



Quarterly Technology Area Report (Q4 2023)



Disclaimer

The CalNEXT program is designed and implemented by Cohen Ventures, Inc., DBA Energy Solutions (“Energy Solutions”). Southern California Edison Company, on behalf of itself, Pacific Gas and Electric Company, and San Diego Gas & Electric® Company (collectively, the “CA Electric IOUs”), has contracted with Energy Solutions for CalNEXT. CalNEXT is available in each of the CA Electric IOU’s service territories. Customers who participate in CalNEXT are under individual agreements between the customer and Energy Solutions or Energy Solutions’ subcontractors (Terms of Use). The CA Electric IOUs are not parties to, nor guarantors of, any Terms of Use with Energy Solutions. The CA Electric IOUs have no contractual obligation, directly or indirectly, to the customer. The CA Electric IOUs are not liable for any actions or inactions of Energy Solutions, or any distributor, vendor, installer, or manufacturer of product(s) offered through CalNEXT. The CA Electric IOUs do not recommend, endorse, qualify, guarantee, or make any representations or warranties (express or implied) regarding the findings, services, work, quality, financial stability, or performance of Energy Solutions or any of Energy Solutions’ distributors, contractors, subcontractors, installers of products, or any product brand listed on Energy Solutions’ website or provided, directly or indirectly, by Energy Solutions. If applicable, prior to entering into any Terms of Use, customers should thoroughly review the terms and conditions of such Terms of Use so they are fully informed of their rights and obligations under the Terms of Use, and should perform their own research and due diligence, and obtain multiple bids or quotes when seeking a contractor to perform work of any type.

Portfolio Information

A summary of the number of project submissions the program has received between October 2023 and December 2023 (Q4), and what project stage and technology area each submission represents can be found in Table 1 below. Also illustrated are the program cumulative totals in each category since the program began in May 2022. Please see the program [Technology Priority Maps](#) (TPMs) to learn more about the technology areas. The current Whole Building, Process Loads, Lighting, and Water Heating TPMs were published on December 15, 2023 and the HVAC and Plug Load TPMs were published on July 1, 2023.

Overall, during Q4, the team saw a marked increase in project submissions from Q2 (51 submissions in Q4 versus 20 submissions in Q3). The “deferred” project classification means these projects will not move forward at this time but will be revisited intermittently to reassess if they meet future program needs and priorities.

Table 1: Project Submission Status Summary by Technology Area

Technology Areas	Q4 vs Cumulative (C)	Number of Projects at Project Stage					Projects Deferred	Project Submissions
		Completed	Reporting	Implementation	Project Planning	Scanning & Screening		
Whole Building	Q4	6	1	1	5	5	1	13
	C	7	5	9	5	6	1	61
HVAC	Q4	8	1	1	5	8	0	14
	C	10	2	18	6	9	1	70
Water Heating	Q4	4	0	0	2	4	1	9
	C	6	2	6	3	4	1	30
Process Loads	Q4	4	0	0	1	9	0	14
	C	6	1	9	2	15	1	55
Plug Loads and Appliances	Q4	1	0	2	2	5	0	8
	C	1	0	2	2	7	1	19
Lighting	Q4	0	0	1	0	0	0	0
	C	0	0	1	0	1	0	2
Total	Q4	23	2	5	15	31	2	58
	C	30	10	45	18	42	5	237

Figure 1 gives a breakdown of where this quarter’s project and idea submissions came from, classified by submitter type.

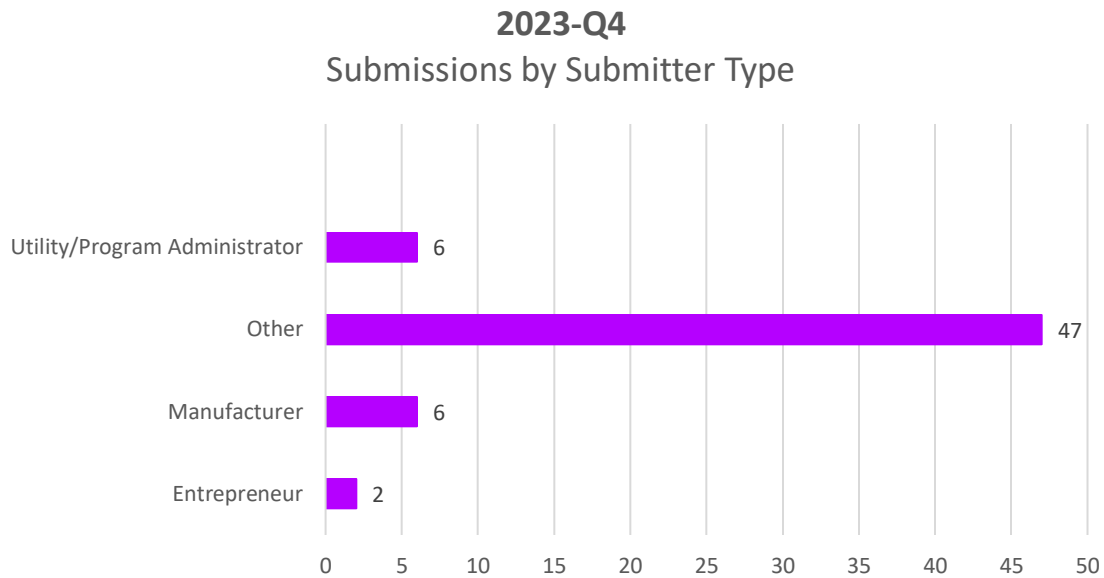


Figure 1: Program participant type

A summary of the number of projects that were selected to move forward, organized by TPM technology area, can be found in

Table 2. Included in this table are the count of projects for this quarter, broken out between technology development research (TDR) and technology support research (TSR) projects.¹

Table 2: Submissions Selected in Q4 by Project Type

Technology Area	Count of Projects by Project Type	
	TDR	TSR
Whole Building	1	5
HVAC	0	4
Water Heating	0	4
Process Loads	0	1
Plugs & Appliances	0	2

¹ Project type definitions can be found [here](#).

Technology Area	Count of Projects by Project Type	
Lighting	0	0
Total	1	16

Figure 2 displays a pipeline of projects that CalNEXT expects to be completed in each year of the program based on projects that have been selected for the program portfolio. This figure includes any projects that have been completed. As the figure shows, CalNEXT completed 6 TDRs and 19 TSRs in 2023. Looking ahead, the program requires 3 additional TSRs that are planned to be completed in 2024 to meet 2024’s program goals. The program expects to fill this gap in the first quarter of 2024. All final project reports from 2023 and 2022 can be accessed [here](#).

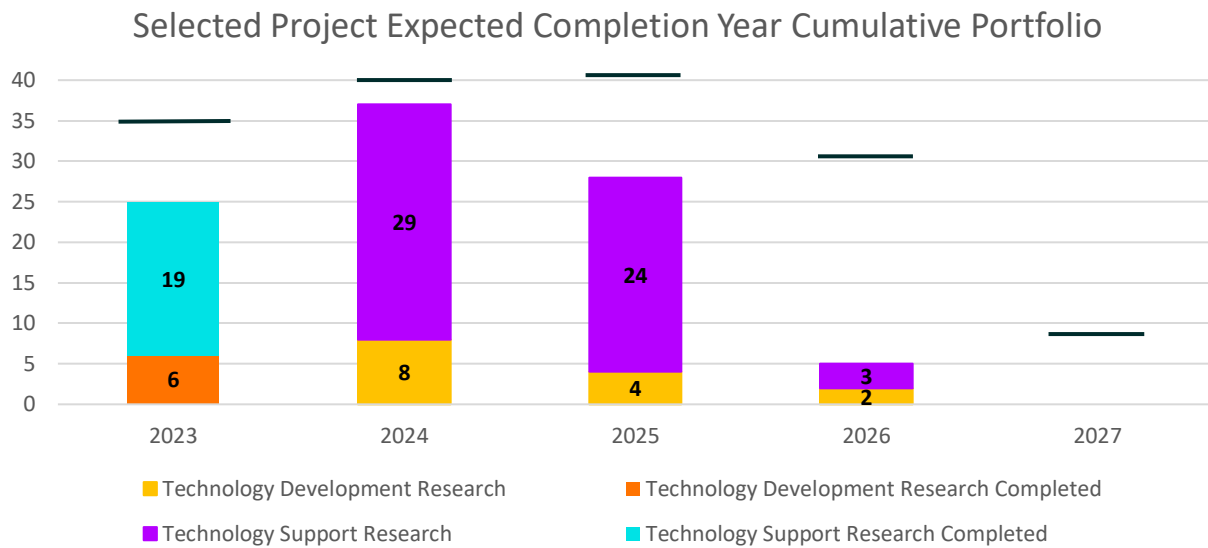


Figure 2: Selected project expected completion year (target number reflected as line)

Table 3 illustrates that by the end of Q4, the 2023 Committed Projects goals have been exceeded in both the TSR and TDR categories.

Table 3: Results of 2023 Committed Research Project Portfolio

Research Type	2023 Target	Actualized	Needed*	Percent Actualized
TDR	8	12	0	138%
TSR	32	40	0	113%
Focused Pilot	3	3	0	100%
Total	43	55	0	116%

*Projects are selected from both program partner and public submission.

Technology Area Information

Table 4 identifies attributes associated with each of the selected projects from Q4. This includes which TPM technology area and with which subcategory the project aligns, as well as whether the project submission included information about energy efficiency (EE) benefits, disadvantaged communities (DAC) and/or hard-to-reach (HTR) customer benefits, decarbonization (decarb) benefits, and load shifting.

Table 4: Q4 Selected Projects by TPM Subcategory and Attributes

TPM	Submission Name	TPM Subcategory	EE Benefit	DAC/HTR Benefit	Decarb Benefit	Load Shifting
Whole Building	Commercial High Efficiency Windows Measure Package Completion	Envelope	X	-	-	-
	DAC HTR Statewide SF Housing Characteristics Study	Electrical Infrastructure	X	X	X	-
	Enabling Non-Residential Electrification and Efficiency with Fault Managed Power Systems (FMPS)	Electrical Infrastructure	X	X	X	X
	Laboratory Evaluation of Residential Smart Panels	Integrated System, Electrical Infrastructure	X	-	-	-
	Residential High Efficiency Windows Measure Package Completion	Envelope	X	-	-	-
HVAC	Commercial Ultra-Low GWP Heat Pump Field Demonstration	Design for Decarbonization	-	-	X	-
	Demonstration of "Combi" Air-to-Water Heat Pump	Refrigerant Management & Low GWP Transition	X	X	X	-

TPM	Submission Name	TPM Subcategory	EE Benefit	DAC/HTR Benefit	Decarb Benefit	Load Shifting
	Electrifying Large Commercial + Thermal Storage: Demonstration of TIER and Program Delivery Implications	Scalable Thermal Storage	X	X	X	X
	Light Commercial Variable Speed Heat Pump Performance Map	Variable Speed Compressor Systems (Commercial)	X	-	X	-
	Smart Ventilation Retrofit Demonstration Project	HVAC Controls	X	X	-	-
Water Heating	Characterization of Central Heat Pump Water Heating Deployment in the Multifamily Market	Commercial-Duty Water Heater	X	-	X	-
	Plug-in HPWH Measure Package Updates to eTRM	Residential-Duty Water Heater	X	X	X	-
	Small Medium business HPWH emergency deployments	Residential-Duty Water Heater	X	X	X	X
Process Loads	Large Ultra-Low Temperature Freezer Measure Offering	Labs and Hospitals	X	-	-	-
Plug Load and Appliances	Medical Devices Market Characterization Study	Medical Equipment	X	X	-	-
	Performance Evaluation of DC EVSE	Electric Vehicle Supply Equipment	X	-	X	X

Table 5 includes the projects from the program lifetime, broken down between TDR and TSR, that have been identified as benefiting DAC and HTR customers.

Table 5: Projects Benefiting DAC and HTR Customers

Project Type	Project Name
TSR	<ul style="list-style-type: none"> • 120V Induction Stoves with Battery Back-Up • All-Electric Commercial Kitchen Electrical Requirements Study • Comfort Impacts of Partial Coverage ASHPs – TRC • Commercial and MF CO2 based Heat Pump Water Heater Field Demonstration – AESC • Commercial Kitchen Hot Water System Design Guide – TRC • Compressed Air End-Use Air Management System – AESC • Double Duct Packaged Terminal Heat Pump Field Demonstration - ASK Energy • Emergency Replacement Heat Pump Water Heater Market Study • HVAC Capacity Controller • HVAC Thermal Energy Storage System (TESS) • Increasing Heat Pump Water Heater Deployment • Integrated HVAC RTU Remote Monitoring Systems • Lab Research of Electric Conveyor Ovens • Low-Income Multifamily Housing Characteristics Study • Market Study of Household Electric Infrastructure Upgrade Alternatives for Electrification • Master Mixing Valve Field Study • Multifamily In-Unit Heat Pumps • Overcoming Key Barriers to Electrification of Foodservice Hot Water in California • Packaged Central CO2 HPWH • Residential Housing Characteristics Study • Restaurant Field Monitoring • Smart Controls for Data-Driven Indoor Agriculture Field Evaluation • Variable Refrigerant Flow (VRF) Refrigerant Management Market Assessment • Wastewater Treatment SB1383 Compliance Characterization
TDR	<ul style="list-style-type: none"> • Advanced Multifamily EV Load Management System • Aerosol Sealing of Existing Attics and Crawlspace • Enhanced Normalized Metered Energy Consumption Analysis with Rapid Interventions • Hybrid RTU • Market Potential for Heat Pump Assisted Hot Water Systems in Food Service Facilities • Mobile and Manufactured Housing Market Characterization Study • Residential Multi-Function Heat Pump: Laboratory Testing - UC Davis WCEC • Residential Multi-Function Heat Pumps: Heat Exchanger Improvement - UC Davis • Residential Multi-Function Heat Pumps: Project Search* • Solar Assisted HVAC Market Study

The goal of publishing this report is to provide transparency into the CalNEXT portfolio and summarize the program’s key focus areas. Future quarterly reports will be updated to show the progress being made from quarter to quarter. Updates to TPMs or the program priorities and future requests for information will be published on the [CalNEXT website](#).