

Multifamily Affordable Solar Housing (MASH)

Draft Evaluation Research Plan Webinar

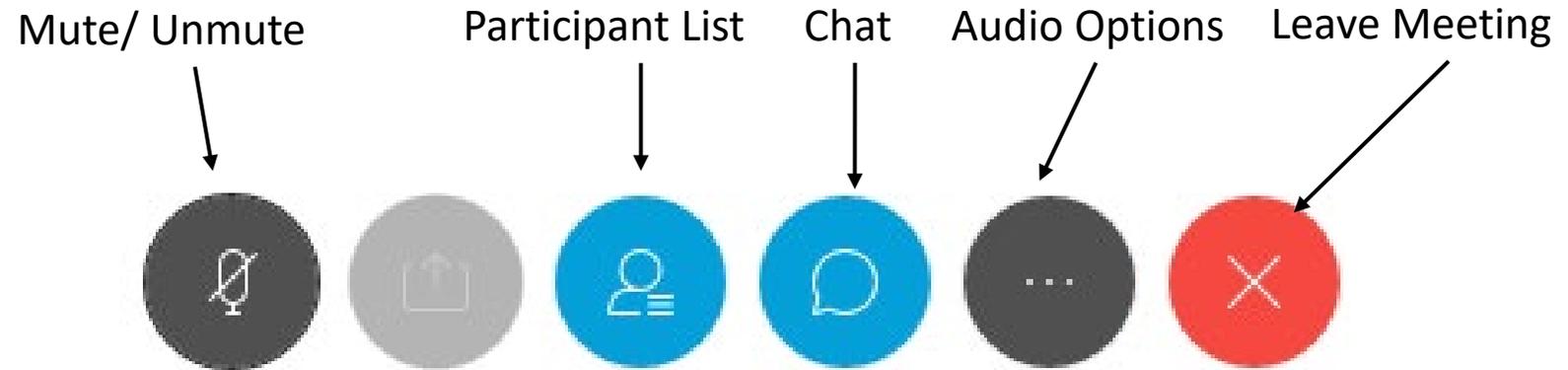
June 21, 2022



California Public
Utilities Commission

Workshop Logistics

- Today's presentation (.pdf) will be sent to all participants afterwards.
- Attendees should be automatically muted when entering the meeting
- Please mute yourself when not speaking
- Submit questions for speakers in the chat box or raise your hand to be unmuted by staff
- Chat questions will be read aloud by staff



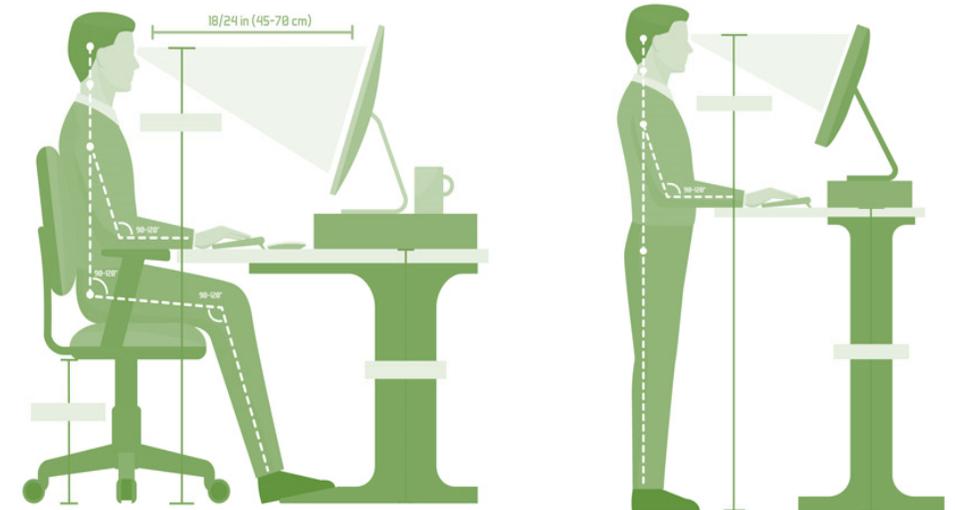
Raise Hand



Workshop Logistics Continued

- Online only
 - Audio through computer or phone
 - **Webinar Number:** 2485 155 2024
 - **Webinar password:** solarMF06 (76527630 from phones)
 - **By Phone:** 1-855-282-6330
 - ***This workshop is NOT being recorded***
- Hosts:
 - Energy Division Staff: Tory Francisco & Sarah Lerhaupt
 - DNV Energy Team: Gomathi Sadhasivan & Megan Ovaska
- **Report Comments?** Send Feedback [Comment Template](#) via email to Sarah Lerhaupt, sarah.Lerhaupt@cpuc.ca.gov

- Safety
 - Note surroundings and emergency exits
 - Ergonomic Check





WHEN TRUST MATTERS

California Solar Initiative Multifamily Affordable Solar Housing (MASH) Evaluation

Research Plan Stakeholder Presentation

21 June 2022

DNV ©

21 JUNE 2022



Agenda

Project Team

01

Evaluation Objectives

02

Research Plan

03

Project Schedule

04



DNV Project Team



**Gomathi
Sadhasivan**

Project
Sponsor



**Megan
Ovaska**

Project
Manager



**Paula
Ham-Su**

Load Impacts
and Data
Management
Lead



**Carrie
Webber**

Grid and
Environmental
Impact Lead



**Karen
Cramton**

Program
Outcomes
Lead



**Kytson
McNeil**

Cost
Assessment
Lead

CPUC Team:

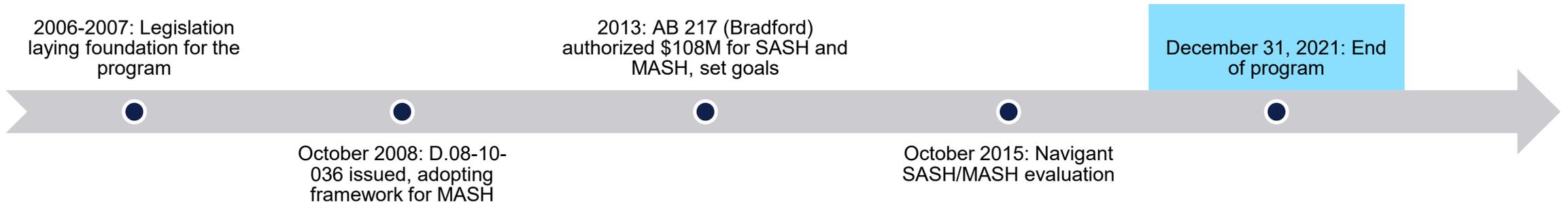
Sarah Lerhaupt, Tory Francisco (Supervisor)

Evaluation Objectives

Introduction to MASH Program

Program Background

- CSI Multifamily Affordable Solar Housing (MASH) program provided upfront solar incentives in the form of a one-time rebate paid at the time of project completion to qualifying affordable multifamily housing residences
- The program was overseen by the CPUC and administered by Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), and The Center for Sustainable Energy in San Diego Gas & Electric (SDG&E) territory
- Two incentive tracks (1C & 1D)



Goals & Targets

Original Goals

- Stimulate the adoption of solar power in the affordable housing sector;
- Improve energy utilization and overall quality of affordable housing through the application of solar and energy efficiency technologies;
- Decrease electricity use and costs without increasing monthly household expenses for affordable housing building occupants; and
- Increase awareness and appreciation of the benefits of solar among affordable housing occupants and developers.

Goals added in 2013

- Maximize the overall benefit to ratepayers;
- Require participants who receive monetary incentives to enroll in the Energy Savings Assistance (ESA) program.
- Provide job training and employment opportunities in the solar energy and energy efficiency sectors of the economy.

Targets

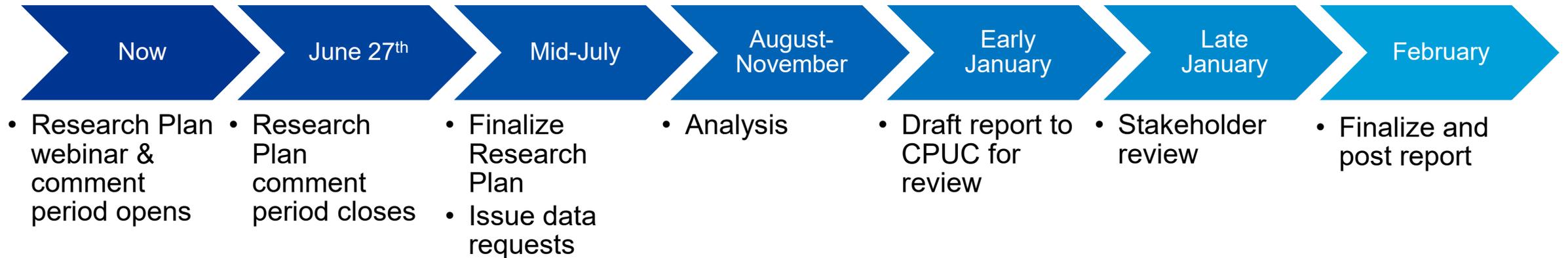
- 35 MW adopted capacity target
- Incentive track 1D capped at 80% of total incentive spending

Why We're Here



Per Decision 15-01-027, we are performing an end of program evaluation to assess whether MASH achieved their program goals and assess benefits to customers, the environment and the electrical system

Project Schedule



Research Plan

Evaluation Goals and Objectives



Task 3: Program Cost Assessment



Task 4: Total Electrical System Benefits



Task 5: Total Environmental Benefits



Task 6: Total Workforce Outcomes



Task 7: Total Customers Served



Task 8: System Characteristics by Customer Type



Task 9: Bill Reduction Outcomes



Task 10: Program Process Metrics



Task 11: Summarize Overall Program Performance

Tasks 6, 7 & 10: Total Workforce Outcomes, Total Customers Served & Program Process Metrics

Summary of activities

- Assessment of training program, including analysis of total number trained, hours worked, type of work done, types of companies that participated
- Examination of customers by location, type and size, number of low-income households, properties in disadvantaged communities
- Summarization of program process, will look at applications received, approved, declined, and withdrawn

Data needed

- Job training affidavits
- Tracking data
- Customer data
- Information from PA interviews
- Any existing customer feedback from participants

Task 8: System Characteristics by Customer Type

Summary of activities

- Summarize the dollar value of award, interconnected solar generation capacity (kWAC), property type, and interconnection meter type
- Compare incentive level/system capacity by meter type
- Compute post-installation consumption for common area metered accounts, tenant accounts and tenant metered accounts participating through VNEM, compare pre-installation consumption to post-installation consumption by Program and by meter type.
- Quantify the number of participants who receive monetary incentives and enrolled in the ESA program

Data needed

- AMI data
- PRMS data
- Tracking data
- Customer data
- ESA Program data
- PowerClerk

Task 9: Bill Reduction Outcomes

Reminder: in low-income situations where there is less energy use than essential, a dollar reduction is not always the goal. Same expense with more energy used is a good outcome

Summary of activities

- Estimate weather-normalized consumption and dollars paid prior to PV installation
- Estimate weather-normalized consumption and dollars paid after PV installation
 - Energy from the Grid (from AMI data)
 - + Energy produced onsite (from PMRS or simulation)
 - Energy sold back to the Grid
 - = Energy consumed onsite
- Estimate impacts by calculating differences between the two periods for the groups of interest

Data needed

- Contractual agreements (how does the landlord allocate the bill if master metered. How does the landlord allocate solar output among tenants.)
- Billing data (kWh and dollars)
- AMI data
- System output (PMRS) data (best), or simulated solar output (DNV's Solar Resource Compass – second choice)
- Purchased solar data (insolation)
- Weather data
- TMY weather data

Tasks 4 & 5: Total Electrical System Benefits & Total Environmental Benefits

Summary of activities

- Create 8760 generation profiles using either
 - Individual system generation calculations using AMI data and PMRS (if available)
 - PV system output simulation using DNV Solar Compass Resource
 - Hybrid approach
- Calculate avoided costs using 2021 DER Avoided Cost Calculator
- Calculate GHG emissions using
 - California Self-Generation Incentive Program marginal emissions data (WattTime)
 - California Air Resource Board Calculators for PV

Data needed

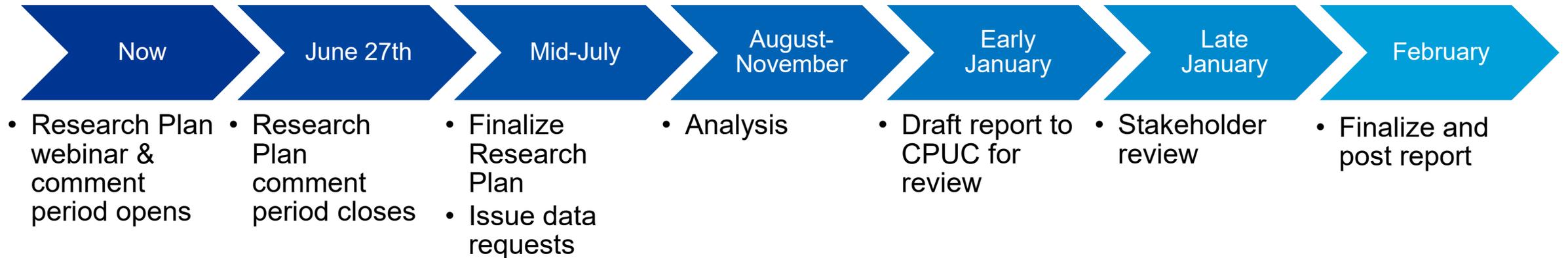
- Tracking data
- California Distributed Generation Statistics (CDGS) confidential data
- AMI data
- Performance Monitoring and Reporting Service (PMRS) data
- Marginal GHG emissions data (<https://sgipsignal.com/>)

Task 3: Program Cost Assessment

Use total resource cost (TRC) test to analyse program spending

TRC Inputs	Description
Administrative costs	Implementation, marketing & evaluation costs as reported by IOUs
Avoided costs of electricity - energy	
Avoided costs of electricity – generation capacity	Values computed as described in Task 4
Avoided costs of electricity - T&D	
Avoided costs - avoided ancillary services procurement	
Avoided costs of electricity - GHG	
Bill Increases/Reduction	Values computed as described in Task 9
Incentives paid	Data filed by IOUs
Participant Costs - Equipment/Installation (Measure Costs)	Costs are self-reported by applicants/developers and may not be accurate. Includes financing costs and taxes.
Investment Tax Credits	Federal tax credit will be treated as a reduction in system cost rather than a benefit. If explicit tax credit information is unavailable through program tracking, we will calculate the value based on the credit available in the year of system completion.
Other: copayments (LI only), non-bypassable charges (DG only), reliability benefits/costs, etc.	Non-bypassable charges included as part of customer bill savings (NEM customers pay all regulatory charges on a net basis)

Project Schedule



Thank you. Questions?

Gomathi Sadhasivan
Gomathi.sadhasivan@dnv.com

Megan Ovaska
Megan.ovaska@dnv.com

Report Comments? Send Feedback [Comment Template](#)
via email to Sarah Lerhaupt, sarah.Lerhaupt@cpuc.ca.gov

www.dnv.com

Thank you!

Regulatory Information: [CSI Multifamily Affordable Solar Housing \(MASH\) Program \(ca.gov\)](#)

CPUC Contact: Sarah Lerhaupt, sarah.lerhaupt@cpuc.ca.gov or
Supervisor, Tory Francisco, tory.francisco@cpuc.ca.gov