



*Pacific Gas and
Electric Company®*

**Emerging Markets & Technology
Demand Response Projects
2026 Q2 – 2026 Q3 Semi-Annual Report**

September 30th, 2026

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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 2026 and Q3 2026

A. Voice Automation Technology for Load Management Study Phase 2

1. Overview

PG&E began transitioning residential customers to time-of-use (TOU) rates by default in April 2021 and continues to expand its website tools to help customers understand these rates. Building on Phase 1, this DRET study evaluates the use of residential voice assistants, such as Amazon Alexa, and a mobile app to educate customers about energy use, bill forecasts, rates, TOU and real-time pricing (RTP) automation and optimization, and utility event notifications.

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 partnered 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 feel of this application.

4. Next Steps

PG&E decided to not continue with this mobile app due to low customers' participants. The team is going to provide the lessons learned to 3rd party with voice automation technology so they can consider adding energy functions into their offerings in the future.

B. Field Test residential EMS with Matter standard

1. Overview

The goal of this project was to demonstrate the feasibility of optimizing off-the-shelf Matter devices, such as thermostats, through direct communication with grid signals. The demonstration will explore how and whether Matter, the new smart home connectivity standard, can enhance interoperability, improve user experience, and enable optimized energy usage through seamless integration with a smart home automation hub. The grid signals may come from different sources such as OpenADR 3.0, showcasing how Matter devices can be paired with a Matter enabled central smart home automation hub to establish seamless interaction

between devices from different manufacturers within the local area network (LAN).

2. Collaboration

The DRET study partnered with two third party vendors to implement this study. One provided Matter certified technologies and the other one provided OpenADR 3.0 Virtual Top Node.

3. Results/Status

PG&E completed the study and posted the report in the CA DRET and ETCC websites.

4. Next Steps

The Study demonstrated that OpenADR 3 and Matter protocols can be used to deliver load flexibility signals for smart home automation through a local area network that does not rely on DER OEM's clouds. However, load flexibility opportunity remain low since the adoption of the Matter standard has been slow for many different reasons. PG&E plans to propose to CEC to consider requiring the adoption of this standard in future revisions on the Flexible Demand Appliances Standard with existing appliances and future appliances such as EV and stationary battery.

The teams plan to present the study results in the following three events:

ERPI webinar -October 2026

ETCC Summit in UC Davis – October 2026

PLMA event – November 2026

III. Project Initiated since Q2 2026

No new DRET study was initiated during this time

IV. Ongoing DRET Projects

A. 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 3rd 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 2026. PG&E have contracted with a M&E company to start evaluating the effectiveness of this software in 2026. We expect the study will be completed by the end of 2026.

B. 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

PG&E contracted with EPRI and started to engage with this project. There was a meeting with other participating utilities in February, which PG&E participated remotely.

4. Next Steps

PG&E will continue participating in the collaborative to identify best practices and lessons that can inform its programs, [particularly](#) to help develop future proposals [for](#) the 2030–34 DR cycle.

C. CEC Industrial, Agricultural, Water (IAW) Flex Hub

1. Overview

The goals of the IAW Flex Hub is to demonstrate demand-flexible technologies in the industrial, agricultural and water sectors, to validate technologies and business cases for industry that will accelerate technology options, gather and share data to support innovative rates that unlock the potential of demand flexibility in these critical industries, and to provide benefits to disadvantaged communities across the state. The proposed Industrial Flex Hub will target four (4) demonstration projects in PG&E's service territory across a diverse set of industries that will enroll in PG&E's demand response or dynamic pricing programs or pilots. Information gathered and generated through the Industrial Flex Hub will be shared to help inform PG&E about opportunities to optimize the benefits of demand flexibility across its service territory.

2. Collaboration

IAW Flex Hub partner includes the Electric Power Research Institute (EPRI), University of California, Davis (UC Davis), Lawrence Berkeley National Laboratory (LBNL), Stanford University, Fresno State University, DNV, community partner PSE Healthy Energy, and IAW Flex Hub lead Momentum.

3. Results/Status

The DRET team participated in the Load Serving Entities Stakeholder Group (LSE-SG) Q3 2026 meeting

LSE Stakeholder Group Objectives & Mechanisms

Objectives

- Inform Research and Demonstrations
- Provide feedback from LSE perspective
- Identify Barriers & Opportunities
- Support Knowledge Transfer, Policy, and Market Design
- Advance Equity and Community Benefits

Mechanisms

- Targeted member list followed by opt-in participation
- Quarterly meetings
- Materials available via iawflehub.org and circulated via EPRI.

4. Next Steps

PG&E is in the process of contracting with Momentum to participate in the IAW hub.

D. Flexible Interoperable Technologies Initiative (FLEXIT)

1. Overview

Given the expected growth of DER, such as smart appliances, EVs, and battery storage, it can be beneficial for energy companies to more easily

integrate with DER aggregators to increase flexibility and reliability. FLEXIT increases the ease of integration by establishing awareness of available resources, maximizing service while operating safely, and unifying technical protocols.

Under FLEXIT, EPRI is facilitating a working group to understand all perspectives and develop consensus in support of its workstreams. By harmonizing existing standard services, communication protocols, and cybersecurity requirements, findings can enable stakeholders to leverage and integrate reliable, accurate, timely, and actionable DER services into grid operations without compromising safety or security.

2. Collaboration

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

3. Results/Status

PG&E contracted with EPRI and started to engage with this project. There were weekly meetings with other participating utilities, which PG&E participated remotely.

4. Next Steps

PG&E will continue to participate in this collaborative and identify if there are any best practice and lessons learned that can apply to PG&E's programs and its DERMS.

E. Lab testing new generation of grid enabled heat pump

1. Overview

California aims to install 6 million electric heat pumps by 2030 to accelerate building decarbonization and achieve carbon neutrality by 2045. With the increase of heat pump adoption in CA, different manufacturers have started to introduce new heat pump technology that provides new load flexibility functions. This new DRET study aims to lab test one of these technologies in PG&E lab to evaluate its load flexibility functions and capabilities.

2. Collaboration

The DRET study is a partnership with the PG&E Applied Technology Service Lab.

3. Results/Status

The lab has received the indoor unit from the manufacture, and the outdoor unit was installed in July 2026.

4. Next Steps

The ATS lab has completed the testing of this technology. The team is in the process of reviewing the final report before publishing it in the CA DRET and ETCC websites.

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.

Approved 2024-2027 Budget	\$5,784,000
Budget Spent as of February 2026	\$1,820,722
2024-2027 Budget Remaining	\$3,963,278