



MTAB Meeting Notes

September 23, 2024

Virtual Meeting

Welcome & Introductions

Stacey Hobart opened the meeting by welcoming attendees and reviewing the meeting agenda. She also provided a brief notice regarding CalMTA's recruitment of members for a future Equity Sounding Board.

Stacey then shared CalMTA's conflict of interest policies and asked the Market Transformation Advisory Board (MTAB) members to disclose any conflicts. Jeff Harris noted that he works for an organization implementing energy efficiency market transformation programs in the Northwest but that no conflict of interest exists.

2024 RFI Submissions: Stage 1 Scoring & Prioritization

Jennifer Barnes reviewed CalMTA's scoring process for potential market transformation ideas, including the disposition of ideas received through the summer 2024 RFI, as well as ideas submitted in the first RFI in 2023 that were subsequently rescored. MTAB comments and questions about the scoring process included:

- How does CalMTA capture market readiness and anticipated ramp rate for potential MT ideas?
 - Rick noted that this would be assessed in Stage 2 scoring. Stage 1 primarily focuses on estimated total system benefit (TSB), although both commercial readiness and MT alignment are included in the RFI scoring criteria.
- What key factors make something a point of leverage and how does that pertain to the scoring process?
 - Rick clarified that Stage 1 scoring seeks to measure whether leverage points were identified as well as how many and whether they've been proven successful in the given market. Policy, codes, and other factors are included as sustained benefits rather than points of leverage.
- In general, it would be beneficial to know what other California programs/projects relate to these potential ideas - either where CalMTA doesn't need to work on it because it's already being addressed or where substantial leverage exists.

Rick Dunn then presented the 20 highest-scoring ideas (weighted by total system benefits) for MTAB discussion and prioritization. These ideas had indicators showing whether the CalMTA team was recommending the idea as one of the top five to consider for advancement. Clarifying MTAB questions and feedback follow.

Combination Heat Pumps

- CalNEXT is also looking at this technology, which could be an opportunity for leverage or coordination.
- Does the focus technology need to include all three end-uses or could it include harvest thermal?
- Does it necessarily have to be a monobloc system (one in which the entire refrigeration circuit is in one box outdoors that would allow for lower-GWP/natural refrigerants that may be flammable or toxic)?
- Could these be central or are they specifically only for individual systems (one per dwelling unit)?
- If the baseline system could be all hydronic, there are a fair amount of combination gas systems installed so this MTI could involve a retrofit of those systems or be compared to them for a baseline.

Sustainable Outdoor Lighting

- When wouldn't these products use the battery? It seems like that would be the default in most cases.
 - Jennifer replied that market insight indicates that the battery is not sufficient to last through the night in winter months when it's darker for longer.
- The return-on-investment is hard to calculate for this technology. Are there ancillary benefits that accompany the substantial cost associated with it? If not, it seems like a hard sell.
 - Rick acknowledged this challenge and said that the scoring team is exploring that. There are different packages and form factors, so all-in-one solutions that are relatively heavy and may not be compatible with existing poles could be cost-prohibitive due to infrastructure upgrade needs.

Thermal Energy Storage as a Distributed Energy Resource

- Some load-shifting is available today, but it does consume some additional energy. Total system benefits are accrued from shifting to lower greenhouse gas (GHG) emission periods, but there's a high risk to the refrigerated distribution warehouse owner related to product viability, as there is any time you take the risk of changing the temperature regime.
- Is this better positioned as an emerging technology project that CalNEXT would work on rather than an MT program?
- SDG&E recently completed a project on this technology through the Energy Transition Coordinating Council and the report is publicly available.

Reflective Insulation for Windows

- Would the reflective insulation be subject to AERC ratings?
 - Rick replied that he would expect so, for both this and attachment windows.

Variable Frequency Drives (VFDs) on all Pumps and Fans >10 HP

- VFDs are not a new technology and are in relatively wide use. However, the Pump Energy Index (PEI) creates an opportunity for small VFDs to be used without significant engineering and makes them easier to apply. This MTI would help increase the prevalence of VFDs in products with a lower horsepower range.

Agricultural Irrigation as a Flexible Demand Load

- NEEA conducted a similar project and ran into some unusual barriers, including issues with rodents that led to project discontinuation. The market varies widely based on highly specific factors like geography, crops, and pest systems, which CalMTA should keep in mind.

Building Performance Standards (BPS) Accelerator

- BPS can include residential buildings in many cases, hopefully with associated grid benefits that could be captured in the scoring.
- This MTI should include a significant workforce development component, since people will be needed to conduct assessments and trainings if standards are to be adopted. Significant job creation could be a benefit of this MTI.
- What is the actual baseline if a jurisdiction decides to implement BPS? What happens after the BPS is passed - are people actually implementing to meet the standards? Energy savings are probably somewhere between a zero-BPS baseline and 100% compliance, with a range of potential baselines based on penalties and state attitude.

Smart Electric Panels

- CalMTA may want to consider combining this with the Smart Homes idea also under consideration.
- NEEA has looked at this technology but primarily for resiliency. With a secondary input like a distributed energy resource on-site (e.g., solar panels or generators), smart panels allow you to reassign/reallocate circuits based on what your available power is.
- Outside of resiliency, the challenge is that all smart panels assume that products/systems are being turned on or off. CalMTA needs to consider how to determine the best point of influence on the decision to change the energy profile of the end-use device, If this happens at the panel level, there are severe limitations since the panel doesn't "know" what's actually happening with a device. However, smart devices can make decisions about loading/offloading or shifting. Given California's

dynamic pricing, devices are being technologically modified to read dynamic pricing signals and adjust its behavior to minimize costs to the end-use customer. Addressing smart panels isn't incompatible with this, but there's a philosophical question about allocating resources to smart panels instead of the devices.

Smart Homes

- The potential for smart buildings is very significant in terms of load shifting/peak load management, and some energy savings potential exists, but the platform will need to connect with California's dynamic pricing structure. Doing so will require coordination with the CEC/CPUC as well as home device manufacturers.
- Although energy savings may be debatable, grid benefits should definitely be included in CalMTA's calculations.

High Performance Windows

- Reducing peak demand has grid impacts, especially since peak hours coincide with sunny, hot parts of the day in summer and cold parts of the day in winter.

There were no substantive comments related to Very High Efficiency Dedicated Outdoor Air System (DOAS) or Residential Smart-Splitting.

Stacey then invite MTAB discussion on idea prioritization and level of excitement or concern/reservation about the top-five highest ranked ideas including: Combination Heat Pumps, Thermal Energy Storage as a Distributed Energy Resource, Variable Frequency Drives (VFDs) on all Pumps and Fans > 10 HP, Building Performance Standards (BPS) Accelerator, and Smart Electric Panels. Individual MTAB feedback follows.

Which ideas excited you? How do you feel about the top five?

- Excitement was expressed for the BPS accelerator and VFD ideas from a workforce development perspective, including potential synergies with SEI programs in higher education and the fact that these ideas will link to job creation.
- Combination heat pumps offer huge potential but the industry has been unsuccessfully trying to drive adoption for a long time. The MTI is also capital-intensive. However, the right products already exist in Europe and Asia and it may be the right time for MT. It would be exciting for California to lead the charge in making this happen.
- Overall, the list represents a nice diverse set. While there's some uncertainty about whether the BPS accelerator will be successful, there was support for a non-technology/adoption-related MTI that will help advance the other ideas in CalMTA's portfolio.
- Was the High-Performance Windows idea not recommended to move forward because it's included in the CRAWs MTI currently in Phase II of development?

- Rick clarified that it was a separate technology but that it would be a second window-based initiative with some similar challenges and barriers and similar benefits and risks, and CalTMA is targeting more diversity in its portfolio.
- It's disappointing that the cost of sustainable outdoor lighting is so high, because this idea has significant benefits. California needs more batteries on the grid and it would be exciting to have solar lighting with load-shifting potential. If it's determined to not be right for CalMTA, there are hopes that another entity will pilot this and try to push it along to move the market in other ways.
- Support was expressed for combination heat pumps, thermal energy storage, and VFDs, as well as for the potential off-peak impact of reflexive window insulation. There was disappointment shared that reflexive window insulation and agricultural irrigation aren't ranked higher.
- Another member expressed strong support for combination heat pumps. VFDs have been around for decades and are addressed quite a bit in Title 24, so clarifying the focus of this idea will be important.
- Re: smart panels, while the concerns expressed by some MTAB members are valid, the problems that this technology is trying to solve are important. It may benefit from being combined with home energy management systems or other tools that bring together end-uses. For customers, the value proposition is convenient, but for utilities it's about enabling and optimizing grid flexibility.

Do you have any concerns, reservations, or questions?

- While the idea is promising and interesting, some skepticism about thermal storage was shared: what is the customer base for these technologies and is it scalable? Calculating the actual TSB potential of this idea may be difficult given the multiple possible load-shifting scenarios.
- For smart panels, there are concerns about lack of savings outside of a resiliency scenario. While the technology may yield some useful information, it seems better to focus on smart devices since decisions are made there and not at the panel-level.
- Given current challenges in the commercial real estate market, it may not be a sensitive time to drive BPS compliance unless the MTI has a very long ramp rate.
- Re: BPS, CalMTA needs to ensure there's a gap that needs to be filled. There is a lot of activity at the state and federal level but it may still be too early for MT intervention.
- One member stated that they were not excited about the BPS acceleration and smart panel/smart home ideas.
- The submitted idea Television Energy Efficiency Driven by Retailer Incentive Program scored low and was not in the top 20 presented to MTAB, but it is a potentially fast ramp program targeting a technology most people have and links to Title 20. NEEA supports this in its ESRPP sponsorship and has quite a bit of market data available.

- Industrial heat pumps are not on the list but should be considered. The industrial sector offers significant opportunity with many high-lift industrial heat pumps are entering the market but seem to be virtually unknown.

Public Comment

- Jim Lutz: Has CalMTA considered the availability of test procedures for rating products? In the case of combination heat pumps, DOE does not seem to have a test procedure and ASHRAE's test procedure is very old and hasn't kept up with changes in the technology.
 - Rick confirmed that this was a consideration but that the lack of a test procedure represents a potential intervention rather than a dealbreaker. For example, there is no test procedure in place for the Commercial Replacement and Attachment Window Solutions idea currently in Phase II of CalMTA's process, so one of the proposed interventions is developing one.

Stacey reviewed the time, date, location and agenda items for the next MTAB meeting in October and in-person meetings in November.

The meeting was adjourned.

Attendees

MTAB Members

1. Karina Camacho, Inland Regional Energy Network
2. Steve Miller, SEI (proxy for Cyane Dandridge)
3. Hayley Goodson, The Utility Reform Network
4. Fred Gordon, Energy Trust of Oregon
5. Jeff Harris, Northwest Energy Efficiency Alliance
6. Randall Higa, Southern California Edison
7. Peter Miller, Natural Resources Defense Council
8. Christie Torok, California Public Utilities Commission
9. Ky-An Tran, California Public Advocates

Participating Staff & Consultants

1. Taqua Ammar, CalMTA/Resource Innovations
2. Jennifer Barnes, 2050 Partners
3. Lynette Curthoys, CalMTA/Resource Innovations
4. Rick Dunn, CalMTA/Resource Innovations
5. Margie Gardner, CalMTA/Resource Innovations
6. Rachel Good, CalMTA/Resource Innovations
7. Stacey Hobart, CalMTA/Resource Innovations
8. Elaine Miller, CalMTA/Resource Innovations

9. Jeff Mitchell, CalMTA/Resource Innovations
10. Nils Strindberg, CalMTA/Resource Innovations

Guests

1. Rob Bohn, PG&E
2. Hellen Chen, ACEEE
3. Kelly Cunningham, PG&E
4. Michael Daukoru, CalTF
5. Natalie Flores-Rios, SCE
6. Carlo Gavina, SoCalGas
7. Rocco Guaragno, Resource Innovations
8. Ted Howard, Small Business Utility Advocates
9. Mina Jimenez, Proteus
10. Nathaniel Jutras, the U.S. Environmental Protection Agency
11. Debra Little, AJO
12. Jim Lutz, HWR
13. Christopher Malotte, SCE
14. Xico Manarolla, Clean Power Alliance
15. Mary-Ann Rau, Velma
16. Vanessa Sanchez, Okapi Architecture, Inc.
17. Pavitra Srinivasan, ACEEE
18. Rusty Tharp, Aozora Consulting
19. Carol Yin, Yinsight
20. Kate Zeng, SDG&E