

**Emerging Markets & Technology  
Demand Response Projects  
2024 Q2 – 2024 Q3 Semi-Annual Report**

**September 30, 2024**

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## **I. Summary**

Pacific Gas and Electric Company (PG&E) submits this semiannual report as directed in *Decision Adopting Demand Response Activities and Budgets for 2012 through 2014*, Decision (D.) 12-04-045, Ordering Paragraph (OP) 59 and continued per D.14-05-025 and D.16-06-029 adopting Bridge Funding for 2015-16 and 2017, respectively. The Demand Response Emerging Technologies (DRET) Program was also approved in the *Decision Adopting Demand Response Activities and Budgets for 2018 through 2022*, D.17-12-003.

PG&E's DRET program continues to explore new technologies and applications that have the potential to enable or enhance demand response (DR) capabilities and can include hardware, software, design tools, strategies, and services. Examples of some of the types of enabling technologies that have been investigated are advanced energy management control systems (EMCS), direct load controls, and advanced heating, ventilation, and air conditioning (HVAC) controls.

PG&E's DR Portfolio Strategy centers on addressing both customer and grid needs today and, in the future, taking into account Rule 24, and the enablement of DR integration into the ISO wholesale markets. In addition, PG&E acknowledges the rapid development of "smart" devices, storage, and other technologies that are seeing increasing customer adoption across sectors and have the potential to help customers better perform in DR programs and or dynamic rates.

PG&E, Southern California Edison Company (SCE) and San Diego Gas & Electric Company (SDG&E), collectively referred to as the Investor Owned Utilities (IOUs), share updates on individual projects, including project status and findings, at monthly DRET conference calls as well as via participation in the Emerging Technologies Coordinating Council (ETCC) quarterly meetings.

## **II. Projects Completed in Q2 2024 and Q3 2024**

No DRET study was completed during this time.

## **III. Project Initiated in 2024**

### **A. Flexible Demand Response Collaborative**

#### **1. Overview**

The objectives of the project are to: 1) demonstrate the capability and value of large loads like water pumping, EV fleets, and data centers to flex usage; 2) characterize and model the capability and availability of large pumps and other loads for better integration in power system operations;

and 3) foster industry collaboration to explore program alternatives and share best practices in sustainably engaging Flex DR to support system flexibility needs.

## **2. Collaboration**

The DRET study is a partnership with the Electric Power Research Institute (EPRI).

## **3. Results/Status**

No results to share at this point.

## **4. Next Steps**

PG&E is in the process of contracting with EPRI on this project.

# **B. Field Test OpenADR 3.0 for dynamic rate**

## **1. Overview**

This DRET Study will contract with an Automated Service Provider (ASP) to bring small medium business customers into the dynamic rate using the recently developed Open Automated Demand Response (“OpenADR”) 3.0 specification. The DRET Study is intended to assist in accessing the cost and benefits of real-time rates, including required infrastructure, manufacturer interest, and customer impacts when using this new open standard.

## **2. Collaboration**

The DRET study will partner with internal pricing product team since they will be leading the development and implementation of the expanded RTP Pilots.

## **3. Results/Status**

No results to share at this point.

## **4. Next Steps**

PG&E completed the contract with an ASP, and will start to evaluate customers sites for technical fit in order to achieve the study objectives. PG&E will work closely with key account managers to determine program eligibility and in developing a customer participation application and terms and conditions.

## **IV. Ongoing DRET Projects**

### **A. Smart Electric Panel Lab Test**

#### **1. Overview**

In recent years, electric panel manufacturers have started to add connected technologies to traditional electric panels. These technologies include integrated or add-on software controls that provide customers with additional information, control and capabilities beyond a traditional panel.

Below are the objectives of the study:

- Evaluate smart panel installation difficulty
- Evaluate smart panel customer app functions
- Evaluate smart panel utility app functions
- Validate that the smart panel is safe to operate for field demonstrations

#### **2. Collaboration**

PG&E's DR Emerging Technology and PG&E's Applied Technology Service (ATS) teams jointly designed and will implement the test cases and procedures for the lab tests.

#### **3. Results/Status**

The ATS team installed two smart panels at its San Ramon location. The panels are connected to a load simulator, which may expand to real residential electric loads such as air conditioning, electric vehicles, and water heaters in the future. The team is currently developing test cases for the customer and utility apps.

#### **4. Next Steps**

The ATS team installed a new EV charger coupling with the existing smart panel. New testing will be done on how well the smart panel can respond to different demand response and load management use cases. In addition, the team identified a new smart panel from a different manufacturer for testing and comparison. This new smart panel is designed for SMB customers, therefore, new use cases will be developed in this area. The installation of the second panel was completed and the ATS lab plan to start testing the new panel next quarter. In addition, the

original smart panel manufacturer have developed new load management functions and the lab is in the process of testing these new functions.

## **B. Residential load management software platform**

### **1. Overview**

Home Energy Management system provides the functions and capabilities for residential customers to manage their energy use by behavior changes and/or automation through different energy end uses. The Study will assess residential customers' receptiveness and ability to perform load management with the support of a load management app, which serves as a home energy management system.

1. What is the effectiveness of emissions reductions messaging in:
  - Reducing household emissions
  - Shifting energy usage to off-peak periods
  - Engaging customers in load management awareness and education
2. What are the incremental load impacts of emissions reductions messaging to existing DR participants.
3. Can new communication protocol (e.g., Matter) be leveraged to automate load management measures.

### **2. Results/Status**

The DRET team have contracted with a 3<sup>rd</sup> party software company to develop an advanced API to enable the residential load management software platform and app last quarter. The DRET team successfully developed the advanced API with the software company and a partnership agreement with the residential load management software platform company.

### **3. Next Steps**

The DRET team will continue to work with the residential load management software platform company to evaluate its GHG impact and develop new LM functions in the next two quarters.

## **C. Voice Automation Technology for Load Management Study Phase 2**

### **1. Overview**

PG&E started to default residential customers to TOU rates in April 2021. Therefore, PG&E continue to expand the existing tools and technologies offered on its website to help customers understand new time varying rates. Similar to Phase 1 the objective of this DRET study is to leverage residential voice assistant technology (such as Amazon Alexa) and mobile app to educate residential customers on energy usage and bill forecasts, rates, TOU and RTP automation/optimization, and notification of utility events.

Customer engagement through Voice Assistants require the customer to have access to Amazon Alexa via speakers, display, and/or mobile app. Information was collected and processed from PG&E's internal rate engine and Share My Data (SMD) to a third-party system. The customer would then interact with a third-party system (Energy Expert) through their smart speakers, smart display, and mobile devices. The Energy Expert advised the customers to optimize their energy use based on the customer's rate schedule. In addition, the app provided customer notification such as Smart Days and PSPS events.

### **2. Collaboration**

The DRET team will partner with the internal customer care Pricing Product and Marketing teams to develop frequently asked questions (FAQs) that relate to TOU and load management. In addition, this mobile app has the capability to support the recently approved expanded RTP pilot. The DRET team will work with the pilot team on such collaboration when appropriate. PG&E hired the same third party to continue the development of the mobile app for this study.

### **3. Results/Status**

A contract was developed for this study and the DRET team is working with internal customers experience team to enhance the look and few of this application.

### **4. Next Steps**

PG&E will work with internal marketing team to expand the user base of this mobile app.

## V. Budget

### 2024-2027 DRET Budget (Excluding VCE Pilot)

The following is a breakdown of the total expenditures for PG&E's 2024-2027 DRET budget. These values are based on accruals made each month. Values do not reflect commitments for projects, including those described in this report, which have been scoped and contracted for, but not yet executed.

<u>Approved 2024-2027 Budget</u>	<u>\$5,784,000</u>
<u>Budget Spent as of August 2024</u>	<u>\$67,634</u>
2024-2027 Budget Remaining	\$5,716,366