



Quarterly Technology Area Report (Q1 2024)



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Portfolio Information

A summary of the number of project submissions the program has received between January 2024 and March 2024 (Q1), 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 latest HVAC and Plug Loads & Appliances TPMs were published on July 1, 2023 and the rest were published on December 15, 2023.

Overall, during Q1, the team saw a decrease in project submissions from Q4 2023 (30 submissions in Q1 versus 51 submissions in Q4) 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

	Q1 vs Cumulative (C)	Number of Projects at Project Stage					Projects Deferred	Project Submissions
		Completed	Reporting	Implementation	Project Planning	Scanning & Screening		
Whole Building	Q1	0	2	3	1	0	1	2
	C	7	7	10	2	0	4	62
HVAC	Q1	0	1	6	3	0	2	6
	C	10	4	22	5	1	5	74
Water Heating	Q1	0	1	2	2	0	2	8
	C	6	3	6	4	0	3	38
Process Loads	Q1	0	0	7	4	1	1	9
	C	6	2	10	8	1	7	63
Plug Loads and Appliances	Q1	0	1	2	1	0	1	2
	C	1	1	4	1	0	2	20
Lighting	Q1	0	0	0	1	1	0	3
	C	0	0	1	1	1	0	5
Total	Q1	0	5	19	12	2	7	30
	C	30	17	53	21	3	21	262

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

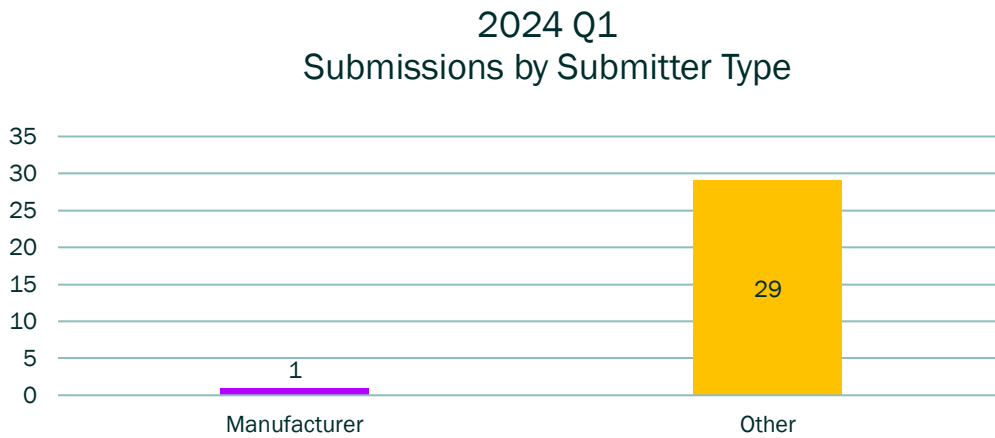


Figure 1: Program participant type

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 Q1 by Project Type

Technology Area	Count of Projects by Project Type	
	TDR	TSR
Whole Building	0	1
HVAC	1	4
Water Heating	0	2
Process Loads	2	6
Plugs & Appliances	0	2
Lighting	1	0
Total	4	15

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

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, the program has 42 expected projects in 2024, 2 more than the required amount in order to meet 2024's program goals. The program also needs just 4 additional TDRs with 2025 completion dates in order to meet 2025's goals. All final project reports from 2023 and 2022 can be accessed [here](#).

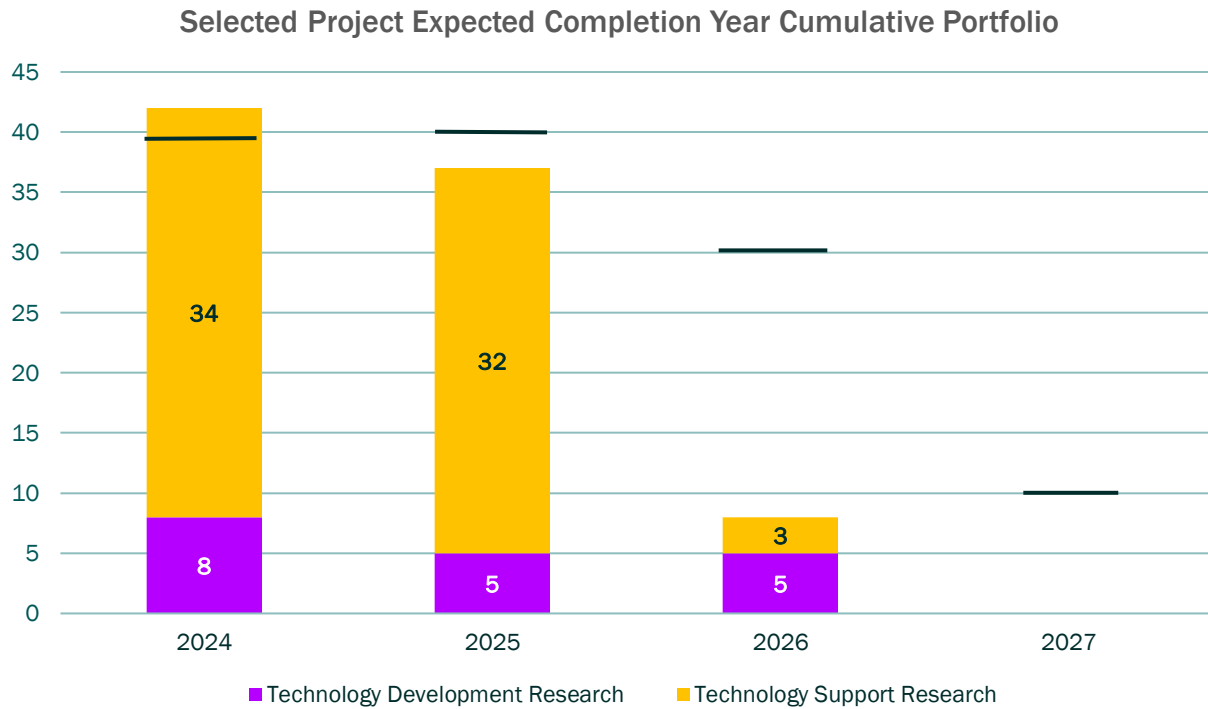


Figure 2: Selected project expected completion year (target number reflected as line)

are almost halfway to their target.

Table 3 illustrates that by the end of Q1, the 2024 Committed Projects goals are almost halfway to their target.

Table 3: Results of 2024 Committed Research Project Portfolio

Research Type	2024 Target	Planned	Actualized	Needed*	Percent Actualized
TDR	8	6	1	7	13%
TSR	32	29	16	16	50%
Focused Pilot	3	0	0	3	0%
Total	43	35	17	26	40%

*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 Q1. 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: Q1 Selected Projects by TPM Subcategory and Attributes

TPM	Submission Name	TPM Subcategory	EE Benefit	DAC/HTR Benefit	Decarb Benefit	Load Shifting
Whole Building	Electric Infrastructure Upgrades Alternatives Study for Manufactured Housing	Electrical Infrastructure	X	X	-	-
HVAC	Commercial Building Duct Sealing - Energy Savings and Cost Analysis	HVAC Design for Decarbonization	X	-	-	-
	Commercial Building Duct Sealing - Market Characterization	HVAC Design for Decarbonization	X	-	-	-
	Heat Pump Customer Questions Study	Heat Pump Market Development	-	-	-	-
	Multipurpose Hydronic CO2 Heat Pump for Commercial Buildings	High Efficiency HVAC Heat Pumps	X	-	-	-
Water Heating	Central Heat Pump Water Heating Control Optimization	Commercial-Duty Water Heater	X	X	-	-
	DIY HPWH Installation & Maintenance Study	Residential-Duty Water Heater	X	-	-	-
Process Loads	Commercial Cooktop Fuel Substitution	Commercial Kitchen Decarbonization	X	-	X	-

TPM	Submission Name	TPM Subcategory	EE Benefit	DAC/HTR Benefit	Decarb Benefit	Load Shifting
Process Loads	Cooling and Dehumidification for Indoor Farming	Controlled Environment Horticulture	X	-	-	-
	Harvesting Mid-size Industrial BRO Savings	Smart Manufacturing and Controls	X	-	-	-
	Lab Grade Refrigerators and Freezers Measure Package Development	Refrigeration, Commercial	X	-	-	-
	Modeling CO2 System Refrigeration Loads	Refrigeration, Commercial	X	-	-	-
	New CFS Measure Prioritization	Refrigeration, Commercial	X	-	-	-
	ProGreen R744 Chiller System	Refrigeration, Industrial	X	-	X	-
	Water Pump Upgrade Measure Package for Clean Water and Wastewater Pumps	Pumping Systems	X	-	-	-
Plug Load and Appliances	Field demonstration of electric clothes dryer controller	Plug Load Optimization and Management	X	X	-	-
	High Speed Oven Energy Use Field Monitoring for the Commercial Foodservice Industry	Plug Load Optimization and Management	X	-	-	-
Lighting	A New Toolkit for Outdoor Lighting Baseline Updates	Advanced Lighting Sources	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 • Central Heat Pump Water Heating Control Optimization • Comfort Impacts of Partial Coverage ASHPs • Commercial and MF CO2 based Heat Pump Water Heater Field Demonstration • Commercial Kitchen Hot Water System Design Guide • Compressed Air End-Use Air Management System • Cooling and Dehumidification for Indoor Farming • Double Duct Packaged Terminal Heat Pump Field Demonstration • Electric Infrastructure Upgrades Alternatives Study for Manufactured Housing • Emergency Replacement Heat Pump Water Heater Market Study • Enhanced Normalized Metered Energy Consumption Analysis with Rapid Interventions • Field demonstration of electric clothes dryer controller • Harvesting Mid-size Industrial BRO Savings • 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 • New CFS Measure Prioritization • Overcoming Key Barriers to Electrification of Foodservice Hot Water in California • Packaged Central CO2 Heat Pump Water Heater Multifamily Demonstration • ProGreen R744 Chiller System • 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 • 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](#).