Induction Cooking Market Transformation Initiative

Appendix I: MTAB Feedback

December 18, 2024

This appendix contains written comments and responses from the Market Transformation Advisory Board (MTAB) as well as notes from the Nov. 21 MTAB meeting where this was discussed.

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

Purpose

This document provides a comprehensive list of comments received from the Market Transformation Advisory Board (MTAB) on the draft Induction Cooking Market Transformation Initiative (MTI) Plan and CalMTA's response to those comments. Content from the draft MTI Plan was shared with the MTAB at meetings on Sept. 19 and Oct. 25, 2024. Complete notes from all MTAB meetings are included in Appendix 4 of the Application to the CPUC. The full draft MTI Plan was provided to the MTAB on Nov. 14, 2024 and then discussed at an in-person meeting on Nov. 21, 2024. Comments from the document and the meeting were then collected on Dec. 3, 2024, and are presented here with CalMTA's responses. Note: All feedback that appears in this document is presented verbatim as submitted, with no edits made by CalMTA.

Source	Feedback Provided	CalMTA Response
Fred Gordon	Section 1.1, General: I think this is a good, albeit ambitious long-term initiative. FG comment #1. The executive summary needs a little editorial smoothing out. There are missing words, at least one run on sentence, and one bullet that's difficult to read. This submittal adds a few comments based on review of selected appendices- it does not include those comments I've already submitted. These comments are about overall methodology and apply to both initiatives.	In reference to the executive summary comments, we revised this section for better flow and clarity.
Fred Gordon	Section 1.2: FG comment #2. This initiative has some efforts focused on multiple markets, and then there is distinct marketing strategies aimed at distinct markets- new dwelling, ESJ existing dwellings and institutional owners thereof, and perhaps the broader existing home market. It would be clearer if this document had a thematic statement to this effect, and then more consistently pointed out where strategy elements are focused on a specific market.	We agree that there are multiple submarkets within the MTI, and each will require a degree of both messaging and tailoring for delivery. A detailed marketing plan will be the first deliverable under Intervention 5, Building Market Awareness. In addition, which audience we target first will, in part, be dictated by how quickly the manufacturers can develop the 120V products which are suitable for those that currently use gas cooking. This is why we plan on working with builders early in implementation of the MTI. New

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		construction does not face this challenge and has potential to serve as a large, early demand signal for induction overall. We added language to Section 2.2, Intervention 5 regarding the need for tailored messaging and delivery by submarket.
Fred Gordon	Section 1.6: FG Comment #3. I think its valuable to do a scenario where fuel conversion rates don't happen or aren't effective- because these are largely out of CalMTA's control, and the political arena for rates is complex and contentious.	The team has conducted sensitivity analysis that considers the impact of slower rates of fuel conversion. Results are reported in Attachment 3 to Appendix B.
Fred Gordon	Section 1.6: FG comment #4 Likewise, I think it's wise to develop a scenario, or at least a strategy, that does not rely on EnergyStar or federal standards support, because the incoming administration has talked about eliminating IRA and other energy efficiency efforts. This helps assess how robust the strategy is.	The team has conducted sensitivity analysis that considers the impact of slower electrification and adoption of induction cooking equipment. Results are reported in Attachment 3 to Appendix B.
Fred Gordon	Section 1.6: FG comment #5. I get the sense that the expected savings are phased, based on when 120v/battery units become commercialized. This is a big point, and may be useful to illustrate with a savings scenario where the 120v units are too expensive or don't gain popularity. If the potential impact of these possibilities on overall initiative savings or carbon reduction is small, it's enough to show that. If the impact is big, it would be good to illustrate, without going into too much detail, what the impacts are on savings, speed, carbon, TSB, and TRC	The team has conducted sensitivity analysis that considers the impact of higher prices for 120V battery equipped ranges combined with lower adoption. Results are reported in Attachment 3 to Appendix B.
Ky-An Tran	General: In D.19-12-021, the Commission declined to set cost-effectiveness requirements for the initial five-year implementation period of Market Transformation Administrator's (MTA) portfolio. However, in doing so, the Commission stressed that the MTA manage its portfolio of Market Transformation Initiatives (MTIs) with "an eye toward cost-effectiveness." As custodians of ratepayer funds, CalMTA should take the utmost care in ensuring these funds are justly and reasonably spent. And as CalMTA prepares to submit its upcoming application, it should also ensure that	With regard to the need to forecast a range of outcomes, CalMTA agrees that this is reasonable and has added the results of sensitivity analysis as an attachment to Appendix B. Pertaining to comment that CalMTA decided "to decouple an MTI's lifetime costs from its lifetime benefits," we disagree that this was done and believe that "decoupling" mischaracterizes our approach. One notable feature of market transformation initiatives is that they represent long-term investments that are characterized by relatively high

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	decisionmakers and stakeholders are well informed of its proposals' benefits and costs to ratepayers. However, CalMTA's current proposals regarding the calculation and application of cost effectiveness warrant concern. First, CalMTA's current cost-effectiveness forecasts are unreasonably narrow and poorly reflect the uncertainties MTIs will face over its twenty-year lifetime. CalMTA's forecasts are constructed using a single set of assumptions and variables which only offers insight into a singular, specific scenario rather than shedding light on a scope of possibilities. Second, CalMTA's decision to decouple an MTI's lifetime costs from its lifetime benefits further distorts the accuracy of cost-effectiveness forecasts without introducing greater clarity. Finally, CalMTA proposes moving forward with its Induction Cooking MTI plan which, even by its own calculations, is shown to be non-cost effective. Furthermore, over 50% of the market transformation effect claimed by this MTI stems from non-induction technologies. This plan should not be submitted to the Commission as part of CalMTA's application.	spending in the early years as the MTI seeks to effect structural market changes to address barriers to market adoption, and then low spending in the later years - after those barriers have been addressed. This feature of MTIs is prominently acknowledged in D.19-12-021 and in the Prahl & Keating white paper cited in the Decision. The MTI Evaluation Framework documents its approach to considering benefits over a 20-year period from MTI inception, which we consider to be after the MTI is approved and funded and at the start of Phase III. This is the same approach that has been used by the Northwest Energy Efficiency Alliance. Rather than ignoring the MTI Phase II spending (which occurred prior to starting MTI implementation), CalMTA decided it would be more prudent to take the conservative approach of including those development costs in the cost-effectiveness calculation. Whether development costs are included or not, CalMTA feels strongly that the 20-year horizon for assessing benefits should begin with the beginning of Phase III Market Deployment. Many MTIs (for instance, most NEEA MTIs) take two years or longer to develop, and they all take a different length of time with some taking many years before they are ready for full-scale implementation. It would arbitrarily disadvantage MTIs that took longer to develop if we chose to assess cost-effectiveness for a shorter period from the start of implementation. Shortening the time horizon for return on investment for certain MTIs that take longer to develop would result in "apples-to-oranges" comparisons of California's MT investment opportunities and would hinder MTAB and CalMTA's ability to recommend the best MT ideas for California.

Source	Feedback Provided	CalMTA Response
		The response below addresses the comment about the MTI not being cost effective and details changes that have been made to the modeling regarding non-induction technologies in response to MTAB feedback received at the Nov. 21 meeting.
Ky-An Tran	General: CalMTA should not proceed with its Induction Cooking MTI. Even when ignoring the cost-effectiveness forecasting concerns raised in prior sections, CalMTA's current cost-effectiveness forecasts have determined that the Induction Cooking MTI will not be cost-effective. This means that over the course of this MTIs' twenty-year lifespan, CalMTA does not expect ratepayers to recoup the costs spent on this MTI. CalMTA's Induction Cooking MTI should be disqualified on non cost-effectiveness alone. While the Commission opted not impose strict cost-effectiveness requirements, it did require the MTA "to manage its portfolio of MTIs, for the initial five-year implementation period, with an eye toward cost-effectiveness." And as an additional measure, the Commission reserved the right to impose "additional cost-effectiveness requirements after gaining experience with this mechanism over the next half decade or more." Concerningly, the Commission's monitoring period coincides with this MTI's plans to spend 87% of its budget over the course of Phase II and the first five years of Phase III. 13 If after the monitoring period, the Commission had come a determination that cost-effectiveness requirements were necessary, which given the timeframe would most likely be attributed to this MTI's possible underperformance, then there would be little recourse to rectify the damages. If this MTI fails, then it will fail spectacularly. Yet if it succeeds, and holds true to CalMTA's cost-effectiveness forecasts, then it will still remain non-cost-effective. The benefits of this MTI do not befit the costs nor the context in which those costs will be paid.	As noted in footnote 3 of Ky-An Tran's comment letter, these comments were based on draft analysis presented to MTAB on Nov. 21, 2024. MTAB input, discussion, and further CalMTA review identified areas where cost-effectiveness inputs were incorrect or inadequate. CalMTA is grateful for MTAB's feedback and has since addressed these issues by recalculating and finalizing the MTI cost-effectiveness calculations. The updates include fixing the mistaken inclusion of non-qualified products (i.e., non-ENERGY STAR) noted in this comment, and adding incremental costs for the wiring associated with switching from gas to electric cooking equipment. CalMTA also corrected current and forecasted equipment pricing based on new information received. Details of these updates were submitted to MTAB on Dec. 13, 2024, and added to the meeting packet at calmta.org. The corrected calculations show that this MTI is forecasted to be cost-effective. With regard to the comment about characterizing the MTI as focused on induction but relying on less efficient radiant cooktops, only efficient ENERGY STAR-qualified radiant cooktops are included in the market adoption for this MTI. (Non-ENERGY STAR units were erroneously included in the draft analysis presented to MTAB on Nov. 21, 2024, and have since been removed, as noted above.)

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	Lastly, while CalMTA characterizes the Induction Cooking MTI as focused on induction, interventions and benefits are significantly reliant on the adoption of less efficient Energy Star and non-Energy Star Radiant Electric Cooktops. Over 50% of the products adopted will be non-induction technologies14 whose savings would be claimed by this Induction Cooking MTI. In this light, this MTI would make more sense reframed as a cooking decarbonization initiative. Additionally, many of the opportunities and outcomes identified for this MTI are reliant on federal cooperation, and/or aid. A new incoming federal administration could prove less cooperative, thus lending more credence towards more thoroughly developing forecasts that would simulate this MTI's effectiveness under those scenarios. CalMTA's Induction Cooking MTI is not ready to be submitted for the Commission's consideration in this upcoming application. This MTI is ill-suited for this first batch of MTIs and is susceptible to many potential flaws that would undermine faith CalMTA ability to deliver value to ratepayers.	As described in the MTI program theory, CalMTA intends to build market demand for induction cooking products - including using the ENERGY STAR specification as a tool to drive increasing levels of efficiency. While the focus of the MTI is on induction cooking technology, CalMTA expects the MTI market interventions to also result in some incremental market adoption of ENERGY STAR qualified units (estimated at 5% of total incremental market adoption assumed in the cost-effectiveness model). The MTI will be focused on increasing the ENERGY STAR specification to the point where induction ultimately becomes the preferred technology.
Ky-An Tran	General: CalMTA's cost-effectiveness forecasts insufficiently manage risk. Market transformation inherently deals with uncertainty, owing to both the scale of time in which market interventions operate on and the scale of how the market reacts to these interventions. CalMTA's cost-effective forecasts, which while considering a multitude of assumptions, ultimately culminate in a singular modelled scenario. This results in forecasts that are especially susceptible to over- and/or underestimating the associated costs and benefits of an MTI depending on the assumptions and variables used. Given these dangers, it is important to ensure not only the robustness of forecast's inputs, but also the robustness of all the scenarios considered. CalMTA should take	After the Nov. 21, 2024, MTAB meeting, CalMTA ran cost-effectiveness sensitivity analysis for the modeling variables corresponding with the greatest MTI plan risks - the details of which are provided in Appendix B to the MTI Plan. The sensitivity analysis illustrates which variables have the greatest impact on MTI cost-effectiveness and, when considered together, provide a range of possible outcomes. This analysis reveals that the price of qualified products is the key driver of MTI cost-effectiveness. The induction cooking MT theory identifies a strategy to negotiate the price of induction cooking products with manufacturers, who have already shown that they are receptive to meeting the price

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	additional steps to remedy its forecasts' dependency on a fixed subset of assumptions before submitting its portfolio for application. CalMTA should foremost consider greater variability in its assumptions and use those various inputs to produce a wider spectrum of scenarios and cost-effectiveness forecasts. A white paper cited by D.19-12-021 and used by CalMTA to develop its evaluation framework, specifically highlighted the inherent uncertainty of baseline projects and advised "assessing a range of possible values for the input parameters into baseline projections based on a range of alternative scenarios, and using the results to produce a range of cost-effectiveness estimates." Although CalMTA has gone through great lengths to detail its processes of developing key assumptions and calculating baseline inputs, once these values are determined, they remained fixed in both the construction of forecasted scenario and in CalMTA's subsequent cost-effectiveness analysis. Any real-world deviation of these values across the twenty-year lifetime of the MTI may result in large discrepancies in an MTI's cost-effectiveness. The development of a wider spectrum of scenarios and cost-effectiveness forecasts will allow stakeholders to have a better grasp of the possible results of a market intervention. The uncertainty of market transformation should be met with more information to help decisionmakers evaluate the possible effectiveness of programs, not less information. Additionally, CalMTA should also include the risks identified in Appendix G of its MTI Plans as part of its construction of further forecast scenarios. Appendix G provides a table of risks for each MTI along with a corresponding identification of the "Probability of occurring" and "Severity" of each risk. CalMTA's identification of these risks and their possible effects demonstrates that it has considered alternative scenarios, but that it chose not to forecast them. For stakeholders, it will	points for the most efficient products that are assumed in CalMTA's modeling.

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	be useful to see how the cost-effectiveness forecasts of MTIs change depending on different scenarios such as laggard adoption rates or lessening federal financial and/or regulatory support. CalMTA's dependency on a fixed subset of assumptions is inappropriate when considering the high degree of uncertainty and risk attributed to market transformation. CalMTA's current cost-effectiveness forecast should be the basis of further scenarios rather than be representative of them all. These extra steps will help ensure that ratepayer funds are justly and reasonably spent.	
Ky-An Tran	General: CalMTA's plans to decouple an MTI's costs from its lifetime benefits will further complicate evaluating an MTI's cost-effectiveness. As part of CalMTA's November 20th presentation, CalMTA announced its plans to evaluate an MTI's twenty-year lifetime from the beginning of its market deployment (Phase III) instead of its program development (Phase II) as previously indicated in its Market Transformation Evaluation Framework. Despite this shift, CalMTA will continue to attribute an MTI's program development costs towards its lifetime costs. In essence, the timeframe of an MTI's lifetime costs of an MTI will be different than its lifetime benefits. Furthermore, due to the characteristics of a S-Curve Model of adoption, a forward shift of evaluation timeline will result in a significant increase in an MTI's claimed market transformation effect and a similar increase on an MTI's cost-effectiveness metrics. This effect is prominently demonstrated with the two-year shift in the Induction Cooking MTI cost-effectiveness forecast that resulted in a 15% increase in TRC from 0.78 to 0.9.10 This increase is not a result of an improved program or a change in forecast inputs, but rather a shift in the evaluation timeframe. As noted in the previous section, there is concern that CalMTA's current cost-effectiveness forecasts obscure the	CalMTA does not plan to "decouple" costs from lifetime benefits. It helps to first define terms: we refer to an MTI's "lifecycle" to span Phases I through III, including the 7 stages identified in the MT Framework adopted by D.19-12-021. We have used the term "lifetime" to refer to Phase III of the lifecycle only and have defined "lifetime" as 20 years. It is important to note that while we are defining the default MTI "lifetime" as 20 years in duration, the duration of Phase I and Phase II are variable, reflecting the fact that it will take longer to develop some ideas into initiatives that are ready to be deployed than it will take for others. For example, CalMTA identified three "Batch" one MTI ideas - two of which (Induction Cooking and Room Heat Pumps) are included in this application and have had a 1-year Phase II duration, and one of which (Efficient Rooftop Units) is expected to have a 2-year Phase II duration. Moreover, MTIs don't generate meaningful energy benefits until they are deployed in the market. By defining the MTI "lifetime" as a 20-year period that starts at the beginning of Phase III, Market Deployment, CalMTA ensures that MT investment opportunities are assessed in a consistent manner with each other and that an

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	challenges and costs an MTI might face. Inflating cost-effectiveness metrics further clouds CalMTA's cost-effectiveness forecasts and misrepresents the risks of MTIs without introducing programmatic changes. Between these two options, CalMTA should continue aligning an MTI's evaluation timeline with the beginning of its program development phase.	MTI idea is not disadvantaged by having a longer development time (during which it doesn't generate benefits). That said, CalMTA believes it is prudent to include all costs associated with MTI development in the cost-effectiveness calculations. Doing so requires including Phase II development costs. While this may create the impression of "decoupling" costs and benefits, CalMTA believes this practice is the opposite: it ensures that development costs are included in cost-effectiveness assessments. This practice is consistent with the approach practiced by the Northwest Energy Efficiency Alliance for more than 20 years. The observations regarding the large impact in the later years of the 20-year lifetime are correct and are a characteristic of MT initiatives that is well noted in D.19-12-021. The reason MTIs require a longer evaluation time period is because they seek to make lasting structural changes in the market, which take years, before there can be substantial acceleration of market adoption.
Randall Higa	Section 1: Both of these MTI Plans are very well written and aside from the length, easy to read, with very few typos. Kudos to the CalMTA teams putting these together.	Thank you for your comment.
Randall Higa	Section 1: The MTI plan is also missing required elements, per D.19-12-021 Appendix C: "Content Requirements for Market Transformation Initiative Plan". The CalMTA could improve this plan by going through each item in that Appendix C and verifying that each has been fully addressed (and it may help to provide section numbers so the reader can find these required elements easily).	We have completed market characterization research and the necessary product assessment during Phase II to deliver the plan of action represented in the MTI Plan. Because markets are dynamic, there may be aspects of the market or technology that are unknown at the start of Phase III. This is a common situation for long-term market transformation. While

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		the CPUC reviews this MTI, we will continue to work with manufacturers and acquire more data on the use of induction products. Waiting, however, runs the risk that this technology will evolve without the needs of the California market being met in the near term. We created the MTI plan template modeled from Appendix C D.19-12-021. For a full crosswalk between the elements in Appendix C and the MTI Plan sections, refer to Exhibit MTA-06 Chapter 1 in the application materials.
Randall Higa	Section 1: Key among the missing elements are areas the CPUC called out as concerns: "In particular, we are concerned about the process for setting savings goals and attributing savings to particular programs and program administrators" - D.19-12-021, p. 73. Although this MTI relies upon RA programs and aims for a code or standard, these savings are not broken out (as per the Decision), and there is no discussion of how savings would be attributed to those programs, let alone any discussion of "inclusion of C&S into the cost effectiveness methodology". Relatedly, the MTI plan could do more to address RA program coordination specifics, especially as there are already 10 programs that CalMTA has identified as offering incentives for induction cooking appliances. The MT Framework devotes an entire chapter to coordination with the Rolling Portfolio, with examples of the level of detail a Rolling Portfolio Coordination Plan should include (e.g. demonstrations of "support from, and coordination with, all related RA programs"; a schedule for ramping down incentives, roles that related programs can take to reduce customer confusion, etc.) Because this is the only Application that the CalMTA will be filing, with subsequent MTIs to be filed as Tier 2 Advice Letters, it is critical that the CalMTA's approach to these areas of CPUC concern is presented in these first two MTI Plans, somewhere.	CalMTA has ongoing coordination meetings with program administrator (PA) leads, the Codes & Standards working group, the California Energy Commission, and others. Those will continue throughout the lifetime of the MTI and include the firms that CalMTA ultimately choses for implementation in Phase III: Market Deployment. Appendix E lays out the approach to aligning the MTIs with the EE portfolio of programs. Because we are over a year out from implementation, it is difficult to define specifically what this alignment would look like at this stage. This information will be further developed in 2025 and be included with additional details in the RFPs issued to solicit implementers for the initiative. Bidders will be required to respond to how they would address this coordination and work plans to guide this future collaboration will be co-created with PAs that have programs with incentives or other aspects related to the Induction Cooking MTI.
Randall Higa	Section 1: In the Adopted Market Transformation Framework, Phase II activities were intended to conduct "full due diligence" on each MTI	Markets are dynamic and we fully expect the market conditions to evolve while this MTI Plan is in review. The team

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	candidate. This Plan acknowledges that further development work needs to be done as part of the due diligence. However, the expectation is that due diligence be completed before the Application.	will continue to monitor and engage market actors in order to ensure the MTI Plan and program strategies are best positioned to have the desired market effects prior to the launch of Phase III.
Randall Higa	Section 1: The plan could be strengthened by providing more details on how the CalMTA proposes to "win hearts and minds". The plan mentions two interventions that have already been offered by others: induction cooktop loaner programs and Chefluencer, in addition to "marketing" with yet-untested messaging. One of the Strategy Pilots was intended to test messaging: please include preliminary results of both the Strategy Pilots.	CalMTA will build and expand upon what we have learned to date from other organizations like the Building Decarbonization Coalition (BDC) and our own research. For example, we have built into the MTI Plan that we need to conduct more Chefluencer events so that more consumers (and builders) can experience the technology. In addition, we learned through the market characterization study, that induction's inherent safety benefits resonate with consumers. We plan to use this message as part of our strategy to "win hearts and minds." We will also build marketing tools and resources that can be deployed by other aligned organizations that will extend the CalMTA investment. Regardless, before any CalMTA marketing efforts are deployed (or via CalMTA contracted implementers) we will conduct message testing and develop a robust marketing plan. With regards to the Chefluencer strategy pilot, the team has been utilizing learnings in real time to inform our MTI strategies, and those learnings have been incorporated into our program strategies and logic. Preliminary reviews of progress towards our pilot objectives will be posted to the CalMTA website and attached to our application testimony, a more thorough assessment will be finalized and shared in early 2025. In addition, CalMTA staff want to stress that MTI plans and strategies are living documents, the team will continue to engage with market stakeholders through 2025,

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		and all learnings will be incorporated into our program strategies prior to the launch of Phase III activities.
Randall Higa	Section 1: The Plan should align the references to "low-income" vs "limited-income" vs Equity vs DAC, etc. The MTI should use the same criteria and language as the EE portfolio and Income Qualified Portfolios. It is also unclear how the MTI will be coordinated with the EE program portfolio or the IQP portfolio.	In our work to drive statewide market transformation, CalMTA is coordinating with a wide range of energy-related programs in California induction cooking, including those outside of the PAs' income-qualified portfolios. As such, language about household income describes the customers served through some of these programs, rather than the formal categorization of the program itself. CalMTA has added a footnote defining "low-income" and has updated the MTI Plan to remove the use of "limited income." Section 5 of the MTI Plan describes the activities conducted by CalMTA to align and coordinate with programs serving ESJ communities or low-income customers, with greater detail provided in Appendix E.
Randall Higa	Section 1: The Plan also seems to be underestimating Baseline Market Adoption (BMA); please see comments below.	Our baseline forecasts are based on historical trends and assumptions about expected trends, informed by regulatory, technology, and market developments. These assumptions are detailed in Section 4.5 of Appendix B
Randall Higa	Section 1.2, Page 8: There should be mention of why induction is better/different than electric radiant (coils or smooth top). Perhaps mention that cooktops are the only gas appliance where consumers can see a gas flame and have a more visceral connection to the appliance. One key attribute of induction (and smooth top radiant) is smooth cooking surface is both easier to clean and has a cleaner-looking, contemporary aesthetic.	Language highlighting the benefits of induction compared to coils or smooth radiant has been added.
Randall Higa	Section 1.2, Page 8: Should mention that induction cooking is more efficient in getting heat to pan so less heat is wasted which heats the kitchen. Mention here or elsewhere that induction cooking is available as a separate cooktop or incorporated into a range. Also, for smaller kitchens, 24" wide induction ranges exist but have a limited availability.	These details are included in Section 3 and Appendix C: Product Assessment Report.

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Randall Higa	Section 1.4, Page 9, Bullets 1 & 2: Induction is proven to produce more heat to the cookware than residential gas cooktops (Consumer Report) and is not only beneficial to boiling water faster, but also searing and other cooking techniques that require higher heat. There should be research (primary or secondary) on whether consumers prefer gas or electric ovens. If electric ovens are preferred (and/or can be shown to have superior operation), this can help sway preferences for induction ranges.	These details are included in Section 3 and Appendix C: Product Assessment Report.
Randall Higa	Section 1.5, Page 10: Gas cooking advocates tout the fact that gas ranges can operate during power outages (assuming they have a match light feature). However, this may need to be addressed from a safety perspective because their ventilation typically isn't operational without power (unless there is back-up power).	These details are included in Section 3 and Appendix C: Product Assessment Report.
Randall Higa	Section 1.5: Also, consumers are heavily influenced by TV and social media and therefore should be better leveraged. Kitchen designers need to be educated on the benefits of induction--as more high-end kitchens have induction; consumers tend to follow those trends which are aspirational.	This will be included in the research and development for the marketing plan to win hearts and minds for induction, which is an outcome of Intervention #5, "Build consumer acceptance and awareness through marketing and education campaigns on the benefits of induction cooking in partnership with aligned organizations." Please see both Appendix A: the Induction Cooking Logic Model.
Randall Higa	Section 1.5: This plan seems to lack some due diligence that was called for in the Adopted MT Framework's Stage Gate model. The collaboratively-developed Framework lays out what stakeholders need in order to have confidence in an MTI's potential for success. In the Framework, Stage 4 deliverables were to include "completed pilot test reports or other MT concept strategy testing reports". Strategy testing was to occur in Phase II before the MTI application stage, so that the MTA "may determine that an MTI is not feasible to deploy as initially planned, or the market has deviated from the initial logic model assumptions and criteria. In these cases, the MTA should abort further	To clarify, the ESRPP strategy test objectives were not to offer different prices based on zip codes, but whether ESRPP could affect the assortment of products utilizing targeted upstream incentives. For the three strategy pilots, the team has been utilizing learnings in real time to inform our MTI strategies, and those learnings have been incorporated into our program strategies and logic. Status updates of progress towards our pilot objectives will be posted to the CalMTA website prior to the filing of the CalMTA application, and full assessments will be finalized in 2nd and 3rd quarter 2025. In

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	spending on the MTI...for MTIs that are not discontinued, an MTI Plan will then be developed by the MTA." (D.19-12-021, p. 112) One of the deliverables of strategy testing phase was supposed to be "completed pilot test reports." This plan does not seem to include the results of all the proposed strategy pilots. For those that have early findings, those findings (including the strategy pilot methodology), should be included. In particular, the ESRPP pilot was intended to determine whether ESRPP can target ESJ communities with special pricing (from midstream incentives). Can the CalMTA speak specifically as their strategy pilot findings on ESRPP's ability to offer different prices based on ZIP codes? How will CalMTA prevent residents from non-ESJ communities from taking advantage of the lower prices?	addition, CalMTA staff want to stress that MTI plans and strategies are living documents, the team will continue to engage with market stakeholders through 2025, and all learnings will be incorporated into our program strategies prior to the launch of Phase III activities.
Randall Higa	Section 1.5, Page 10: The IOUs already have electrification-specific rates. PleaSection 1.5, se specify what changes to these rates should be considered.	We are aware that the IOUs already have electrification rates, but we wanted to point out that the CPUC is considering modifications to the all-electric baseline allowance that will help the adoption of electrification technologies like induction cooking in proceeding R.19-1-011. We added to the referenced section of page 10 to be clearer.
Randall Higa	Section 1.5, Page 10: IRA already includes induction cooking, expected to be rolled out in 2025. If the MTI doesn't start until 2026 or later, how does CalMTA propose to support the "rollout"?	"Rollout" was the wrong wording and has been changed to "deployment." How the MTI will support both programs and consumer utilization of IRA incentives could take various forms but will likely include building overall consumer awareness, greater product choice through CalMTA's manufacturer engagement and retailer focus on more affordable induction products.
Randall Higa	Section 1.6, Page 10: Development of 120V products should apply to both cooktops as well as ranges.	This edit has been made.
Randall Higa	Section 1.6, Page 11: For zonal electrification in California under Senate Bill 1221, two-thirds of the occupants affected are required to agree to go all-electric with the electric appliances provided by the utility. Therefore, winning hearts and minds will be crucial in these areas to allow electrification.	We agree and thank you for your comment.

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Randall Higa	Section 1.6: There don't seem to be any Recommendations here: who are the recommendations for?	The recommendation made at the end of section 1.5 is that the CPUC approves the Room Heat Pump MTI to advance to Phase III based on the findings in Phase II.
Christina Torok	Section 1: This overarching objective statement doesn't mention efficiency or energy savings.	Language has been included.
Christina Torok	Section 1: Is CA doing this? It sounded like lobbying would be required in the RHP MTI, to achieve this.	We agree and did not intend to imply that CalMTA's role would be to "lobby" for electric rates in Commission proceedings or at the Legislature. Instead, as outlined in our MTI Plans, we see our role related to electrification rates as supportive in nature, supplying those who lead on this with data on bill impacts, demand-response capabilities, and details on additional benefits to consumers. As this is a barrier across multiple MTIs, CalMTA will explore additional ways we can work across the programs to support greater adoption of electrification rate structures and mitigation strategies to benefit multiple MTIs (induction cooking and RHPs). Any efforts would be done in consultation with the CPUC program manager.
Christina Torok	Section 1.2: This would be easier to read as a bulleted list. Or, you could use semi-colons to help the reader separate the items.	A bulleted list of market challenges in this paragraph has been added.
Christina Torok	Section 1.4, Bullet 3: This would be easier to read as a bulleted list. Or, you could use semi-colons to help the reader separate the items.	A bulleted list of market challenges in this paragraph has been added.
Christina Torok	Section 1.6: I had some comments related to this in the RHP MTI Plan. Same applies here.	CalMTA staff does not envision our role would be to "lobby" for electrification rates; nor do we think that would be appropriate. As a program of the CPUC, we would seek guidance from our CPUC contract manager on what CalMTA's appropriate role could be. We agree with your comment that it would be helpful to meet with the CPUC Energy Division's sections involved in rates and do additional research into the relevant proceedings that may impact electrification rates.

Source	Feedback Provided	CalMTA Response
Fred Gordon	Section 2, FG comment #6 Page 20. Strategy #3. I'm not sure that the additional cost of electric induction cooking over gas is significant in the big picture. Cooking is for most homes a very small portion of energy use. I have no data, but wonder, whether the trend to microwave cooking and take out has greatly reduced cooktop and oven cooking loads. Since the primary purpose of this initiative is to remove cooking as a barrier to getting homes completly off gas, the size of the load may not be that important to the goals; but if it's tiny, I think the fuel cost issue may not amount to much and the grid impact diminishes. Maybe a small increase in load matters more to a large multifamily building owner that pays electric bills for the tenants, because the small difference aggregates. Otherwise it may largely be a perceptual issue at purchase, but I'm not sure even that's such a big deal. My big concern is that CAL MTA frames this as a big issue and creates that impression if it isn't. Or if there is a lot of variance in cooking loads, it's just an issue to a small proportion of homedwellers. My understanding is that Cal MTA is getting more recent data on cooking loads and will monitor this question.	We are in the middle of acquiring more recent data on this and will reassess this barrier and the intervention at that time. CalMTA staff want to emphasize that MTI plans and strategies are living documents, the team will continue to engage with market stakeholders through 2025, and all lessons learned will be incorporated into our program strategies prior to the launch of Phase III activities.
Fred Gordon	Section 2: FG comment #7 Page 28. Spell out ESRPP in text or footnote.	This acronym was spelled for the first time on page 14 and appears in the list of abbreviations at the beginning of the document.
Karina Camacho	Section 2.2: Focusing on developing 120V battery-equipped products will be very important to ESJ communities during power outage especially since they are less likely to have solar panels or back up electric energy. The battery options gives families piece of mind if the power goes out.	We agree and thank you for your comment.
Karina Camacho	Section 2:3: Emphasize the difference between induction and radiant. Most people don't know the difference, they're all just electric stoves. Think about marketing it as a magnetic stove. Many low income apartments have horrible electric stoves for safety reasons so people have negative experiences. It's important to make people not feel they're getting the short end of the stick.	Radiant technology is discussed more in Section 3 and we will be mindful of this as we develop targeted messages and our marketing plans.

Source	Feedback Provided	CalMTA Response
Karina Camacho	Section 2.4: There may also be controversary that with electrification you're causing job loss for plumbers or those who work with gas. Workforce transition is important to address to make sure workers don't feel left behind. How will the repairs for induction stoves work? Is it more costly? Will current contractors know how to fix these appliances or will it require a more expensive specialist?	We have details on repair costs for induction located in Section 3 - Product Assessment 3 and in Appendix C. We recognize the potential for job loss with plumbers and will monitor this as the MTI advances.
Cyane Dandridge	Section 2.1: In 2.1.5, I think "ratcheting down the standard to a level that could only be met by induction stoves" needs some clarification. Why wouldn't efficient non induction electric satisfy the standard? If induction was that much more efficient, wouldn't efficiency be included in "Induction cooking's extensive benefits over incumbent technologies"? Or would the standard capture one of those other benefits? In Strategic Intervention 7, battery backup is mentioned, which might mean it would only be satisfied with induction, but that is not clear in 2.1.5	Induction cooking products are currently slightly more efficient than electric resistance cooktops on average, but induction is a relatively immature product compared to electric coils or electric radiant in which the efficiency has been close to fully optimized. As the efficiency standard becomes more stringent, induction products have more potential to optimize and meet higher efficiency targets. The difference in efficiency is still small enough that it is unlikely to be a main factor in consumer choice.
Randall Higa	Section 2.1, Page 12: Initiative vision: While induction offers a superior cooking experience, the typical consumer is not familiar with induction probably does not agree. Winning hearts and minds such that consumers will prefer induction for its superior performance, higher heat output, more precise repeatable control, cooler pot handles, cooler kitchen, etc., is imperative. Refer to Consumer Reports November 2018 where electric ranges rate substantially higher than gas.	CalMTA recognizes that "winning hearts and minds" is a key component of product acceptance and have utilized this language in areas of the MTI Plan. The use of "consumer awareness" throughout the MTI indicates a need to raise understanding of the technology's benefits and advantages over gas and electric resistance to make them the preferred product of consumers.
Randall Higa	Section 2.1, Page 13: Key market barriers: Add "scarcity of 24 inch wide induction ranges" that are needed for many ADUs, and low income/ESJ homes. Also, the learning curve may be insurmountable without a proper introduction to cooking with induction.	CalMTA does not see these two barriers are "key barriers" but is aware of them and we will tackle these through manufacturer engagement and consumer education to win hearts and minds for induction.
Randall Higa	Section 2.1, Page 14: Market opportunities: the "improved cooking experience" needs further explanation as explained above. Other features include higher heat output, greater safety, precise control, and induction come with electric ovens. Also, using the term "superior" may be better than "improved".	The details that explain induction's "superior" cooking experience are explained in Section 3 and Appendix C: Product Assessment Report. We agree that "superior" is a better word to describe induction cooking and have made this suggested change.

Source	Feedback Provided	CalMTA Response
Randall Higa	Section 2.1.6, Page 14: Although sales may be an indicator of consumer preference, it may not be the entire reason especially if gas cooking is no longer available. Market transformation requires winning hearts and minds such that consumers overwhelmingly prefer induction cooking.	We have outlined multiple market progress indicators (MPIs) in addition to tracking sales that CalMTA plans to track as part of the Evaluation Plan. Please see details in Appendix: F.
Randall Higa	Section 2.1.7 Page 15, 2.1.7: See above comments regarding heating output and winning hearts and minds. Simply being aware of benefits may not be enough.	We agree that simple awareness-building of benefits will not be enough. We will focus our marketing efforts on winning hearts and minds through a variety of messages, promotions, sales associate training, and education strategies like demonstrations to help consumers better understand the benefits of induction cooking.
Randall Higa	Section 2.1.8, Page 15: There should be mention of electrification of cooking (and other appliances) and the impact on/from weatherization. Gas cooking may not be an IAQ concern in a leaky, drafty home. However, if a home has less infiltration, IAQ issues from emissions from appliances (and other sources) become more critical. Again, winning hearts and minds can reduce occupant pushback of converting from gas to induction -- ESJ consumers should aspire to have induction cooking.	Details on the impacts of gas cooking on IAQ, home size, and access to ventilation are discussed in Appendix C: Product Assessment Report. We agree with your comment regarding "winning hearts and minds," especially as it relates to ESJ communities.
Randall Higa	Section 2.1.9, Page 15: A key assumption is that induction cooking becomes a "commodity" and/or "mainstream" product and is no longer a "niche" or "specialty" product.	This is the overall outcome we will be working towards via the MTI's interventions.
Randall Higa	Section 2.2, Page 18, Barriers: As with many battery-powered devices that were previously using a liquid or gaseous fuel, range anxiety needs to be overcome. Outcome: The cost of a 120V range/cooktop will be substantially less than a 240V unit and the additional electrical upgrades. Should also discuss what happens if the battery is depleted even when plugged in to alleviate concerns.	This communication will be a part of our marketing campaign to communicate benefits and alleviate concerns around battery life/usage.
Randall Higa	Section 2.2, Page 19, Strategic Intervention 2: Increased consumer preference leads an easier advancement of codes, policies, standards, and practices. In other words, winning hearts and minds can more easily facilitate regulations, policies and practices.	We agree that winning hearts and minds and increased consumer acceptance will make it easier for codes, policies and standards to be accepted and adopted for induction cooking. This is built into the overall strategy.

Source	Feedback Provided	CalMTA Response
Randall Higa	Section 2.2, Page 20, Strategic Intervention 3: As noted in the MTAB meeting, CalMTA may have very limited ability to influence rate structures, especially when current rate structures tend to encourage electricity use when it is cleaner and less expensive to generate. Therefore, it may be more advantageous to support load shifting, not only with 120V induction ranges, but with electrical energy storage outside of the range. One way to provide support is to educate battery manufacturers and installers to size systems that can accommodate electric cooking.	We agree that CalMTA's ability to influence rate structures is limited. We expect CalMTA's role will be to support others who are leading this work and plan to meet with the CPUC Energy Division's sections involved in rates and do additional research into the relevant proceedings that may impact electrification rates. At the same time, CalMTA will explore ways that this MTI can support load shifting with induction ranges and across other forms of energy storage.
Randall Higa	Section 2.2, Page 22, Strategic Intervention 4: It is true that builders and remodelers can be influential and should be educated and made aware. However, they are generally not trailblazers and are very focused on meeting their customer's preferences and aspirations. Builders have relied on surveys to indicate that their customers prefer gas cooking. Also, there should be some work looking upstream from the home builders.	We agree that builders are price-sensitive and plan to focus this intervention on incentives or bulk purchase pricing. In addition, if this MTI successfully builds consumer acceptance and awareness (as outlined in Strategic Intervention 5) consumer interest in induction will also influence builders to install these products. We also plan to deploy Chefluencer events to builders themselves to grow their understanding of induction's appeal. Intervention 1, Manufacturer Engagement, will focus upstream to drive builder acceptance through strategic partnerships between large production builders and appliance suppliers.
Randall Higa	Section 2.2, Page 22: The Strategy pilot was supposed to test the messaging around induction. What were the findings?	The team has been utilizing learnings in real time to inform our MTI strategies, and those learnings have been incorporated into our program strategies and logic. Status updates on the Strategy Pilots will be posted to the CalMTA website prior to the filing of the CalMTA application, and a complete assessment will be finalized and shared in early 2025. In addition, CalMTA staff want to stress that MTI Plans and strategies are living documents, the team will continue to engage with market stakeholders through 2025, and all learnings will be incorporated into our program strategies prior to the launch of Phase III activities.

Source	Feedback Provided	CalMTA Response
Randall Higa	Section 2.2, Page 23, Intervention Strategy 5: This has the primary goal to "change hearts and minds." should be included upfront in the executive summary and in early sections. It is worthy of greater emphasis. There are other ways to influence consumers in addition to the Chefluencer program such as demos at county fairs, chef endorsements, TV placements, references to Consumer Reports and other sources that tout the superiority of electric cooking, and social media campaigns. A potential barrier is the perception that induction cooking can adversely impact pacemaker operation. This should also be addressed.	This language has been added. Before we fully deploy Intervention 5, we will finalize key messages by target markets and then deploy marketing tactics based on how best to reach the various target audiences. All of this will be developed as part of a marketing plan and shared with MTAB prior to full deployment.
Randall Higa	Section 2.2, Page 25, Strategic Intervention 6, Short-term outcomes: Change "RHP" to induction cooking.	This edit has been made.
Randall Higa	Section 2.2, Page 27: Can ESRPP include induction in the absence of an Energy Star specification for induction?	Yes, it can.
Randall Higa	Section 2.4, Page 30, Workforce Development: In this section or elsewhere, there needs to be mention of training needs for retailers (at all levels), designers, electricians, realtors, home appraisers, home builders, land developers, lenders, etc.	All of these audiences will be assessed along with their key education and training needs as part of several interventions. Most will be reached through Intervention 5, building consumer acceptance and awareness, which will involve targeting key influencers (designers, realtors, etc.). Intervention 8, Deploying midstream stocking incentives, will include training for retailer staff. Intervention 4, Engage builders, will include builders and their agents.
Randall Higa	Section 2.5, Page 30, Section 2.5: Regarding grid impacts, does this include 120V with batteries? This product could potentially support the grid by charging the battery when the grid contains excess solar energy.	The TSB numbers include 120V battery-equipped products. The 120V battery-equipped products have a very high avoided cost benefit, especially to the grid. However, in the market adoption, we estimate that most products purchased will still be traditional 240V appliances. We believe the positive benefits of load shifting for the battery-equipped products are very important and we hope to drive higher market adoption.
Randall Higa	Section 2.5.1, Page 31: Does the BMA factor in CARB and AQMDs Zero Emission Appliance rules? While these rules currently are not targeting	Yes, we consider various California-specific existing and upcoming regulatory and policy developments to forecast

Source	Feedback Provided	CalMTA Response
	cooking equipment, they show an increased move away from gas appliances that should be factored into the BMA forecast.	trends in the adoption of electric cooking appliances and have met with CARB and the AQMDs. This includes the transition of households with gas cooktops to electric, as well as the adoption of electric cooktops in newly built housing units. See Section 4.5.
Randall Higa	Section 2.5: Although D.19-12-021 did not set a TRC ratio threshold for MTIs, it recounts the MTWG's discussion and parties' comments on setting a TRC ratio between 1.25 and 1.5. The TRC ratio by the end of this MTI is forecast to be less than one which is not in this range. For an MTI targeting codes or standards, this low TRC is surprising, and much lower than the TRC ratio for other codes and standards.	CalMTA revised the preliminary cost-effectiveness calculations presented at the Nov. 20, 2024, meeting in response to MTAB feedback and discussions, and corrected an error to the calculation of assumed product price. Details of these updates were submitted to MTAB on Dec.13, 2024 and added to the meeting packet at calmta.org. The corrected calculations show that this MTI is forecasted to be cost-effective, with TRC of 1.12. The team also has conducted sensitivity analysis with results reported in Attachment 3 to Appendix B. Please note: the TSB and cost-effectiveness forecast for this MTI does not include savings from codes or standards.
Randall Higa	Section 2.5: The adopted market transformation framework states that the MTIs shall be assessed using TRC and PAC with a focus on modifying three categories: C&S savings, timeframe of costs and benefits, and net-to-gross methodology. This plan should follow the MTI guidance per ordering paragraph (OP) 11 in D.19-12-021. In the section on "Inclusion of C&S into the CE Methodology", the market transformation framework directs the MTA to address: What is the methodology for calculating and including voluntary vs enforceable C&S? What is the "timeframe of costs & benefits separate from C&S"? What is the "Net-to-gross methodology" (for incentive programs)? In particular, the C&S savings should be called out as a separate category of savings from incentive-driven savings, and the plan should provide a rough timeframe of when C&S savings might occur (to be revisited and updated with each annual market progress report). The methodology of the C&S savings calculation should also be made clear. While there is	The Induction MTI does not count savings associated with enforceable Codes & Standards, so that consideration is not relevant to this MTI. For future MTIs that do include pursuit of enforceable codes or standards, we agreed to use the 3X rule prescribed by the decision. CalMTA is unaware of any Decision guidance regarding voluntary standards (nor of the existence of voluntary building codes). CalMTA analysis doesn't include benefits specific to voluntary standards such as ENERGY STAR; MT initiatives use voluntary specifications and standards as a tool to influence product availability and to drive innovation to increasingly higher standards. Such voluntary standards are not an end unto themselves but rather, a means to achieve accelerated/increased market adoption of energy efficient products.

Source	Feedback Provided	CalMTA Response
	a detailed discussion of which S-curve is most appropriate for the MTI, the adoption graphs show what are essentially straight lines. Typical C&S savings graphs show a non-linear and large increase in savings and adoption once a code or standard has been adopted.	The three methodology "modifications" used to calculate Cost-Effectiveness of the Induction and other MTIs is documented in the MTI Evaluation Framework and is documented for each MTI in Appendix B of the MTI Plan, including the "net-to-gross" methodology.
Randall Higa	Section 2.5: For this MTI, the C&S savings graph should show a non-linear increase once the Federal efficiency standards come into effect, and another when ENERGY STAR 2.0 goes into effect. These should be part of the BMA.	This MTI does not include any incremental adoption or savings associated with codes & standards. CalMTA does not anticipate a federal efficiency standard for electric cooktops. We do not anticipate a non-linear increase in adoption due to the ENERGY STAR specifications. New specifications don't generally produce that type of impact without accompanying programs and incentives.
Randall Higa	Section 2.5: The CalMTA's Evaluation Framework further states: " CalMTA will conduct and share additional research and analysis during Phase II of the MTI lifecycle: we will refine the MTI market adoption and baseline forecasts, estimate TSB and cost effectiveness using the 3X rule, and conduct sensitivity analyses to understand the implications associated with different market adoption curves." For this MTI, the savings would be 3X incentive program the year before (each) ENERGY STAR specification or federal efficiency standard goes into effect. This analysis needs to be included in the submitted MTI application.	The 3X rule pertains only to mandatory building codes and equipment standards, which typically result in a dramatic, non-linear increase in market adoption. It does not pertain to voluntary specifications and standards. Those specifications, such as ENERGY STAR, are a tool that can be used to help energy efficiency programs stimulate supply and demand of EE products. When we have an MTI that includes a mandatory building code or equipment standard, we will include sensitivity analysis to understand the impact to forecasts of applying the 3X rule versus alternative approaches to estimating attribution for the code or standard change.
Randall Higa	Section 2.5, Page 32: "product re-adoption". What re-adoption rate is this MTI using? The market study shows only 50% of current induction owners (n=21) would re-adopt induction, so it may not be appropriate for the re-adoption rate in the TMA to be 100%. Also, incentive programs cannot claim re-adoption rates, so this inflates MTI savings compared to RA savings.	On Page 33 when we indicate re-adoption, we are referring to decision making by households with a radiant or induction cooking appliance currently (we do not model readoption of induction-only households). For those households, on product failure, the choice set consists of 120V induction, 240V induction, 240V radiant and 240V ENERGY STAR

Source	Feedback Provided	CalMTA Response
		radiant. The relative shares of these technologies are the same as that of Segment S1 and summarized in Figures 7 and 8. We do not make any assumption that re-adoption will be 100%.
Randall Higa	Section 2.6, Page 33: See comments on page 14 with other benefits. Perhaps another way to explain the benefits is that induction has a "higher performance" which may resonate with certain stakeholders.	We changed the first bullet to "superior cooking experience" to align with a similar comment earlier. This section is specific to induction's unique non-energy benefits. CalMTA staff is reluctant to change this to "higher performance" as this more commonly refers to energy efficiency compared to energy use of incumbent technologies and is addressed in other sections dedicated to efficiency.
Christina Torok	Section 2.1.4: Is there a difference between 'cultural' and 'consumer' attachment?	CalMTA staff have used the term "cultural" to indicate that some audiences, within the broader consumer set of audiences, will require more culturally sensitive awareness-building strategies due to specific cultural cooking methods.
Christina Torok	Section 2.1.5: Are these already defined? Are they included in the baseline market forecast?	We have not considered this specific policy change. Compared to 2027, 2028 is assumed to see a higher share of MTI technology and a larger level of electrification. However, these assumptions are based on general trends and are not tied to any specific regulation.
Fred Gordon	Section 3.5.3, Comment FG11, Pages 40-41: I wasn't clear that there is consumer value in all these improvements. Consumers are not accustomed to cooking at a precise temperature. The idea of reserving one resistance burner seems a bit fraught. It isn't gas heat so won't assure customers who think they need to see the flame. It is less efficient. If induction has the indicated advantages, it will soon be considered to be the one lousy burner.	This resistance burner is just one possible suggestion as something to be explored to overcome barriers to induction adoption due to cookware and possible equity concerns. It does not specifically call for the future of induction products to include a resistance area.
Karina Camacho	Section 3.4: Work on identifying types of homes that could benefit the most from induction cooking benefits. For example, in home child care facilities that benefit from the safety element.	Section 3.4.4 identifies that older multifamily buildings and older, small single-family homes will benefit the most from cooking electrification. We agree that home childcare facilities could benefit from the improved safety and indoor air quality that is associated with induction cooking and

Source	Feedback Provided	CalMTA Response
		specific building types is something we will consider as we refine our strategy moving forward.
Randall Higa	Section 3.2.2, Page 37: Key weakness is the preference for gas cooking. This is generally regardless of how much better electric cooking may be and therefore goes beyond awareness.	Cultural preferences for gas cooking are certainly an MTI challenge and content has been added in this section to reflect this.
Randall Higa	Section 3.2.2, Page 37: Key opportunity is to win hearts and minds.	The "messaging and awareness of the IAQ benefits" piece of this section seems to encapsulate the most likely way to win hearts and minds and this messaging is reflected in other portions of the MTI plan. Air quality and health concerns are significant motivators.
Randall Higa	Section 3.4.5, Page 40: Precision (especially at lower heat output) and repeatability should be added.	While precision was mentioned, we added additional language to emphasize the precision at lower temperatures in the "power output" section.
Karina Camacho	Section 4.3: Consider the ADU market that is growing in CA for new construction or people turning their garages to living quarters. There's potential with smaller stove tops and an all electric ADU won't need gas lines running and paying for gas hook ups.	We will consider this submarket in the MTI plan's implementation.
Randall Higa	Section 4.3: The MTI Plan does not seem to contain all the elements of D.19-12-021 Appendix C: Content Requirements for Market Transformation Initiative Plan. For the Induction Cooking MTI Plan, more details are needed on RA program coordination, and in particular, the nature of their active "support from and coordination with" the proposed MTI. " If the MTI includes an existing RA program, present a RA coordination plan that demonstrates support from, and coordination with, all related RA programs. This plan could offer a fixed free-ridership rate for the resource programs for an interim period. This plan may also present a schedule and process for updating free ridership assumptions and for phasing out the resource programs altogether over the longer- term, in sync with the progress of the Market Transformation Initiative." D.19-12-021, p. 163. Specifically, name the programs that you expect to offer incentives, and explain if you are proposing a change to free ridership, a plan to ramp down	CalMTA has ongoing coordination meetings with program administrators (PAs) leads, the Codes & Standards working group, the California Energy Commission, and others. Those will continue throughout the lifetime of the MTI and include firms that are ultimately chosen for implementation in Phase III: Market Deployment. Appendix E lays out the approach to aligning the MTIs with the EE portfolio of programs. Because we are over a year out from implementation, it would be difficult to define specifically what this alignment would look like at this stage. This information will be further developed in 2025 and be included with additional details in the RFPs issued to solicit implementers for the initiative. Bidders will be required to respond to how they would address this coordination and work plans to guide this future collaboration will be co-created with PAs that have programs

Source	Feedback Provided	CalMTA Response
	incentives, or other options. CalMTA has identified 10 programs that offer incentives for induction cooking appliances. Per the Decision: What are the positive overlaps? What are the negative overlaps? What have those programs agreed to do, in support of or coordination with this MTI? How will this MTI impact their savings potential over the duration of the MTI?	with incentives or other aspects related to the induction initiative. Savings will be calculated based on the MTI Evaluation Plan reviewed and accepted by MTAB.
Randall Higa	Section 4.3: The MTI plan suggests that the Energy Savings Assistance (ESA) Program in the income qualified assistance programs proceeding may be leveraged to help offset costs of bulk purchasing. Have the ESA program administrators agreed to this and do they have the ability to coordinate with this MTI? How will this MTI impact the ESA's ability to meet goals? How will attribution for market adoption be shared with the Income Qualified Programs?	CalMTA has participated in multiple meetings with the ESA program implementation teams and at the utilities. The opportunity for bulk purchase of products has been raised. In general, market transformation will increase the availability of products that are appropriate for California climates and buildings stock at a broader range of price points. This will enable ESA programs to be more successful. The approach to savings attribution is described in the MTI Evaluation Framework.
Randall Higa	Section 6, Page 46: The MTI Plan is required to include an RA program coordination plan, see earlier comment about Content Requirements. The MTI Plan should include specifics on the preliminary agreements CalMTA mentioned: "met directly with key parties to secure at least preliminary agreement on the extent of overlap and approach to program alignment." (Appendix E, p. 7)	CalMTA has ongoing coordination meetings with program administrators (PAs), the Codes & Standards working group, the California Energy Commission and others. Those will continue throughout the lifetime of the MTI and include firms that are ultimately chosen for implementation in Phase III: Market Deployment. Appendix E lays out the approach to aligning the MTIs with the EE portfolio of programs. Because we are over a year out from implementation, it would be difficult to define specifically what this would look like at this stage. We have met with most of the PA leads for the priority programs listed in Table 2 to discuss our approach and will continue to meet with them through 2025, as they plan for program updates, to agree on the details to be included in the RFPs issued to solicit implementers for the initiative. Bidders will be required to respond to how they will address this coordination. Work plans to guide this future collaboration will be co-created with PAs that have incentives

Source	Feedback Provided	CalMTA Response
		in the future or other program aspects related to the Induction Cooking initiative. This work plan would describe alignment between the MTI and programs and mitigate any overlaps.
Fred Gordon	Section 7.1: Comment FG12. I hope that in addition to tracking all these metrics, the evaluation will synthesize information to separately track progress in each of these markets: (1) new single and multifamily construction (2) Existing low income (3) existing other.	Yes, we intend to do that.
Fred Gordon	Section 8, Table 7, Page 59: Comment FG13. Last row, consumer price. I think you said the opposite of what you meant to say?	We were missing a word in the first bullet, which has been corrected.
Karina Camacho	Section 8: The culture way issue is going to require cultural sensitivity by demonstrating that while the push for induction cooking is to support electrification, spokespersons are interested in supporting the household. If indoor air quality is a concern, be transparent about tips to use ventilation. Do not stop the conversation if people don't seem interested induction, provide additional resources. Be mindful of people's experiences with poor outdoor air quality, removing a gas stove isn't going to stop air pollution if you live near a major roadway.	We will be mindful of this with our awareness-building interventions and activities.
Karina Camacho	Section 8: Celebrity Chefs vary in cultural communities. YouTube is a huge place for immigrant communities to share recipes, think more broadly about spokespersons.	We will be sure to include this in our research of appropriate awareness-building tactics to build cultural acceptance for induction cooking.
Randall Higa	Section 8: Include a discussion of exit criteria if a high or medium risk materializes that cannot be mitigated. Do any of these risks, particularly the "high severity" risks, mean that an MTI would not succeed? Ideally, the high severity risks would be addressed during Stage 4 "Strategy Testing" so that CalMTA could "abort further spending on the MTI". If the CPUC approves this plan, these risks need to be mitigated early in the MTI so that ratepayer funds are not expended on an MTI that has a low probability of succeeding.	We agree that high risks need to be mitigated early in the life of the MTI to avoid large investments of rate payer funds being spent on something that may not work out. We have detailed what we mean by severity of risks in the instructions to the reader in Appendix G. We will monitor all risks carefully and, if key risks begin to materialize that jeopardize the success of the MTI, we will be sure to bring that and mitigation strategies to the attention of CPUC and MTAB to determine next steps and if exiting is warranted.
Randall Higa	Section 8, Page 58: Have manufacturers indicated interest in licensing their intellectual property (IP) through this MTI?	Yes.

Source	Feedback Provided	CalMTA Response
Randall Higa	Section 8, Page 58: Please share any data that influencer chefs carry weight with the customer segment most skeptical of induction.	We will have data and information to share on this in early 2025 as an output of our strategy pilot deploying Chefluencer events in partnership with the Building Decarbonization Coalition (BDC).
Randall Higa	Section 8, Page 59: This bullet lacks a verb therefore it is difficult to determine the meaning: "New specification to manufacturers that targets basic models of induction cooking that does include features that drive costs up."	We have edited this bullet to make it clearer.
Fred Gordon	Appendix B: Comment FG 13.This is an overall comment about CMTA's methodology and applies to both initiatives. For reporting and cost-effectiveness and TSB purposes, the method used, which excludes savings from utility rebate programs provides a useful perspective. However, in a market transformation environment, both the MT initiative and the utility programs "cause" the savings rebated by the utilities, and likewise "cause" the savings from market shift. The utility programs and market transformation initiative are complimentary pieces that operate synergistically. So, it's important to not just track but report the combination as "co-created savings" and, to the extent possible, create a second cost-effectiveness/TSB analysis based on these together. The real picture of what ratepayer money did is the combination of the two, and the separation of savings into utility and CMTA piles is an artifice.	CalMTA agrees and intends to report both.
Fred Gordon	Appendix B: Comment FG 14. Has the propane market share of cooking being simply folded into the gas share and treated the same? If so, fine,	Yes. We clarified with a note under Table 7.
Fred Gordon	Appendix G: Comment FG 14. This is a comment on CMTA's overall methodology and applies to both programs. This is a forward- looking comment; it may be a bit late to consider this for the current initiative. I think the matrices have improved, but I'm wondering if it's worth having a column which indicates the degree of CalMTA influence over the area of risk- can they prevent or mitigate bad outcomes in this area? I think this is valuable to distinguish between risks where continuous	We will be sure to add this to the Risk Management Plan as we monitor all of the risks starting in 2025. CalMTA staff will need to monitor and update several of these risks in 2025 before we receive approval for Phase III and will update Risk Mitigation Plans. Risk mitigation plans will be living documents, updated frequently as we monitor and track possible risks.

Source	Feedback Provided	CalMTA Response
	monitoring and management can assure a reasonable chance of a positive outcome, and risks that are just uncontrolled risks. If the latter are big, it reduces the chance of initiative success. Both at NEEA and CMTA these matrices tend to look like any problem has an answer, because the boxes are filled in. Sticking something in the box is appropriate because we should do what we can; but it doesn't always seriously mitigate the risk.	
Randall Higa	Appendix B: Per D.19-12-021, p. 73: "In particular, we are concerned about the process for setting savings goals and attributing savings to particular programs and program administrators." These need to be included in this plan. The cost-effectiveness needs to include costs and benefits of C&S. Where are the benefits of C&S from ENERGY STAR and CEE specifications shown? The impacts of these specifications need to be specified in the BMA, so that stakeholders can see that they are appropriately sized and excluded from CalMTA claims.	The process for setting savings goals and attributing savings were addressed in the MTI Evaluation Framework. The Induction Cooking MTI cost-effectiveness includes all program costs. It doesn't include benefits specific to ENERGY STAR and CEE specifications; MT initiatives use voluntary specifications and standards as a tool to influence product availability and to drive innovation to increasingly higher standards. Such voluntary standards are not an end unto themselves but rather, a means to an end, which is accelerated/increased market adoption of energy efficient products.
Randall Higa	Appendix B: It is unclear what the MTI program baseline is because it is unclear what is included in the BMA. For greater clarity, and to allow assessment of the CalMTA's estimates feeding into BMA, the BMA/TMA figures should break out C&S savings (including ENERGY STAR induced savings) and RA program savings, per the market transformation decision.	There are no C&S savings in either the Induction Cooking BMA or TMA. The BMA and TMA both include estimated market adoption resulting from existing RA programs. BMA includes estimated market adoption from currently existing programs, as well as from IRA incentive programs. The bulk of future PA savings are included in TMA and then subtracted from TMA-BMA, as documented in Appendix B.
Randall Higa	Appendix B: These figures don't show the non-linear increase in adoption due to upcoming ENERGY STAR specifications and associated IRA incentives. This has the potential for CalMTA to claim credit for ENERGY STAR and IRA incentives-driven adoption. How will those impacts be accounted for? If these are supposed to be part of the BMA, then it seems unlikely that they would be lumped in with all other interventions and only be credited with the adoption of fewer than	We don't anticipate a non-linear increase in adoption due to the ENERGY STAR specification. New specifications don't generally produce that type of impact without accompanying programs and incentives. The effect of IRA incentives is reflected in the BMA forecast, since BMA represents what would happen in the absence of the MTI.

Source	Feedback Provided	CalMTA Response
	2,001K units (Table 1), while the MTI would be credited with 2,180K units, at the end of 20 years, particularly when CalMTA's builder interviews indicate "California's regulations influenced these builders to install induction cooking products" (CalMTA Appendix D, p. 56) and "One manufacturer of a battery-equipped 120V product shared that they had scaled the battery storage of their product to the minimum eligible for IRA incentives (3 kWh)," (CalMTA Appendix D, p. 74).	
Randall Higa	Appendix B: Note that the C&S program savings also only reflect savings within IOU service territories, not statewide savings. The share of savings that accrue to the C&S programs will actually need to be increased to account for the share that is claimed by LADWP and SMUD and other POUs. That share is not included in the California Energy Data and Reporting System (CEDARS), so simply subtracting CEDARS savings is not sufficient. This is just one example of how subtracting RA savings claimed on CEDARS would overestimate the MTI's impact. CalMTA should explain how these issues will be addressed in the BMA and TMA estimates.	No C&S savings are claimed for the Induction Cooking or RHP MTIs.
Randall Higa	Appendix B: The GHG benefits need to be broken out by product efficiency vs fuel substitution, in case electrification rates do not change since that is named as a high severity risk. What is the TSB without fuel substitution? Because there are so many contingencies and factors yet unknown, it may be useful for the CalMTA to model different scenarios to demonstrate that TRC and TSB benefits would still warrant funding of the MTI even if the high severity risks materialize.	The team has conducted sensitivity analyses and results are available in an attachment to Appendix B which explores TSB without fuel substitution.
Randall Higa	Appendix B, Table 1: Why is adoption outside IOU territory higher than within IOU territory? This seems to contradict p. 37's number of IOU adoption at 74%	Table 1 summarizes two aspects of calculating MTI net incremental adoption: (1) it breaks out the components of the equation used to estimate net incremental adoption (i.e., TMA – BMA – PA-verified units); (2) after calculating net incremental adoption, it subtracts the estimated portion of net incremental adoption that occurs outside IOU service territories (26%) because CPUC doesn't allow those impacts to be included in the cost-effectiveness calculation. The 74%

Source	Feedback Provided	CalMTA Response
		number represents the portion of net incremental adoption that occurs within the IOU service territories. As Table 1 indicates, this is 74% of statewide ('net incremental').
Randall Higa	Appendix B, Page 10: "Under the MTI implementation scenario, the model incorporates an accelerated replacement rate to reflect policy-driven changes in consumer behavior." Does this mean that policy-driven changes were included in TMA assessment but not in BMA assessment? If so, the net incremental adoption, i.e. the difference between TMA and BMA, includes policy-driven market adoption, which should not be considered as the impact of the proposed MTI. Shouldn't policy-driven changes be included in BMA assessment? Table 4: Is this for both SF and MF households? Table 5: What is the source of the number that there will be 800,000 NC households over the next 20 years?	Here "policy-driven changes" refer to MTI interventions. We changed the text to be explicit about it. Table 4. Yes. We included a note under the table to clarify. Table 5: The data is based on population and household size forecasts by California Department of Finance. We mention this later in Section 4.4
Randall Higa	Appendix B, Page 17: What data do you have suggesting that customers are willing to accelerate replacement of working gas stoves, especially since there are infrastructure barriers to electrification?	Based on inputs from Delphi panel members, we assumed faster transition away from gas compared to historical trends because of greater awareness of health and environmental concerns.
Randall Higa	Appendix B, Page 20: Why does CalMTA expect a spike in demand in 2030-2031, four years before 120V battery-equipped products are expected to be introduced?	Based on MTI interventions and milestones, we expect the 120V battery-equipped products will be made available through various retailers by around 2030. By that year, prices are also expected to drop from today's higher levels. Per the MTI Plan, CalMTA will engage with influential builders, remodelers, and property management firms leading to demand aggregation and bulk purchase agreements. This is expected to motivate manufacturers to introduce more models. These developments are expected to lead to a spike in demand in 2030-31.

Source	Feedback Provided	CalMTA Response
Randall Higa	Appendix B, Page 21 & 26: The figure of comparable ENERGY STAR products having a market share of 45%-60% of the residential market should be part of the BMA, in Table 14.	We now assume a market share of 75% for ENERGY STAR products in the market for 240V radiant cooking products and have made the change in the report.
Randall Higa	Appendix B, Table 20: Is this meant to be NC, not existing households?	This edit has been made.
Randall Higa	Appendix B, Figure 12: Delphi panelists thought MF would adopt more radiant than induction. This doesn't seem to be reflected here.	As Table 21 indicates, around 80% of the MTI products adopted between 2024-2045 by multifamily households are ENERGY STAR radiant.
Randall Higa	Appendix B, Page 38: "CalMTA assumes that as the market matures and PA incentives are no longer necessary to drive adoption, the PA verified savings claims will decreased." If RA programs are only achieving 7.5% adoption in the early years, before there is even a 120V battery induction product available, who is responsible for achieving the 92.5% of the rest of the adoption? Second, the assumption that the market matures, and incentives are no longer necessary doesn't seem to be based upon any intervention that would "lock in" market transformation such as an enforceable code or standard. Rather, the MTI seems to require continual incentives. This could be made clearer in an RA program coordination plan where a ramping down of incentives is presented.	During the period 2024-2027, most of the units attributable to RA programs (and IRA incentives) are reflected in the BMA, since BMA is a representation of what would occur in the absence of the MTI. In the initial years, incremental adoption (TMA-BMA) is substantially lower than BMA. CalMTA assumed that 7.5% of the incremental adoption would be units/savings that would be reported in CEDARS from existing programs (Energy Upgrade CA, and others); the remaining 92.5% of incremental units would therefore be attributed to the MTI. We assumed this low value because of the limited PA activity to date. We acknowledge that the actual percentage could be substantially higher than 7.5% - especially if we achieve quick success with our coordination and collaboration efforts - and we will true up the MTI TSB and CE forecasts each year to reflect the actual verified savings reported in CEDARS. However, the incremental market adoption during the 2024-2027 is only 2.2% of total net incremental over the entire MTI lifetime (through 2045), so increasing 7.5% to a higher number - even a much higher number - would not have a material impact on forecast TSB or cost-effectiveness.
Randall Higa	Appendix B, Page 52: Since the CalMTA discounted the Delphi panel input for both RHPs and Induction Cooking due to lack of full understanding of the context of the MTI, perhaps the background information should be vetted by the Evaluation Advisors in the future.	We recognize the Delphi panel as a pool of subject matter experts with deep industry knowledge. Their inputs were an important part of our forecasting process. We also

Source	Feedback Provided	CalMTA Response
		considered additional inputs, such as surveys and interviews, to ensure a comprehensive and well-rounded forecast.
Randall Higa	Appendix B, Page 59: How were the data from the Delphi Panel used in developing the BMA?	The comments from the Delphi panel (along with inputs from the market research and literature review) informed CalMTA's assumptions of trends: (a) the relative proportion of induction and radiant cooking products, and (b) trends in transition to electric cooking by existing households with gas as well as share of electric in new construction.
Randall Higa	Appendix B, Page 60: The CalMTA discounts the Delphi Panel because only 5 experts participated rather than a "broad consensus from the industry": Would the original 10 experts constitute a "broad consensus"?	Yes, having 10 panel members representing different market players – including manufacturers, retailers, subject matter experts, and program administrators/RENs – as was initially targeted, is expected to constitute a broad consensus.
Randall Higa	Appendix B, Page 62: Earlier the EUL was shortened by 2 years to account for early replacement, but here the plan is only for "normal replacement and new construction". Please reconcile and/or include the early replacement scenario.	The incremental market adoption includes equipment adopted under both an end-of life, and before end-of-life scenario. The annual adoption associated with early replacement represent units at different stages of their lifetime and have different values of remaining useful life. To reduce complexity in the cost-effectiveness modeling, CalMTA did not use the dual baseline approach to model impacts for these measures and instead treated them as part of normal replacement in terms of baseline equipment assumptions. This decision to simplify the modeling could result in a conservative estimate of impacts; however, any such impacts are expected to be minimal.
Randall Higa	Appendix B, Page 64: There hasn't been much discussion about the ability for batteries to be grid-responsive, and there's a strong possibility that it may be a premium feature that would have to be cut in order to produce an entry-level product. Unless CalMTA is including grid-responsive batteries as part of the MTI measure, then it would be more conservative to assume that avoided costs cannot be optimized because of reliable charging during off-peak times.	The benefits of grid responsive batteries are mentioned in Sections 7, 8, and 9 of Appendix C. As we noted in our technical analysis section, the TSB benefits we use from battery-equipped 120V induction appliances choose a single charging hour that remains constant throughout the entire modeling period, thus our grid benefits are not tied to an active grid-responsive appliance but a large portion of the grid benefits can be achieved by picking a time of day to

Source	Feedback Provided	CalMTA Response
		charge that is known to be beneficial to the grid as well as best for TOU electricity rates.
Randall Higa	Appendix B, Attachment 1: "..., provided adoption forecasts based on market conditions, technological advancements, and regulatory trends." If regulatory trends were included in BMA forecast, why were policy-driven changes included in TMA assessment but not in BMA assessment? BMA forecast should include all non-MTI introduced market adoption.	Any policy not attributed to the MTI Plan is included in both the BMA and TMA forecasts.
Randall Higa	Appendix E: In D.19-12-021, coordination would also inform budget. If other program interventions are unknown, does the CalMTA budget include creating and implementing programs to fulfill those objectives?	The budget covers all the expenses anticipated to implement the initiative during Phase III: Market Deployment, including the strategic interventions described, coordination and alignment with other programs, and evaluation studies.
Randall Higa	Appendix F: The CPUC said "milestones and contingencies established in the Plan should dictate continuation or termination of the MTI" - D.19-12-021 Attachment A. How are these milestones to be used for dictating continuation or termination of the Induction MTI? Does missing one MPI milestone dictate the end of the entire MTI? Please provide details on how the CalMTA plans to manage the MTI using these milestones, and the conditions under which missing milestones would dictate the termination of the MTI.	This is not correct. Missing one milestone does not dictate the termination of the MTI. CalMTA presented an MTI Performance Management Approach at the Nov. 20, 2024 meeting (see the PowerPoint presentation, slide 66). The approach is based on transparent reporting of market progress, per the MPIs and milestones in the MTI Plan - as assessed by a third-party evaluator. CalMTA will update MTI scorecards at least annually (with some metrics more frequently) and will update MTAB at quarterly meetings. When an MPI is falling short of milestones, it will report on that and other relevant findings in a timely manner as part of MTAB quarterly updates and bring recommended actions for discussion.

Draft MTAB Meeting Notes

November 20-21, 2024
Virtual Meeting

Day 1: Nov. 20

Welcome & Introductions

Stacey Hobart opened the meeting by inviting the Market Transformation Advisory Board (MTAB) and CalMTA team members to introduce themselves, followed by a review of the day's meeting agenda.

Stacey reviewed CalMTA's conflict of interest policies and asked MTAB members to disclose any conflicts. There were no disclosures. She then asked for any comments or feedback regarding Oct. 25 MTAB draft meeting notes. There were none.

An MT Portfolio for California

Lynette Curthoys shared appreciation for the MTAB members whose guidance resulted in the development of CalMTA's first two draft Market Transformation Initiative (MTI) Plans. She then described several notable aspects of these MTIs, including support for statewide decarbonization goals, potential benefits for environmental and social justice (ESJ) communities, and substantial health and safety benefits.

She presented the high-level total system benefits (TSB) and cost-effectiveness metrics for the two MTIs and shared the market deployment timeline with key milestones for filing of an application to the California Public Utilities Commission (CPUC) and future third-party requests for proposals (RFPs). Lynette reviewed the next steps for MTAB members to comment on the MTI Plans. She noted that previous comments received from MTAB, including Advancement Plan comments and prior meeting notes will be included in the Application supporting materials. Comments received in today's meeting and via MTAB member written comments, will be included in a separate appendix (Appendix I) of the final MTI Plans.

Summary of Room Heat Pump MTI

Elaine Miller provided an overview of the Room Heat Pump MTI. MTAB comments included the following:

- Barriers related to the technology itself (e.g., any currently available products that do not perform at the optimal level or have all desired features) seem to be addressed through activities like the tech challenge, but CalMTA should also call out any activities related to installation barriers if the time and effort required to install room heat pumps proves significant.

- The need for rate structures that enable or encourage electrification seems applicable to multiple MTIs and is an issue with many drivers or requirements. Is this an MTI-specific intervention or a standalone MTI, and what role would CalMTA play in supporting rate design and optimization?
    - Elaine clarified that this intervention will be a component of multiple MTIs and is included in the Induction Cooking MTI Plan. CalMTA is still determining the support we could provide for this work and will clarify an appropriate role to play for this MTI – for instance, potentially collecting/sharing data and supporting product development with a focus on the multifamily sector.
- The MTI Plan rightly highlights bill impacts as a significant barrier, so capturing the need for improved electrification-friendly rate structures in the plan makes sense. The most natural role for CalMTA is providing data, information, and input on what forward-looking rate design could look like (e.g, what a customer needs to do to qualify for special electrification rates, whether enrollment in demand response programs is required, etc.) as well as helping advocates and policymakers think about this issue in terms of real-life technology and use-cases.
- Most IOUs have electrification rates of some sort, although the requirements may be easier for end-uses like EV charging but not others such as cooking or space cooling, although pre-cooling can help with this. However, it's also important to increase the efficiency of products to reduce electrical bills beyond any special rates, and CalMTA could support the advancement or sales of more efficient products.
    - Elaine noted that the Room Heat Pump MTI Plan talks about pushing for a more rigorous ENERGY STAR specification that should drive increased efficiency.
- CalMTA has identified a barrier around operating costs in an electrification scenario and needs to include something in the logic model that addresses that, so this intervention should remain regardless of CalMTA's role in driving new rate structures. In the Northwest, NEEA doesn't lobby for special rates but provides supportive data and real-world examples of policy impacts, a role CalMTA could play in California.
- Recognizing that rate structure is likely not the only intervention that will cross multiple MTIs, CalMTA should look at its organizational structure to determine how best to address these cross-cutting activities.
    - Jeff Mitchell replied that CalMTA has decided to represent cross-cutting interventions in each MTI Plan they apply to, but that CalMTA's influence in these areas will grow as the organization grows.
- Regarding cost parity between room heat pumps and less efficient products, as well as the higher operating cost associated with fuel switching, it's worth noting that the success of ductless heat pump initiative in the Northwest demonstrates that many customers will adopt a more expensive technology in exchange for better performance and valued benefits like increased comfort.

Room Heat Pumps: Total System Benefits & Cost-Effectiveness

Karen Horkitz introduced a discussion on the market forecasts and cost-effectiveness for the Room Heat Pump MTI. MTAB questions and feedback included:

- Are IOU-verified savings still subtracted when running the societal cost test (SCT)?
    - Karen confirmed that CalMTA did this consistently.
- A footnote in Appendix B of the MTI Plan indicated that impacts will be measured only once implemented but costs are measured earlier. Is that accurate?
    - Karen noted that this was correct and that it was important to capture the cost of the MTI spent leading up to its full market deployment.

Gouri Mishra of Cadmus presented estimated adoption (both baseline/naturally occurring adoption, or BMA, and adoption in the presence of the MTI, or TMA) in terms of number of households and number of units, as well as the inputs, assumptions, and methodology used to develop them. Questions and comments included:

- Looking at market assumptions about household heating and cooling types, how did CalMTA define rural vs. urban given that much of California is suburban?
    - Gouri noted that the definition taken directly from U.S. Census as used in the U.S. Energy Information Administration Residential Energy Consumption Survey (EIA-RECS). Suburban households are included in the urban segment.
- Why aren't climate zones a factor for market assumptions, since hotter climate zones may be more likely to adopt a room heat pump for its cooling capabilities?
    - Gouri clarified that climate zones were one of the variables initially considered for inclusion, but that it was ultimately discovered to have a relatively minor impact on likelihood of adoption. The final four variables were derived from 80 potential factors following analysis of how significant preferences were in those segments.
- Even if climate zones had a minimal impact on adoption, wouldn't they have significant impact on benefits?
    - Matt Wisnefske replied that this was included in the unit energy savings (UES) calculations.

Matt Wisnefske of Cadmus then introduced a presentation of cost-effectiveness and results for the Room Heat Pump MTI, including TSB and various cost-effectiveness tests. He presented technology definition inputs and program regulatory inputs. Questions and comments included:

- How did CalMTA deal with the baseline assuming that two pieces of equipment are retired at the same time, which people rarely do?
    - Matt acknowledged that by necessity, CalMTA made generic assumptions about how people behave, and this was one of them.
- Are discount rates real or nominal, as they seem high in real terms?
    - Matt confirmed that they are real.

- Is it assumed that at the end of the estimated useful life (EUL) that equipment is replaced at cost?
    - Matt explained that in cases where a particular piece of equipment works for nine years, the market adoption forecast assumes that the replacement unit would remain at the improved level of efficiency moving forward rather than returning to the more inefficient level of the previous unit. A second cost is not assigned in this scenario. If the unit is considered an MTI-moved unit then it is included in the calculation; if it is not considered an MTI-moved unit, it isn't represented. So, as the baseline and adoption curves move, the difference in the cost is included over time.
- The MTI is not responsible for units in the baseline adoption curve, but by reducing the cost of the technology through market transformation, everyone on the baseline would pay less so there are additional savings.
    - Matt agreed that while these are not included, it is an example of the entire state benefiting from the MTI indirectly.
- The ramp-up of TRC and parallel ramp-down of cost is typical and indicative of why California is pursuing MT: it is a long-term investment with the potential to deliver significant savings.
- From a cost-effectiveness standpoint, if you put a room heat pump in a home that previously only had heating, energy use will go up. How is that taken into account?
    - Matt replied that CalMTA modeled multiple scenarios, including this one in which there is a net-negative over time. It is included in the analysis but represents a fairly small percentage of California homes.
- When looking at cooling load, did CalMTA consider climate change and the likely increase in the number of cooling days over time?
    - Rick Dunn noted that CalMTA used rear-looking data to determine the number of heating and cooling degree days and due to climate change, the cooling degree days calculated were likely an underestimate.
- CalMTA was established to take a different approach than conventional utility resource acquisition programs, which are service-territory specific. Showing all statewide impacts outside the funding IOU territories helps demonstrate that MTIs will benefit the entire statewide market.
- The CPUC discussed the unique value a statewide independent administrator could bring vs. having an IOU administrator and the Decision says that CalMTA would be able to conduct "truly statewide activities…outside of IOUs." It is important to present the net incremental impacts statewide.
- A "robustness" or resilience investment test could be valuable, as certain variables driving the market are outside of CalMTA control or are uncertain – for instance, if manufacturers are unable to develop a form factor for horizontal slider or casement windows or if these products are unable to be integrated with central systems. CalMTA should model these and perform a sensitivity test to know how significant they are, clarifying which of the identified risks are identified are outside of CalMTA's control.

MTI Evaluation Plan

Karen presented highlights from the Evaluation Plan (Appendix F) for this MTI, including an overview of the evaluation approach and objectives for third-party evaluation. There was no MTAB feedback.

Room Heat Pumps: Budget, Risks & Discussion

Jeff Mitchell provided a summary of the MTI Phase III budget across a 20-year period, broken down by activity (program implementation, market research, mid/upstream and downstream incentives, and program evaluation). MTAB feedback included the following:

- Looking at what NEEA would typically spend on an initiative of this scale and factoring in the relative size of the California market compared to the Northwest, the budget seems very appropriate and potentially on the low side.

Elaine Miller shared the risks and management/mitigation strategies identified in Appendix G of the MTI Plan. She asked MTAB members to discuss the MTI Plan with a focus on bright spots and possible challenges, questions of clarity for CalMTA, questions for other MTAB members, and other feedback. MTAB comments and questions included:

- While California likely has mitigation strategies in place, CalMTA should describe these in addressing the potential risk of ENERGY STAR or Inflation Reduction Act (IRA) funding being eliminated by the next presidential administration.
- As a bright spot, there are many national actors, including in the Northwest, that are very engaged with manufacturers, share the need for a milder-climate product, and are interested in partnering. This satisfies language in the Decision that refers to market activation outside of California. The more other regions are involved, the greater leverage CalMTA will have with manufacturers.
- The MTI represents "the right amount of audaciousness" by taking enough risk but with a strong rationale and a high likelihood of success.
- The MTI makes sense and has the right level of ambition. It will be exciting to have more detail on activities during the first five years after the plan is approved.
- It's important for CalMTA to differentiate an MT approach from that used in resource acquisition programs, and this plan does that. It includes multiple interventions that would not otherwise happen, and they come together with significant cost-effectiveness potential. Additionally, room heat pumps are a product that people understand and as California gets hotter, more people will want an efficient cooling option.
- Of all the ideas, this MTI fits expectations the most. It is encouraging to see manufacturer response and activities in other areas of the country. There are also strong equity benefits.
- Is the MTI dependent on federal funding?
    - Elaine noted that it was nice to leverage but not essential, and the MTI could work without it. Karen added that the ENERGY STAR labeling intervention relates to product differentiation and labeling, and there are many other

pathways to get there and achieve those strategic aims. Jeff Mitchell also pointed out that the MTI doesn't expect or depend on the U.S. Department of Energy to lock in a behavior.

- The process of developing the MTI with the advisory board has met expectations, and there is recognition of the significant work that CalMTA has put into this.
- While there remain some concerns about high electrical rates and other factors that are outside of CalMTA's control but important, this MTI has a lot of clear value.
- Margie Gardner shared appreciation for MTAB's level of involvement in developing the first MTI Plans and hope that the MTI will move forward in the proceeding/application.
- The collaborative relationships, processes, and systems built so far with manufacturers, community-based organizations (CBOs), and other interested parties seem to be productive and will benefit future initiatives.
    - Rachel Good noted that while Appendix E wasn't presented to MTAB, this MTI has significant alignment between residential electrification efforts with an equity focus, which represent a large part of the IOUs' residential electrification programs.
- In addition to generally liking the MTI, it's possible that some customers may prefer this to a central heat pump system due to high electrical rates.
- It's exciting to see the MTI come to fruition. CalMTA needs to look at the ductless heat pump/mini-split market vs. the room heat pump market to see where the individual drivers exist from a market push-pull perspective and where room heat pumps may be a better fit.

Stage 2 Scoring & Prioritization of RFI Submissions

Rick Dunn introduced ideas under consideration for future development as "Batch 3," including an overview of the scoring process and RFI scoring criteria. Jennifer Barnes of 2050 Partners and Rick then presented a summary description, potential benefits, potential challenges and MT strategies, and preliminary TSB estimates for the four top-ranked ideas: Multifunction Heat Pumps, BPS Acceleration, VFD on all pumps & fans >10 HP, and Efficient Streetlighting (previously in Phase II development but paused by CalMTA).

Rick and Jennifer then introduced an interactive activity in which MTAB members could ask questions about each potential idea in this new batch and hold up a sign reflecting their level of interest: green (excited), yellow (neutral or unsure), or red (no way). The MTAB response and important comments and questions related to each idea are shared below.

Idea Name: Multifunction HP
MTAB Sentiment: Mostly neutral or unsure
Comments/Feedback:

- ETCC developed a hot and cold storage tank for a multifunction heat pump that enabled load-shifting in both directions – is that included?

    - Jennifer replied that there are many different configurations that could be included and CalMTA has not determined what to focus on or include.
- Early versions of this technology were not particularly efficient when shifting between functions, and CalMTA should confirm this has been solved or can be.
- Strong positive support: it's worth keeping an open mind about the many different configurations. Air-to-water configurations offer the substantial benefit of using hot water as defrost or supplemental heat, therefore, from a grid perspective, consolidating to a single load and reducing use of strip heat.
- For some customers this might involve electrifying multiple parts of their homes, so CalMTA will need to explore how incentives would work or be applied.
- CalMTA should require these products to be connected so that end-users can shift loads around to the best rate period, especially if they are on an electrification rate schedule.
- If this product is deemed superior to high-efficiency heat pumps and heat pump water heaters, it may compete with these technologies and be more difficult to implement.
- There are multifunction gas heat pumps with a cooling side that are 50% more efficient than the gas water heater they replace. Would these be included?
    - Staff responded that CalMTA will work with the CPUC to assess inclusion of efficient gas technologies, looking at statewide policy.

Idea Name: BPS Acceleration
MTAB Sentiment: Mixed between excited and neutral or unsure, although slightly more neutral or unsure
Comments/Feedback:

- Another challenge that CalMTA will need to address is that no workforce is in place to support strategic energy plan development and subsequent implementation.
    - Rick agreed and laid out alternative solutions that have reduced capital investment over time.
- Most BPS will promote electrification so how can this be done in a way that minimizes the impact on the grid?
- For this to be successful, the MTI will need to reinvent how people operate buildings and position operations as a building profit center in the long-term play.
    - Rick acknowledged that the current standard is the consequence for noncompliance, but that better strategies to drive compliance are needed.

Idea Name: Efficient Streetlighting
MTAB Sentiment: Mostly "no way" with one neutral or unsure and one excited
Comments/Feedback:

- CalMTA should consider that while the technology is stable, previous work in this market has faced an unstable supply chain with significant wait time.
- Market barriers are entrenched with the jurisdictions that have to make these decisions and it's a hard market to penetrate. In an example from 10+ years ago, the LED market hadn't taken off, so savings were more substantial, and the value proposition was clearer.

Now that LEDs are the norm, savings are just claimed from the portion associated with controls.
    - Jennifer noted that older LEDs can be updated to more efficient LEDs and not all streetlights have been converted, resulting in more significant savings.
- Also from this past example, experts looked at safety standards for roadway lighting. Illumination wasn't the appropriate metric for safety, and it was more about contrast and other factors, which proved challenging from the perspective of the municipalities' investment.
- How much would a city save by switching? What's the value proposition for cities to upgrade beyond efficient LEDs?
    - Jennifer replied that this depends on multiple factors, especially their existing technology. Jeff Mitchell added that it is also dependent on whether cities own their lights, as both energy and maintenance savings are much more significant in those cases.
- SCE owns more streetlights than anyone else in the state. There's uncertainty about how much more CalMTA can add from an energy efficiency perspective in this technology area.
- It seems like this is an exciting new area with opportunities for technology improvements at the control level, and the MTI could potentially make a big impact for a relatively low investment.
- CalMTA should explore city sports lighting, as cities seem motivated on that.

Idea Name: VFD on all pumps & fans >10 HP
MTAB Sentiment: Mostly excited, two neutral or unsure
Comments/Feedback:

- Are the people who sell motors the same people who sell VFDs?
    - Rick replied that it's a little of both, and that currently it may be that the people selling the motors are seeing the opportunity and bundling it, but that this is likely one of the challenges to address early on.
- NEEA is implementing programs in this relative area, looking at VFDs with very low HP. The market is complex and active. There are different kinds of manufacturers (e.g., motor manufacturers, drive manufacturers) all approaching different components. CalMTA should also look at a federal standard for pumps that recognizes a wide range of efficiency considerations, with fans on the way to a similar standard. All these activities could be applied to commercial buildings, industrial applications, possibly even irrigation-pumping systems – so refining the focus of the MTI will be helpful.
- How does Title 24 address this? How much of this is building-related under Title 24, even for replacements, because that seems like where the opportunity really is.
    - Jeff Harris clarified that Title 24 has standards that require VFDs in a certain size pump, not this smaller size, and this is also primarily in the retrofit market. NEEA's smart pumps program goes all the way down to 1 HP, which aren't covered by replacement requirements in building codes, although thousands of them are sold every year.

CalMTA should think about expanding this MTI to capture a broader range of horsepower.

Rick then introduced a breakout group activity for MTAB members to discuss factors that make a good MTI, followed by group discussions and presentations. MTAB feedback included:

Multifunction HPs

- The technology seems not ready for widespread adoption, particularly since they are less efficient than single-function heat pump systems or heat pump water heaters.
- Unlike separate space/water heating heat pump technologies, this could reduce the need for some of the grid buildout associated with electrification and could eliminate panel upgrade needs.
- The MTI could be very complex from a contractor standpoint, especially in water heater emergency replacement situations. Many different product configurations also create complicated retrofit technologies.
- From a statewide perspective, there could be issues competing with investments in promoting heat pump water heaters and heat pump HVAC systems that are already a priority.

BPS Acceleration

- The MT play is more about addressing barriers than technology. Trying to drive uptake of BPS has been happening for a while and seems challenging to address.
- The opportunity lies in creating a business case for building decision-makers to comply or go beyond compliance to pursue upgrades that are in their best interest, with BPS as a leverage point.
- 100% compliance should not be considered a realistic baseline assumption.

Streetlights

- This is a lower-cost MTI (positive) that creates opportunities to engage local governments.
- It may be hard to convince laggards who haven't already upgraded to LEDs and there might be additional issues with the utility-city ownership model.
- The MTI is complicated and difficult.

VFDs

- In general, the MTI seems focused on overcoming barriers rather than the technology, which already exists and seems accessible. It could be a short-term play.
- Adding an MTI focused on a commercial and industrial technology is viewed positively.
- The technology is ubiquitous, has impact, and fills CalMTA portfolio gaps by serving the C&I (and maybe agricultural) segments.

Public Comment

- Richard Fennelly: The cooling sector sells defective equipment that requires condenser coil cleaning, which almost never happens. Utilities need to incentivize preventative action.

The meeting was adjourned for the day.

Day 2: Nov. 21

Welcome & Introductions

Following an induction cooking demonstration at the Food Technology Center featuring a battery-enabled 120V range, Stacey Hobart opened the meeting by welcoming attendees and reviewing the Day 2 meeting agenda. She shared updates to the MTAB conflict of interest (COI) rules. She also reviewed several updates to the MTAB charter.

Summary of Induction Cooking MTI

Elaine Miller provided an overview of the Induction Cooking MTI. MTAB comments included the following:

- One outcome of advocating for an ENERGY STAR 2.0 specification for electric cooking could also be mitigating bill impacts through increased efficiency – potentially addressing bill impacts through a different path than rate design.
- ENERGY STAR efficient radiant products are included in the MTI but not addressed in most of the interventions. How does CalMTA envision radiant products fitting into the MTI activities and does its inclusion impact market acceptance if induction cooking is assumed to provide a superior end-user experience?
    - Elaine clarified that while the product definition includes ENERGY STAR-certified radiant products, almost all MTI interventions are focused exclusively on induction. No budget is allocated specifically to radiant products, but some interventions may increase adoption of efficient radiant products along with induction models.
    - Jeff Mitchell added that the MTI seeks to raise the efficiency of the product category, starting at the top (induction) but also wanting to raise the floor (efficient radiant). ENERGY STAR-certified radiant products are included in the product definition because some existing products are as efficient or more efficient than some induction products, but if the MTI achieves its desired market impact, radiant products will likely fall off.
- Radiant cooktops are about half the cost of comparable induction products and the radiant cooking experience has gotten better, so they could play a role in moving the market to efficient all-electric cooking, especially for consumers concerned about

affordability. This could also motivate induction manufacturers to lower the cost of their products to be competitive.

- As a counterpoint, switching from gas cooking to electric is already a jump for some consumers and past negative experiences may make consumers opposed to adopting electric radiant or deter them from adopting electric cooking products at all.
    - Looking toward ENERGY STAR 2.0, SCE helped develop the ENERGY STAR specification for commercial electric cooking products and learned there two ways to elevate induction in the specification: (1) raising overall efficiency standards and (2) including an idle rate, which effectively eliminates all other electric cooking options.

Induction Cooking: Total System Benefits & Cost-Effectiveness

Note: Throughout the discussion below, MTAB members raised questions that prompted the CalMTA team to revisit their models and analysis. The update to the material shared at this MTAB meeting is described in a supplemental memo added to the packet for this meeting located at: https://calmta.org/market-transformation-advisory-board-mtab-meeting-11-20-21-24/. In addition, sensitivity analysis was conducted to determine how key assumptions would affect the modeling for the Induction Cooking MTI and can be found in the Appendix B of this plan linked at: https://calmta.org/resources-and-reports/induction-cooking-mti-plan/.

Karen Horkitz shared an overview of the TSB and cost-effectiveness numbers for the Induction Cooking MTI. Gouri Mishra then presented estimated adoption (both baseline/naturally occurring adoption, or BMA, and adoption in the presence of the MTI, or TMA), including separate models for existing households and newly built housing units, as well as the inputs, assumptions, and methodology used to develop them. MTAB feedback included:

- It seems like the forecast shows radiant has a larger cumulative market share even in the presence of the MTI. Is that accurate and what is the reasoning?
    - Gouri explained that accelerated retirement of gas cooking products drives up an increased cumulative market share for all electric cooking products. Radiant will increase from a low percentage of the market share today to a very high one before induction starts to dominate the market. Looking at how many people purchase induction or radiant in a given year (vs. total market share), radiant is a much smaller percentage.
- In looking at the cumulative adoption forecast, CalMTA should also consider the diffusion of innovation curve: the "early majority" may be adopting induction, but "laggards" may be price-driven and opt for efficient radiant products first.
- As increased adoption of efficient electric cooking drives positive GHG impacts but negative grid impacts, it may be worth conducting a sensitivity analysis to model the TSB for scenarios with different ratios of radiant vs. induction products.
- How current is the data used to estimate the electrical loads for cooking products? It's likely that consumer cooking behavior has changed since the increase in home

cooking during the height of the COVID pandemic and cooking behavior is likely to vary widely, so the operating cost for consumers who cook a lot will look very different than for those who cook very little.
    - Jeff Mitchell noted that CalMTA used EPRI load shapes for this, which were published in 2019. Gouri added that EIA RECS is trying to ascertain changes in cooking behavior after the pandemic which will be reflected in the next iteration, scheduled for completion in the next year or two.
- The Northwest has a home energy use measurement data set that is actual load shapes and includes some cooking load shapes. This data is public at the hourly level.

Matt Wisnefske then introduced a presentation of cost-effectiveness and results for the Induction Cooking MTI, including TSB and various cost-effectiveness tests. He presented technology definition inputs and program regulatory. MTAB comments and questions included:

- In the scenario in which a gas burner range (counterfactual equipment) is replaced with an efficient induction or ENERGY STAR radiant range, does the first-year incremental measure cost include electric panel upgrades for service?
    - Matt replied that non-product assumptions were not modeled because the wide variance made this difficult to do accurately.
- Feedback emphasized the importance of modeling this, since electrical upgrade charges should be factored into incremental cost. This should also differentiate between a simple panel upgrade and upgrading to 240V.
- In California, electrification measures include estimates of infrastructure upgrades, although in some cases those costs are separated out.
    - Andre Salvidar of SCE (subject matter expert) shared that the 2019 version of the CPUC's fuel substitution technical guide says that the measured technology cost may exclude any additional upgrades required to increase the building's total electric or natural gas load. If those additional upgrades are included for the purpose of calculating the incremental measure cost, work papers should explain why. However, the necessity of such upgrades is specific to individual buildings and the cumulative load of installed technologies in the building and therefore in most cases should not be attributed entirely to a single measure.
- Do calculations assume the same cost for an induction and an ENERGY STAR radiant range? Will the inclusion of ENERGY STAR radiant products in the calculations skew some of the numbers if interventions are focused on induction products?
    - Matt clarified that there was a significant delta between products and CalMTA developed a reasonable median product price estimate after looking at a wide range of products sold by California retailers.
- There was discussion about whether the initiative is focused on induction cooking or efficient electric cooking including induction and ENERGY STAR radiant.

- How is CalMTA weighting replacement by induction vs. ENERGY STAR radiant products over time and do these scenarios use the same adoption curves Gouri presented? The same weightings that change over time would also affect the calculation of costs and benefits over time because there's a different incremental cost and different benefits calculation between the two technologies.
    - Matt replied that as with other MTIs, CalMTA assumed reductions in the relative incremental measure cost year-over-year using a learning-curve-based analysis. As induction products, especially those with a battery, become more common, economies of scale and additional market pressure will reduce the relative cost compared to the baseline. The numbers in the replacement scenario table are the first-year incremental measure costs, which are the highest they will be during the lifecycle of the MTI.
- Even though the MTI is focused on increasing induction adoption, it is developed as an initiative targeting increased adoption of efficient electric cooking, with induction as one primary way to reach high levels of efficient electric adoption because of its superior cooking experience. Induction is a pathway to getting more people to switch from gas cooking to electric, but the ultimate endpoint is efficient electric cooking.
- Given the substantial interest in building new accessary dwelling units (ADUs) in California, it may be easier to promote induction for these units as they would not face the challenge of infrastructure upgrades. Has CalMTA factored this in?
    - Matt noted that CalMTA has not isolated this segment specifically but that it could factor into adoption of smaller 24-inch models. Karen added that CalMTA will use data collection to true-up the forecast every year, so if we see that ADUs are a niche, specific strategies could be deployed to address that in the model. These units will also be captured in our market share calculations from an evaluation perspective.
- Would products with less than four hobs be included? The statewide fuel substitution workpaper currently requires four or five hobs.
    - Jeff Mitchell said that CalMTA is using the U.S. DOE definition right now but will look at the statewide workpaper to ensure alignment.
- CalMTA forecasted incremental price reductions over time, but for the battery-equipped models there's a very high cost associated with the battery itself. Has CalMTA used other forecasts for decrease in lithium-ion battery costs? If product cost is driven by batteries, the price of those is likely to go down quickly as EV adoption goes up.
    - Gouri stated that CalMTA did not look at the battery itself but referenced EV price trends, taking the revolutionary learning rate from the DOE study and applying it to the 120V model. Karen noted that CalMTA will look at this in finalizing the cost-effectiveness estimates.
- The MTI seems more frontloaded in cost than the Room Heat Pump MTI is, so showing the lower discount rate with the societal cost test would be helpful.

- Regarding discount rates, the number that is now in the Avoided Cost Calculator was adopted in 2024. The weighted average cost of capital for 2025 will be a bit lower, but not dramatically.
- With the assumption that induction cooking offers a superior cooking process, CalMTA should ensure that forecasts capture the consumers who may prefer it over gas, regardless of price parity.
    - Karen confirmed that those questions were included in CalMTA's baseline market characterization surveys and as a potential market progress indicator, and that the MTI will continue capturing preferences as part of market monitoring.
- How will CalMTA measure the MTI's ability to win hearts and minds and when it happens?
    - Karen replied that CalMTA can reference responses from the market characterization work about general perception, favorability, likelihood of purchase, etc. and compare with future stages. The third-party evaluator will also have good ideas for how to clearly identify this.
- Did CalMTA use the same baseline market characterization survey for the Room Heat Pumps and Induction Cooking MTIs?
    - Karen said that CalMTA used one survey to cover both products, with the same sample. Sampling needs to reflect the market, so for these two products it made sense to use the same one but for future MTIs it may be different.
- How is CalMTA tracking equity for this beyond inclusion in other California programs, specifically capturing hearts and minds in ESJ communities?
    - Karen replied that this information is in Appendix F of the MTI Plan and varies by metric. For instance, the consumer survey was broken out by low-income and non-low-income respondents and anything tracked by survey will follow this approach. For metrics related to inclusion of the measure in programs, CalMTA will track this at the statewide level so that will include equity programs. The metric tracking the share of products stocked in stores will specifically include those in identified ESJ communities and will include analysis of product price points.
- If CalMTA is really looking at all efficient electric cooking products, the MTI should include strategies to reduce gas replacement costs to get to parity.
- Consumers would have two choices: (1) between gas and induction and (2) between 120V and 240V models.
    - Jeff Mitchell noted the significant grid benefit of the 120V model, so CalMTA may shift strategy more toward that product if the price goes down quickly.

Public Comment

- Carol Yin: CalMTA uses the term "limited and low income" interchangeably in MTI Plans and it would be good to define these in terms of what programs they will be impacting and how savings will be claimed/attributed.
- Weldon Kennedy: Regarding the need for an analysis of the total cost of adopting induction products that includes panel and wiring upgrades, it would be good if CalMTA could publish this to show what parity really looks like as well as the cost per household or building.

Induction Cooking: Budget, Risks & Discussion

Jeff Mitchell provided a summary of the MTI Phase III budget across a 20-year period, broken down by activity (program implementation, market research, mid/upstream and downstream incentives, and program evaluation). MTAB questions included:

- Since no downstream incentives are included in this budget, how does CalMTA plan to engage or support programs serving ESJ community members?
    - Jeff Mitchell noted that the MTI strategy can shift over time, so there may be future downstream incentives offered if they are needed to reach these customers. Incentives paid to property owners/managers or builders may technically be downstream incentives but are categorized in the midstream budget. Elaine added that the tech challenge will help CalMTA understand manufacturers' willingness to drive down prices to increase affordability to all customers.

Elaine shared the risks and management/mitigation strategies identified in Appendix G of the MTI Plan. MTAB feedback included:

- How significant is consumer understanding of the health impacts of gas cooking when looking at risks?
    - Elaine confirmed this is a significant risk but there is still much to learn about that specific barrier. Consumer surveys completed at Chefluencer events indicate that health impacts are one of the greatest motivations to switch.
- The health impacts may be more persuasive for residents in smaller multifamily buildings and ESJ community members.
- For high-pollution communities where poor air quality is driven by many external factors, it can be easy to deprioritize switching cooking methods. CalMTA should be sure to address this in the messaging or it will come off as tone deaf.
    - Elaine explained that having a local champion who can communicate in the regional language is important. CalMTA will also need to address consumer resistance regarding the focus on gas stoves in proportion to other issues in ESJ communities, potentially by bundling any promotion of induction cooking with information about weatherization or positioning basic energy efficiency as a first step. She confirmed that before deploying any MTI marketing, CalMTA

will research and test messaging to make sure it is culturally sensitive and responds to community priorities.

- Messaging needs to be tailored to specific segments and audience priorities if the MTI is to be successful in changing hearts and minds.
- The Green & Healthy Homes Initiative partnered with local hospitals to access data on community factors like the rate of childhood asthma. Are there indicators CalMTA could look at to monitor health impacts?
    - Elaine replied that these indicators are not fully identified yet but are part of the MTI's planned trajectory.
- Regarding the need for rate optimization: Special rates already exist for income-qualified customers, but many are unaware of them and others may not be on the correct rate. The major IOUs have electrification-rate schedules that vary in structure and have very different requirements, but getting efficient electric cooking alone would not qualify a customer for any of the available options. No time-of-use (TOU) periods are convenient for cooking, and some have a higher fixed charge, so consumer uptake varies. It may not be financially advantageous for smaller users to be on these rates. At the end of the day California IOU electrical rates are very high and rate design alone will not solve this.
    - Jeff Mitchell clarified that the MTI Plans use "electrification rates" as a catch-all term designed to capture issues related to the high cost of electricity and bill impacts. CalMTA's ability to share real-world use cases and insight could be beneficial to better rate design. Sometimes policymakers who want to see electrification are disconnected from the people who face operating costs.
- While bill impacts are significant for electrification overall, they are less significant for cooking. The operating cost difference between a gas range and an electric range is nominal on a monthly basis and many consumers would be willing to look beyond that if they love their electric stove. The bill impact of switching to electrical cooking products is not necessarily the major challenge in this market.
- Before finalizing estimates of potential bill impacts and operating costs, it would be good to have greater insight into true usage patterns related to cooking, ensuring any estimates of cooking behavior used in CalMTA's modeling are accurate and current.

Stacey asked MTAB members to discuss the Induction Cooking MTI Plan with a focus on bright spots and possible challenges, questions of clarity for CalMTA, questions for other MTAB members, and other feedback. MTAB comments and questions included:

- CalMTA should be clearer about the goal for this MTI. Is it targeting (1) efficient electrification of cooking or (2) widespread adoption of induction as part of the overall market, with induction as a tool with which to electrify? The presentation sounds like the latter, but the documents are a little ambiguous and read more like the former. Appendix B is not ambiguous and seems very much focused on the former, which is the electrification of cooking.

- California transitioned to TSB in order to make fuel-switching work more feasible and palatable – it makes sense as a public benefit. The question is how much of the MTI goals are achieved through adoption of efficient radiant products. Modeling multiple scenarios and doing some sensitivity analysis may be beneficial.
- If the MTI pushes electric radiant products at all, is there the risk of backlash due to the inferior performance and low consumer satisfaction that could set electrification of cooking back overall?
- The Bay Area Air Quality Management District already requires electric replacement after furnace burnout, and similar requirements for cooking won't be far behind. If CalMTA is advocating for recommending or forcing an electric replacement in these scenarios, induction should be the only option.
- The 120V model with a battery is exciting, as the ability to cook with power out is huge. The 240V products are less exciting due to concerns about panel upgrades, expensive installation, and bill impacts.
- In touting the ability to cook during power outages, CalMTA should be careful about clarifying the negative health impacts of cooking without an exhaust fan or range hood, even with electric cooking products.
- The focus on 120V battery-equipped products seems like a good way to promote induction and an induction-only initiative seems like a good fit for MT. Is an MTI more broadly focused on efficient electric cooking better suited for the energy efficiency portfolio?

Stacey asked the MTAB members how much the lack of cost-effectiveness for the Induction Cooking MTI was an issue for them. The responses included:

- Regarding the preliminary total resource cost (TRC) of the MTI, the 0.9 TRC is a little bit disappointing, and the Decision should be reviewed to ensure a TRC of <1.0 is acceptable. Initially, really liked the addition of the battery-enabled products, but now looks more like pushing electrification. If it was focused fully on induction, there's an opportunity for market transformation. I need to read more but am more hesitant about this MTI at this time.
- The societal cost test (SCT) value is cost-effective, and the MTI addresses many societal costs and benefits beyond energy savings. While a TRC of 1.0 would be preferable, this kind of situation is why California has adopted other tests. Looking more closely at incremental measure costs or economies of scale associated with decrease in battery prices may result in a higher TRC. I just wish it was better.
- Guidance appears to be that all MTIs should strive to be cost-effective, but the only requirement is at the portfolio level. However, the Decision emphasizes the importance of individual cost-effectiveness for first MTIs and the CPUC is very interested in TRC vs. other cost-effectiveness tests.
- The Oregon Public Utilities Commission considers benefits you can't measure are just as important as the ones you can. CalMTA should apply its best judgement for benefits that could add value if the quantifiable metrics aren't quite sufficient and

make an argument for the significant, but difficult to quantify, health and safety benefits not captured in TRC.
    - Karen confirmed that the modeling team would refine the TRC estimate for the Induction Cooking MTI based on factors that include: (1) the addition of equipment installation/infrastructure costs; (2) factoring in the probable decline in the cost of batteries and assumption that the current 120V battery-equipped product may not be the best basis for cost modeling, as it may remain a niche custom-build product and not one that would be adopted at scale; and (3) factoring in data about statewide benefits outside of IOU service territories.
- The CPUC was very clear on not establishing a cost-effectiveness threshold for each MTI but rather wanting the portfolio to be managed with an eye toward cost-effectiveness. The CPUC uses SCT only as information and not as a basis for approving programs (which is TRC and PAC only). With the Room Heat Pump MTI's TRC factored in, CalMTA is in a good place at the portfolio level but should be thoughtful about how to present a MTI <1.0 – acknowledging it's not optimal and being clear on the many factors going into that. This is particularly important since California is used to resource acquisition programs where benefits are accrued fairly quickly, versus MT programs which yield significant benefits but not immediately.
- While there was previously a requirement that each IOU's energy efficiency portfolio be cost-effective, when this was segmented in 2021 to include market support and equity programs, only resource acquisition programs at the portfolio level were expected to be cost-effective and not all reach a TRC of 1.0.
- Induction cooking represents an on-peak-load measure that doesn't immediately pay the customer back but also yields significant other benefits, so the MTI needs a story with these various scenarios built out to show the foreseeable negative effects if the state doesn't try to address induction cooking right now. For limited-income customers, benefits messaging needs to overpower concerns about building an expensive stove that will drive usage up during peak times.
- If modeling assumptions are based on the premium model cost, CalMTA may not be capturing the real market and may want to make sure prevalence of mass market products, such as smaller models with smaller batteries, are factored in.

Application Overview

Lynette described the process for and contents of the CPUC application Pacific Gas & Electric will be filing on behalf of CalMTA, which will include the Room Heat Pump and Induction Cooking MTI Plans as well as an estimated five-year implementation budget and request for a process for future approval of new MTI Plans. MTAB feedback included:

- From the perspective of ensuring that program costs are being spent efficiently, TRC is a significant issue, but hearing about the MTI development process and all benefits of the technologies is also important. CalMTA should tell the story of how this work

benefits California. Statewide numbers are relevant in contextualizing, but CalMTA should keep in mind that IOU ratepayer dollars and benefits are always top of mind.
- Some reviewers value the opportunity to access and review Excel work papers, so CalMTA should have those ready with live cells supporting cost-effectiveness calculations.
- CalMTA may face expectations that these are the two MTIs that are the "best" of all possible ideas, so clarifying the frontrunner criteria and speaking to long-term portfolio plans will provide context and build confidence.
- CalMTA should clarify that these MTIs do not overlap with or duplicate existing program efforts but rather add value to the external program landscape.
- It is important to clearly state in the application why MT is different and provides added value, and that its activities cannot simply be rolled into other efforts.
- The narrative should tell the story that MT needs to extend itself more than resource acquisition programs and that these examples prove that principle. If all outcomes are accomplished after five years, not enough of a risk has been taken.
- Public comments on the application can be submitted directly to the docket and are included for consideration. Formal motions are submitted as evidentiary material and are weighted more heavily.

Public Comment (from the online public comment form)

Jayson Martin: "Regarding the MTAB meeting, I am pleased to report that the recent session was quite productive, fostering insightful discussions and collaborative efforts among participants. The exchange of ideas was particularly enriching, and I believe it will significantly contribute to our ongoing electrification initiatives."

Wrap-Up & 2025 Meeting Plans

Stacey shared a few closing items, including formation of the eight-member Equity Sounding Board and process for MTAB members to submit comments about the two MTI Plans prior to their finalization. She asked MTAB members to share their relative feelings about the deadline for comment form submittals and ask any questions about the process for resolution.

Stacey presented the initial plan for 2025 MTAB meeting dates and alignment with quarterly activity report updates.

The meeting was adjourned.

Attendees

MTAB Members

1. Karina Camacho, Inland Regional Energy Network
2. Cyane Dandridge, SEI
3. Hayley Goodson, The Utility Reform Network
4. Fred Gordon, Energy Trust of Oregon

5. Jeff Harris, Northwest Energy Efficiency Alliance
6. Randall Higa, Southern California Edison
7. Peter Miller, Natural Resources Defense Council
8. Christie Torok, California Public Utilities Commission (virtual)
9. Ky-An Tran, California Public Advocates

Participating Staff & Consultants

1. Taqua Ammar, CalMTA/Resource Innovations
2. Jennifer Barnes, 2050 Partners
3. Lynette Curthoys, CalMTA/Resource Innovations
4. Rick Dunn, CalMTA/Resource Innovations
5. Margie Gardiner, CalMTA/Resource Innovations (virtual)
6. Rachel Good, CalMTA/Resource Innovations
7. Karen Horkitz, consultant to CalMTA
8. Stacey Hobart, CalMTA/Resource Innovations
9. Elaine Miller, CalMTA/Resource Innovations
10. Gouri Mishra, Cadmus (virtual)
11. Jeff Mitchell, CalMTA/Resource Innovations
12. Nils Strindberg, CalMTA/Resource Innovations
13. Matt Wisnefske, Cadmus

Guests

1. Pradeep Bansal, Energy Solutions
2. Rob Bohn, PG&E
3. Courtney Dilly, SMUD
4. Richard Fennelly, CoilPod LLC
5. Natalie Flores-Rios, SCE
6. Mina Jimenez, Proteus, Inc.
7. Debra Little, AjO
8. Jayson Martin, R&B Wholesale Distributors
9. Savannah McLaughlin, CPUC
10. Emily Pelstring, CPUC
11. Andre Saldivar, SCE (subject matter expert on induction)
12. Steve Schiller, Schiller Consulting
13. Eduardo Uranga
14. Yanda Zhang, ZYD Energy