

**DOCKETED**

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## **Solar Thermal Workshop Staff Slides**

This document includes the slides from the CEC staff presentation given at the October 15 Staff Workshop on Research and Development Opportunities for Solar Thermal Water Heating in Commercial and Multifamily Buildings.

*Additional submitted attachment is included below.*



# California Energy Commission

Title: Research and Development Opportunities for Solar Thermal Water Heating in Commercial and Multifamily Buildings

Date: October 15, 2020



# Workshop Agenda

Time	Item
1:00 PM	Welcome and Introduction <ul style="list-style-type: none"><li>• Housekeeping</li><li>• Diversity Survey</li><li>• Program Overview for Natural Gas R&amp;D</li></ul>
1:15 PM	CEC Project Highlights
1:45 PM	Technological Stakeholder Discussion
2:15 PM	Community Stakeholder Discussion
2:50 PM	Proposed Solicitation
3:00 PM	Public Comment
3:20 PM	Closing Remarks
3:30 PM	Adjourn



# Virtual Housekeeping

This public workshop conducted remotely via Zoom is recorded.

## 3 ways to comment

1. Use the “raise hand” feature in Zoom,
2. Over the telephone: dial \*9 to “raise hand” and \*6 to mute/unmute your phone line, or
3. Type your question in the Q&A window.

Please limit comments to 3 minutes.

Written comments can be submitted through the e-commenting system at:

<https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-ERDD-01>





# Commitment to Diversity

CEC adopted a resolution strengthening its commitment to diversity in our funding programs. CEC continues to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs.

To meet this commitment, CEC staff conducts outreach efforts and activities to:

- Engage with disadvantaged and underrepresented groups throughout the state.
- Notify potential new applicants about the CEC's funding opportunities.
- Assist applicants in understanding how to apply for funding from the CEC's programs.
- Survey participants to measure progress in diversity outreach efforts.



# We Want to Hear From You!

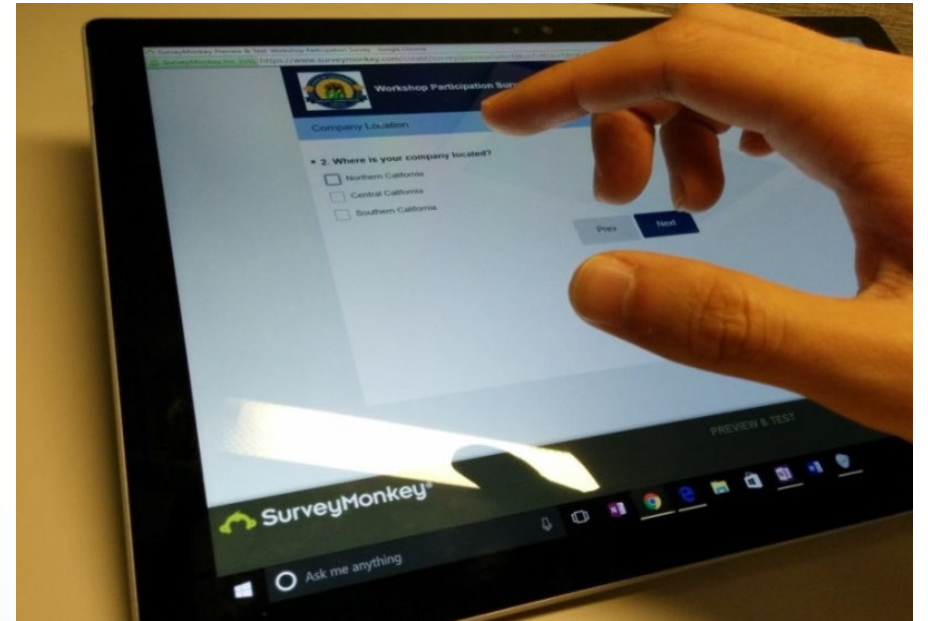
## 1 Minute Survey

The information supplied will be used for public reporting purposes to display anonymous overall attendance of diverse groups.

Please use this link:

<https://www.surveymonkey.com/r/CEC-10-14-2020-2>

Thanks!





# Natural Gas R&D Program

The Natural Gas Research Program invests in technologies and solutions that promote a more reliable, cost-effective, safe, and equitable energy service for natural gas sector ratepayers and supports California's energy and environmental goals.

- Annual funding amount: \$24 million
- Research areas:
  - Resiliency, Health, and Safety
  - Building Decarbonization
  - Pipeline Decarbonization
  - Renewable and Advanced Generation
  - Industrial and Agricultural Innovation
  - Low-emission Transportation





# About the Workshop

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## Objective

The purpose of this workshop is to discuss research and development opportunities to address barriers for solar thermal applications in commercial and multifamily residential buildings.

## Goals

- Highlight past and current CEC solar water heating projects
- Discuss technological and community-based barriers to implementation
- Gather public inputs on future research needs and pathways on advancements needed to overcome these barriers and accelerate adoption of solar water heating in these sectors



# CEC Project Highlights



# Technological Stakeholder Discussion



# Community Stakeholder Discussion



# Proposed Solicitation

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## Proposed Research Initiative:

Accelerating Adoption of Next Generation Modular Solar Water Heating

## **Background:**

Water heating accounts for approximately 40 percent of natural gas used by California households and 32 percent used by the commercial building sector. Solar thermal water heating can significantly reduce natural gas consumption in the building sector. However uptake of these systems has been slow, even with incentives.





# Purpose of Research

## Accelerating Adoption of Next Generation Modular Solar Water Heating

### Issues:

- Current solar thermal water heating systems have high cost due to the need for customized installations, high maintenance, and the requirement for large backup systems. A modular and standardized approach is needed.
- Competition with solar photovoltaics, especially in single-family settings, makes solar thermal systems less desirable.
- Resources for both solar thermal installers and potential buyers are limited.
- Disadvantaged and low-income communities with higher energy cost burden need pathways for decarbonization. Modular solar water heating is one potential pathway.



# Research Description

## Accelerating Adoption of Next Generation Modular Solar Water Heating

The initiative would fund the demonstration of modular solar water heating systems in low-income and/or disadvantaged communities and include an analysis of the building applications and climate zones where it would be most cost-effective.

- The selected applications should be representative of those with high market potential and hot water needs, such as multi-family residential, community centers, retirement communities, laundries, healthcare, gyms and schools.
- Achieve a minimum of 70% reduction in natural gas use for water heating.
- Achieve a minimum 20% cost reduction compared to conventional solar thermal.
- Document system performance that includes but is not limited to energy bill savings, system energy efficiency, and customer satisfaction.



# Research Description

## Accelerating Adoption of Next Generation Modular Solar Water Heating

### Continued...

- Develop modular, plug-and-play methods for designing each system so that they can be easily replicated to other buildings to minimize cost.
- Prepare and distribute case studies based on documented performance.
- Coordinate with Community-Based Organizations to determine community needs and barriers related to adoption of solar water heating in low income/disadvantaged communities.
- Create guides for solar water heating system installers which provide information on design methods, tools, and commercially-available systems with a focus on disadvantaged and low-income community applications.
- Develop guides to help customers understand the benefits and costs of solar water heating systems, available incentives, and resources to find installers.
- Explore opportunities for demand response or other co-benefits.



# Projected Ratepayer Benefits

## Accelerating Adoption of Next Generation Modular Solar Water Heating

- **Energy and Cost Savings.** Provide decarbonization pathway for natural gas ratepayers, especially low-income communities with natural gas-fired water heating systems.
- **Environmental Benefits.** Reduce greenhouse gas emissions.
- **Energy Sector.** Increase system resilience.



# Questions for Stakeholders

## Accelerating Adoption of Next Generation Modular Solar Water Heating

- What research investments have significant potential to reduce solar water heating system cost and customer uptake?
  - Are there any conditions or considerations the CEC should keep in mind?
  - Is there an alternate approach(s) that might have greater potential? Provide your reasons for an alternate approach.
- What project considerations should be included to address the needs of residents in low income or disadvantaged communities?
- How can our research help create replicable solutions?
- What are the targeted building types and climate zones or other factors that are the best candidates for cost effective solar thermal?
- What technological improvements are needed to reduce cost, space requirements, and backup system sizing of solar thermal systems?





# Public Comment



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# Find Partners on EmpowerInnovation.net

Empower Innovation accelerates your clean tech journey with easy access to funding opportunities from the CEC and other funding providers, curated resources and events, and connections to people and organizations.

## FIND A PARTNER

Announce your interest in this funding opportunity and message other interested parties to find potential partners.

## RESOURCES & TOOLS

Browse the collection of resources for clean tech innovators including Resource Libraries, Funding Sources, Tools, and Databases.

Send questions for the Empower Innovation to:  
[https://www.empowerinnovation.net/en/contact\\_us](https://www.empowerinnovation.net/en/contact_us)



# Questions & Comments

Submit comments:

1. By E-Comment:

<https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-ERDD-01>

2. By Email:

[docket@energy.ca.gov](mailto:docket@energy.ca.gov)

Include docket number 19-ERDD-01 and Solar Thermal Workshop in the subject line.

**Comments are due November 10, 2020 by 5:00 PM**



**Thank You!**

