Disposition Report for the 2024 RFI

May 2025

CalMTA is a program of the California Public Utilities Commission (CPUC) and is administered by Resource Innovations

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List of Abbreviations

Abbreviation	Definition
BMA	Baseline Market Adoption
BPS	Building Performance Standard
CalMTA	California Market Transformation Administrator
CBECC	California's Building Energy Code Compliance Software
CBECC-Res	California's Building Energy Code Compliance Software – Residential
CEC	California Energy Commission
CEDARS	California Energy Data and Reporting System
CET	Cost-Effectiveness Tool
CPUC	California Public Utilities Commission
DAC	Disadvantaged Community
DER	Distributed Energy Resource
DOE	Department of Energy
EIA	Energy Information Administration
eTRM	California Electronic Technical Reference Manual
ESJ	Environment and Social Justice
ESRPP	ENERGY STAR® Retail Products Platform
GHG	Greenhouse Gases
GWP	Global Warming Potential
HTR	Hard to Reach
HVAC	Heating, Ventilation, and Air Conditioning
IOU	Investor-Owned Utilities
LBNL	Lawrence Berkeley National Laboratory
MT	Market Transformation
MTAB	Market Transformation Advisory Board
MTI	Market Transformation Initiative
NEI	Non-energy Impact
NREL	National Renewable Energy Laboratory
PAC	Program Administrator Cost
RECS	Residential Energy Consumption Survey
RFI	Request for Ideas
TES	Thermal Energy Storage
TFP	Total Factor Productivity
TSB	Total System Benefit
TMA	Total Market Adoption
TRC	Total Resource Cost
UEI	Unit Energy Impacts
VFD	Variable Frequency Drive
WE&T	Workforce Education and Training

1 Introduction

In December of 2019, the California Public Utilities Commission (CPUC) issued Decision 19-12-021 (Decision) establishing a comprehensive market transformation (MT) framework. The MT Framework laid out a stage-gate process for scoring and selecting concepts that may be developed into Market Transformation Initiatives (MTIs). Through a Request for Ideas (RFI), stakeholders and market actors were invited to submit information about viable technologies or practices that would support CalMTA's goals.

The CPUC Decision directed CalMTA to document the results of each RFI to the MTAB in disposition reports for both Stage 1 – including a list of submissions rank-ordered by their score – and Stage 2, listing the ideas advancing to Phase II.[1] For the first RFI, CalMTA produced two reports: a **Stage 1 Disposition Report**, finalized in January 2024, and a **Phase I Disposition Report**, finalized in June 2024. For the second RFI, open for submissions from May 29 – July 3, 2024, CalMTA has combined the information into this single **Disposition Report for the 2024 RFI**. For more information about the phases of MT development, visit https://calmta.org/mti-development.

1.1 Overview of MTI scoring & selection

CalMTA executed a multi-stage process to select the MTIs to submit to the CPUC for approval. The process builds on a two-stage scoring and selection method described in the MT framework with additional steps to provide clear guidance to submitters and support CalMTA's portfolio development. The steps are illustrated in Figure 1, summarized in this section, and further described in the Submission Scoring Results section in Section 3. This Disposition Report for the 2024 RFI describes the CalMTA team's scoring and selection process for both Stage 1 and Stage 2 scoring.

Figure 1. Overview of CalMTA scoring and selection

Self-screening: The RFI submittal form asks several screening questions to ensure submitter ideas meet the CalMTA requirements. If the submitter responds "no" to any of the self-screening questions, they are encouraged to further develop their idea before submitting.

Threshold review: This initial review by the CalMTA team ensures that basic requirements are met. The primary objective is to confirm that the ideas save energy and that there is enough information to be scored.

[1] CPUC D. 19-12-021, p.107 and p.110

Stage 1 scoring: scan & identify ideas: An initial pass at the scoring of each idea provides a basis for ranking the ideas so that only those with the best potential are advanced to the next stage: Develop & Assess Ideas. The Stage 1 scores are based on the CalMTA team's expertise and judgement, so the Stage 1 scoring can be conducted quickly and with limited investment of resources.

Stage 2 scoring: develop & assess ideas: The ideas that advance to Stage 2 are scored with additional rigor around Total System Benefit (TSB) and cost-effectiveness potential. Scores for this stage are based on preliminary estimates developed using secondary data sources, light research, and energy modelling.

To support the execution of the scoring and selection process, the CalMTA team developed the following elements described in Appendix A:[2]

- **Scoring categories** are broad categories under which one to three criteria are grouped. The scoring categories represent the policy or other priorities that drive the selection of the MTIs.
- **Scoring criteria** are the specific metrics or values that are used to calculate the scores. The criteria roll up to the categories.
- **Category and criteria weights** are the values placed on each category and criterion to determine the MTI score.
- **Scoring rubric and guidance** provides the structure and definitions for each criterion that allows the scorer to assign the score to each idea and supports consistent scoring across multiple scorers.
- **Intake portal** where market actors and other stakeholders are able to submit their ideas for MTIs.

2 RFI outreach

CalMTA re-opened our Idea Portal for a second round of submissions from May 29 – July 3, 2024. Outreach efforts were tailored to CalMTA's specific goals for this RFI, which were informed by MTAB discussions at the April 25, 2024 meeting[3] that indicated ideas with significant Total System Benefit, potential for scalability, and fast ramp time were the highest priority, rather than any specific market segments (e.g., agricultural or industrial) or technologies. Therefore, outreach for the second RFI focused on leveraging established communications channels to reach the greatest number of interested parties, with many contacts identified in the introductory briefings conducted to promote the 2023 RFI.

The timeline in Figure 2 below highlights key milestones in the RFI process through May 2025.

[2] The Phase I Disposition Report is available here.
[3] The April 25, 2024 MTAB meeting notes can be found here.

Figure 2: 2024-2025 RFI milestones timeline

2.1 RFI outreach activities

CalMTA promoted the RFI opportunity to our network of interested parties through established communications channels, including our website, email newsletter, industry trade groups, the CPUC Service List, and social media. We validated the list of contacts on our mailing list (currently at around 1,200 individuals) and in our CRM to ensure that these communications would reach a wide range of stakeholders across the state and nationally, including research and emerging technology groups, energy efficiency and decarbonization organizations, and entities focused on equity or workforce development. We also conducted direct outreach to the targeted sectors or audiences that would allow us to round out the CalMTA portfolio of initiatives, such as commercial and industrial sectors, and to stakeholders with whom CalMTA has ongoing engagement, like CalNEXT, the national labs, USGBC California, the California Energy Commission, and participants in CalMTA's ESJ listening sessions. Promotional RFI outreach resulted in a 314% increase in traffic to CalMTA's website during the RFI period and more than 800 views of the "How to Participate" webpage promoting the RFI, making it the most visited page on our site besides the homepage.

CalMTA also reached out to parties who submitted an idea through the first RFI in 2023 that were not selected to move forward, encouraging them to re-submit if new information about the submitted idea had become available. We met with several organizations that submitted an idea through the first RFI to discuss the status of their idea with CalMTA and determine whether re-submittal would be desirable or necessary.

2.2 Submission support

CalMTA offered two options for potential submitters to request specific information and receive assistance on the development of their ideas.

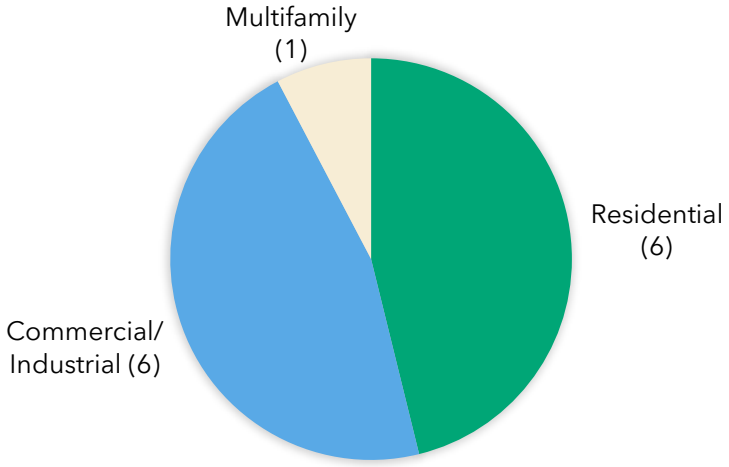
Staff support: CalMTA shared available weekly office hours with Senior Manager of Emerging Technology, Rick Dunn, to help RFI submitters in need of support. No submitters utilized this offering.

Q&A discussion board: Through the RFI Idea Portal, users could ask questions and receive answers from CalMTA via an online discussion board by clicking an "ask a question" link. All questions would receive a publicly posted response within 24 hours, enabling other interested parties to view previously asked questions and answers. No questions were posted to the discussion board.

3 Submission summary

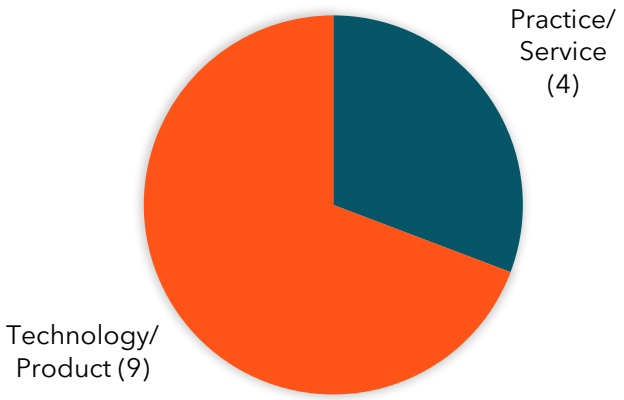
CalMTA's second RFI process, conducted May 29 through July 3 of 2024, resulted in the submission of 13 ideas by 10 unique submitters via the intake portal. As illustrated in Figure 3 below, six submissions were received in both the residential and commercial/industrial sectors and one submission addressed multifamily.

Figure 3. Market sector of newly submitted ideas



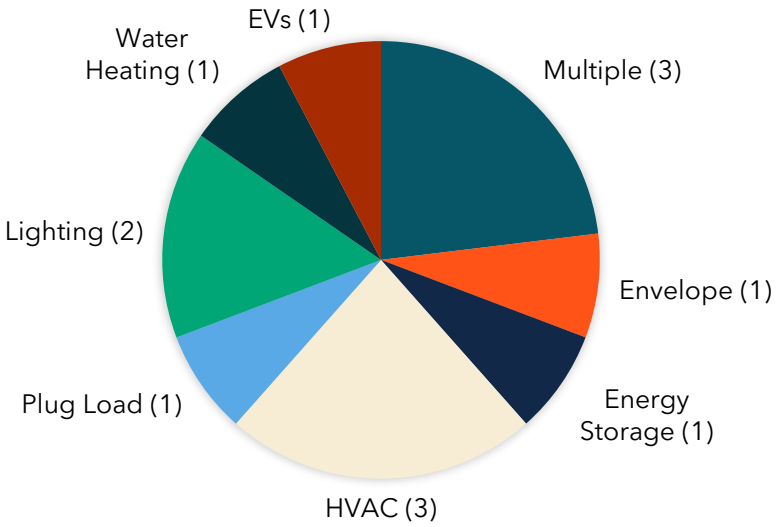
The majority of submissions received were for techologies or produts, but nearly a third were for products and services (Figure 4).

Figure 4. Submitted ideas for Technology/Product vs. Practice/Service



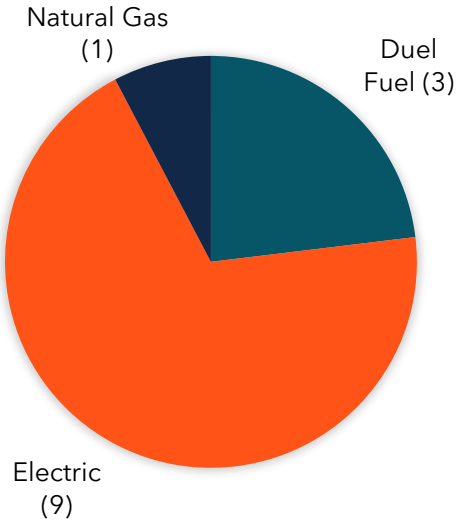
The submissions covered a variety of end uses including one supporting residential electric vehicle (EV) charging, one idea for an energy storage device, and three ideas that covered multiple end uses. Three ideas addressed either residential heat pumps or commercial HVAC. See Figure 5 for the types of end uses representend in the newly submitted ideas.

Figure 5. End use of newly submitted ideas



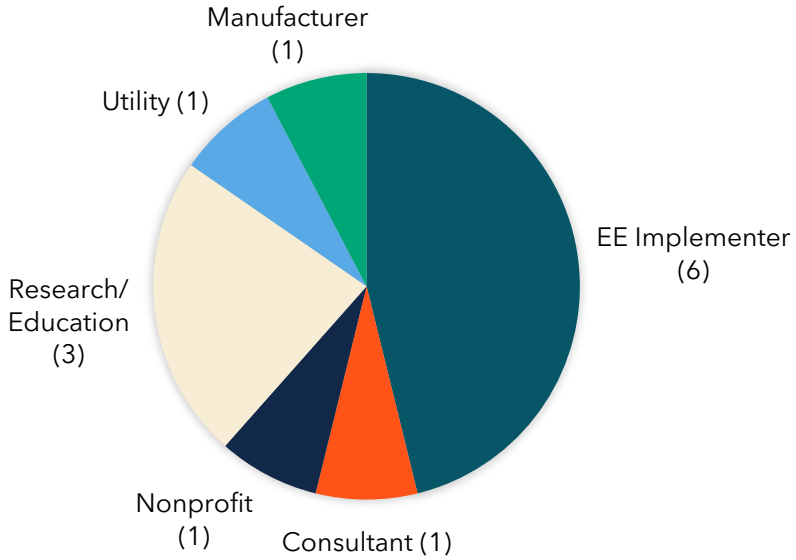
The submissions addressed both natural gas and electric fuel types, with three of the submissions addressing both fuels, as shown in Figure 6.

Figure 6. Submitted ideas by fuel source



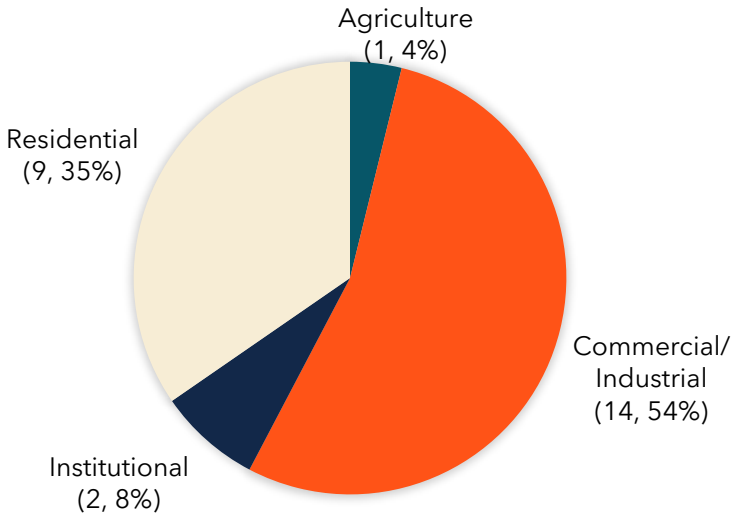
A range of industry actors submitted ideas, as indicated in Figure 7 below. The CalMTA team did not submit any ideas for this RFI.

Figure 7. Submitted ideas by industry actors



In addition to the 13 newly submitted ideas, CalMTA pulled forward 20 high-scoring ideas submitted in the previous RFI, held in 2023.[4] After combining ideas[5] that were the same or closely related and conducting the threshold review, 26 ideas remained for scoring.[6] The composition of ideas is summarized below. Figure 8 illustrates that more than half of the ideas were for the commercial or industrial sectors, but that agriculture and institutional customers were represented as well.

Figure 8. Market sector of all ideas scored in the 2024 RFI



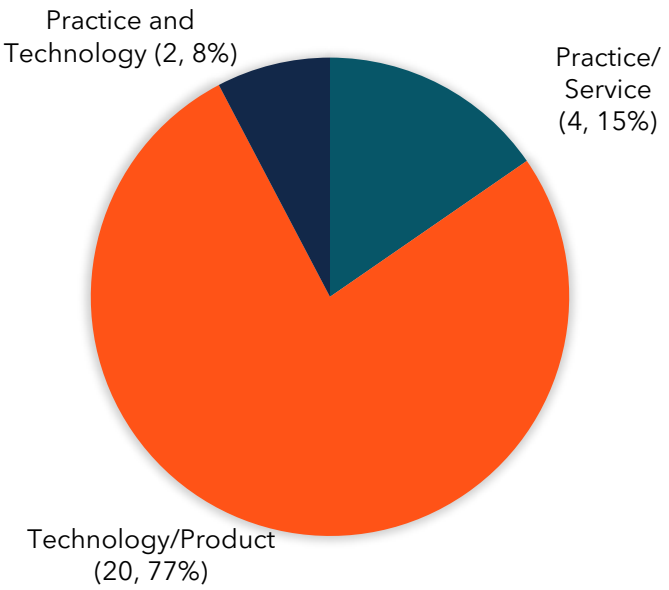
As Figure 9 shows, the majority of the ideas scored were for technologies or products, but nearly a quarter were for practices, services, or ideas that included both elements.

[4] The ideas pulled forward from the previous RFI were selected based on previous scoring, potential for new information that might allow for updating previous scoring, guidance from strategic advisors and strategic value to the CalMTA portfolio.

[5] When ideas were duplicative or complementary in nature, they were combined and scored together.

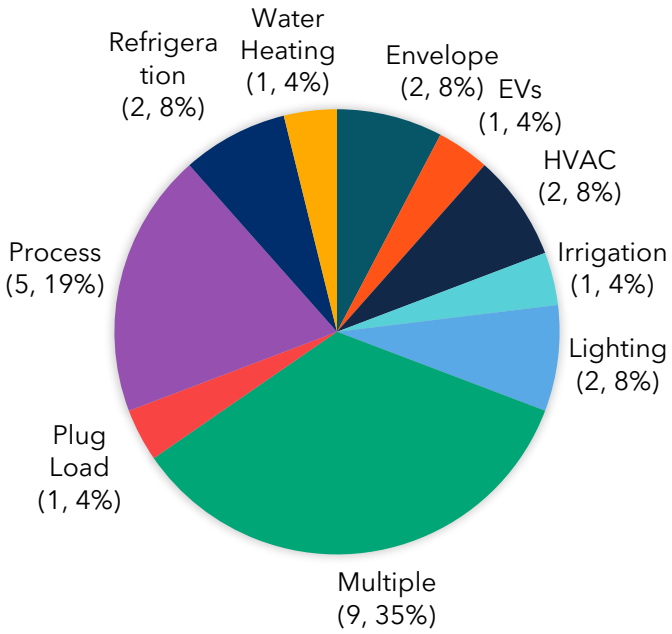
[6] See Figure 14 in the following section for more detail.

Figure 9. Scored ideas by technology, product, service, or practice



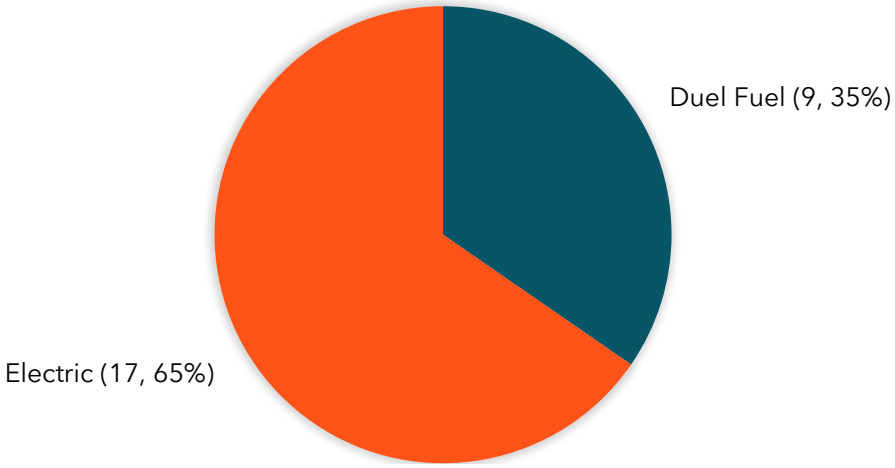
The scored ideas also had good diversity across end uses, as illustrated in Figure 10 below. The greatest portion of ideas crossed multiple end uses, such as for Building Performance Standard Acceleration and Multifunction Heat Pumps that provide both space conditioning and water heating. Five ideas addressed industrial processes, including process motors and the production of low-carbon concrete. Lastly, one idea addressed electric vehicle (EV) charging with a device that allows EVs to share a 240V outlet with another appliance.

Figure 10. End use of all ideas scored in the 2024 RFI



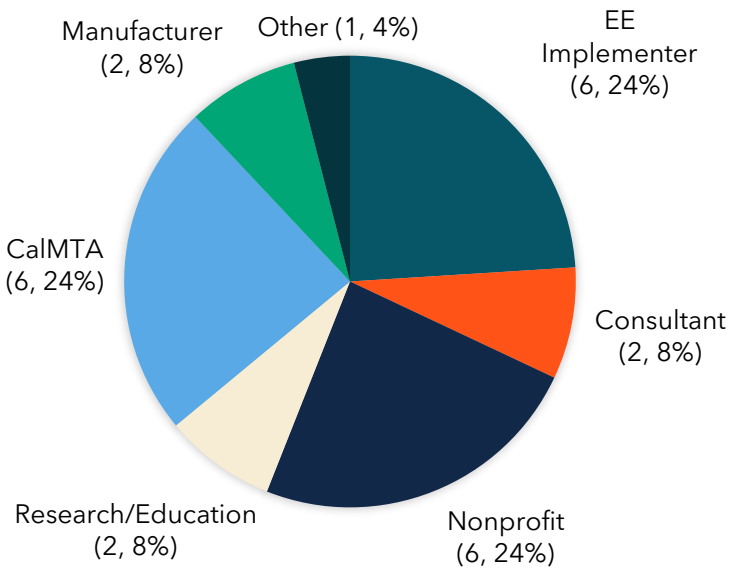
The scored ideas represented both electric and natural gas fuel types, as shown in Figure 11 below.

Figure 11. Scored ideas by electric and natural gas fuel types



The scored submissions were received by a wide range of industry market actors, including six from the CalMTA team. See Figure 12.

Figure 12. Scored ideas by industry market actors



4 Submission scoring results

The scoring process, illustrated in Figure 13 below, was designed as a multi-stage process with each stage applying a greater level of rigor to the advancing ideas. The initial threshold review is an administrative review to ensure that the submissions are an appropriate fit for market transformation investment. Stage 1 scoring ranks the submissions so that rigor and resources required for Stage 2 scoring are applied to the ideas with the greatest likelihood of success.

Figure 13. Steps to advancing ideas submitted through the RFI

Threshold Review	Stage 1	Stage 2
Does it save energy? Is it commercially available? Is there enough information to be scored?	Scores based on expertise and easily accessible information	Scores based on calculated values for TSB & TRC/PAC

*TSB = total system benefit; TRC = total resource cost; PAC = program administrator cost.

4.1 Threshold review

The threshold criteria requires that an idea provide energy savings, is near commercial availability, and the submission has enough information and the appropriate level of specificity to allow the idea to be understood and scored by the review team. Three of the 13 newly submitted ideas did not pass the threshold review, as follows: one idea did not produce energy savings, one

was for a product concept but not a commercially available product, and the third was a duplicate of a previously submitted idea. Descriptions of these ideas are provided in Appendix C.

4.1.1 Combining related ideas

As described above, in addition to the 13 newly submitted ideas, CalMTA pulled forward 20 ideas submitted in the previous RFI. Two of the newly submitted ideas, related to rooftop units and windows, were the same as those with an MTI plan under development. These ideas were referred to those project teams. Another two ideas, related to passive houses and multifunction heat pumps, were able to be combined with one of the 20 ideas pulled forward from the 2023 RFI. After conducting a threshold review and combining similar ideas together, 26 ideas were advanced to Stage 1 scoring. This process is illustrated in Figure 14 below.

4.2 Stage 1 scoring

The scoring team approached the Stage 1 scoring one of two ways, depending on whether the idea was a carryover from the 2023 RFI or newly submitted in 2024. For the carry over ideas, the scoring team reviewed each idea to determine whether there was any new information since 2023 that would alter the score. If not, then the Stage 1 score from 2023 was used. If there was new information, then the team treated the idea as if it was newly submitted, following the process described in Section 2 of the **Phase I Disposition Report**. The scoring team did make one modification to the scoring process at the suggestion of the MTAB. In the first RFI, only two scorers (Resource Innovations and 2050 Partners) scored all criteria while the Cadmus scorer only scored Non-energy Impacts and Participant Cost/Cost-effectiveness. In this 2024 RFI, the Cadmus scorer scored all criteria.

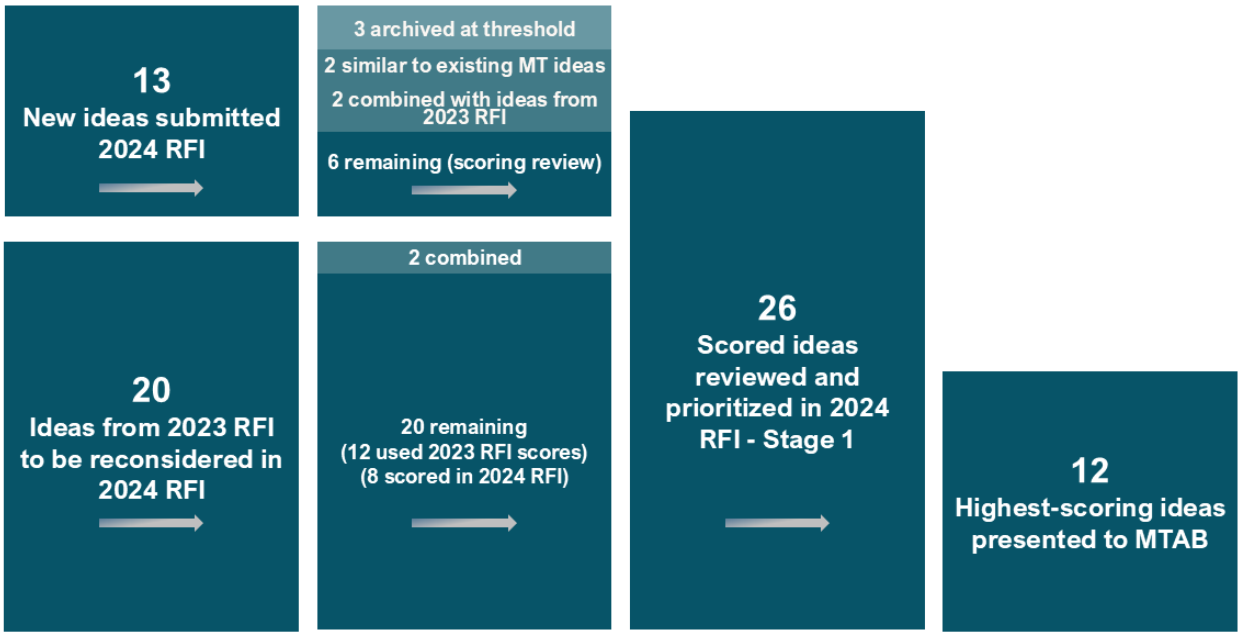
A list of the 26 ideas scored in Stage 1, ranked in order of their score, is provided in Appendix B. Of those, the 12 highest scoring ideas were presented to the MTAB on Sept. 23, 2024, along with CalMTA's recommendation for the five ideas to advance to Stage 2 scoring:[7]

- Multifunction Heat Pumps
- Thermal Energy Storage (TES) as a Distributed Energy Resource (DER)
- Variable Frequency Drives on All pumps and Fans > 10 horsepower
- Building Performance Standard Acceleration
- Smart Electric Panels

The following sections describe the Stage 2 scoring for selecting the third batch of MT ideas to recommend for further development. Figure 14 below shows the breakdown of how ideas were ultimately disposed through the scoring process. Appendix B further explains which ideas were combined, archived, or advanced.

[7] The 10 lower-scoring ideas were archived.

Figure 14. Disposition of ideas in the 2024 RFI



4.2.1 Ideas advancing to Stage 2 scoring

Based on the Stage 1 scores and discussions with the MTAB, the CalMTA team advanced four ideas to Stage 2 scoring, deciding not to include smart electric panels. The MTAB's feedback was that smart electric panels were not an electrification solution on their own but rather need to work with smart devices to best control end-use loads.

In addition to the four ideas advancing from Stage 1, the Efficient Streetlighting idea was assessed in Stage 2. Efficient Streetlighting was a Batch 2 idea, but during the Phase II advancement planning, there were a number of questions about the size of market opportunity for streetlights, whether an MTI could deliver substantial total system benefits, and the likely ramp rate. Because of these questions, the team decided to revisit streetlights in the second RFI to see how it compared to the other ideas under consideration.

These ideas are shown in Table 1 together with the numbered RFI ideas they were combined with, where applicable.

Table 1. Ideas advanced to Stage 2 scoring

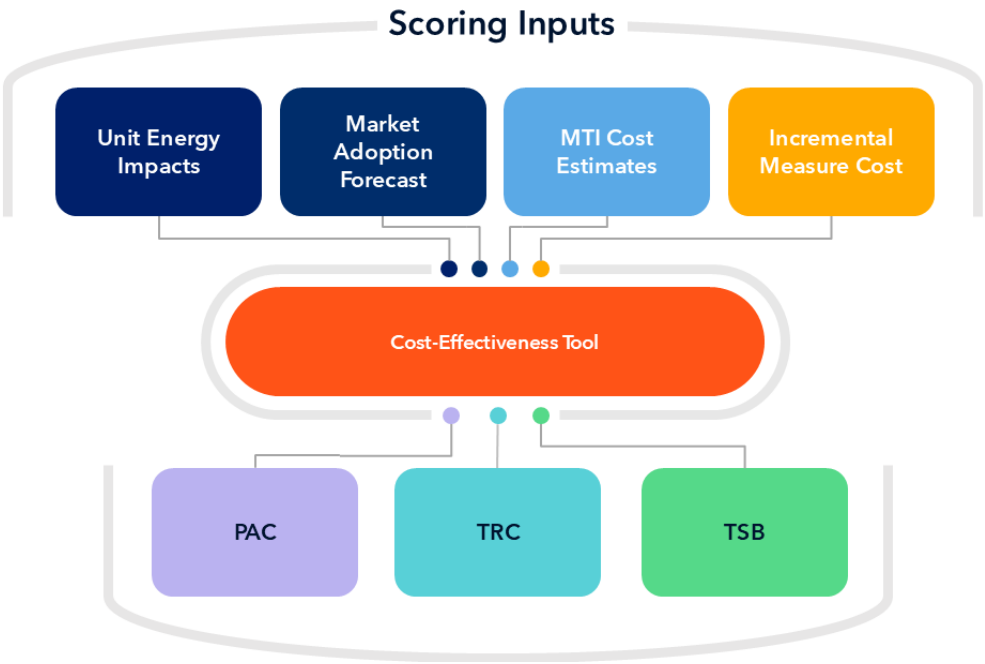
Idea Group	MTI Name	Idea #
HVAC	**Multifunction Heat Pump**	
	Multi-function Heat Pump	0085
	Combined Heating, Cooling, and Hot Water with TES	0219 (2024)
	Combination Heating, Cooling, Water Heating-Thermal Storage	0126

Idea Group	MTI Name	Idea #
Motors	**Motor Efficiency**	
	Variable Frequency Drives (VFDs) on All Pumps and Fans >10 Horsepower (HP)	0024
	Adjustable Speed Drives Leveraging the Power Index	0112
	Advance Electric Motors Market Awareness and Demand Total Factor Productivity (TFP)	0172
Refrigeration	TES as a DER	0133
Practices	Building Performance Standards Acceleration	0193
Lighting	Efficient Streetlighting	0105

4.3 Stage 2 scoring process

Stage 2 scoring applies a higher level of rigor than that applied in Stage 1 scoring. Specifically, in Stage 2 the scoring team conducted analysis to determine a preliminary value for the cost-effectiveness criteria, Program Administrator Cost (PAC) and Total Resource Cost (TRC), and TSB. Figure 15 illustrates the inputs and outputs of the Stage 2 scoring for cost-effectiveness and TSB.

Figure 15. Stage 2 Scoring Inputs and Outputs



4.3.1 Stage 2 scoring inputs

The following inputs were used to calculate TSB, TRC, and PAC for Stage 2 scoring:

- Unit energy impacts
- Market adoption forecasts

- MTI cost estimates
- Incremental measure costs

The development of each input is described in the sections below.

Three of the five ideas scored in Stage 2 had TSB, TRC, and PAC values that had been calculated in 2023. The scoring team reviewed the inputs, calculations, and resulting values and determined that the only change since the Stage 2 scoring conducted in 2023 was the avoided cost input. Between the 2023 and the 2024 RFIs, the CPUC updated their 2022 avoided costs to the 2024 version.[8] The scoring team determined that it was most reasonable to calculate the TSB, TRC, and PAC values for the two newest ideas using the 2022 avoided costs rather than re-running the three carry over ideas with 2024 avoided costs. This approach was the most efficient use of program resources while also ensuring that all five ideas were assessed consistently.

The scoring team also reviewed the MTI cost estimates, market adoption forecasts, and incremental measure costs for the three ideas carried forward and determined that no changes were necessary.

Unit Energy Impacts

CalMTA used a combination of secondary data sources, engineering calculations, and building energy models to develop the unit energy impact estimates. The method(s) and source(s) used to develop each estimate is described in Table 2 below.

Table 2. Source of Unit Energy Impacts (UEI)

Idea #	Idea Name	UEI methods and sources
0024	VFDs on All Pumps and Fans >10 HP	The team used the 2022 compliance version of California's Building Energy Code Compliance Software (CBECC) to model the commercial component of the MTI. Specifically, a large office with and without VFDs on air handling unit (AHU) fans and chilled water pumps. For the industrial pumps and fans, the Department of Energy (DOE) and Lawrence Berkeley National Laboratory (LBNL) released a motor market assessment report in 2021. The report outlined load factors and operating hours which were used to develop hourly spreadsheet models. For each case, the units are HP.
0085	Combined Heat Pump Cooling-	The team used CBECC-RES 2022 Title 24 software along with post-processing of the hourly energy uses based on heating, cooling, and

[8] Generally, the 2024 ACC will provide higher TSB values in comparison to the 2022 ACC but the magnitude of the increase will be dependent on the load shape (or when the measure saves energy.) From a monthly standpoint, the 2024 ACC has modest increases each month except August which slightly decreases. From an hourly perspective, the avoided cost impacts have increased overnight and early morning and in the 5-6PM and 8-10PM, which are adjacent to 6-8PM, the highest 2022 hourly avoided cost values. Thus, measures with savings occurring in those time periods will have a greater increase than those that primarily save energy in the middle of the day.

Idea #	Idea Name	UEI methods and sources
	Heating-Water Heating	domestic hot water needs each hour. Baseline models included separate mixed-fuel and/or heat-pump water heating and HVAC systems typical of code-compliant new construction and equipment change out in California single family homes. Data was post-processed to reflect efficiencies achieved by combi units during periods of simultaneous water heating and space cooling demand. The percentage reduction applied was based on a review of existing studies for currently available combined heat pump products.
0105	Efficient Streetlights	The methodology to determine unit energy impacts is the difference in lighting wattages multiplied for each hour of operation. Specifically, typical baseline (high-intensity discharge or older light emitting diode – LED) with high efficacy LED replacements total fixture wattages from the CPUC approved Modified Lighting Calculator were used with sunrise and sunset times from the National Ocean & Atmospheric Administration. Streetlighting controls were conservatively estimated to dim between 20-40% during the 2-5 a.m. time.
0133	TES as a DER	The measure uses a phase change material (PCM) to shift refrigeration demand from the peak to the off-peak period. It is applicable to walk-in refrigerated spaces mostly found in large and small grocery stores, restaurants, and refrigerated warehouses. A CBECC large grocery simulation model was run to evaluate the walk-in refrigeration load and energy consumption. Excel analysis was used to shift the refrigeration load to nighttime when the compressor is more efficient due to condenser temperatures. The large grocery outputs were scaled for different walk-in and compressor efficiency was adjusted to represent different refrigeration technology present areas in the other facility types.
0193	Building Performance Standards Acceleration	The team used load shape ratios from National Renewable Energy Laboratory's (NREL) ComStock database for medium offices prototype, and applied Energy Information Administration (EIA) commercial building monthly energy consumption estimates to develop an 8760 hourly model in Excel. The team then referenced existing Building Performance Standards (BPS) policies and reports to estimate annual savings and assigned a conservative 20% reduction in whole building energy consumption to quantify hourly impacts for successful implementation of BPS policies in California commercial buildings.

Market adoption

CalMTA developed preliminary baseline and total market adoption estimates based on readily available secondary research and a combination of three analysis approaches: Bass modeling; extrapolation of historic trends; and stock turnover modeling. Incremental market adoption for the MT ideas was calculated as the difference between total and baseline market adoption estimates.

The team used the following methods to develop market adoption estimates:

- Market saturation estimation: market saturation estimates for the existing building/technology stock were developed based on literature review, analysis of public databases, and forecasts developed by participants in mini-Delphi panels, as described below.

- Literature review: the team developed qualitative insights regarding technology trends and market characteristics using sources such as manufacturer specifications, evaluation reports, academic papers, and past market studies.
- Analysis of public databases: the team developed quantitative inputs such as population, housing stock, saturation, and cost data using public data bases such as census data, U.S. Energy Information Agency's Commercial Buildings Energy Consumption Survey, Residential Appliance Saturation Survey, U.S. Energy Information Administration (2023). Residential energy consumption survey 2020 (RECS 2020), California Energy Commission (CEC) Integrated Energy Policy Report forecasts.
- Mini-Delphi panel: for the Phase I forecasting model, CalMTA used a preliminary, abbreviated approach to estimate baseline market adoption and convened a mini-Delphi panel consisting of two rounds of surveys in which three panel members with general energy efficiency and market expertise provided their forecasts along with key rationale for their estimates. After the first round, panelists were shown all forecasts with an anonymized account of panelists' rationales and were given the opportunity to update their forecasts. CalMTA averaged respondents' second-round forecasts to determine the preliminary baseline market adoption estimates by market segment.

- Market share estimation: the team estimated annual market shares of efficient equipment for the new construction segment, using the same approaches described in the bullet above.
- Bass diffusion model: the Bass Model was used to generate market adoption curves that represent the cumulative adoption of a product over time.9 The Bass model is based on three model parameters: maximum potential market saturation (m), coefficient of innovation (p) and coefficient of imitation (q).

CalMTA will refine the estimated baseline and total market adoption curves using modeling best practices, and based on additional research, during Phase II: Program Development.

The preliminary baseline (BMA) and total (TMA) market adoption estimates for each MT idea scored in Stage 2 are presented in Table 3 below. BMA is the counterfactual market adoption likely to occur absent the MTI and related utility-funded interventions.[10] Total market adoption (TMA) is the actual market uptake that occurs over time. The table includes the assumed lifetime of the proposed MTI in Stage 2. In all cases, this is assumed to be 20 years.

[9] The Bass Model offers a mathematical framework to predict how new technologies spread within a market over time. It considers two key adoption drivers: innovators swayed by external influences, such as marketing, and imitators influenced by positive word-of-mouth from existing adopters. This widely used model in diffusion research helps forecast market penetration for various innovations, including the adoption of energy-efficient technologies.

[10] CalMTA will include previously established savings in the BMA forecast because they would have occurred absent the MTI. Savings associated with collaborative efforts under the umbrella of the MTI, however, will be excluded from the BMA forecast.

Table 3. Estimates of baseline and total market adoption to inform Stage 2 scoring

Idea #	Idea name	Calculation Period	BMA	TMA	Unit definition
0024	VFDs on All Pumps and Fans >10 HP	2024-2045	1.75M	2.26M	Motor horsepower
0085	Combined Heat Pump Cooling-Heating-Water Heating	2025-2045	0.03M	1.22M	Heat pump units
0105	Efficient Streetlights	2025-2045	0.25M	2.11M	Efficient streetlight fixtures with dimmable controls
0133	TES as a DER	2024-2045	2.7K	10.0K	Building
0193[11]	Building Performance Standards Acceleration	2025-2030	1,567M	2,608M	Commercial Floor Space (square feet)
		2031-2035	1,853M	1,444M	
		2036-2045	456M	57M	

MTI cost estimates

To develop the MTI cost estimates, the team first assessed the initiative's market characteristics in terms of sector, viable market segments, and adoption decision types. The team next considered the current rate of market adoption and the reasonable adoption rate over the MTI's timeframe based on the known market barriers and opportunities. Then, based on the team's experience designing and implementing MT initiatives in other markets and considering California's market size and policy drivers, the team estimated the funding that would be needed across multiple possible intervention strategies. For example, if awareness of the product or practice is low, we assessed the types of marketing interventions and dollars that would be needed to build awareness with leverageable partners. Lastly, if the first cost is expected to be a significant barrier, the team estimated the incentives that might be needed for supply chain market actors and, separately, for end-use customers.

The total cost estimates were developed from the following components:

- **Consumer incentive costs:** These are the estimated costs of incentives required to influence the market. These cost estimates include incentive dollars that could be upstream facing, consumer facing, or any other mechanism that might be required to motivate market response. These may be incentives provided through CalMTA or by other entities.
- **Non-consumer-facing incentive costs:** These are incentives directed to supply chain market actors to influence the product, feature set, or regional adoption.

[11] The BMA and TMA estimates for #0193 are disaggregated for three sub-periods of the forecast period to highlight the fact that TMA primarily differs from BMA in terms of rate of adoption instead of extent of total adoption.

- **Administration/program management costs:** These are CalMTA or program implementer costs, including labor and other direct expenses.
- **Research and evaluation costs:** Costs for the tracking and evaluation of MTI market progress over the life of the MTI, which may include lab testing and test procedure development.
- **Awareness building costs:** Costs related to awareness building or other marketing activities.
- **Other:** This category includes expenses not captured in the above categories like workforce education and training (WE&T) needs, stakeholder engagement, supply chain engagement, specification development, and advocacy.

The breakdown of estimated costs for each MT idea is provided in Table 4 below. These cost estimates will continue to be refined for ideas advancing to Phase II.

Table 4. Estimate of MTI cost (in millions of dollars)

Idea #	MTI	Customer incentive costs	Non-consumer-facing incentive costs	Administration/ Program management	Research & evaluation	Awareness building	Other	Total without customer incentives	Total including customer incentives
0024	VFDs on All Pumps and Fans >10 HP	0.0	8.0	6.882	3.5	7.820	10.0	35.514	35.514
0085	Combined Heat Pump Cooling-Heating-Water Heating	7.50	7.50	8.365	12.625	6.70	7.50	50.219	57.719
0105	Efficient Streetlights	n/a	n/a	1.330	2.40	1.0	3.250[12]	9.177	9.177
0133	TES as a DER	10.0	n/a	4.490	5.0	1.0	5.0	19.313	29.313
0193	Building Performance Standards Acceleration	n/a	n/a	7.854	10.520	3.50	25.250[13]	54.193	54.193
Total								**168.416**	**185.916**

[12] The "other" costs for Idea 0105 include advocacy efforts and WE&T.

[13] The "other" costs for Idea 0193 include technical support/tool development, stakeholder engagement, and WE&T.

Incremental measure costs

The team conducted secondary research to develop estimates of incremental costs for each baseline installation condition. We reviewed California Electronic Technical Reference Manual (eTRM) measure packages and other TRMs for information to support cost estimates.[14] In most cases, incremental measure costs were not available for all the combinations of proposed and baseline technologies for each installation condition of an MTI in the TRM measure packages. We therefore conducted research into currently available products for the baseline and proposed technologies through a review of retail pricing. We extrapolated the incremental costs in future years by assuming a percentage price decrease for each subsequent year in the life of the MTI, using secondary research findings whenever possible.

4.4 Stage 2 scoring outputs

The scoring inputs described above were used to develop the TSB and cost-effectiveness values used as the basis for the Stage 2 scores. These are described below.

Currently, the CEDARS Cost-Effectiveness Tool (CET) is the official publicly available program to evaluate energy efficiency programs in California.[15] The CET allows for evaluation of programs from all utilities and climate zones and contains approved 8,760 load shapes and defined avoided costs. However, since the MT ideas focus on relatively new technologies and some MT ideas involving new technologies require custom 8,760 load shapes not currently supported by CET, the team developed an in-house, Excel-based cost-effectiveness tool that is consistent with the CET methodology and versatile enough to handle all the MT ideas. CalMTA used this tool to calculate TSB. Cost-effectiveness (TRC and PAC) includes TSB and requires an allocation of the different cost components. A combination of the tool and the CET were used to determine the cost effectiveness.

4.4.1 PAC & TRC

TRC and PAC are calculated in line with the investor-owned utilities (IOU) energy efficiency requirements. Costs and benefits were modified to accommodate a statewide value, with utility-/climate-zone-avoided costs averaged by the share of customers from each of the three largest state IOUs and with average values applied to the remaining portion of California served by other utilities. The TRC test compares the life-cycle benefits that the MTI will deliver to the costs associated with achieving those benefits from the perspective of both the MTI administrator and participant. The PAC test compares the life-cycle benefits that the MTI will deliver to the costs

[14] The California eTRM (www.caetrm.com) is a statewide repository of California's deemed measures, supporting values, and documentation.

[15] CEDARS is the California Energy Data and Reporting System (CEDARS) managed by the CPUC. It is the secure repository of California's energy efficiency program data reported to the CPUC by the investor-owned utilities, Regional Energy Networks, and certain Community Choice Aggregators. Data available on CEDARS are submitted in annual budget filings, quarterly savings claims, and monthly report summaries.

associated with achieving those benefits from the perspective of the MTI administrator. The TRC and PAC values that informed the cost-effectiveness scoring are presented in Table 5.

4.4.2 TSB

TSB is calculated using the savings and load shape of an energy efficiency resource by applying the hourly values for energy, capacity, and greenhouse gas (GHG) emissions compliance costs over the life of the resource, to enable development of the total net system benefits from an MTI. The team disaggregated the total TSB value into its component parts of energy, grid impacts, and GHG impacts. The team also calculated the GHG impacts related to refrigerants for Combined Heat Pump Cooling-Heating-Water Heating.[16] These results were combined with the GHG impacts. Showing the breakdown of TSB into its component parts gave the team insight into the drivers of the TSB value and where the potential benefits are. The TSB values, both the total TSB and the component parts, are provided in Table 5 below.

[16] GHG impact from refrigerants only occurs when refrigerants are added when fuel switching from a natural gas technology to electric.

Table 5. TSB and cost-effectiveness inputs to Stage 2 scoring

Idea #	Idea name	Total System Benefit ($M)					Cost-effectiveness	
		Total TSB	Energy	Grid	GHG w/o refrigerants	GHG refrigerants	TRC	PAC
0024	VFDs on All Pumps and Fans >10 HP	562	195	83	284	n/a	8.30	22.29
0085	Combined Heat Pump Cooling-Heating-Water Heating	2,354.1	350.8	618.0	1,199.7	185.6	1.25	60.98
0193	Building Performance Standards Acceleration	566.4	148.1	223.0	195.3	n/a	1.35	12.67
0105	Efficient Streetlights	256.8	114.2	45.8	96.8	n/a	0.80	20.93
0133	TES as a DER	108.7	7.7	95.8	5.2	n/a	0.26	0.53

4.5 Stage 2 scores

To develop the Stage 2 scores for TSB and cost-effectiveness, the team converted the values in Table 5 using the scoring rubric described in Section 2 of the **Phase I Disposition Report**. The TRC and PAC values were assigned a "yes" if they were 1.0 or greater and a "no" if they were below 1.0. To determine whether the TSB values were high, medium, or low, the team ranked the TSB values within each TSB criterion then assigned a high to values in the top third percentile, a medium to values in the middle, and low to the values in the lowest third percentile.

The scoring rubric for Product Readiness, Non-energy Impacts, Environment and Social Justice (ESJ) Community Impacts, and MT Alignment is consistent between Stage 1 and Stage 2. To develop the Stage 2 scores for these criteria, the scoring team reviewed the Stage 1 scores and adjusted them based on additional information or insights that developed during the Stage 2 process, where necessary. However, none of the scores changed between Stages 1 and 2.

The Stage 2 scores for the five ideas that advanced to Stage 2 scoring are presented in Table 6 below. The CalMTA team used the same Excel-based scoring tool used for Stage 1 scoring to calculate weighted scores for each idea and rank them based on the criteria and weightings. The scoring tool ensured that the ideas were scored consistently using the defined criteria. The tool applied weights to the individual criterion score and aggregated them across scoring categories to develop a total weighted score for each idea.

Table 6. Stage 2 scores

Idea #	Idea Name	Stage 2 Score	Total System Benefit			Commercial Readiness	MTI Cost & Cost-effectiveness		Equity (HTR/DAC* Impacts)		Non-energy Benefits	MT Alignment/ Opportunity		
			Energy Savings	Grid Benefits	GHG Impacts	Readiness	TRC	PAC	Beneficial Impacts to ESJ Communities	Partnership Opportunities with ESJ Communities	Non-energy Benefits	Innovation Characteristics	Leverage Points	Sustained Benefits
0024	VFDs on All Pumps and Fans >10 HP	6.82	High	Med.	Med.	High	Yes	Yes	2	2	5	4	4	3
0085	Combined Heat Pump Cooling-Heating-Water Heating	8.11	High	High	High	High	Yes	Yes	2	3	5	3	4	4
0105	Efficient Streetlights	6.92	Med.	Med.	Med.	High	No	Yes	3	3	4	4	4	4
0133	TES as a DER	4.68	Low	Med.	Low	High	No	No	2	2	3	3	3	4
0193	Building Performance Standards Acceleration	7.22	High	Med.	Med.	High	Yes	Yes	2	2	4	2	4	5

* HTR = hard to reach; DAC = disadvantaged communities.

5 Batch 3 MT idea

CalMTA staff presented four of the five ideas scored in Stage 2 to the MTAB, during a meeting held November 20, 2024. The fifth idea, TES as a DER (IDEA-0133), had a very low TRC test score (0.26) and was therefore not presented. As a result of Stage 2 scoring and discussion with MTAB, CalMTA has identified one idea that is suitable for continued development within Phase 1: Building Performance Standard Acceleration. CalMTA recommended this idea for Advancement Plan development based on high TSB and a beneficial ramp rate and cost-effectiveness; the idea also scored well in energy savings and GHG emissions. Due to the complementary elements with other measures, it would also strengthen the MTIs being developed as part of Batch 1 and Batch 2. Lastly, this MT idea would broaden the portfolio's reach into commercial markets. We note that the MT idea described in the submission would, among other activities, promote the adoption of Building Performance Standards by jurisdictions, whereas CalMTA believes there is an opportunity to shape policy design to reduce market barriers and to accelerate the market adoption of adopted Building Performance Standards.

Building Performance Standard Acceleration idea is summarized in the "2024 Request for Ideas: Phase I Update" memorandum delivered to the MTAB and is further described in the Advancement Plan available on the CalMTA website. The MTAB memorandum can be found here and the Advancement Plan will be posted to the CalMTA Resources and Reports page (found here) when it is finalized (estimated by end of September 2025).

6 MTAB feedback

A primary responsibility of MTAB is to "provide feedback and recommendations to pursue, modify, or reject each potential MTI brought forward by the MTA."[17] MTAB feedback related to this Disposition Report began at the April 24, 2024 MTAB meeting (notes here) where MTAB members advised CalMTA to prioritize ideas that had the highest potential lifecycle TSB, with a quick ramp rate, and which would be cost-effective sooner. MTAB members also provided feedback during three regular meetings and presentations on September 23, 2024 (Stage 1 scoring and prioritization, notes here), November 20, 2024 (Stage 2 scoring and prioritization, notes here), and February 19, 2025 (Batch 3 recommendation, notes here). The draft of the Disposition Report for the 2024 RFI was delivered to the MTAB for review and feedback on March 21, 2025. Three MTAB members submitted a total of thirty-three comments. These written comments and the CalMTA team's response on how the comments were addressed are presented in Appendix D.

[17] CPUC D. 19-12-021, pp. 119

7 About CalMTA

CalMTA is a program of the California Public Utilities Commission and is administered by Resource Innovations. We work to deliver cost-effective energy efficiency and decarbonization benefits to Californians through a unique approach called market transformation. Market transformation is the strategic process of intervening in a market to create lasting change by removing market barriers or exploiting opportunities, accelerating the adoption of identified technologies or practices. CalMTA-developed market transformation initiatives (MTIs) also aim to advance state goals on demand flexibility, workforce development and equity. Learn more at www.calmta.org.

Appendix A: Scoring & Selection Process Elements

The CalMTA team developed the following elements to execute the scoring and selection process described in Section 1.1:

1) **Scoring categories** are broad categories under which one to three criteria are grouped. The scoring categories represent the policy or other priorities that drive the selection of the MTIs.
2) **Scoring criteria** are the specific metrics or values that are used to calculate the scores. The criteria roll up to the categories.
3) **Category and criteria weights** are the values placed on each category and criterion to determine the MTI score.
4) **Scoring rubric and guidance** provides the structure and definitions for each criterion that allows the scorer to assign the score to each idea and supports consistent scoring across multiple scorers.
5) **Intake portal** where market actors and other stakeholders are able to submit their ideas for MTIs.

Scoring categories & criteria

The scoring categories and the individual criteria within each are presented in Table A1 and defined and described in more detail in Appendix B. These are the same across the two stages except for the Participant Cost/Cost-effectiveness criteria:

Stage 1. The scorers' assessment of the reasonableness of the participant cost is used to score Participant Cost as a proxy for Cost-effectiveness in this stage. At this stage, there is not enough information on the ideas to assess cost-effectiveness more accurately.

Stage 2. In this later stage, Program Administrator Cost Test (PAC) and Total Resource Cost Test (TRC) are estimated to score Cost-effectiveness. The TRC represents the effects of an MTI on the entire market and gives an indication of the rate of return of the MTI to both the utility and participants. The PAC measures the costs of an MTI based on program administration costs (including incentives) but excludes any costs incurred by participants. This means that the costs in the PAC are defined similarly to supply-side resource alternatives which do not include direct customer costs.

Table A1. Scoring categories and criteria

Category	Criteria
Total System Benefit (TSB) A single metric that encompasses energy savings, grid benefits and reliability, and GHG impacts	Energy TSB
	Grid Benefits TSB
	GHG Impacts TSB
Product readiness An indicator of the supply chain maturity/product availability	Readiness
Participant Cost/Cost-effectiveness Assesses the overall estimated cost of the MTI against its benefits	Participant Cost (Stage 1) PAC & TRC (Stage 2)
ESJ impacts (Equity) Assesses whether the MTI will provide beneficial impacts to ESJ communities or leverage existing community resources in its execution	Beneficial Impacts to ESJ Communities
	Partnership Opportunities with ESJ Communities
Non-energy impact Captures the benefits or impacts (in addition to energy savings and greenhouse gas emissions reductions) that the MTI will deliver	Non-energy Impacts
MT alignment Ensures that the MTI aligns with key aspects of MT theory and presents a strong MT opportunity	Innovation Characteristics
	Leverage Points
	Sustained Benefits

The CalMTA team considered including "workforce development" as a stand-alone scoring category but determined that it was more appropriate to capture workforce development within other categories. Insufficient workforce is often identified as a barrier that might limit market diffusion. Workforce development, however, is also an effective strategy for removing the barrier of lack of contractor awareness and support for a technology or practice. In other cases, an MTI could provide an opportunity to grow a contractor base, improve the skills and capabilities in the industry, or create a new delivery or support channel. This could provide significant value, specifically when targeted toward rural or low-income communities. For these reasons, the CalMTA team scored workforce development opportunities as follows:

- Initiatives that provide workforce development in ESJ communities received credit in the beneficial impacts to ESJ communities.
- WE&T was captured as a non-energy impact (NEI) when a WE&T effort (existing or new) could be leveraged to support the initiative.

Similarly, the team discussed including "risk" as a standalone scoring category but determined that MTI risk is best managed through the careful selection of MTI ideas using a robust scoring and selection process. With MTI selection, risk is minimized by ensuring the technologies or practices are commercially or near-commercially available, and opportunities have strong MT

alignment (see Table A2). These two categories specifically reduce the likelihood of investments that would not effectively result in savings.

Category & criteria weights

The CalMTA team established scoring weights to prioritize each of the six categories and the criteria within them. Table A2 presents the weights for each category and criterion. Because Stage 2 uses PAC and TRC calculations to score Cost/Cost-effectiveness, but Stage 1 only uses Participant Cost as a proxy, the weight for cost-effectiveness is increased in Stage 2 to give more weight to TRC and PAC.

Table A2. Category and criteria scoring weights for Stages 1 & 2

Category	Category weights	Criteria	Criteria weights
Total System Benefit	25%	Energy Savings	30%
		Grid Benefits and Reliability	30%
		GHG Impacts	40%
Product readiness	10%	Readiness	100%
Participant Cost/Cost-effectiveness	Stage 1: 5% Stage 2: 10%	Participant Cost (Stage 1)	100%
		Cost-effectiveness: TRC (Stage 2)	50%
		Cost-effectiveness: PAC (Stage 2)	50%
ESJ impacts (Equity)	15%	Beneficial Impacts to ESJ Communities	65%
		Partnership Opportunities with ESJ Communities	35%
Non-energy impacts	Stage 1: 15% Stage 2: 10%	Non-energy Impacts	100%
MT alignment	30%	Innovation Characteristics	20%
		Leverage Points	50%
		Sustained Benefits	30%

The CalMTA team used an Excel-based scoring tool to calculate weighted scores for each idea and objectively rank them based on the criteria and weightings. The scoring tool ensured that the ideas were scored consistently using the defined criteria. The tool applied weights to the individual criterion score and aggregated them across scoring categories to develop a total, weighted score for each idea.

Scoring rubric & guidance

A scoring rubric was developed to guide the process by defining the scale and values used to score each criterion. Each criterion has a set of clearly defined score options that were developed

to be applicable to all types of ideas (for instance, technologies, services, practices, delivery approaches, etc.) and have been appropriately differentiated for use in Stage 1, which is a high-level assessment. Stage 2 includes an assessment based on more in-depth information from research and analysis of available secondary resources.

The scoring rubric is presented in Table A3 and more detailed score options and instructions are provided in Table A4.

Table A3. Scoring rubric

Category	Stage 1: Scan & identify ideas		Stage 2: Develop & assess ideas	
	Criteria	**Scoring scale**	**Criteria**	**Scoring scale**
Total System Benefit	Energy Savings Potential	Low, medium, high	Energy TSB	Low, medium, high
	Grid Flexibility Potential	Low, medium, high	Grid Benefits TSB	Low, medium, high
	GHG Reductions Potential	Low, medium, high	GHG Impacts TSB	Low, medium, high
Commercial Readiness	Readiness	Low, medium, high	Readiness	Low, medium, high
Participant Cost/Cost-effectiveness	Reasonable Participant Cost	Yes/No	MTI Cost-effectiveness: PAC	< 1 = No ≥1 = Yes
			MTI Cost-effectiveness: TRC	< 1 = No ≥1 = Yes
ESJ Impacts (Equity)	Beneficial Impacts to ESJ Communities	1-5	Beneficial Impacts to ESJ Communities	1-5
	Partnership Opportunities with ESJ Communities	1-5	Partnership Opportunities with ESJ Communities	1-5
Non-energy Impact	Non-energy Impacts	1-5	Non-energy Impacts	1-5
MT Alignment	Innovation Characteristics	1-5	Innovation Characteristics	1-5
	Leverage Points	1-5	Leverage Points	1-5
	Sustained Benefits	1-5	Sustained Benefits	1-5

The following table presents the scoring guidance provided to the scoring team to ensure that the scores are assigned consistently across all ideas.

Table A4. Scoring guidance

Stage 1			Stage 2	
Overarching scoring guidance				
Scores should be based on the submitters response but can be modified if the reviewer sees potential for enhancement, such as ESJ partnership opportunities, or changes to assumptions, such as targeting a narrower segment of the market. The reviewer must document the reasons for their score and any changes made in the notes.			Scores for Total System Benefit and Participant Cost/Cost-Effectiveness are estimated by the CalMTA team. Scores for the other categories use the same scoring rubric as Stage 1 but are updated based on new information, if applicable.	
Total System Benefit				
Energy Savings	The energy savings potential of the technology or practice over the life of the MTI.	In Stage 1, the energy savings score is the reviewer's informed opinion of the achievable energy savings potential within the market sector and end use, as follows: • Low levels of energy savings • Medium levels of energy savings • High levels of energy savings	Energy component of total system benefit - Dollars ($)	Bin values into scores of low, medium, high
Grid Benefits	The potential level of grid flexibility or the contributions to reliability the initiative will provide.	In Stage 1 scoring, load flexibility is a proxy for grid benefits and reliability. The reviewer should use their informed opinion to assess the level of load flexibility within the market sector and end use, as follows: • Low levels of grid flexibility • Medium levels of grid flexibility • High levels of grid flexibility	Grid benefits (Generation Capacity, Transmission, Distribution, Avoided AS Procurement, and Losses) components of total system benefit - Dollars ($)	Bin values into scores of low, medium, high
GHG Impacts	The GHG reductions potential of the technology or practice over the life of the MTI.	In Stage 1, the likely levels of GHG emissions reductions (including the net emissions reductions from fuel switching) and/or peak demand reductions. The reviewer should use their informed opinion to score based on likely levels of GHG emissions reductions (including the net emissions reductions from fuel switching) and/or peak demand reductions within the market sector and end use, as follows: • Low levels of peak demand reductions and/or change in GHG emissions from refrigerants • Medium levels of peak demand reduction and/or change in GHG emissions from refrigerants • High levels of peak demand reductions and/or change in GHG emissions from refrigerants	GHG impacts (GHG Cap and Trade, GHG Adder, GHG Portfolio Rebalancing, and Methane Leakage) components of total system benefit - Dollars ($)	Bin values into scores of low, medium, high
Readiness				
Readiness	Readiness is an indicator of the supply chain maturity/product availability. Scores are assigned based on the level of availability of the technology or practice in the United States.	• Low - not commercially available or limited, pre-commercial availability (anywhere) • Medium - commercially available outside of United States; requires special order in United States • High - commercially available in the United States	Same as Stage 1	Same as Stage 1
Participant Cost/Cost-effectiveness				
Participant Cost/Cost-effectiveness	In Stage 1, Participant Cost/Cost-effectiveness is the reviewer's assessment of the reasonableness of participant costs.	• Yes, the cost estimates are reasonable • No, the cost estimates are not reasonable	In Stage 2, Participant Cost/Cost-effectiveness score is determined by the estimates of Program Administrator Cost Test (PAC) and Total Resource Cost Test (TRC)	PAC score: <1.0 (no) ≥1.0 (yes) TRC score: <1.0 (no) ≥1.0 (yes)
ESJ impacts (Equity)				

Stage 1			Stage 2	
Beneficial Impacts to ESJ Communities	Beneficial impacts result from projects which include activities to reduce energy burden, create jobs in disadvantaged communities and high road pathway opportunities, reduce GHG emissions, and demonstrate transformative climate change actions which contribute to the ESJ community's health, safety, and improved environment. The MTI should specifically address the delivery of benefits to ESJ communities as part of the MTI idea. MTI ideas that focus on the general market but generate benefits to ESJ communities incidentally (as in the case of mass market products that both general market and low-income customers purchase) can receive points in this category if the reviewer determines that there is a plausible strategy. Technologies or practices that improve air quality in DAC or DAC adjacent communities should receive credit in this category. Initiatives that provide workforce development in ESJ communities should receive credit in this category.	Will the initiative provide beneficial impacts to ESJ communities as submitted or envisioned by the MTA team? 1 - none of the benefits generated by the initiative idea will accrue to ESJ communities 2 - some of the benefits generated by the initiative accrue to ESJ communities 3 - about half of the benefits generated by the initiative will accrue to ESJ communities 4 - most of the benefits generated by the initiative accrue to ESJ communities 5 - all of the impacts generated by the initiative will accrue to ESJ communities (exclusively)	Same as Stage 1	Same as Stage 1
Partnership Opportunities with ESJ Communities	The partnership opportunities with ESJ communities reflects whether the initiative will leverage existing community resources, partner with other ESJ entities, or use available resource(s) in its execution. The points earned in this category depend on whether the described initiative specifically identifies an ESJ agency or other CBO for delivery, or whether they identify the role for an agency but indicates that it will be filled later. Ideas can receive points in this category if the reviewer determines that there are additional partnership opportunities.	Does the initiative leverage existing community resources, partner with other ESJ entities, or use available resource(s) as submitted or envisioned by the MTA team? 1 - no role has been identified/anticipated for an ESJ agency or other CBO in a stakeholder or advisory role for the initiative 2 - there is a strategy for involving public participation from the ESJ communities, however, potential partnerships or the targeted geographic locations have not been identified 3 - there is an identified role for a CBO partner and/or ESJ agency, however, a specific partner has not been identified 4 - one CBO organization who will work on the implementation of the initiative has been identified 5 - two or more CBO organizations OR a single statewide/regional CBO have been identified to work on the initiative	Same as Stage 1	Same as Stage 1
Non-energy impacts				
Non-energy Impacts (NEIs)	The non-energy impacts capture the impacts generated by the initiative other than the direct energy (kWh and therms)	What non-energy impacts does the initiative address that would increase the success of the initiative (as identified by the submitter or CalMTA)?	Same as Stage 1	Same as Stage 1

		Stage 1	Stage 2	
	and demand savings. For the purposes of this scoring, GHG emissions reductions do not count as a non-energy impact since they are captured under the TSB score. The non-energy impact score is determined by whether the non-energy impacts are incidental (achievable and measurable) or a fundamental element of the initiative's value proposition. WE&T should be captured as an NEI when a WE&T effort (existing or new) can be leveraged to support the initiative.	1 - no identified NEIs 2 - NEIs are identified in the initiative, but are not measurable and are not of strategic value to the success of the initiative 3 - NEIs are identified in the initiative and are measurable, but do not have strategic value to the success of the initiative 4 - NEIs are identified in the initiative, are measurable and likely have some strategic value to the success of the initiative 5 - NEIs are identified in the initiative, are measurable, and substantial, and have significant strategic value to the success of the initiative		
MT alignment/opportunity				
Innovation Characteristics	The innovation characteristics capture the technology or service's alignment with the factors of diffusion, which have influence on the innovation's likelihood of success or failure.	Does the product or service align with the 5 factors of diffusion: relative advantage, compatibility, (low) complexity, trialability, and observability? 1 - product or service aligns with 0 factors of diffusion 2 - product or service aligns with 1 factor of diffusion 3 - product or service aligns with 2 factors of diffusion 4 - product or service aligns with 3 factors of diffusion 5 - product or service aligns with 4+ factors of diffusion	Same as Stage 1	Same as Stage 1
Leverage Points	The leverage point criteria captures whether there is a known aggregation node in the technology or services market structure that can be utilized to gain market leverage causing amplified MTI influence.	Is there an intervention point, aggregation node, trend, or policy impacting the target market that will generate broad change? 1 - there are no known or identified market leverage points or proven intervention strategies 2- one identified market leverage point/intervention strategy, without evidence of likely success 3- one identified market leverage point/intervention strategy with some evidence of likely success (i.e., previously interventions or relevant conversations have already taken place) 4 - one market leverage point with proven intervention strategies and MT success 5 - two or more market leverage points with proven intervention strategies and MT success	Same as Stage 1	Same as Stage 1
Sustained Benefits	Sustained benefits are the structural changes that will occur to lock in the desired market behavior. The reviewer should have a theory for where or how those changes might occur and have a plausible strategy to create that change. Examples of sustained benefits include adopted code or standard, permanent changes to manufacturing operations, market practice, or permanent infrastructure that does not require CalMTA support.	Are there potential structural market changes that may occur that are difficult to reverse to support lastingness or a plausible argument that market changes could occur? Such as: adopted code or standard, permanent changes to manufacturing operations, market practice, or permanent infrastructure that does not require CalMTA support. 1 - no changes in market structure/infrastructure/regulations envisioned that could result in sustained market adoption 2 - changes in market structure/infrastructure/regulations that could result in sustained market adoption are envisioned, but no strategy is identified 3 - the MTI envisions a change in market conditions/infrastructure/regulations that could result in sustained market adoption, and infrastructure mechanisms exist to support change, but the strategy is not clear 4 - the MTI includes a plausible strategy that can lead to changes in market conditions/infrastructure/regulations that could result in sustained market adoption, and infrastructure mechanisms exist to support change 5 - the MTI includes a proven strategy that can lead to changes in market conditions/infrastructure/regulations that would result in sustained market adoption	Same as Stage 1	Same as Stage 1

Intake questions

The intake questions, completed by the submitters and presented in Table A5, were designed to solicit information in narrative form rather than data points corresponding to the scoring criteria. The CalMTA scoring team used their expertise to take the information provided by the submitter and relate it to the scoring criteria.

Table A5. RFI intake questions

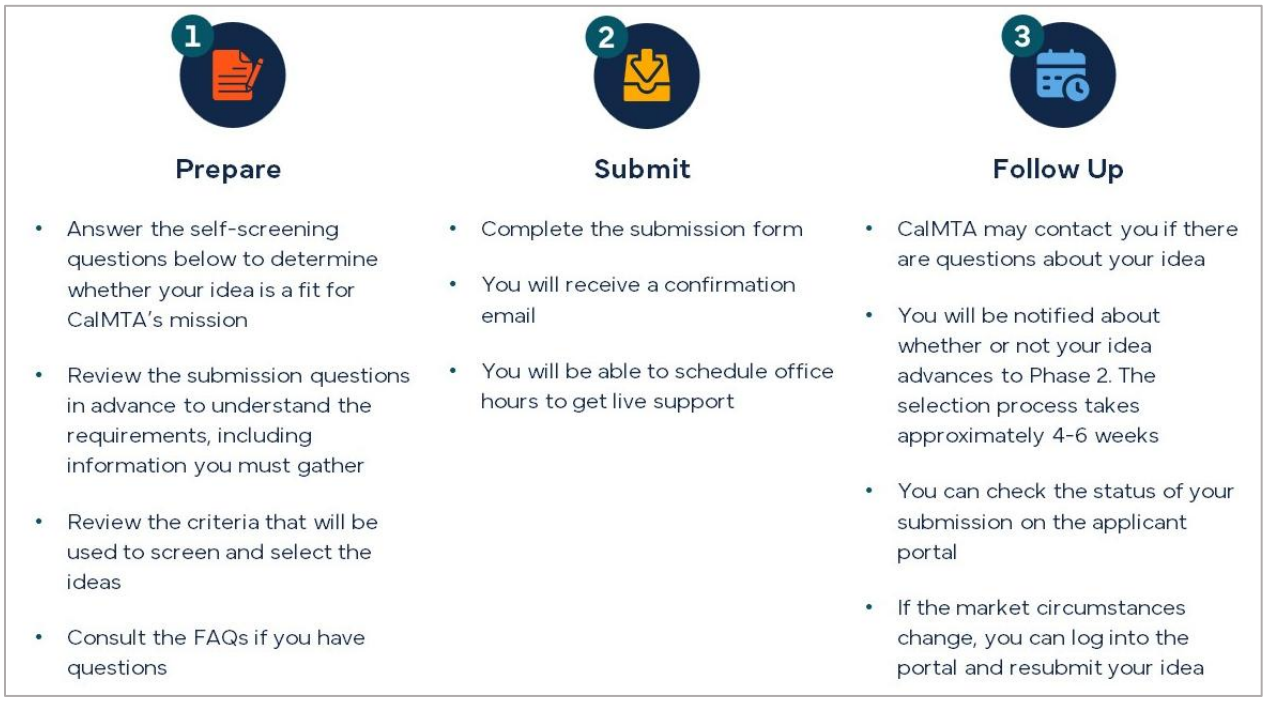
Product description & benefits
Please describe the technology or practice. *(2,000 characters)*
Describe how the technology or practice saves electricity or natural gas, reduces peak demand, and/or reduces GHG emissions. *(800 characters)*
Are there additional benefits that your technology or practice will provide? If so, please describe these benefits. *(800 characters)*
Target market description
Describe the target market sector and customers that will benefit from your technology or practice in California. For example, commercial, industrial, single family residential, multifamily residential, agricultural, etc., and, if applicable, key subsector. Be sure to specify whether it will benefit hard-to-reach customers, low-to-moderate income markets, disadvantaged communities, etc. and how. *(800 characters)*
Where, specifically, is the technology or practice available? Is it available to consumers in California? Please provide an example of a specific outlet or service provider, if possible. *(800 characters)*
Describe how the technology or practice is (or will be) delivered to the market. For instance, will it be available for direct purchase by the consumer through traditional retail establishments, or will it be available only through installation by a licensed professional, or something else? Is there a well-established distribution channel that can be used, or would one need to be developed or adapted? Also include information about any partnerships, including those with community-based or environmental/social justice organizations, if applicable. *(4,000 characters)*
What is your best estimate of current market adoption of the technology or practice? For instance, how many units or what percentage of the target market(s) have already adopted the technology or practice? (*1,200 characters)*
Market adoption barriers
What is keeping the market from adopting your technology or practice? Please list the key market barriers. *(2,000 characters)*
What limitation(s), if any, does the technology or practice have that must be overcome? What are the technical barriers, if any? *(4,000 characters)*
Beyond the standard or base case technology or practice, what are the alternative competing products or services (direct and indirect), and how does your technology or practice compete with them? *(2,000 characters)*
What type of market interventions, assistance, or support do you think are necessary to overcome the identified barriers? *(2,000 characters)*
Additional information

Is there any additional information that would be helpful in evaluating your proposed idea? *(800 characters)*
If available, please provide names and links to any recently completed studies, workpapers, measure packages, whitepapers, industry publications, articles, interviews, and other supporting documentation related to this idea. *(2,000 characters)*

Intake portal

Decision 19-12-021 directed CalMTA to develop an intake portal where market actors and other stakeholders could submit their ideas for MTIs. The team developed such a portal with a process and requirements that were clear and easy-to-follow, and the submitters had access to supporting resources. Self-screening questions provided the submitter a way to determine whether their idea was a good candidate for market transformation. Guidance language navigated submitters through a logical flow of information from the broader CalMTA website, to the "Participate" landing page, and ultimately to the "Idea Portal" for submission. A simple graphical element illustrated the stages of the intake process and included links to supporting information.

Figure A7. Steps to submitting an idea



Appendix B: Ranked List of Ideas Scored in Stage 1

This appendix contains a rank-ordered list of all the ideas scored in Stage 1. Ideas that did not meet the threshold requirements to advance to Stage 1 scoring are listed in Appendix C. As depicted in Figure 14 above, two ideas (0212, Net Zero Emissions California 2044 and 0220, DOAS and VRF Market Support for Advancing High Efficiency Rooftop Units), overlapped with ideas that were under Phase II development. These new submissions were combined with these in-progress MT ideas.

The rank-order list includes a description of the submitted idea as well as the status of the idea in the scoring process and clarifying notes. They are grouped in bins by score. Ideas that were submitted by CalMTA are indicated by an asterisk (*) in the Idea Name. Ideas with the status "Stage 2 Scoring Review" are those ideas that CalMTA advanced to Stage 2 scoring.

Ideas that CalMTA did not recommend advancing to Stage 2 scoring indicate a status of "Archive/Stage 1." The "Status Notes" field includes a short explanation/rationale for which categories were the primary reason for the idea not scoring high enough in Stage 1 scoring to advance to Stage 2. For more details on the scoring rubric and guidance, see Section 2 of the **Phase I Disposition Report**. CalMTA will monitor the market and other conditions and may advance archived MTI ideas in the future.

When ideas were duplicative or complementary in nature, they were combined and scored together. In these cases, the status indicates "Combined" and the notes indicate which ideas were combined.

Table B1: Rank ordered list of ideas

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
Ideas with Stage 1 scores between 8.0 & 8.9					
1	0085	Combined Heat Pump Cooling-Heating-Water Heating-Thermal Storage*	A Combined Heat Pump is a product that integrates water heating, space heating, and space cooling into one combined, three-function heat pump system. These systems can also store some amount of thermal energy for use at a later time.	Stage 2 Scoring Review	Advanced to Stage 2
1	0219 (2024)	Combined Heating, Cooling, and Hot Water with TES	A combined heating, cooling, and domestic hot water (DHW) system with TES for residential applications. The system uses thermal storage and advanced controls to reduce energy costs by 30% vs. gas and other heat pumps.	Combined	Linked with IDEA-0085 in Stage 2 Scoring Review
Ideas with Stage 1 scores between 7.0 & 7.9					
2	0010	High Performance Windows*	High performance windows are windows that outperform code efficient windows by ~20% or more through the use of two or more panes of glass and/or the use of gases such as krypton or argon.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and moderate energy savings.
2	0109	High Performance Windows	High performance windows are defined as a product that achieves a .22 U-factor or less. The primary product currently meeting this efficiency level is a thin triple-pane window.	Combined	Linked with IDEA-0010 in Archive/Stage 1

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
3	0024	VFDs on All Pumps and Fans > 10 HP	Variable frequency drives on pumps and fans allow reduced speed and energy consumption during periods of low loads; can be combined with advanced motors for additional efficiency gains.	Stage 2 Scoring Review	Advanced to Stage 2
3	0112	Adjustable Speed Drives Leveraging the Power Index	Adjustable Speed Drives (ASDs) leveraging the Power Index uses the ratio of rated power over baseline power (PI) to calculate energy savings achieved by adding ASDs to motor-driven systems.	Combined	Linked with IDEA-0024 in Stage 2 Scoring Review
3	0172	Advanced Electric Motors Market Awareness and Demand TFP	Advanced Electric Motors Market Awareness and Demand TFP would increase awareness of and demand for advanced electric motors in California by launching an advanced motor measure program that generates savings and accelerates market adoption.	Combined	Linked with IDEA-0024 in Stage 2 Scoring Review
4	0193	Building Performance Standards Acceleration MTI	BPS Acceleration MTI would encourage cities to adopt BPS policies that target existing building stock and improve efficiencies either through a prescriptive design or an energy use intensity benchmark.	Stage 2 Scoring Review	Advanced to Stage 2
5	0111	Efficient Fans Leveraging	Efficient Fans Leveraging the fan energy index (FEI) would require adopting the FEI rating as the key energy metric for fans in state codes.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and GHG impacts.

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
6	0022	Smart Home*	Smart home technology enables automation of certain appliances for increased capabilities, security, comfort, and convenience including products such as thermostats, lighting, refrigerators, and cooking appliances. In addition, these appliances can be connected to an overarching smart home energy management system which allows the customer to monitor their energy usage and make changes based on usage patterns.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and grid benefits and low in MT Alignment relative to other submitted ideas due to lack of innovative characteristics and leverage points.
7	0188	Reflective Insulation for Windows	Reflective Insulation for Windows is designed to keep building interiors cool without interfering with the occupants' views by blocking infrared light reducing solar heat gain by 50% in turn reducing summer cooling load.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and low in MT Alignment relative to other submitted ideas due to lack of identified sustained benefits.
8	0217 (2024)	High Quality, High Efficiency Light Sources	This initiative would advance linear LED products developed through the Million LED Challenge, an initiative led by the UC Davis California Lighting Technology Center in partnership with the California Energy Commission EPIC Program and the University of California's Office of the President.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and energy savings.

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
Ideas with Stage 1 scores between 6.0 & 6.9					
9	0110	Smart Pumps	Smart pumps and circulators are a packaged pumping solution that combines a pump, motor, drive, and integrated controls into one product and is an example of highly efficient pumps and circulators.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and GHG impacts and low in equity relative to other submitted ideas.
10	0142	Agricultural Irrigation as a Flexible Demand Load	Agricultural irrigation as a flexible demand load proposes a proprietary agricultural irrigation technology that cuts irrigation water consumption by 80% as well as an equal amount of power consumption from well pumping, booster pumps and canal transportation pumps.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and low in MT Alignment relative to other submitted ideas due to lack of identified sustained benefits.
11	0218 (2024)	Sustainable Outdoor Lighting	Combines a typical outdoor light fixture with a solar panel, battery, and smart controller. The smart controller decides when to use battery power and when to draw from the grid. Typically, the battery is sized to be charged predominantly by the solar panel during the day.	Archive/ Stage 1	The idea scored low in MTI cost because of the high incremental cost that is unlikely to come down significantly.
12	0133	TES as a DER	This idea proposes using TES storage as a DER at commercial sites that traditionally have the highest energy intensities like hospitals, grocery stores, and refrigerated warehouses.	Stage 2 Scoring Review	Advanced to Stage 2

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
13	0106	High-Efficiency Factory-Built Homes	High-efficiency factory-built homes are homes that exceed ENERGY STAR certification criteria and are fully electric with low impact on the grid.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and grid benefits.
14	0118	Very High Efficiency Dedicated Outdoor Air Systems	Very High Efficiency Dedicated Outdoor Air Systems use high efficiency heat recovery combined with a high-performance heat pump as an HVAC system approach, which result in significant commercial sector energy savings potential.	Archive/ Stage 1	The idea scored low in MT Alignment relative to other submitted ideas due to lack of leverage points.
15	0080	Smart Electric Panels*	A smart panel is an electric panel with integrated or add-on software controls, generally in the form of relays, that provide a user with additional information and capabilities beyond a traditional panel. Smart panels are capable of shutting down all non-critical loads, communicating circuit-level consumption, facilitating strategic participation in demand response programs, limiting whole-home demand by preventing coincident demand from appliances, managing appliances, and enables electrification by allowing addition of loads in excess of rated panel capacity.	Archive/ Stage 1	MTAB advised not to advance to Stage 2 scoring because smart electric panels are not an electrification solution on their own but rather need to work with smart devices to best control end-use loads.
16	0146	Work-based Learning to Achieve Equitable Climate Cool Schools	Work-based Learning to Achieve Equitable Climate Cool Schools prepares and supports cohorts of Local Education	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
			Agencies to design, build, operate, and repair their facilities to meet state energy, decarbonization, and air quality requirements by providing cohort support, internship pilot programs, roadmaps and implementation activities.		lack of grid benefits, energy savings, and GHG impacts and low in MT Alignment relative to other submitted ideas due to lack of sustained benefits.
17	0121	Remote Pump Monitor	Remote Pump Monitor uses various sensors to measure a pump's operational data such as suction pressure, discharge pressure, flow rate and power consumption to provide real-time information to end users. It helps customers monitor their pumping systems and make timely decisions regarding optimizing pumping operations.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of GHG impacts.
18	0210 (2024)	Passive House Standard in Title 24	Passive House is a high-performance building standard (superior to California's Title 24 Part 6). Passive Houses are energy efficient and airtight (highly insulated with no thermal bridging, and with heat-recovery ventilation) which cuts heating and cooling loads by more than half relative to Title 24. This proposal is to incorporate the Passive House standard as an optional pathway within Title 24.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and grid benefits.
18	0173	Scaling Passive House	Scaling Passive House is a performance standard for residential and nonresidential construction and alterations that lean on continuous insulation, high-efficiency	Combined	Linked with IDEA-0210 (2024) in Archive/Stage 1

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
			fenestration, and dedicated ventilation, among other principles, resulting in ultra energy-efficient buildings with capacity to retain heating or cooling and release it steadily and slowly.		
19	0154	Hydronic Heating Supply	Hydronic Heating Supply is a self-contained unit that converts a building's hydronic heating supply by using a proportional control valve and double-wall heat exchanger to provide on-demand domestic hot water for the ultimate in water and energy savings in multifamily, hospitality, assisted-living centers, and healthcare patient towers.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits, energy savings, and GHG impacts and low in Equity relative to other submitted ideas due to lack of partnership opportunities.
20	0160	Low Carbon Calcined Clay Concrete in California	Low Carbon Calcined Clay Concrete in California is a supplementary cementitious material that can reduce CO2 emissions through material & energy efficiency to meet state net zero goals for the sector. Clay is naturally zero carbon raw material and can be calcined at lower temperatures using less energy.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and low in Equity relative to other submitted ideas due to lack of ESJ strategy for partnerships.
21	0221 (2024)	Light Duty Commercial Heat Pump Water Heating	The use in a commercial facility of a unitary heat pump water heater similar to those used in single-family residences. Light-duty commercial applications are hot water needs similar to residential	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and grid benefits and

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
			customers, such as in bathrooms and breakrooms.		low in Equity relative to other submitted ideas due to lack of ESJ strategy for partnerships.
Ideas with Stage 1 scores between 5.0 & 5.9					
22	0216 (2024)	Television Energy Efficiency	Using an existing and proven program infrastructure known as ENERGY STAR Retail Products Portfolio (ESRPP), the program will provide per unit financial incentive on retailers' sale of ENERGY STAR V9.1 televisions.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings GHG impacts and grid benefits, and low in Equity relative to other submitted ideas due to lack of ESJ strategy for partnerships.
23	0137	Sustainable Refrigeration Transition	Sustainable Refrigeration Transition combines practice and technology to demonstrate the value of investing in and managing refrigeration systems more sustainably for smaller independent grocers. The practice involves comprehensive refrigerant leak detection and remediation, and the technology component aims to facilitate the transition to low global warming potential (GWP) and natural refrigerant technologies.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and grid benefits and low in MT Alignment relative to other submitted ideas due to lack of innovative characteristics and identified sustained benefits.

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
24	0025	Industrial Process Heat Pump*	Industrial Process Heat Pumps are a class of active heat-recovery equipment that allows the temperature of a waste-heat stream to be increased to a higher, more useful temperature resulting in energy use being cut by up to one third.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of grid benefits and low for MT Alignment relative to other submitted ideas due to low diffusion and unclear sustained benefits.
24	0129	Combi Heat Pump	Combi Heat Pump is an integrated Heat Pump system designed to provide space cooling, space heating, and water heating.	Combined	Linked with IDEA-0025 in Stage 2 Scoring Review
24	0164	Decarbonization for Industrial and Agricultural Sectors, and Hospitals	Decarbonization for Industrial and Agricultural Sectors, and Hospitals would place an emphasis on exploring alternative heating technologies and implementing heat recovery solutions to increase overall energy efficiency in the industrial and agricultural sectors.	Combined	Linked with IDEA-0025 in Archive/Stage 1
25	0222 (2024)	Residential Smart-Splitting	Electric vehicle supply equipment technology family, addressing the issue of insufficient electrical panel capacity. Smart-splitting solutions enable multiple devices to utilize an existing 240V outlet to power multiple devices by managing the charge.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and MT Alignment relative to other submitted ideas due to lack of identified

Stage 1 score rank	Idea #	Idea name	Description	Status	Status notes
					leverage points and sustained benefits.
26	0215 (2024)	Visit a Heat Pump	This initiative would develop a web-based platform, similar to AirBNB, that would allow individuals interested in heat pump technology to connect with heat pump owners who are willing to allow visitors to see the technology. The service will advance the adoption of heat pump technology by providing "social proof" which is a significant driver of home technology uptake.	Archive/ Stage 1	The idea scored low in TSB relative to other submitted ideas due to lack of energy savings and grid benefits and low in MT Alignment relative to other submitted ideas due to lack of identified sustained benefits.

*Ideas were internally generated by CalMTA.

Appendix C: Ideas Archived at Threshold Review

This appendix presents the ideas that did not pass the threshold review. The status notes provide information about why they did not pass the review.

Table C1: Ideas archived at threshold review

Idea #	Idea Name	Description	Status Notes
213 (2024)	Chilled Water Energy Storage	Describes using an insulated tank as a thermal battery. In the winter, hot water solar collectors would be used to product hot water and in the summer, solar PV would be used to chill the water.	This is an idea for a product but not a commercially available product.
214 (2024)	"Consumer Reports" for Energy Efficient Products	The Empower Procurement Product Evaluation Hub (Cal EPE Hub) is a CEC-funded project that provides rigorous and unbiased evaluations of DER products that reduce and/or manage demand for energy consumption in commercial buildings and agriculture. Through its website, the Hub provides application guidance, side-by-side product comparisons, and feedback from actual users for a variety of DER technologies. The Hub aims to inform procurement decisions made by large commercial and institutional energy utility customers across California.	This idea will not deliver direct energy savings but rather is a supporting tactic.
223 (2024)	Gas Absorption Heat Pumps with Phase Changing Insulation	Residential Efficient Gas Absorption Heat Pump is a technology that offers significant improvements to existing furnaces and electric heat pumps by using natural gas to pump heat from the outdoors to an indoor conditioned environment via a group of heat exchangers, vessels, and a pump that comprise the thermal compressor. In the 2024 submission, the description adds a statement about "leveraging recent advancements in Phase Changing Materials for home insulation to reduce the energy consumption of HVAC systems by reducing the need for active heating and cooling."	This is largely the same as IDEA 0155 submitted during RFI1 except that phase changing insulation was included. However, very little information is provided about the phase changing insulation and potential energy savings, thus unable to rescore for the additional benefit.

Appendix D: MTAB Comments on the Disposition Report for the 2025 RFI

This appendix captures the MTAB feedback and the CalMTA response on the draft Disposition Report for the 2024 RFI (Table D1).

Table D1. MTAB comments on draft Disposition Report for 2024 RFI and CalMTA response

No.	Section	MTAB comment	CalMTA response
1	Section 1: Introduction & Overview of MTI Scoring & Selection (Randall Higa)	As the CalMTA conducts more RFIs in the future, it will become unwieldy in later years to require the reader to dig up the June 2024 Phase 1 Disposition Report in order to understand the scoring. Please consider revising this report to stand alone to make it more user-friendly, perhaps by adding repeated details about the scoring framework in an appendix as reference. This will ensure that new MTAB members and other staff have the information readily available.	We've added an appendix that describes the scoring framework. This is the same content as the referenced section from the previous disposition report.
2	Section 2: RFI Outreach (Randall Higa)	a. This section can be greatly improved and made more comprehensive by following the example of CalMTA's own earlier disposition report. As in the Phase 1 Disposition Report (for the 2023 RFI), please list the specific channels: which industry trade groups, which social media channels, etc? How did the outreach activities and channels differ from the first RFI? Please follow the format and level of detail in the Phase 1 Disposition Report including but not limited to: Stakeholder segments, industry submitter roles, share toolkit materials, number and audience for outreach briefings (per Appendix D of the previous disposition report), etc. It was encouraging to see that level of detail to fully appreciate CalMTA's efforts in promoting submission of innovative ideas.	CalMTA used established channels for outreach on this second Request for Ideas (RFI). In 2023, the program was just six months old and the briefings we held were necessary to introduce various stakeholders to the program and explain our efforts. Over the course of the following year, we continued our outreach to the various audience segments to grow connections and build better awareness for market transformation and CalMTA's work. This outreach resulted in a robust network of connections with prospective submitters, which we engaged throughout promotion of the second RFI. Additional details related to this have been added to Section 2 of the report.

3	Section 2: RFI Outreach (Randall Higa)	b. What sectors/segments did you target for this second RFI, were they different from the first RFI (i.e., in order to round out the portfolio)? What tactics did you use to reach out to these sectors? For the first RFI, in response to MTAB comments about the first RFI, CalMTA acknowledged the lack of submissions in the industrial and agricultural sectors. What actions did CalMTA perform for the 2nd RFI to encourage higher engagement from these sectors?	Section 2 of the report has been updated to reflect these details.
4	Section 2: RFI Outreach (Randall Higa)	c. CalMTA used a new metric, web traffic, for this RFI that was not used for the first RFI. Does CalMTA intend to continue using web traffic to gauge how widely their outreach was received? How can stakeholders better understand what level of effort CalMTA is putting into soliciting innovative ideas, and the metrics being applied to determine how that level of effort translates into results?	During the first RFI, CalMTA had just launched its website so we did not have access to historic data for comparison. In 2024, we were able to assess the increase in visitors. As we have during the last two Disposition Reports, we will continue to report on our outreach efforts.
5	Section 2: RFI Outreach (Randall Higa)	d. CalMTA indicated it had established an Equity Sounding Board to ensure that the voices of ESJ communities were heard. What type of outreach did CalMTA conduct to ESJ communities to solicit their ideas during this second RFI, and what was the result? Did any ESJ organizations submit ideas? Did the CalMTA ask for feedback on RFI submissions from the Equity Sounding Board, in particular on the scoring of the equity component?	CalMTA maintains a growing list of contacts representing equity interests from our listening sessions and other engagements. We communicated with these contacts about the opportunity to submit an idea using the channels identified in our response to Q3 above. We don't share the names of organizations that submit in deference to our submitters and the Equity Sounding Board was not formed before this RFI closed. Equity representatives and any other interested party are able to provide feedback at any point through our comment form available https://calmta.org/contact/.
6	Section 2: RFI Outreach (Randall Higa)	e. Why does CalMTA think there were only 13 new ideas submitted for the second RFI, compared to the 117 ideas submitted (with 22 of those submitted by CalMTA staff) for the first RFI?	We believe that the majority of interested parties were able to submit their ideas through the first RFI and did not have cause to re-submit their idea(s), since they remain in the pipeline for future consideration, eliminating the need for resubmittal unless newly available

			information about an idea(s) would warrant a re-submittal. In addition, because we only anticipated advancing 1-2 new ideas, we knew we wanted to focus on a smaller number of viable submissions and so did not pursue more aggressive promotion such as Linked In advertising or promotional "share kits".
7	Section 2: RFI Outreach (Randall Higa)	f. CalMTA conducted an internal debrief after the first RFI, as reported in the Phase 1 Disposition Report (June 2024). Did CalMTA conduct an internal debrief after the second RFI? What will CalMTA do differently in the next RFI? What worked well, and were there any areas of improvement (as per Table 6 in the June 2024 Phase 1 Disposition Report)?	As with all key deliverables, CalMTA debriefed internally on our process and reviewed RFI outcomes. From the debrief on the initial RFI, areas for improvement were either completed or determined not necessary based on MTAB feedback on the nature of the portfolio. These internal and MTAB conversations have resulted in a change to CalMTA's overall RFI process, which we believe better serves our ability to develop a dynamic and cost-effective portfolio of MT initiatives for California. Starting in March 2025, CalMTA is keeping the RFI open continuously so submitters can provide their ideas as they are developed. We announced this when it opened and will share during our quarterly reporting events. Ideas that are submitted will be reviewed and scored per the process developed in collaboration with MTAB members and brought to the next available MTAB meeting to report and, if needed, discuss.
8	Section 3: Submission Summary	a. This section can be greatly improved by following the CalMTA's own earlier disposition report. This disposition report is missing the report of submissions by fuel type, as well as report of submitter by industry roles (Figure 4 in the first disposition report). Who submitted ideas? Did CalMTA staff submit any more ideas? Who should be submitting ideas, that have not submitted?	We added charts for the product type, fuel type, and submitter industry. We do not share the names of submitters, but in this round, no ideas were provided by CalMTA staff and we have noted this in the report.

9	Section 3: Submission Summary	b. This section is a little too abstract. To provide a more concrete understanding of the pool of ideas under consideration, please indicate the 13 newly submitted ideas as well as the 20 previously submitted ideas that are being re-considered. Appendix A should be referenced in this section, and does list 33 ideas, but it's hard to tell which are new vs old. For example, are all new ideas numbered over…200? The reader should be able to understand how each submission was disposed, across RFIs and across combining exercises.	The intent of Section 3 is to provide a high-level overview of the newly submitted and scored ideas. The information you are looking for is provided in Figure 14 (which illustrates how the previously and newly submitted ideas progressed through the process) and Appendix A (which provides more specific details on all the ideas, including whether/how they were combined with others.) To make it clear which ideas came through the 2024 RFI, we added the year in the Idea # column in the table in Appendix A. We've added a reference to Appendix A above Figure 14.
10	Section 3: Submission Summary	c. Figure 5 and 6 are very confusing, because there are only 26 ideas listed in each figure, while the narrative specifies 13 new + 20 new ideas were under current consideration. Please clarify.	Please refer to Figure 14 to understand the disposition of the ideas. We have added a note in Section 3 referring the reader to Figure 14 as well.
11	Section 4: Submission Scoring Results (Hayley Goodson)	1. Section 4.3 Stage 2 scoring process, p. 12 (use of 2022 avoided costs instead of 2024 version): Sometimes these changes make a big difference and other times they do not. Can CalMTA provide a directional estimate of the impact of using the older avoided cost calculator ("ACC"), given the MTIs at issue? Alternatively, CalMTA could add a footnote summarizing the changes adopted in CPUC Resolution E-5328 and explain why using the 2020 ACC for the purpose of Stage 2 cost-effectiveness estimates produces reasonably accurate results under the circumstances.	Generally, the 2024 ACC will provide higher TSB values in comparison to the 2022 ACC but the magnitude of the increase will be dependent on the load shape (or when the measure saves energy.) From a monthly standpoint, the 2024 ACC has modest increases each month except August which slightly decreases. From an hourly perspective, the avoided cost impacts have increased overnight and early morning and in the 5-6PM and 8-10PM, which are adjacent to 6-8PM, the highest 2022 hourly avoided cost values. Thus, measures with savings occurring in those time periods will have a greater increase than those that primarily save energy in the middle of the day.

12	Section 4: Submission Scoring Results (Hayley Goodson)	2. Table 3, p. 15: Consider moving footnote 7 to the row for Item 0193 instead of the current placement. The reader may otherwise miss the footnote and wonder why TMA is lower than BMA in 2031-2035 and 236-2045.	This footnote has been moved.
13	Section 4: Submission Scoring Results (Randall Higa)	a. How did CalMTA determine which 20 ideas to bring forward into scoring from the previous RFI? Was the prior scoring the only metric? Was the scoring updated with new information between the previous RFI for all previously submitted ideas or only the 20 selected ideas?	The ideas pulled forward from the previous RFI were selected based on previous scoring, potential for new information that might allow for updating previous scoring, guidance from strategic advisors and strategic value to the CalMTA portfolio. Scoring was updated for previously submitted ideas only when the scoring team was able to identify new information or research relating to that idea; otherwise, the previous score was carried forward.
14	Section 4: Submission Scoring Results (Randall Higa)	b. Figure 7 seems to be missing the Portfolio Optimization step that was present during the first RFI. There are many references in the first disposition report about the need to utilize the second RFI to balance and optimize the portfolio, and CalMTA discussed during MTAB meetings the selection of specific ideas due to a need for portfolio optimization. Please include in this report a discussion of the process CalMTA used to optimize the portfolio, and the current state of the portfolio (under Phase 2).	While we did consider how the chosen ideas would relate to the other ideas in the portfolio, portfolio optimization was not a primary concern with the selection of these ideas because, in discussions earlier in 2024 (see meeting notes from April 2024), MTAB members expressed that ramp rate and scale were their priorities for the new ideas. Balancing across sectors, end uses, or other aspects was less of a concern.
15	Section 4: Submission Scoring Results (Randall Higa)	c. 4.2 Stage 2 scoring – This is unclear, are you saying all three scorers scored all criteria for all submissions? How were different scores reconciled?	We believe this question actually refers to Stage 1 scoring, which is the subject of section 4.2. In that case, yes, three of the scorers scored all of the criteria for each idea. The scoring team then held an alignment meeting to discuss their individual scores and the assumptions behind them. When their scores were not aligned, they were reconciled through discussion about the scorers' assumptions and rational behind their scores.

16	Section 4: Submission Scoring Results (Randall Higa)	d. Please include a discussion of the MTAB's feedback given during the meeting, and how that feedback was incorporated (i.e. did CalMTA select a different subset of ideas based on MTAB feedback?) It would be helpful to understand whether the MTAB meetings have been useful. Also, for future MTAB meetings, if verbal comments are made, should they also be followed up by the comments in writing?	The report notes the areas where MTAB feedback was incorporated into the scoring and selection of ideas. We feel that this is the appropriate level of detail to include in the disposition reports. CalMTA provides notes from each MTAB meeting, which document MTAB comments and CalMTA team responses. In this case, the feedback received during the September 23 meeting was considered during the prioritization of ideas to bring to the November meeting and the feedback from the November meeting was considered in the final update memo provided in February 2024 Those notes can be found here (September 23) here (November 21), and here (February 19).
17	Section 4: Submission Scoring Results (Randall Higa)	e. Fig 8 – The main purpose of a disposition report is to understand the transition of ideas between these columns. Please clearly list or indicate which of the 13 ideas were archived, similar, combined, or remaining. Please also list the 20 ideas, and which 12 used the 2023 (first) RFI score and which used a new 2024 (second) RFI score.	This graphic is intended to be a summary to demonstrate how ideas were archived or advanced. Specific information about the individual ideas is found in Appendix A. We added a reference to that section.
18	Section 4: Submission Scoring Results (Randall Higa)	f. Which ideas from the earlier submission had new information, and what was that information?	We considered new information about the following ideas: 0010 – High Performance Windows: updated based on information from NEEA HPW program, subject matter expert (SME) input from CalMTA; 0024 – VFDs on all Pumps and Fans > 10 HP: scoring updated based on NEEA's Extended Motor Product Distributor Pilot Annual Reports

			from 2021, 2022, and 2023 and the DOE/LBNL U.S. Industrial and Commercial Motor System Assessment Report; and 0142 - Agricultural Irrigation as a flexible demand load: updated based on additional product and market research conducted by scoring team.
19	Section 4: Submission Scoring Results (Randall Higa)	g. The CalMTA is not allowed to claim co-created savings. To better align the submission screening process with the ultimate evaluation outcome, please consider multiplying the co-created savings estimate by some conservative factor in order to develop a better estimate of whether an idea is worth advancing. As the MTAB has pointed out, there are some ideas, such as Residential HPWHs, that would be extremely difficult to evaluate for savings attributed solely to the CalMTA.	The Stage 2 savings estimates are preliminary and rely upon a limited investment of time and resources to identify the most promising opportunities. CalMTA and the MTAB have agreed that this level of preliminary analysis – which estimates incremental impact above what would occur without CalMTA investment - is appropriate for Phase I of the MTI lifecycle. The forecast of incremental impacts *net of what IOUs could claim* will be developed during Phase II.
20	Section 4: Section 4: Submission Scoring Results (Randall Higa)	h. Looking back at the Stage 2 scores for the 2023 (first) RFI, it looks like CalMTA has pretty consistently advanced the high scoring ideas forward. One notable exception is Idea 0171, Residential Variable Speed Heat Pumps, with a Stage 2 score of 8.25. Why was that idea not advanced?	At the January 2024 MTAB meeting, CalMTA staff recommended holding off on further development of idea 0171, Residential Variable Speed Heat Pumps, due to ongoing C&S activities.
21	Section 4: Submission Scoring Results (Randall Higa)	i. For future ideas, consideration of the fuel source should be given, since natural gas rate payers are also paying into the MTA initiative. All of the projects that have moved through have been electric equipment. As this is partially funded by natural gas ratepayers, consideration should be given to the highest top scored fuel agnostic and/or gas equipment.	Your comment is noted. For clarity, some of the ideas advanced have been fuel agnostic. For example, the commercial windows solutions idea (CRAWS) is fuel neutral as is Building Performance Standards Accelerator that was advanced from the batch of ideas considered in this Disposition Report.
22	Section 4: Submission	j. Is the MTA developed in-house TSB calculation tool available for public review and comment? Has this tool been tested for consistency with CEDARS outputs for any given inputs?	MTAB members have the TSB calculation tool in the form of the Phase II forecasting workbooks, which include a sufficient level of

	Scoring Results (Randall Higa)		research and documentation to allow for review and comment. CalMTA developed the in-house Excel-based cost effectiveness tool using guidance available from the CPUC on the appropriate method of calculating TSB and cost effectiveness tests. The CalMTA team ran several tests comparing test measures using a consistent set of inputs. The results were not identical and included marginal differences that did not indicate consistent bias in the CalMTA tool that either over or underestimated TSB.
23	Section 4: Submission Scoring Results (Randall Higa)	k. Was the scoring performed using the 2024 ACC Model approved via Resolution E-5328, or the 2022 ACC Model?	The scoring included ideas that had previously been scored using the 2022 ACC model. To maintain consistency and avoid re-work, the new ideas were also scored using the 2022 model.
24	Section 4: Submission Scoring Results (Randall Higa	l. Please provide a table for all inputs used in determination of cost-effectiveness values presented in Table 5. This should include baseline information, energy consumption, effective useful life, cost, rebate, etc. for each idea scored.	CalMTA will make a table with this information available to the MTAB members upon request, separate from the disposition report. Note, however, that Stage 2 analysis, including the inputs, is preliminary – it occurs prior to completing market research needed to refine the estimates.
25	Section 4: Submission Scoring Results (Randall Higa	m. Is the TSB presented in Table 5 for the technical, economic, or achievable potential TSB of the program? The TSB of refrigerants should be negative in the table, given they have global warming potential relative to no refrigerant in the baseline. Please label if these are gross or net impacts.	The TSB is calculated based on our initial estimates of achievable market adoption. TSB represents net impacts, because CalMTA uses incremental adoption (TMA – BMA) to calculate the benefits. The avoided cost for refrigerant for Idea 0085 (Combination Heat Pumps) is positive because the baseline technology is assumed to have a higher refrigerant charge level compared to

			the proposed technology. The baseline includes separate central heat pump and heat pump water heater, while the proposed technology is a single combination heat pump.
26	Section 4: Submission Scoring Results (Randall Higa)	n. Please clarify if the TRC and PAC are gross or net? If net, the PAC results across the board appear high.	TRC and PAC are net, because the numerator (TSB) is net.
27	Section 4: Submission Scoring Results (Randall Higa)	o. Please explain how TSB is attributed between CalMTA and existing EE programs or for measures which are eligible for TECH incentives?	The TSB values have not been adjusted for program attribution. The research to quantify that adjustment will occur during the Phase II forecasting analysis.
28	Section 5: Batch 3 MT idea (Randall Higa & Hayley Goodson)	The BPS Advancement Plan link appears to be missing from the last sentence in this section.	Yes, the Advancement Plan is not yet final. We have added a link to the CalMTA Resources and Reports page and indicated that the Advancement Plan link will be added upon completion.
29	Section 5: Batch 3 MT idea (Randall Higa)	a. Please provide more details about the feedback that the MTAB provided during meetings, as there were notable concerns by the MTAB about BPS as an MTI. Please also explain why the higher scoring idea #0085 Combined Heat Pump was not advanced by the CalMTA despite endorsement by the MTAB?	Any concerns expressed by individual MTAB members about the BPS Acceleration idea were noted and are being addressed in Advancement Plan describing Phase II research to determine barriers and opportunities for initiative development. Those findings will be shared with the MTAB on a regular basis throughout 2025 and 2026. Individual MTAB members expressed both positive feedback and concerns about most, if not all, of the ideas discussed, including Idea 0085, Combined Heat Pump. Objections to any of the prioritization of ideas can be expressed directly though comments on the Disposition Report.
30	Appendix A: Ranked List of	a. CalMTA should provide a list of all of the ideas in all the stages. A comprehensive list will enable future bidders to better	We are developing a directory to be made available on calmta.org that will list all the

	Ideas Scored in Stage 1 (Randall Higa)	understand the selection process and the types of projects CALMTA accepts and deny. A thorough explanation of why a project did not meet the threshold for scoring, why it passed or didn't, should be provided for each project. Increased transparency regarding the evaluation process for all projects is needed. Within the list, energy reduction benefits should also be identified.	ideas received and the status of their disposition.
31	Appendix A: Ranked List of Ideas Scored in Stage 1 (Randall Higa)	b. CalMTA needs to demonstrate the value to rate payers and impact to utility bills of the cost of each tranche of MTIs. What is the estimated impact to utility bills for each idea that was screened?	While bill impacts due to electrification are well known by California's program administrators and implementers, bill impacts at this Phase I stage are not calculated. Those specific calculations to determine the extent of any bill impacts is part of the Phase II Advancement Plan research and is shared with MTAB when it is completed.
32	Appendix B: Ideas Archived at Threshold Review (Randall Higa)	c. Please provide a separate Appendix or table that provides the archived ideas with the status of every project, the scores from previous rounds, and the information needed to move the ideas forward.	We are developing a directory to be made available on calmta.org that will list all the ideas received and the status of their disposition.
33	Appendix B: Ideas Archived at Threshold Review (Randall Higa)	d. Each idea should clearly state the description of the technology but also what it is being compared against, also known as the baseline. If you do not include the counterfactual, there is not enough information to assess what is being proposed.	We believe this question refers to Appendix A, Ranked List of Ideas Scored in Stage 1 and not Appendix B, Ideas Archived at Threshold Review because ideas that do not pass threshold review do not get evaluated or scored. Stage 1 scores are based on the scorer's assessment of the information in the submission supplemented by their expertise and limited research. Preliminary estimates of the energy savings relative to the baseline(s) was conducted on the subset of ideas advancing to Stage 2 only.