MTAB Meeting Notes

March 25, 2026
Virtual Meeting

Welcome, Agenda & Conflict of Interest Declarations

Stacey Hobart opened the meeting with MTAB member introductions and reviewing of the conflict of interest (COI) policies. She called for any COI concerns to be raised and there were none. She then asked MTAB members for any comments regarding draft notes from the previous meeting (3/5). No comments were received.

Residential Heat Pump Water Heating (HPWH): Draft MTI Plan Overview

Alexis Allan shared a summary of the market transformation strategy developed to accelerate adoption of HPWH in California, including identified market-level opportunities, barriers that will need to be addressed, the strategic interventions developed by CalMTA, and areas of potential coordination/collaboration with external market partners.

MTAB comments and questions included:

- Thinking about the opportunity to aggregate market demand by segment, can existing programs be sorted by segment as it stands now or would this be a new approach?
    - Alexis replied that current programs might offer tiered rebates for electric-to-electric conversions vs. gas-to-electric but aren't focused on specific housing type segments. CalMTA anticipates nuance between segments that would be developed further in Scale-Up Plans and will conduct an inventory of existing programs prior to MTI market deployment, which will inform coordination planning.
- How will workforce development activities supported through the MTI actually results in work for contractors, especially those in ESJ communities?
    - Alexis agreed that for trainings to be effective, they must actually create a pathway to sales. The MTI's segmented approach is designed specifically to drive business for contractors. The MTI would not directly deploy trainings but rather equip existing training providers with the information and resources needed to help contractors capitalize on the market potential of these identified segments.
- Are bulk purchases a potential strategy for accelerating market momentum?
    - Alexis confirmed that we are interested in exploring this, as the topic was discussed at our Residential HPWH Market Acceleration Summit. Some targeted sub-markets will be positioned for early acceleration and CalMTA will

conduct the engagement needed to hit the ground running, which may include some mechanism for volume discounts.

- How will access to the proposed market database be handled? Will it be public access or only for select market actors?
    - Alexis noted that while the details of implementation would be determined later, we currently anticipate that specific permissions would be in place to incentivize collecting and providing the required data points (e.g., only manufacturers who share data could access all other data).
- How will the data collection effort be different than Heating, Air-conditioning & Refrigeration Distributors International (HARDI) data or Air-Conditioning, Heating, and Refrigeration Institute (AHRI) shipment data?
    - Alexis said these data sets don't offer the desired level of granularity or help us understand where in California the products are installed. Our plan for this database is inspired by work done in the Northwest, which enabled visibility into hot spots for adoption around the region and allowed market actors to see how they compared to the overall market

Residential HPWH: Appendix F – Evaluation Plan

Ellen Rubinstein presented an overview of proposed evaluation objectives, key market progress indicators (MPIs) and milestones, and related data collection activities for the Residential HPWH MTI.

MTAB feedback included:

- An important early indicator will be whether external parties perceive the MTI as helpful in filling gaps and complementing their efforts within the first two-to-three years. This will likely come from the partner interviews conducted as part of the embedded evaluation.

Residential HPWH: Market Adoption

Karen Horkitz introduced the process used to forecast the impact of the MTI on market adoption, including a high-level overview of the modeling approach. Isaac Schultz then shared the model inputs and assumptions before presenting the forecasting results.

MTAB comments and questions included:

- Why did CalMTA decide to use unit-cost data from the eTRM and not actual program data from TECH Clean California?
    - Isaac clarified that TECH data reflects incentivized installation, which our model isn't exclusively trying to forecast, and that eTRM is a widely understood and easy-to-cite data source.
- This approach makes sense from a cost-effectiveness standpoint but it's important to break out the cost of the HPWH itself (vs. panel upgrades) from the purposes of

informing intervention strategies. The equipment costs don't look accurate if they're meant to be the HPWH product alone.
    - Karen replied that TECH data is the primary source for the eTRM and CalMTA concluded that numbers do align with the TECH database. Panel upgrades are not included but the cost of labor that goes into the equipment cost value may include factors like permitting or a dedicated 240 circuit. CalMTA has a hypothesis about what specific factors feed into this cost and will validate prior to MTI Plan finalization
- eTRM data is intended to be as transparent as possible, so it's surprising to hear there are challenges with this data.
    - Karen clarified that this wasn't a flaw of the data but that additional investigation was required to better understand it.
- Even with cost reductions, is it accurate the lifecycle cost of a 240V HPWH will be ~30% more than a gas water heater for the foreseeable future?
    - Isaac confirmed that this was correct on average, but that there are many possible scenarios in which this isn't true.
- What Uniform Energy Factor (UEF) is assumed in this analysis? It might be worth doing some sensitivity analysis to determine what UEF would achieve cost parity and focus MTI efforts there.
    - Isaac said that CalMTA used a weighted average for the analysis of customer economics. Total System Benefits (TSB)/cost-effectiveness analysis gets split out into assumptions about what percentage of the market adopts models with a specific UEF.
- Is it possible to reach cost parity for 50% of the market?
    - Isaac confirmed that there were multiple scenarios in which cost parity or cost savings could be achieved based on rate structure and climate zone.
- Regarding product availability, why – when the 2029 standard takes effect – is the market share of HPWHs so slow to lift off? The 2029 standard will require electric water heaters to be HPWHs so the slow ramp doesn't seem to make sense.
    - Isaac noted that the fuel substitution segment is only indirectly impacted by the federal standard.
    - Karen added that this is informed in part by composite research data, while CalMTA's sensitivity analysis explores different potential impacts of the MTI and federal standard.
- One identified barrier is that there's not enough demand for HPWHs to motivate supply chain stocking, but this will change in 2030.
    - Karen agreed that the standard change will make HPWHs more available, but CalMTA is using product availability to describe whether gas water-heater owners have the choice of a HPWH when replacing their unit. This distinction may need to be described more clearly in CalMTA materials.
- In the electric resistance market, the federal standard UEF is only 2.2. If the MTI targets a UEF of 3 or better, some savings could be claimed by the MTI on top of the federal

standard and this might be worth investigating. It seems likely that manufacturers will try to meet the minimum federal standard rather than exceeding it, but there's still potential for incremental savings.
    - Karen replied that CalMTA explored the potential of modeling this opportunity but concluded that the federal standard might result in an influx of lower-cost models that meet the standard. We may revisit this scenario in the future.
- Title 24 certainly points to HPWH as the right choice for new construction now, but when the federal standard takes effect, Title 24 may need to evolve. This might create an opportunity to add points for HPWHs with a higher UEF, which would unlock new construction savings that aren't currently captured.

Residential HPWH: Total System Benefit and Cost-effectiveness

Isaac continued presenting with a focus on the Total System Benefit (TSB) and cost-effectiveness modeling for the Residential HPWH MTI, including inputs and results of sensitivity analyses.

MTAB feedback included:

- Has CalMTA made any assumptions about incentives from current Program Administrators (PA) in the baseline?
    - Isaac clarified that most baseline units are assumed to have been incentivized/installed through external programs but the adoption forecast doesn't track this specifically.
    - Karen added that the set percentage of PA impacts subtracted from the forecast applies entirely to assessing incremental market impacts and not the baseline.
- The total count of incentives going through PA programs would need to be reduced by a net-to-gross assessment of what percentage would have occurred without the MTI, which would then feed into the baseline.
    - Karen acknowledged this as a great point.

Public Comment

No public comments were received verbally in the meeting. One comment was received via the online public comment portal, which is presented verbatim below.

Frank Sandtner: *I attended the March session and wanted to add a data element that was not discussed but is absolutely critical – performance of the various HPWHs in the market. We are working with AWHI and have developed a labor-only extended warranty program that has the side-benefit of creating performance data for all HPWH models. The claims management system we are using will be able to show first-year failure rates for GE, Rheem, American Standard and AO Smith. It will show the percentage of failures that get replaced across brands. It will show failure rates for the 120V product versus the 240V product. I am happy to discuss*

further with you and partner to get TECH Clean California plumbers to offer the extended warranty which establishes the product performance dataset.

Next Meeting & Next Steps

Stacey shared CalMTA's plan for the remaining scheduled meetings in 2026.

The meeting was adjourned.

Attendees

MTAB Members

Mary Anderson, Pacific Gas & Electric
Cyane Dandridge, SEI
Hayley Goodson, TURN
Fred Gordon, Context Consulting
Jeff Harris, Northwest Energy Efficiency Alliance
Peter Miller, Natural Resources Defense Council
Christie Torok, California Public Utilities Commission

Participating Staff & Consultants

Alexis Allan, Brio Consulting
Lynette Curthoys, CalMTA/Resource Innovations
Stacey Hobart, CalMTA/Resource Innovations
Karen Horkitz, KSH Advising
Jeff Mitchell, CalMTA/Resource Innovations
Ellen Rubinstein, CalMTA/Resource Innovations
Isaac Schultz, CalMTA/Resource Innovations

Guests

Paul Campbell, ICF
Anders Danryd, SoCalGas
Natalie Flores-Rios, SCE
Carlo Gavina, SoCalGas
Will Graswich, CPUC
Jillian Greene, Resource Innovations
Evan Kamei, Energy Solutions
Jason Leung, PG&E
Jenna Lusczynski, TRC Companies
David Murphy, Bonneville Power Authority
Peter Mustacich, Silicon Valley Clean Energy
Joaquin Narvaez, West Coast Green Builders
Derek Okada, Energy Solutions
Frank Sandtner, Nationwide
Shawn Shahrokhi, BC Hydro
Marty Turock, Cleantech San Diego
Garett Valenzuela, C+C

Forecasting Follow-Up Items: MTAB Meeting – March 25, 2026

On March 25, 2026, several MTAB members had questions about the HPWH market adoption and cost-effectiveness forecasting model that staff could not answer on the call. This memo summarizes their comments and provides a response for each of them. It has been appended to the meeting notes as part of the record.

Q1. What is the source and what are the components of the measure cost data assumed by the model? Why would CalMTA utilize TRM data rather than TECH program data?

A1a. CalMTA chose to use eTRM data because it represents up-to-date market-wide data for gas-to-electric installations. In general, CalMTA defaults to using CPUC approved values, unless there are valid reasons to deviate from those (for example, they don't represent the market targeted by the MTI).

After the discussion at MTAB, we clarified the following:

- The source of the eTRM equipment data is inflation-adjusted webscraping data from major CA retailers – collected in 2024 and updated to 2026 based on state inflation data
- The equipment category includes more than the cost of the water heater unit: it includes the water heater; and for a 240V HPWH, a gas line cap, a new circuit breaker and running wiring and conduit to the new 240V HPWH. Those additional equipment costs are one of two reasons the unit costs shown on the slide are higher than prices seen at retail
- Equipment and labor costs include a 40% markup to account for various non-equipment costs such as ancillary material, taxes, contractor or vendor markups, fees, and contingencies. This markup generally aligns with assumptions used by the Department of Energy in their 2024 technical support document for HPWH[1]. This is the second reason those equipment costs are higher than what is seen at retail stores
- The source for labor data is RSMeans hourly rate and hours for plumbers installing an electric water heater (not specific to a HPWH). It is possible that this understates the true installation costs, however – as mentioned above - the eTRM data also includes a 40% markup – which seems adequate to cover any difference.

Decision: Based on this information, CalMTA will continue to use values from the eTRM data to determine incremental costs.

[1] U.S. Department of Energy.2024." Technical Support Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment: Consumer Water Heater"

A1b. CalMTA agrees that costs will decline as a result of the 2029 federal standard, and that decline is represented in the BMA forecast. It is part of the MTI program theory that costs will decline more with investment in the MTI, due to the market interventions described in the MTI Plan.

In the MTAB presentation, Isaac Schultz showed a slide that included equipment and installation costs, along with assumed decline in equipment and installation costs for the BMA and TMA forecasts.

Decision: After further discussion and analysis of the data, CalMTA has decided to simplify the cost decline assumptions by applying a single cost reduction rate to total installed HPWH cost for BMA vs. TMA (rather than separate reductions for equipment vs. labor). This will be documented in the HPWH MTI Plan Appendix B.

Q2. How will the new federal standard affect CA Title 24 requirements? Should we consider specifying a higher Uniform Energy Factor (UEF) to get more favorable bill impacts and allow us to claim some delta from the federal electric water heater standard? Would specifying a higher UEF allow us to claim some incremental impact for more efficient units?

A2a. The 2025 Title 24 rules anticipated the federal standard, so they will not be further affected by it. The prescriptive path requires NEEA Tier 3 HPWH efficiency, while the performance path is compared against the federal standard (required by the rules of federal pre-emption). Moreover, Title 24 makes it difficult for builders to qualify using the performance path without installing higher efficiency HPWHs.

A2b. The MTI team discussed the possibility of including new construction in its incremental impact forecasting. However, we concluded that there was little or no opportunity for incremental impact in that segment because 2025 Title 24 is already designed to make it very challenging for builders to install HPWHs that are lower efficiency than the NEEA Tier 3 specification, and the performance path already references the forthcoming federal standard.

A2c. The MTI team discussed the possibility of including assumed shift of market adoption to higher efficiency units than would otherwise be purchased – an impact that could be particularly significant if manufacturers introduce lower efficiency, "builder grade" models that just meet the federal standard. However, we concluded that it would be difficult to defensibly forecast what proportion of the market would install lower-efficiency units. If ongoing market assessment reveals a trend toward lower-efficiency units, we can reconsider the possibility of quantifying the impact of the MTI on driving market uptake of higher efficiency products.

Q3. Should product "recommendation and availability" have more of a jump after the new federal standard takes effect?

This nomenclature and modeling parameter has drawn a lot of comments – particularly regarding the term "availability". This parameter is meant to represent market barriers targeted by the MTI. Per the MTI logic model, multiple market interventions are designed to overcome the barriers to installer recommendation of HPWHs – particularly in cases of fuel substitution. These include developing a California product roadmap that meets the needs of California households and providing resources for installers that increase their confidence and comfort with recommending HPWHs more broadly.

After reflecting on the MTAB discussion, CalMTA has modified this parameter to focus on installer recommendation (i.e., the proportion of customers for which installers recommend a HPWH). CalMTA used the installer survey conducted in 2025 to estimate the current and forecast baseline values for installer recommendation. Details of these estimates will be documented in the HPWH MTI Plan Appendix B.

Q.4. How do proposed CARB rules and adopted BAAQMD rules in Bay Area factor into the market adoption?

The BAAQMD zero NOx regulations were not reflected in the TSB and cost-effectiveness numbers presented at the MTAB meeting, however, we incorporated them into the final numbers in the MTI Plan, with detailed assumptions about the impact of the new rule provided in the HPWH MTI Plan Appendix B.

Unlike the BAAQMD regulation, CARB rules are still pending. CalMTA has incorporated the impact of CARB regulation into a "CARB regulation" scenario, to illustrate the potential impact on the MTI incremental TSB and cost-effectiveness of the proposed regulations being adopted as currently proposed. The results of this alternate scenario are presented in HPWH MTI Plan Appendix B.

Q.5: Do the assumed PA-verified units include units already assumed in the baseline? If so, CalMTA would be subtracting them twice.

The assumed PA-verified units are incentives on "incremental" units, that would not be installed without the MTI. CalMTA doesn't currently have a solid estimate of the number of HPWH incentives expected by PAs, absent the MTI, but we plan to true up the incremental PA-verified units based on program administrator budgets for HPWH incentives, when that

information becomes available. CalMTA will update the PA-verified baseline and incremental units as part of the annual third-party evaluation.

Q.6: Are there installation cases that result in a ratio of ownership cost for HPWH to gas water heater of less than or equal to 1.0? The MTAB slide (Slide 75) that shows total cost of ownership never decreasing below 1.3 is concerning.

While the MTI strategy and market interventions are focused on identifying market segments and installation cases that will not increase utility bills, the numbers presented on the slide represent averages that reflect both higher up-front costs of HPWHs versus gas water heaters, and bill impacts. We expect up-front costs to decrease over time, but we assume that 47% of units receive incentives to offset up-front cost differences.

With regard to the operating costs that drive bill impacts, the MTI is designed to identify and target segments for which lifetime operating costs would be at parity or lower by installing a HPWH. It will require additional research to identify these segments, but they are likely to include customers on CARE rates and electrification-friendly rates, and may include those with rooftop solar, propane water heaters, and other segments yet to be identified.