

**DEMAND RESPONSE
EMERGING
TECHNOLOGIES
PROGRAM**

**SEMI-ANNUAL
REPORT 2025**

March 31, 2025



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Summary

The Demand Response Emerging Technologies (DR-ET) Program Semi-Annual Report for the period of Q4 2024 and Q1 2025 is being submitted pursuant to Ordering Paragraph 59 and the discussion at pages 145-146 of Decision (D.) 12-04-045. During Q4 2024 and Q1 2025, San Diego Gas & Electric DR-ET Program initiated one (1) new activity and continued to manage three (3) ongoing projects.

I. Completed Projects during the Reporting Period

No projects were completed during the Reporting Period.

II. Ongoing Projects Through the Reporting Period

A. *Evaluating Demand Response Capabilities of Connected Variable Capacity Heat Pumps*

1. Overview

This study is testing whether variable speeds of heat pump compressors and fans can improve comfort and overall performance as well as provide an improved resource for demand response. The results will help inform DR program design concerning the technology as well as customer impacts.

The primary research objective is to conduct shed events with and without pre-cooling or pre-heating strategies combined with varying levels of heating, ventilation, and air conditioning (HVAC) capacity limiting; and to demonstrate functional capabilities of variable capacity systems for demand response.

Potential research questions include:

- Can variable capacity systems respond more effectively to demand response signals compared to other types of HVAC equipment?
- How is customer comfort impacted during demand response events?
- Can the duration of a demand response event be extended prior to customer opt-out?
- Can demand response programs tailored to variable capacity systems result in higher levels of program adoption by customers given system

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features that may help overcome typical demand response program enrollment barriers?

2. Collaboration

The progress and results will be shared with other CA IOUs DR-ET Leads.

3. Status

The vendor has developed an online portal with click-through agreement portal for customer recruitment and continues to engage with manufacturers to identify compatible systems that can participate in the evaluation.

4. Next Steps

Customer recruitment is expected to continue in Q2 2025, with the first wave of customer signups expected in early summer. Testing is expected to begin in Q3 2025. Upon completion, the final report will be published to the Energy Transition Coordinating Council (ETCC) web site for public review and reference.

B. Flexible Demand Response Collaborative

1. Overview

This project is designed to advance Flexible Demand Response by modeling and demonstrating its value when employed as a balancing resource to support integration of wind, solar and other variable supply.

Project structure includes a collaborative effort to demonstrate effective and sustainable demand flexibility from large pumps and other loads such as electric vehicle (EV) fleet charging. A core focus is on water or wastewater facilities to engage large pumping loads as flexibility resources and to identify viable load shift strategies.

The results will inform future demand response models for program design, operations and planning tools so Flexible Demand Response can be scheduled and dispatched for the greatest benefits.

Potential research objectives include:

- Demonstrating the capability and value of large pumping and EV fleet charging loads to flex usage.

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- Characterizing and modeling the capability and availability of large pumps and other loads for better integration in power system operations.
- Fostering industry collaboration to explore program alternatives and share best practices in sustainably engaging Flexible Demand Response to support system flexibility needs.

2. Collaboration

The progress and results will be shared with other CA IOUs DR-ET Leads.

3. Status

The Flexible Demand Response model and simulation findings have been drafted for EV fleets.

4. Next Steps

The draft simulation findings are to be updated based on peer review. The project is expected to continue through 2026.

C. *Smart Panel Demand Response and Load Management Study*

1. Overview

The Smart Panel Demand Response and Load Management Study will examine the load shed and shift potential of smart panel devices. The study is leveraging a field demonstration that has been initiated through CalNEXT, the statewide electric energy efficiency emerging technologies program¹.

Smart panels will be installed at residential customer sites that replace or augment typical residential electrical panels. Smart panel features allow homeowners to monitor and understand their energy usage similar to dedicated energy monitoring services; and throttle or manage circuit-level power through software or programming. The circuit-level control of the smart panel allows the system to shut off dynamic combinations of non-critical loads during demand response events. The smart panels may also be able to help control the flow of renewable and stored energy for resiliency or load flex purposes.

The study will identify host sites to demonstrate smart panel capabilities, gather occupant and installer feedback, quantify costs, and assess benefits.

¹ For more detail on CalNEXT see: <https://calnext.com>.

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Tested configurations will depend on the selected sites, but each will include accompanying measures enabled by the smart panel, such as a heat pump water heater, heat pump HVAC system, and/or EV charger. Site recruitment will focus on sites that include photovoltaics (PV), energy storage, and/or smart loads to evaluate the ability to control the Distributed Energy Resources (DERs) using the smart panel, if possible.

A final report will outline the qualitative and quantitative findings in support of market adoption, future research directions, and/or program design.

Potential research questions include:

- Can smart panels allow dynamic control of critical loads by controlling circuit ampacity?
- Do smart panels allow unwanted circuits to be turned off during an event or outage?
- Can smart panels allow for dynamic control of certain non-critical loads during a demand response event?
- Can smart panels manage PV and/or energy storage systems?

2. Collaboration

The progress and results will be shared with other CA IOUs DR-ET Leads. SDG&E's ET Team is collaborating with its Demand Response Team on this study.

3. Status

The vendor has worked with the installation contractor to recruit customers.

4. Next Steps

Smart panel installations are expected to begin in Q2 2025.

III. New Activity Initiated during the Reporting Period

A. *Laboratory Testing of Electric Vehicle (EV) Meter Socket Adaptor (MSA)*

1. Overview

SDG&E is planning to conduct internal testing of a Meter Socket Adaptor (MSA) that can simplify the installation of an EV charger or other electric load such as a Heat Pump Water Heater for residential customers. The

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technology is installed between the utility meter and the meter socket, allowing customers to avoid costly electrical upgrades.

The primary objective of the testing is to verify the installation of the MSA has no impact on meter operation.

Future ET research is planned involving EV charging activities that could support demand response so this technology could facilitate equipment installations at customer sites that would otherwise need electrical upgrades for an EV charger to be installed.

2. Collaboration

The progress will be shared with other CA IOUs during scheduled monthly Statewide DR-ET Leadership Collaboration meetings. SDG&E’s ET Team is also collaborating with its Distributed Energy Resources, Metering, Standards, Customer Generation, Clean Transportation and Demand Response Program teams.

3. Status

A test plan is under development and undergoing review by SDG&E teams. Testing is expected to begin in Q2 2025.

4. Next Steps

Once the testing is completed, SDG&E will share the results internally and determine whether the device can be incorporated into a future field evaluation and installed at customer sites.

IV. Budget

Program Approved Budget 2024-2027²

	2024	2025	2026	2027
ET-DR	\$774,000	\$774,000	\$774,000	\$774,000

² Approved Budget per D.23-12-005 (dated December 14, 2023)