

Project Summary

Project Name:	Evaluation of Water Heater Technologies	May 22	Jun 22	Jul 22	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22
Project ID:	ET22SWG0002								
Description:	Research emerging gas-fired water heating technologies to prioritize further study by the Statewide Gas Emerging Technologies (GET) program. This project will focus on both residential and small commercial water heating systems ready for lab or field study and will include gas storage water heaters, tankless water heaters, dual-fuel water heaters, combination space & water heating systems, and water heating controls specific to emerging technologies.								

Expected Outcomes	Business Case	Policy Alignment
<ol style="list-style-type: none"> Inventory of emerging water heating technologies equipment types, manufacturers, and specific technology considerations (e.g., workforce training needs). Identification of market gaps that exist in high priority technologies. Technology specific market barriers for high priority technologies. Identification of technologies recommended for further study. 	<p>Gas water heating has a high opportunity for therm savings and touches many market segments and customer types. This project will give the GET program a better understanding of emerging technologies in the water heating end-use and their potential in California. Measure potential will be calculated based on information that is publicly available and where information is not available, it will be based on engineering judgement. This project will also guide where emerging technology funds should be spent and will feed into the 2023 Research Plan.</p>	<ul style="list-style-type: none"> SB 350 Clean Energy and Pollution Reduction California Long Term EE Strategic Plan AB 32 (Global Warming Solutions Act) SB 1477 (Building Decarbonization)

#	Risk/Issue Description	Status	Owner	Due Date
001	Availability of calculation tools required to calculate potential energy savings from nascent technologies	Active	Cristalle Mauleon	Oct 22
002	Availability of reliable equipment cost required for TRC/TSB calculations	Active	Cristalle Mauleon	Nov 22



ET22SWG0002 Status Update

Task	Status	Impactful Findings
Water Heating Technology Table	Completed	<ul style="list-style-type: none"> • AQMD requirements are very impactful to ET water heating technologies • Codes & Standards are not well aligned to gas-fired absorption water heaters
Subject Matter Expert Interviews	Completed	<ul style="list-style-type: none"> • Highest drivers for ET adoption are <ul style="list-style-type: none"> • Lower production cost • Independent verification of performance • Environmental compliance with regulations • Highest barriers for ET adoption are <ul style="list-style-type: none"> • Technology cost • Lack of awareness of technology by the customers • Adverse regulatory environment • Uncertainty in performance
Prioritization of Technologies	Completed	<ul style="list-style-type: none"> • Prioritized Technologies are <ul style="list-style-type: none"> • Absorption Heat Pump Water Heater & Combi (DHW & SHW)– Commercial • Internal Combustion Engine Heat Pump Water Heater & Combi – Commercial • Adsorption Heat Pump Water Heater – Residential • Thermal Compression Heat Pump Combi – Commercial & Residential
Energy Savings Calculation	Completed	<ul style="list-style-type: none"> • Methodology <ul style="list-style-type: none"> • Followed DEER Water Heater Calculator methodology with changes as needed • Used combination of loads from DEER Water Heater Calculator & DEER Prototype Models • Used best available data on COP as a function of Outside Air Temp • Gaps <ul style="list-style-type: none"> • No modeling software has ability to model gas-fired heat pump water heater • DEER prototype models do not include DHW loads – DHW and SHW needed to properly model combi systems • DEER Water Heater Calculator needs revisions to accommodate gas-fired heat pump water heater • More performance data needed on all technologies • More installation configuration data needed on all technologies • More cost data needed on all technologies
Market Potential Analysis	In Process	Performing market potential on high priority technologies
Final Report	Expected Q4 2022	None