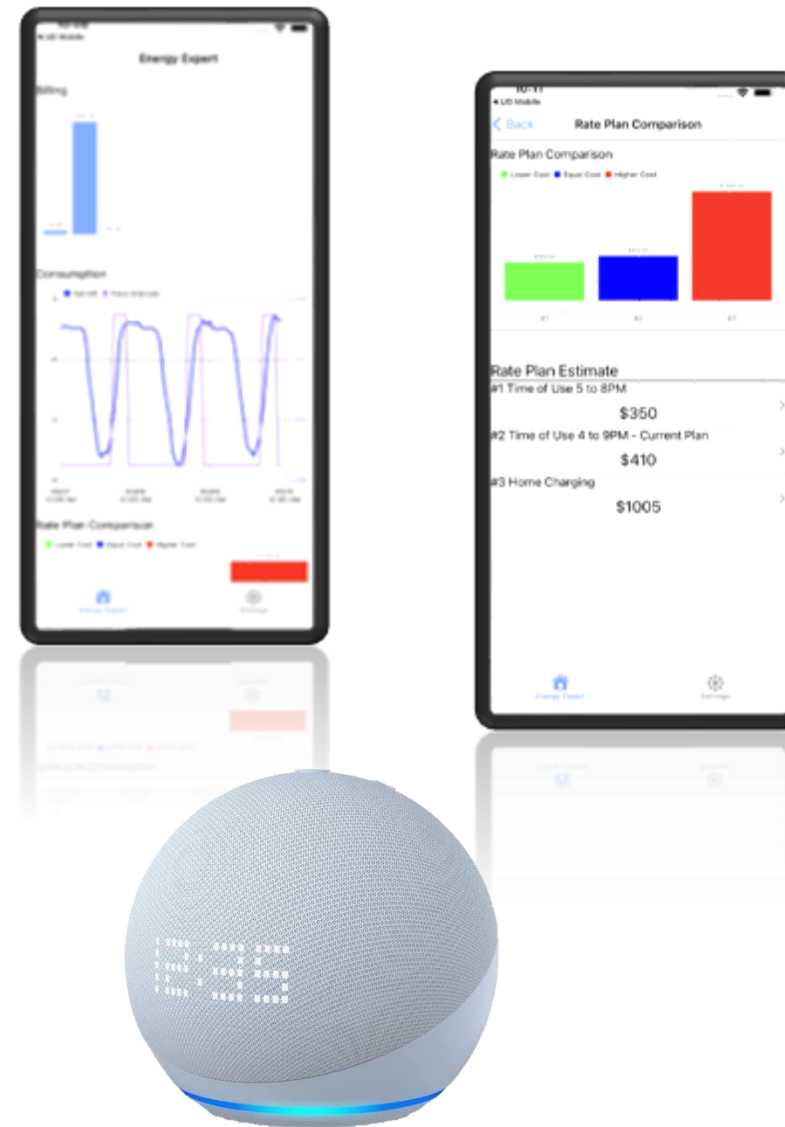
Energy Expert App

- Study designed to test:
 - Evaluating communication channel for time-of-use customers
 - Voice command mechanism/smart speaker function
 - Bidirectional communication with the customers
- Customers use Alexa Smart Speaker or a cell phone app, branded as Energy Expert, to:
 - Receive Notifications: PSPS, High Price
 - Ask questions about:
 - Best time to use an appliance or charge an EV
 - Optimal Rate
 - Energy Use
 - View PV Production and Consumption



Energy Expert App

1. Continue to evaluate the effectiveness of the Smart Speaker and the app as a platform to provide information, such as time-of-use, PV production, PSPS, and demand response events
2. Additional information (e.g. outage)
3. Increase customers adoption
4. Increase app capabilities and functions (e.g. supporting dynamic rates)



Field Test OpenADR 3.0 for Dynamic Rate

PG&E 24-27 RTP Pilots summary

PG&E has \$25M to \$50M portfolio of RTP rates that will be evaluating program and rate design elements ahead of full implementation.

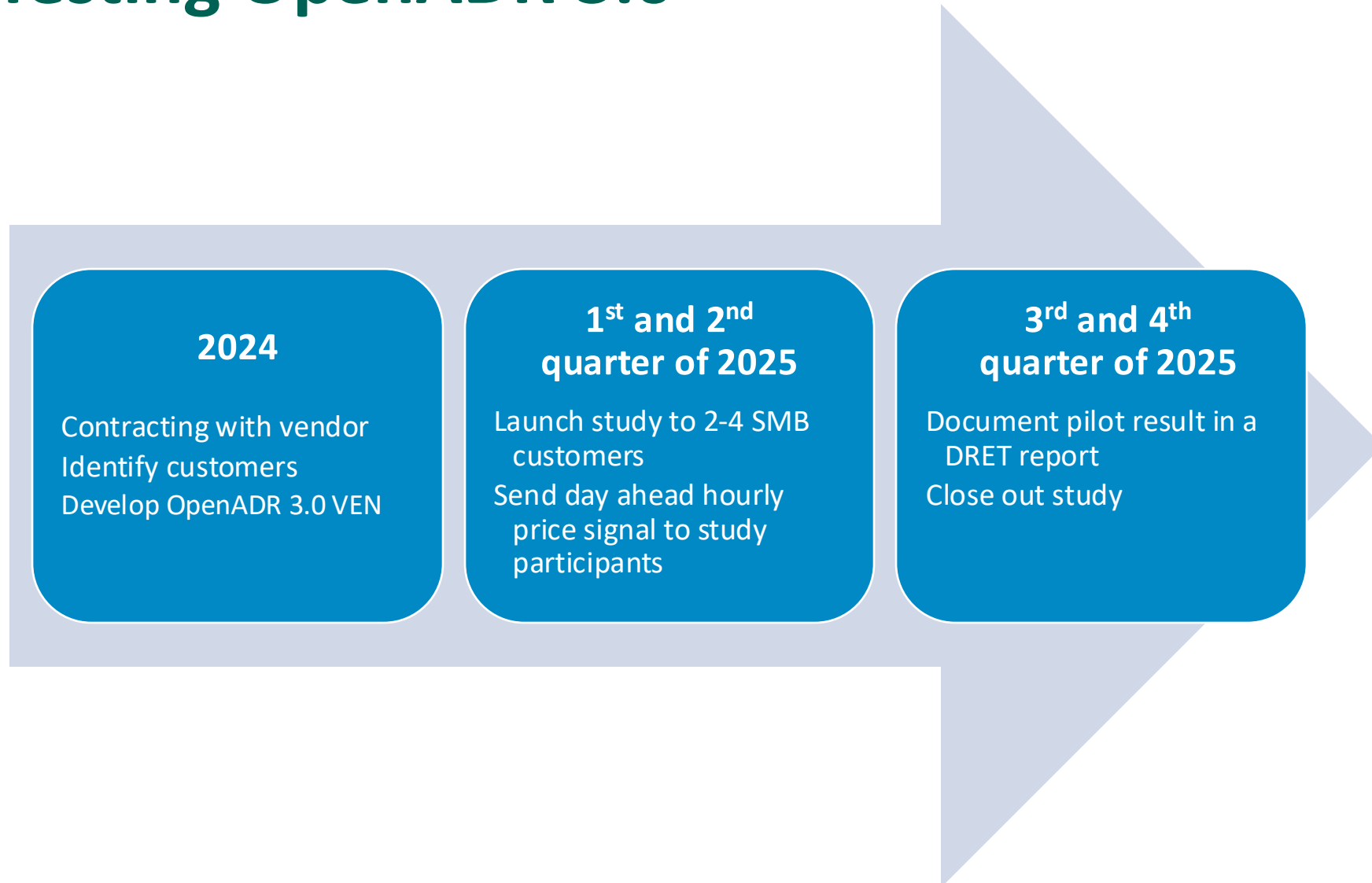
| Pilot By Priority | Electric Vehicles (CET Team) | Agricultural Sector | Res/Commercial Sector |
|-----------------------------------|--|---|---|
| Target Use Cases | Vehicle to Grid (V2G) | Water Pumps/Sanitation, Electric Tractors | Box stores, industrial, Smart EV charging (V1G), BTM Batteries, TBD |
| Timeline | Sept '24-'25 | Sept '24 (compliance) – Dec '27 | Sept '24 (compliance) – Dec '27 |
| Budget | \$13M | \$7.5M / \$14M / \$21.5M | \$4.7M / \$10.5M / \$15.2M |
| Goals | 1,000 Residential Service Points 250 Commercial Service Points | 50 MW | 50 MW |
| Key Challenges and Areas of Focus | 1. CCA Adoption 2. Complex Rate Design 3. Partnerships with Automation Service Providers (ASP) 4. Partnerships with other PG&E programs | | |
| Systems and Processes | (Vendor enabled “Shadow billing” platform) | | |

OpenADR 3.0 for dynamic rate

OpenADR 3.0 is a new version of the OpenADR standard that includes dynamic price structures and other features to help with energy management:

| Feature | Description |
|------------------------|--|
| Dynamic pricing | OpenADR 3.0 offers more dynamic pricing structures and allows utilities to exchange dynamic price and reliability signals with customers |
| Simplified messaging | OpenADR 3.0 simplifies messaging, including pricing, and uses modern web service designs |
| Seamless communication | OpenADR 3.0 provides seamless communication between utilities and customers, and between different devices and systems |
| Capacity management | OpenADR 3.0 supports two mechanisms for capacity management between the grid and the customer |
| Easy to implement | OpenADR 3.0 can be implemented in customer devices, such as Wi-Fi appliances, EVSE and DERs, to receive grid signals |

Field Testing OpenADR 3.0



The logo for DRET (Demand Response - Emerging Technologies) consists of the letters "DRET" in a bold, blue, sans-serif font, enclosed within a white rectangular box with a blue border.

This project was funded by
PG&E's Demand Response - Emerging Technologies Program

For more information,
contact Albert Chiu
akc6@pge.com



The project report can be found at
<https://www.dret-ca.com/wp-content/uploads/2024/10/Voice-Automation-Technology-for-Load-Management-Study-Phase-2.pdf>