VERDANT

ILLUME

SOLAR ON MULTIFAMILY AFFORDABLE HOUSING (SOMAH) INDEPENDENT EVALUATION

Public Webinar on Triennial Evaluation

OCTOBER 4, 2022

AGENDA

- Welcome and Introduction
- Evaluation Overview
- Prior SOMAH Evaluation Recap
- Current Program Status
- Evaluation Activities
- Timeline
- Stakeholder Feedback and Questions

EVALUATION OBJECTIVES

Primary objectives

- **Objective 1**: Assess progress towards the program goals and metrics, determine cost-effectiveness, and meet legislative reporting requirements
- **Objective 2**: Determine electrical system benefits, environmental benefits, workforce outcomes, and customer/participant outcomes
- **Objective 3**: Progress meeting past evaluations' recommendations and identify recommendations for improving the program to meet its goals

ABOUT THE SOMAH EVALUATION

Evaluation Areas of Research and Approach

1. **Participation Assessment**
   Quantify and classify program participation
2. **Process Assessment**
   Assess progress towards minimizing barriers to participation and possible other areas for improvement
3. **Impact Assessment**
   Estimate energy, environmental and economic impacts; Assess PV generation and change in electricity consumption post-SOMAH
4. **Cost Effectiveness Assessment**
   Determine SOMAH Cost Effectiveness using three California Standard Practice Manual tests

PRIOR SOMAH EVALUATION RECAP

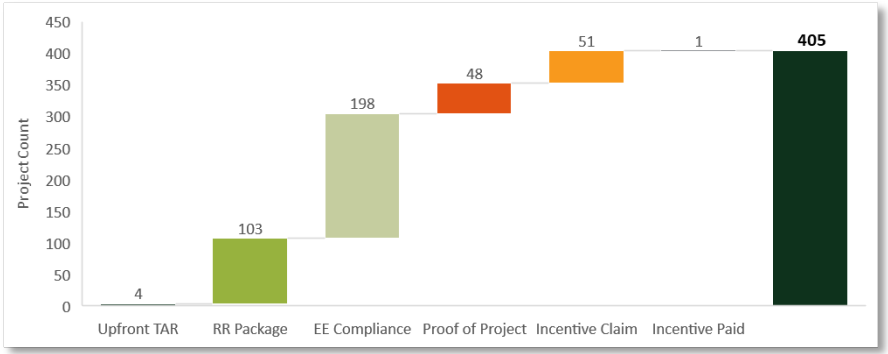
Past reports and Response to Recommendations (RTR) available at www.cpuc.ca.gov/somah

- Phase I Research
  - Developed program theory and logic model, established metrics to assess SOMAH performance, reviewed program tracking database, documented data collection protocols
- Phase II Research
  - Interviewed part/non-part contractors and property owners, identified primary barriers to participation, evaluated program metrics, estimated program impacts
- Vendor Assessment
  - Assessed primary drivers of SOMAH Program spending, interviewed Community Based Organizations (CBOs)

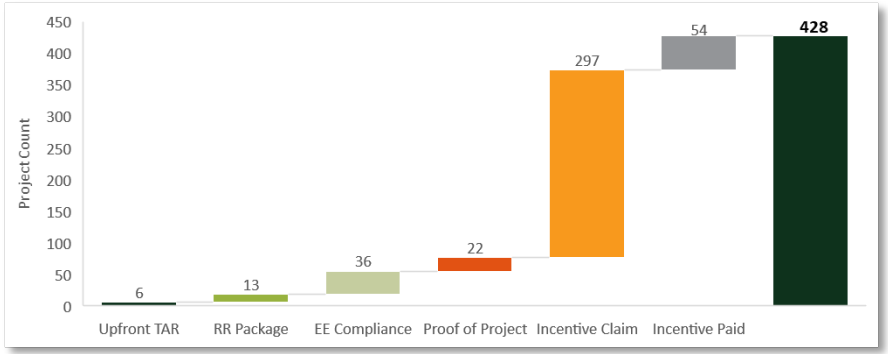
SOMAH STATUS

Program status at completion of last evaluation vs. current

April 2021



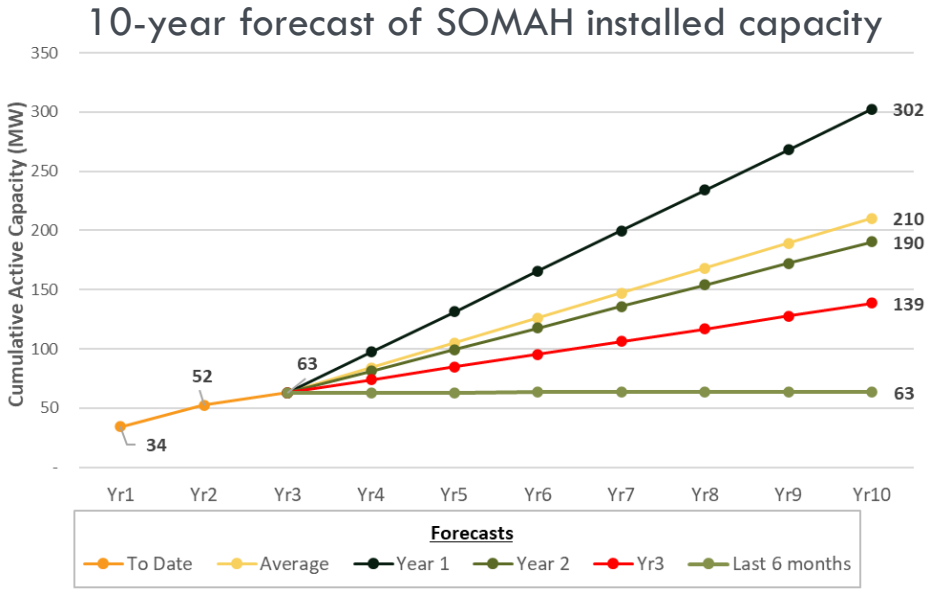
September 2022

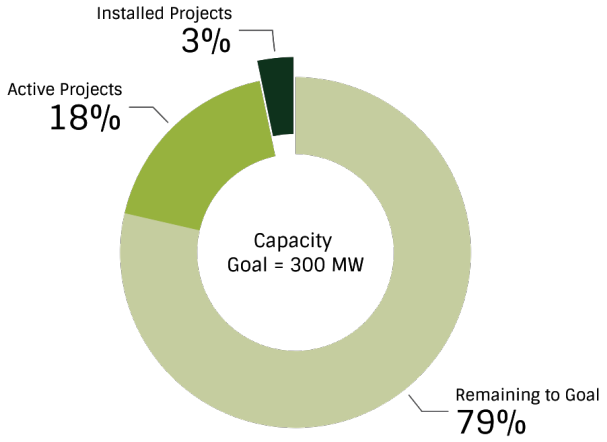


*Projects are shown pending within a stage once they meet approval of previous step (e.g., projects in status "Proof of Project Milestone Approved" are categorized here under "Incentive Claim")

SOMAH PROGRESS TOWARDS GOAL

Applications have stalled and installed projects make up only 3% of targeted capacity





DATA COLLECTION ACTIVITIES

Individual data collection activities inform multiple areas of research

Data Collection Activity	Participation Assessment	Process Assessment	Impact Assessment	Cost-Effectiveness Assessment
SOMAH Program Tracking Data (PowerClerk)	X	X	X	X
SOMAH Semi-Annual Expenditure Reports & Admin Cost Data		X	X	X
Job Trainee and Opportunity Data	X	X		
Eligible Contractor and Property Owner Data	X	X		
Project Cost Data	X			X
In-Depth Interviews	X	X	X	
PA Surveys of Tenants and Job Trainees	X	X	X	
PV Performance, Energy Bills, and AMI Data		X	X	X

» In-depth interviews with the SOMAH program administrators, contractors and property owners, CBOs, financing partners

PARTICIPATION ASSESSMENT

Quantification and assessment of program participation

- Updating metrics, KPIs, and M&V requirements to reflect current program status
  - Number, size (kW), and status of SOMAH reservations and completed projects
  - Geographic coverage of participants and eligible non-participants
  - Assess project cancellations and withdrawals
  - Contractor participation and diversity (increased focus on sub-contractors)

- New Activities for this evaluation cycle
  - Verification of SOMAH system costs and comparison to non-SOMAH system costs
  - Completed projected paired with behind-the-meter storage
  - SOMAH Job trainees, # who have since been hired for solar jobs, workforce development costs
  - Cross program enrollment (self-reported)

PROCESS ASSESSMENT

Recommendations for continued improvements to help SOMAH achieve its goals

- Assessment reliant upon in-depth interviews and surveys with key SOMAH vendors and participants
  - Target audiences' awareness of SOMAH and likelihood of future participation
  - Satisfaction with technical assistance and new program elements

- New activities for this evaluation cycle
  - Effectiveness of 2022 Marketing, Education and Outreach (ME&O) plan, workforce development, and CBO activities
  - Progress made towards addressing identified contractor/property owner barriers to participation and plans for future changes
    - Awareness and impact of recent program changes
  - Impact of tenant education and bill credits on occupancy, arrearages, energy efficiency upgrades

IMPACT ASSESSMENT

Quantity of installed systems allows for methodology changes from last evaluation

- Estimate PV production+
- Estimate customer change in electricity consumption*

- SOMAH's energy, environmental, and economic impacts
  - Energy (kWh and kW)
  - Environmental (CO_2 using WattTime and California Air Resources Board (CARB) Reporting)
  - Economic
    - Bill savings+
    - Time from install to permission-to-operate (PTO) to credits on bills*
    - Changes to tenant arrearages*
    - California Alternate Rates for Energy Program (CARE) impacts

* : New Activity
\+ : Significantly Changed Method

PV PRODUCTION

Adjust simulated generation based on metered PV from installed systems

- **Simulate PV generation** using National Renewable Energy Laboratory's (NREL's) PVWatts calculator with **actual weather** from the National Solar Radiation Database (NSRDB) developed NREL - (installed systems)

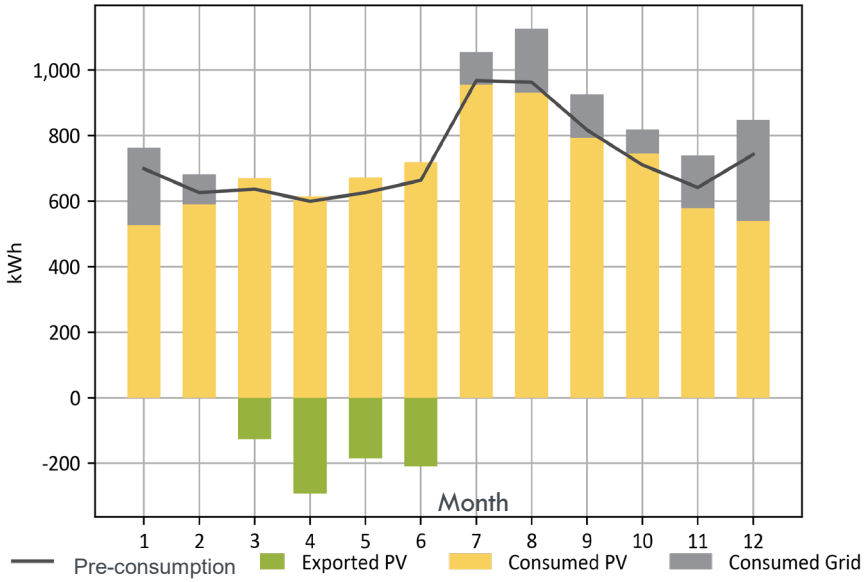
- Calculate **PV Performance ratio** = actual **metered** PV generation/**simulated** generation with actual weather

- **Simulate PV generation** using PVWatts with **Typical** Meteorological Year (TMY) weather - (all systems)
  - Adjust by performance ratio

CUSTOMER ELECTRICAL CONSUMPTION

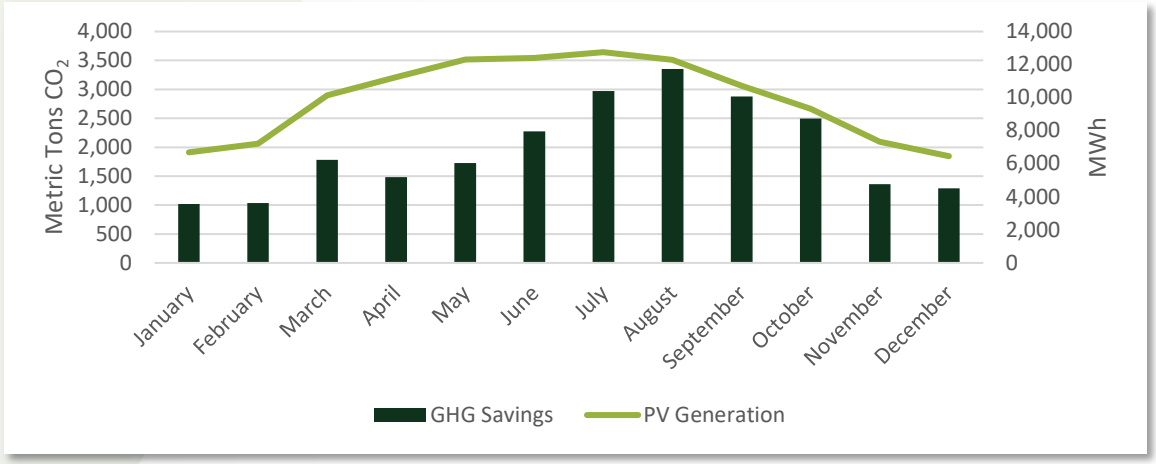
Customers may change usage following PV install

- **Consumption ratio** of post- to pre-installation energy consumption for **installed** systems will be applied to **planned** systems
- **Utility Impacts** (Energy and Peak Coincident Demand) incorporating:
  - PV performance ratio
  - Consumption ratio



ENVIRONMENTAL IMPACTS

Quantify greenhouse gas (GHG) impacts based on marginal emissions rate from WattTime



- Lifetime GHG emissions reductions per CARB requirements will also be calculated

ECONOMIC IMPACTS

Bill Savings calculated using three distinct approaches

Actual bill savings (installed systems only):

1 – Pre/Post utility bill comparison

Simulated bill savings (all systems):

2 – Accounting for **changes in consumption**

3 – Assuming **no increase in consumption**

ECONOMIC IMPACTS

Additional research activities

- **Tenant Arrearages**
  - Compare bill arrearage data pre- and post-installation, using SOMAH active applications as control for COVID-19 effects on arrearages
- **CARE Program Impacts**
  - Use estimated bill savings to calculate reduction in CARE Program subsidies
- Timing from **PV Installation** to **PTO** to **Credit** on bills

COST-EFFECTIVENESS ASSESSMENT

Joint utility and participant (TRC), societal (SCT), and ratepayer (RIM) perspectives

SPM Test	Cost	Benefit
Total Resource Cost (TRC)	Program Admin Costs, Measure Costs	Avoided Costs, Federal Tax Credits
Societal Cost Test (SCT)	Program Admin Costs, Measure Costs	Avoided Costs, Federal Tax Credits, GHG Adder, Non-Energy Impacts
Ratepayer Impact Measure (RIM)	Program Admin Costs, Reduced Revenue, Incentive Costs	Avoided Costs

TIMELINE

- **Mid-October: Finalize Research Plan**
  - Public Comments due October 14, 2022
- **December – January 2023: Data Collection**
  - In-depth interviews with contractors and property owners – Nov/Dec/Jan
  - Program tracking data (frozen 12/31/2022)
  - Participant billing and AMI data, PV generation data (frozen 12/31/2022)
- **January – March 2023: Analysis**
  - Participant/Process/Impact Assessments – Jan/Feb/Mar
  - Cost-Effectiveness Assessment – Feb/Mar
- **April – May 2023: Draft Report & Public Webinar**
- **June 1, 2023: Triennial Evaluation Report Finalized**

OPEN DISCUSSION

FEEDBACK

AND

QUESTIONS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