



11/21/24

# Market Transformation Advisory Board (MTAB) Meeting

CaIMTA is a program of the  
California Public Utilities  
Commission and is administered by  
Resource Innovations

# Agenda Day 2: Nov. 21



Time	Agenda Item	Presenter
9:00 a.m.	<b>9. Induction Cooking Demo</b>	
9:40 a.m.	<b>10. Welcome &amp; Agenda</b>	Stacey Hobart
9:45 a.m.	<b>11. Charter &amp; COI Update Review</b>	Stacey Hobart
9:50 a.m.	<b>12. Summary of Induction Cooking MTI</b>	Elaine Miller
10:20 p.m.	<b>13. Part 1: Induction Cooking: Total System Benefits &amp; CE</b>	Karen Horkitz, Matthew Wisnefske & Priya Sathe
11 a.m.	<i>Break (15 min)</i>	
11:15 a.m.	<b>14. Part 2: Induction Cooking: Total System Benefits &amp; CE</b>	Karen Horkitz, Matthew Wisnefske & Priya Sathe
12:05 p.m.	<b>15. Public Comment</b>	

# Agenda Day 2: Nov. 21



Time	Agenda Item	Presenter
12:20 p.m.	<i>Lunch (45 min)</i>	
1:05 p.m.	<b>16. Induction Cooking: Budget, Risks &amp; Discussion</b>	Jeff Mitchell & Elaine Miller
2:15 p.m.	<i>Break (15 min)</i>	
2:30 p.m.	<b>17. Application Overview</b>	Lynette Curthoys
3:00 p.m.	<b>18. Public Comment</b>	
3:15 p.m.	<b>19. Wrap-up &amp; 2025 Meeting Plans</b>	Stacey Hobart
3:30 p.m.	<i>Adjourn</i>	

***Phone participants will be muted throughout the meeting and can share during the public comment period.***

# Safety Minute



AED & First Aid Kit near Smart Energy Experience room



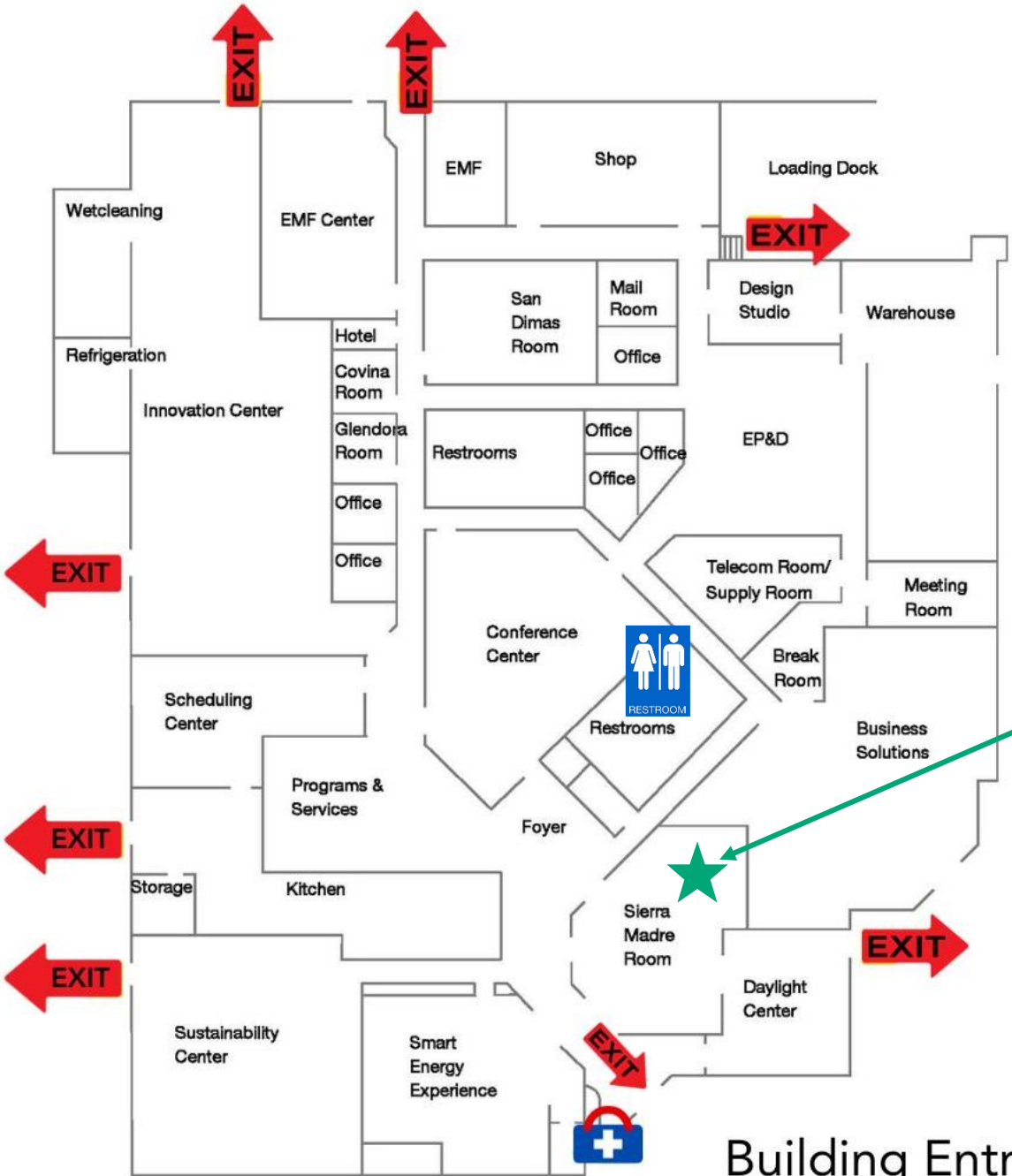
Exits on all sides of the building



Evacuation Gathering Destination



Restrooms



You are here



Building Entrance



# 11 Charter & COI Update Review

Stacey Hobart  
Principal of Engagement & Communications



# MTAB COI rules updates



- 1 Added the following definition of COI to the MTAB COI Rules (Attachment B to Charter):

*A conflict of interest shall mean any financial interest or contractual relationship that may impair the ability of an MTAB member to be impartial and unbiased in fulfilling the MTAB member's duties identified in the MTAB charter.*

- 2 Enhanced MTAB member recusal requirements to link the “competitive interest” policy to the definition of COI

# MTAB COI rules updates



- 3 Remind MTAB members of recusal requirements prior to Phase II discussions and document recusals in the meeting notes
- 4 Review and assess the MTAB COI Policy after the first MTI Plans are approved by the CPUC for implementation and prior to release of the request for proposals for implementation and evaluation firms

# Other MTAB charter updates

**1** MTAB members who are eligible for compensation will receive additional compensation to account for the time needed to review these documents:

- Advancement Plan Review: estimated two hours of effort.

  - Maximum stipend = \$400.00

- MTI Plan Review: estimated six hours of effort.

  - Maximum stipend = \$1,200

**2** Invoicing should include list of reviewed plans, hours spent, and specified stipend amount





12

# Induction Cooking: MTI Plan Summary



Elaine Miller, Senior Strategy  
Manager

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## Process slide: where we are today & why



-  Complete
-  Current status

- Permanently-installed, consumer-grade cooktops and ranges
- All induction and ENERGY STAR certified radiant
- Includes battery-equipped induction cooking products
- Does not include portable induction cooktops



# Induction cooking market summary



Target market	Existing and newly-constructed SF and MF households
Who makes the product?	All major kitchen appliance manufacturers as well as several new start-up firms focused on technology innovations and battery-equipped products
Who buys the product?	Homeowners, developers and builders, property managers or building owners, and Program Administrators (PAs)
Who uses the product?	Residential consumers who use a cooktop or range
How is product sold?	Online through e-commerce websites, in stores (big box as well as independent appliance retailers), and direct from manufacturer
Who influences purchase decision?	Builders, remodel contractors, kitchen designers, retailers and their sales staff, and property managers all influence

# Barriers

California homes have primarily been built for gas cooking (120V)

Bill impacts of moving from gas to electric cooking

Low consumer awareness of induction and its benefits

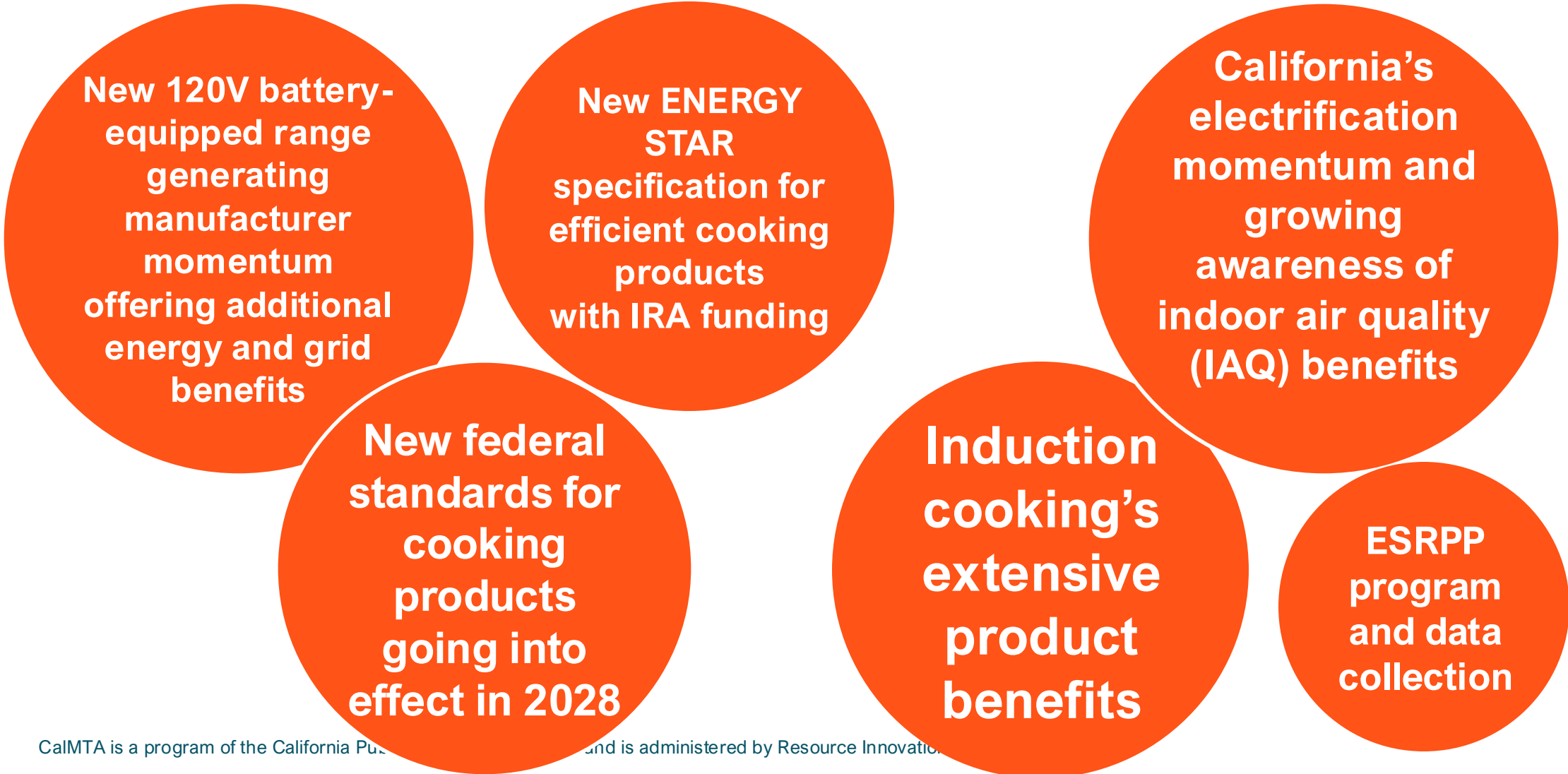
Cultural and consumer attachment to gas cooking

No affordable 120V electric options with same cooking output as 240V

Concerns about durability

Higher product and installation costs

Need for new cookware when converting to induction (for some)





# Theory of market change

## Interventions

## Outcomes

Manufacturer engagement, demand aggregation for 120V, builder engagement on 240V, retail promotion of 240V, awareness building, policy engagement

- Manufacturers respond with plans for 120V
- Builders change plans
- Awareness grows
- Programs include as measure
- Retailers stock and sell more affordable products

Program inclusion, more awareness building, more retail availability, more policy engagement, advocate for ENERGY STAR 2.0

- Availability of 120V grows
- Electrification-enabling rates grow
- Use by builders grows
- Average price declines
- EPA develops V2.0 of ENERGY STAR spec
- Market share grows

More program inclusion, more retailer engagement, more awareness building, especially on 120V battery product and more policy engagement, especially to support CARB regulation

- Consumers utilize 120V for increased energy benefits
- CARB sets zero emissions appliance standards
- Market share reaches majority of sales

# Interventions: MTI primary market role



- **I1:** Influence manufacturer development of affordable, 120V battery-equipped ranges that fill the product availability gap for CA electrical infrastructure and multifamily market needs
- **I4:** Engage influential builders, remodelers, and property management firms through incentives or bulk purchase pricing coupled
- **I5:** Build consumer acceptance and awareness through marketing and education campaigns on the benefits of induction cooking
- **I7:** Engage ENERGY STAR specification development to support continued product differentiation and increased energy efficiency stringency
- **I8:** Deploy midstream stocking incentives that motivate retailers to target ESJ communities with more affordable induction products

- **I2:** Support advancement of codes, policies, standards, and practices that increase consumer preference for electric cooking and reduce costs associated with installing electric cooking
- **I3:** Support advancement of electrification-enabling rate structures to mitigate the bill impacts of moving from gas to electric cooking
- **I6:** Support inclusion of affordable induction cooking products in California programs and the rollout of IRA funding



# 13 Induction Cooking: Evaluation Plan & Cost-Effectiveness

Karen Horkitz  
Lead, Market Research and Evaluation

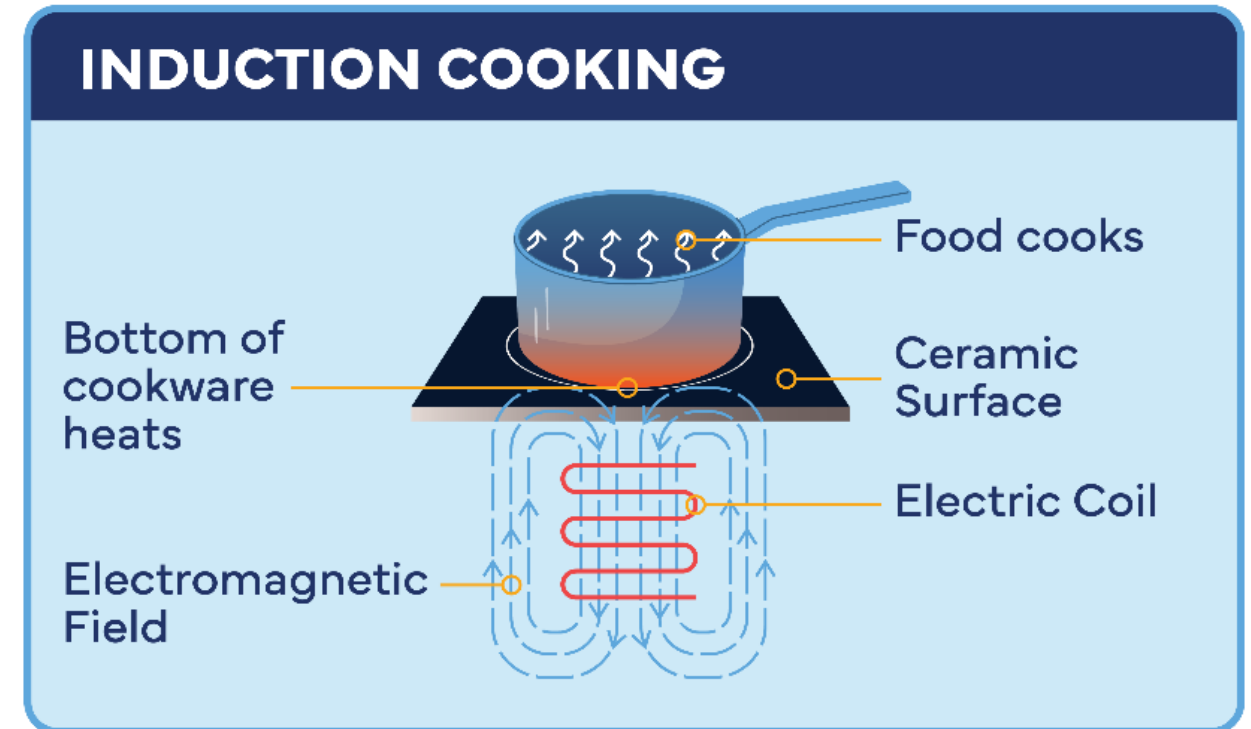
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## Induction Cooking

- TSB and cost-effectiveness overview
- Modeling overview
- Market adoption forecast
- Cost-effectiveness modeling
- Evaluation



# TSB and cost-effectiveness 2024 - 2045

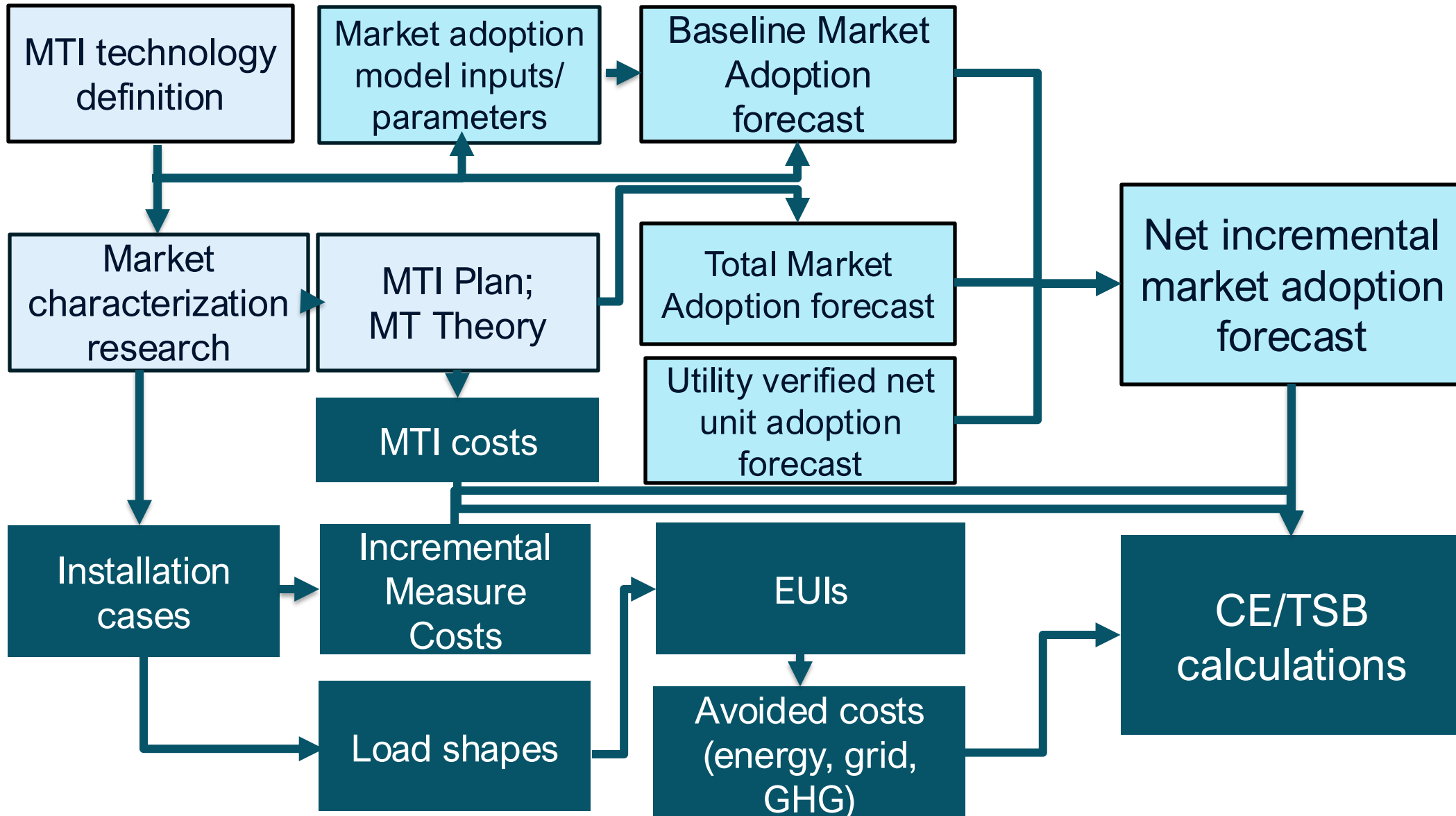


Test	TSB – Energy	TSB – Grid	TSB – GHG	TSB – Total
TRC	\$ 29M	(\$ 147M)	\$ 679M	\$ 561M
SCT	\$ 72M	(\$ 346M)	\$ 2,772M	\$ 2,499M

	TRC Ratio	PAC Ratio	SCT Ratio
With Negative IMCs	0.90	14.99	2.58
With Negative IMCs set to Zero	0.87	14.99	2.48



# Forecasting approach





# Market Adoption Forecast

Gouri Shankar Mishra  
Senior Associate, Cadmus

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## Baseline Market Adoption (BMA)

Expected “naturally occurring” market adoption. Considers current and expected market, regulatory and technological trends  
Counterfactual adoption in absence of the MTI

## Total Market Adoption (TMA)

Actual market uptake  
Includes the additional adoption forecasted to result from strategic interventions described in this MTI plan

## Resource Acquisition (RA) Verified Units

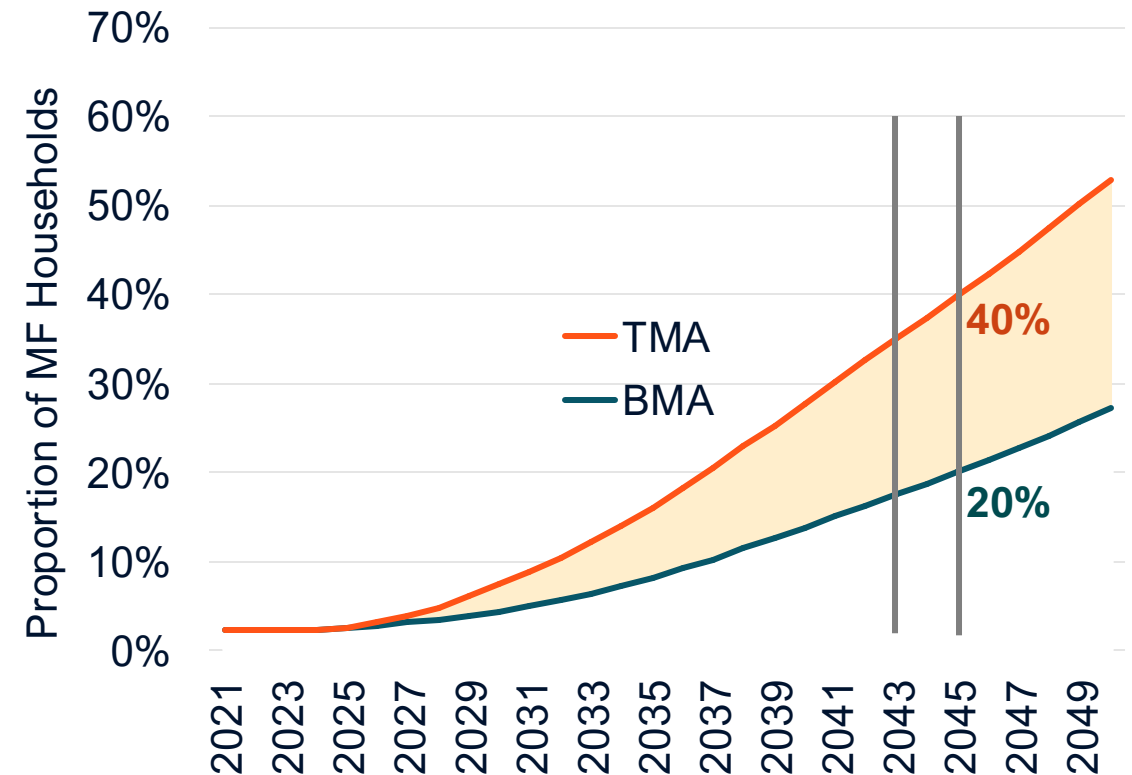
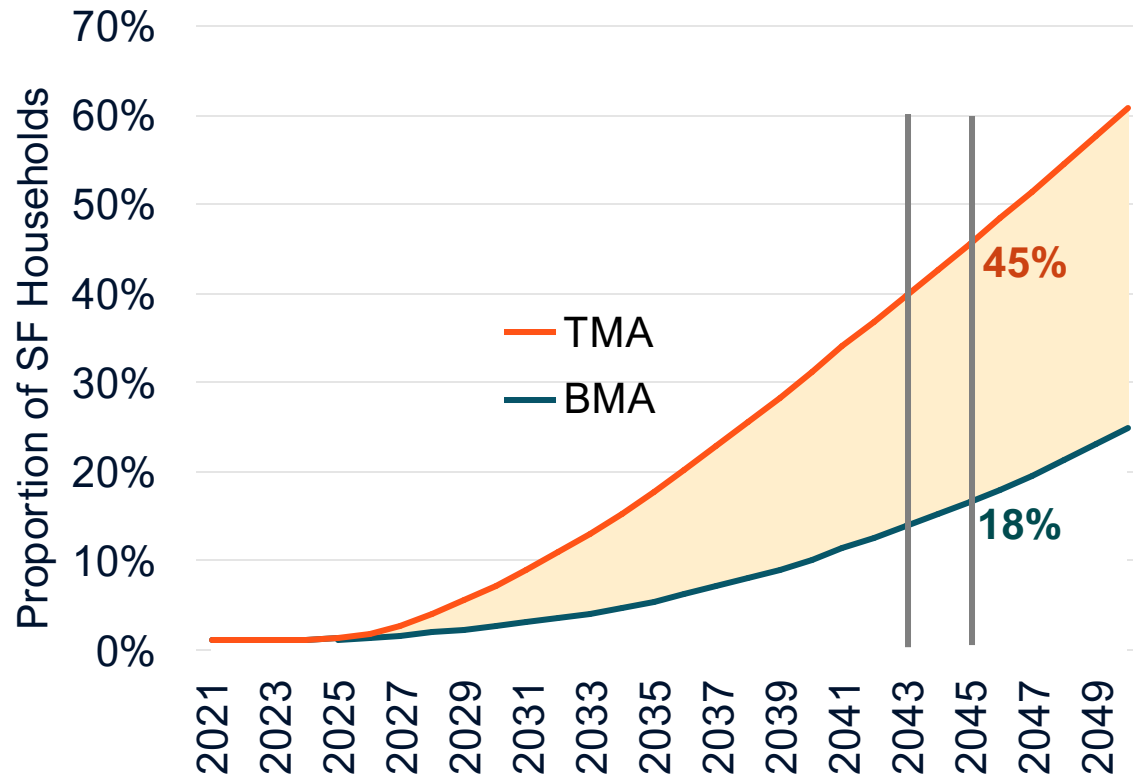
Estimated verified adoption associated with RA program claims reported in CEDARS

## Net Incremental Adoption

$TMA - BMA - RA \text{ Verified Units}$

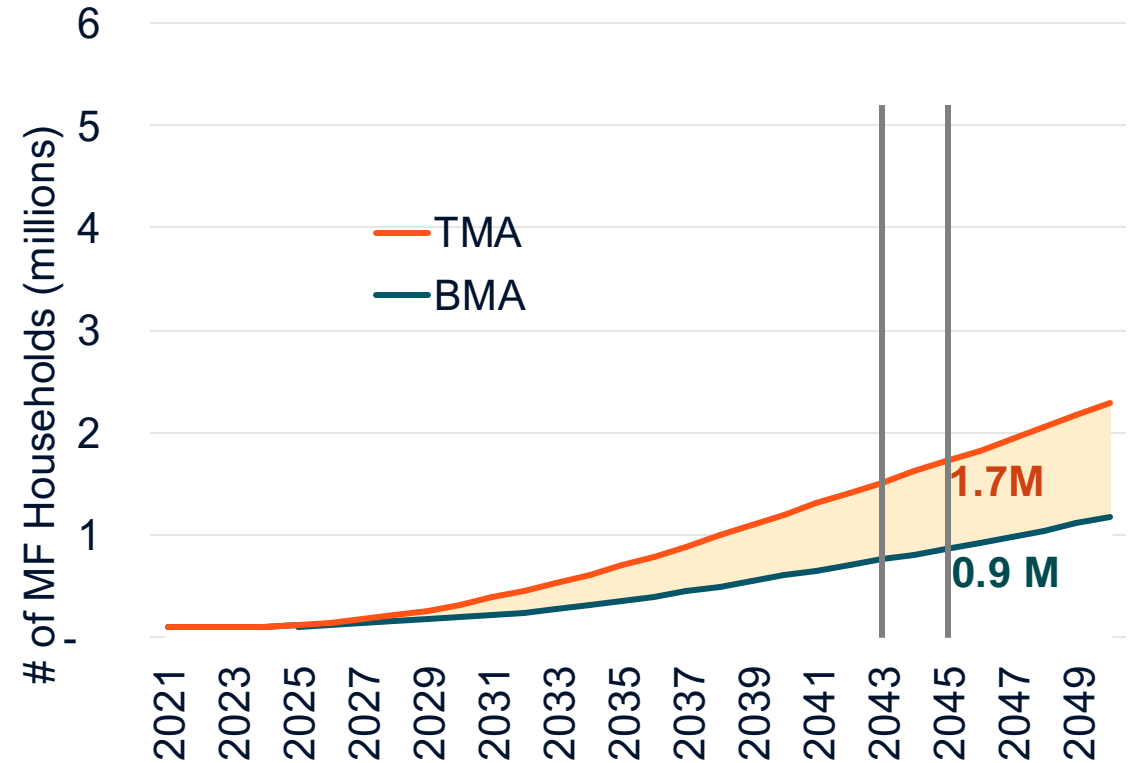
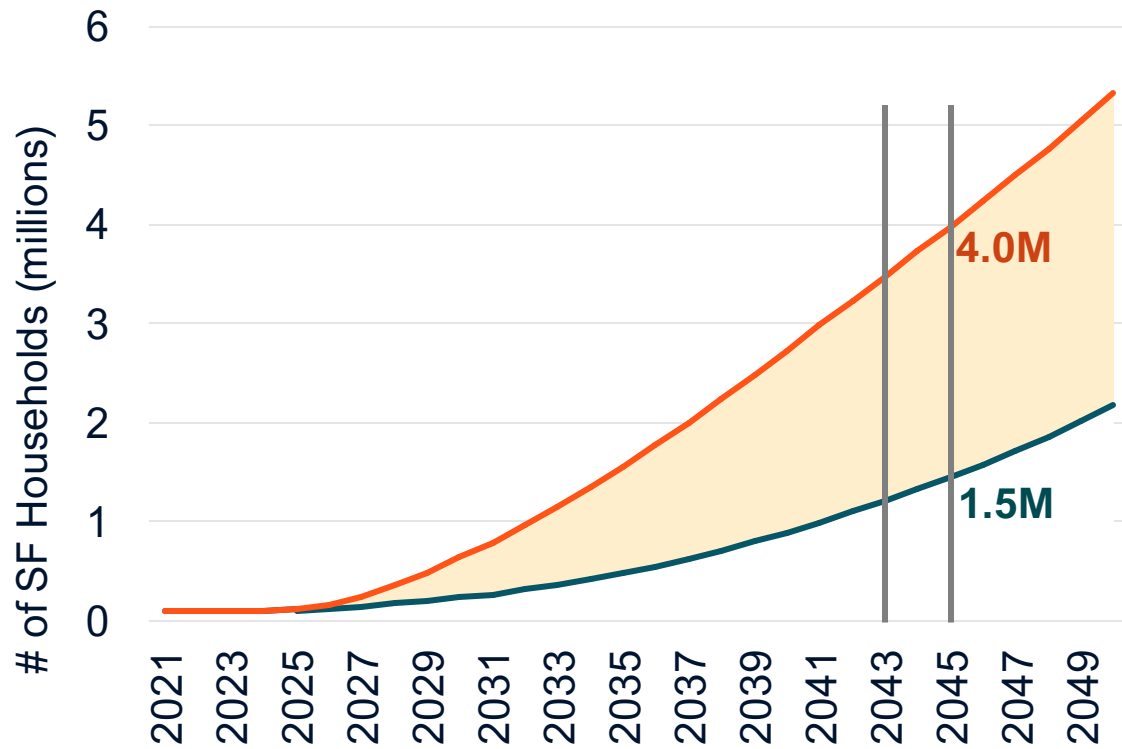
# Estimated adoption

## Proportion of existing households estimated to adopt induction and ENERGY STAR certified cooking appliances



# Estimated adoption

**Cumulative # of existing households estimated to adopt induction and ENERGY STAR certified radiant (thousands)**



# Market adoption forecast

**Net incremental adoption = TMA – BMA – verified RA units**

	Units of Cooking Products (thousands)					
	TMA	BMA	RA Program Verified	Net Incremental	Non-IOU	Net Incremental net of non-IOU
Single-family	3,883	1,357	191	2,335	597	1,738
Multifamily	1,621	766	54	802	205	597
New Construction	421	255		166	42	124
<b>Total</b>	<b>5,926</b>	<b>2,378</b>	<b>245</b>	<b>3,303</b>	<b>844</b>	<b>2,459</b>

Forecast Period: 2024-2045



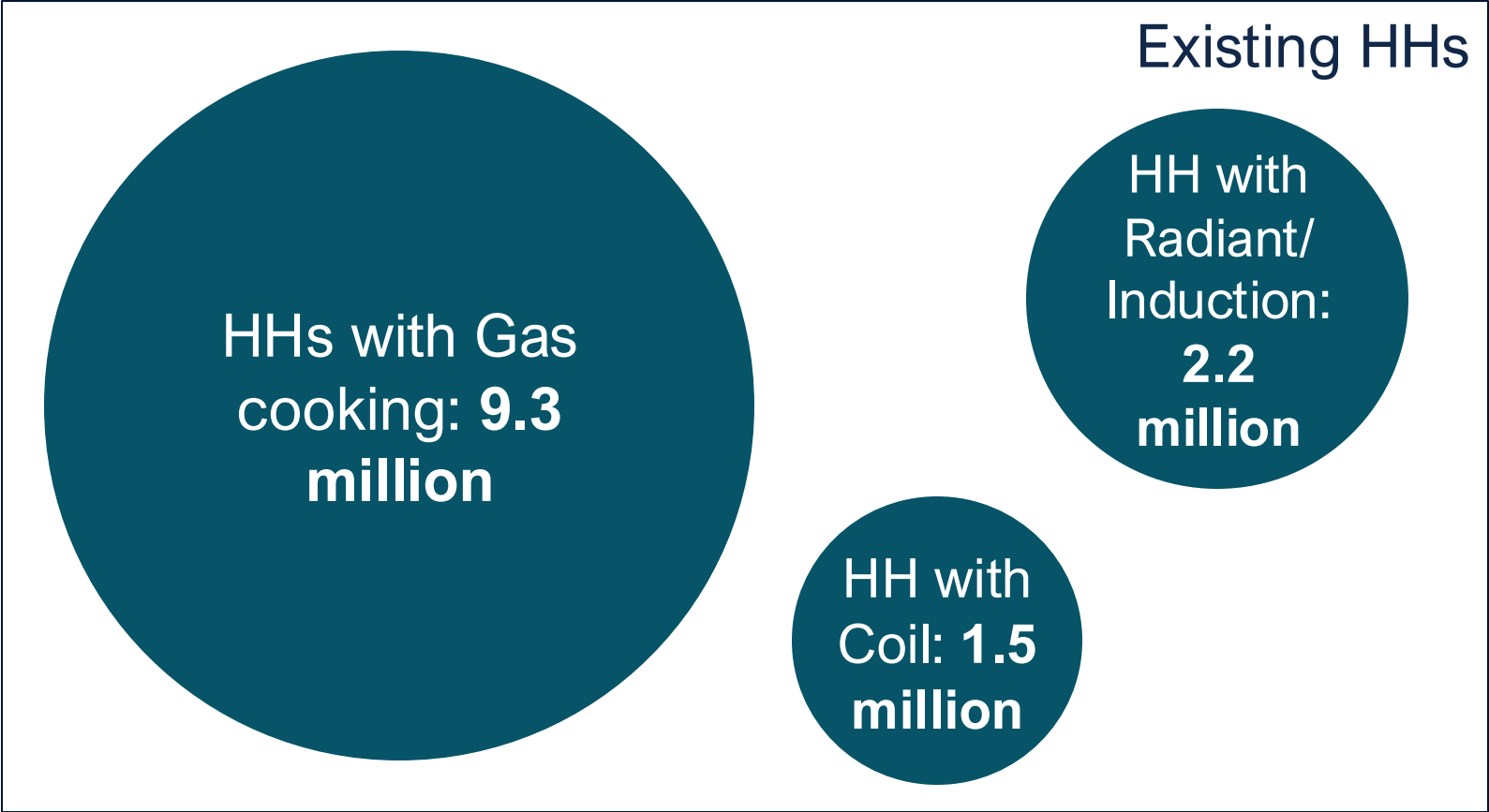
## Two models

Segment	Model	Model Approach
Existing households	Stock turnover model	<ol style="list-style-type: none"> <li>1. Retirement of existing appliance</li> <li>2. Replacement with a new appliance</li> </ol>
Newly built housing units	New construction model	<ol style="list-style-type: none"> <li>1. Install new appliance</li> </ol>

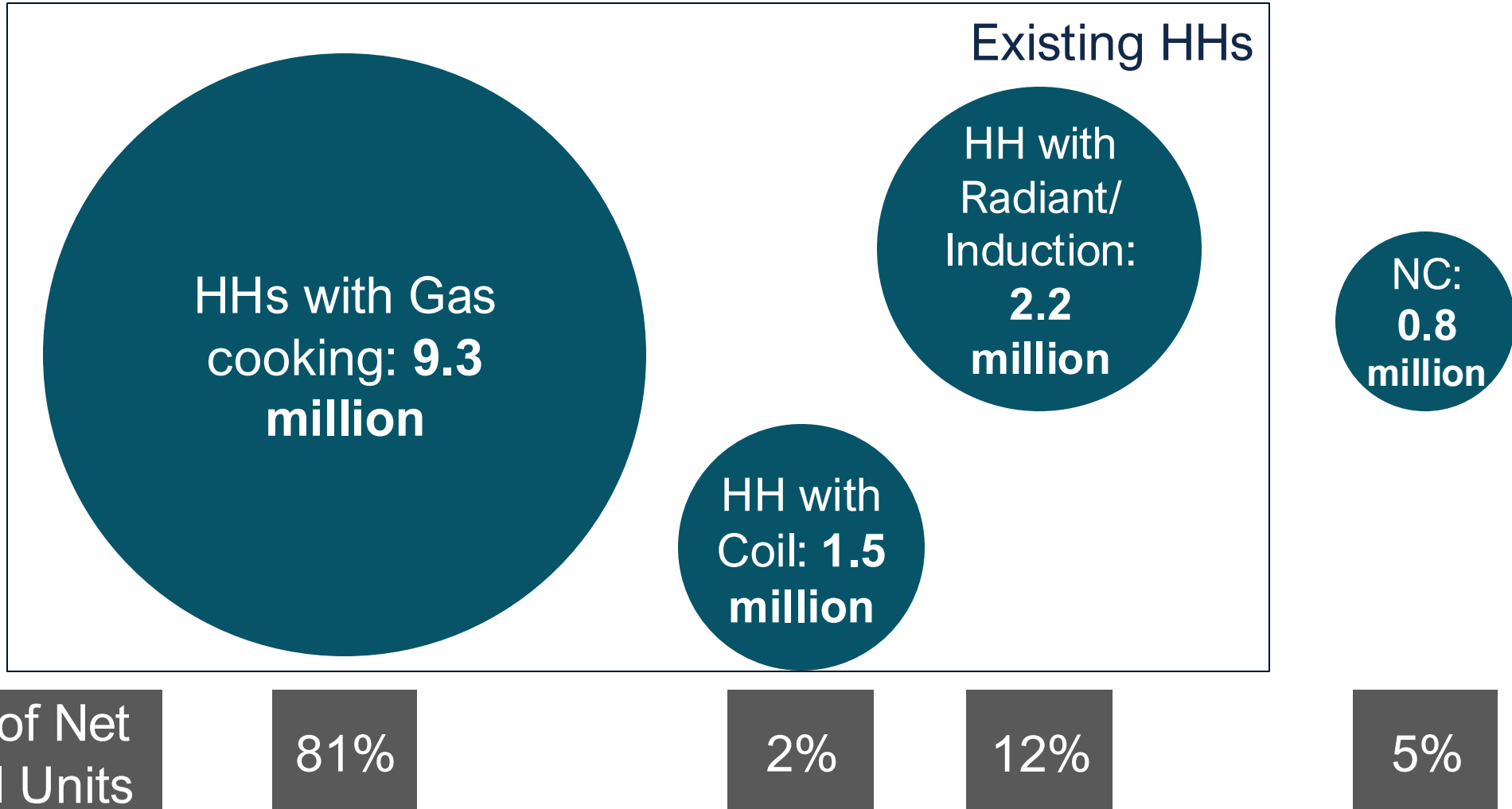
# Market adoption model: Incorporating strategic interventions in the MTI



	BMA	TMA
Assumption	<ul style="list-style-type: none"> <li>• <b>Retirement schedule:</b> Matches historical trends</li> <li>• <b>Transition out of gas:</b> Limited</li> <li>• <b>Relative market share of efficient technologies:</b> Limited adoption of 120V as well as 240V induction</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Retirement Schedule:</b> Accelerated due to MTI interventions.</li> <li>• <b>Transition out of gas:</b> Increased</li> <li>• <b>Relative market share of efficient technologies:</b> High adoption of induction</li> </ul>
Inputs	<ul style="list-style-type: none"> <li>• Market Research &amp; Lit Review</li> <li>• DOE EERE 2022 Stock Turnover Model</li> <li>• Expert Opinions including Delphi</li> </ul>	<ul style="list-style-type: none"> <li>• MTI Plan – Strategic Interventions and Milestones</li> </ul>



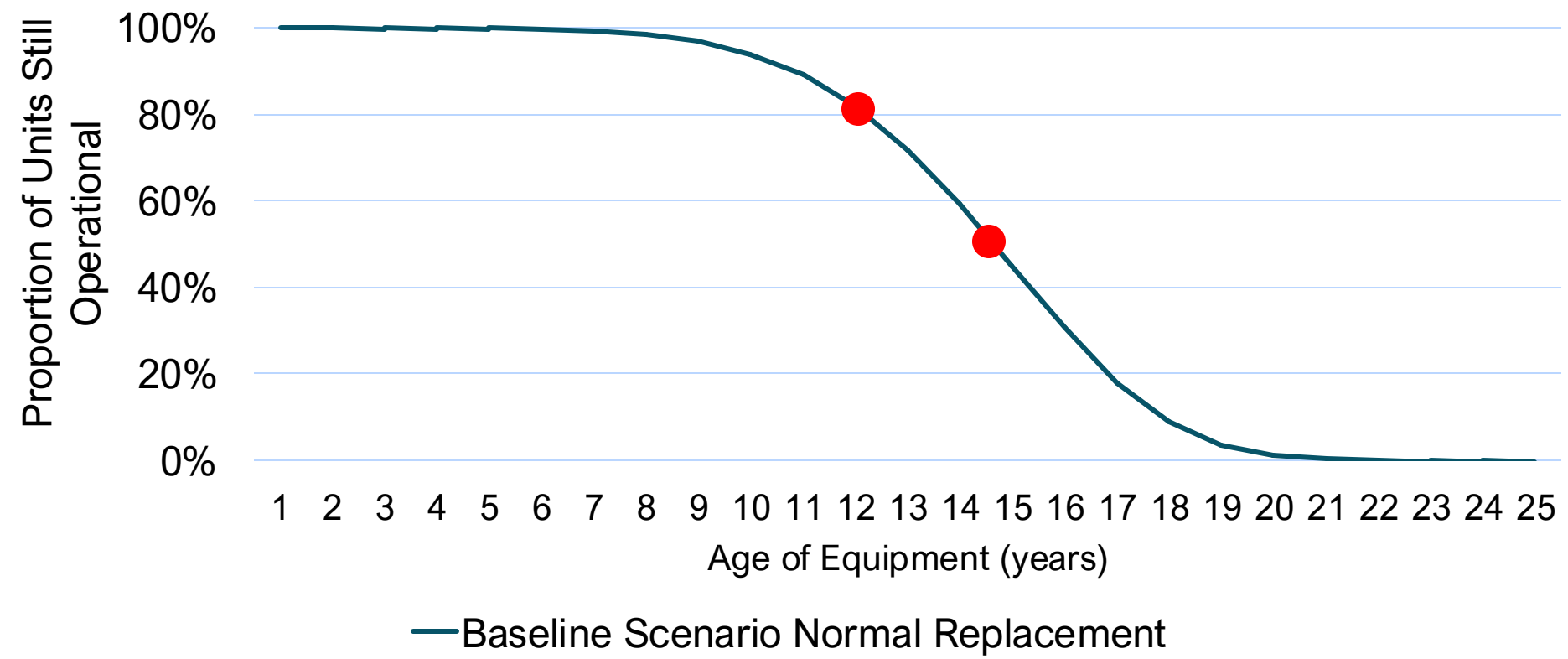
# The Four Segments: Contribution to net incremental



# Case Study: Transition from gas cooking and adoption of efficient cooking products (1/3)



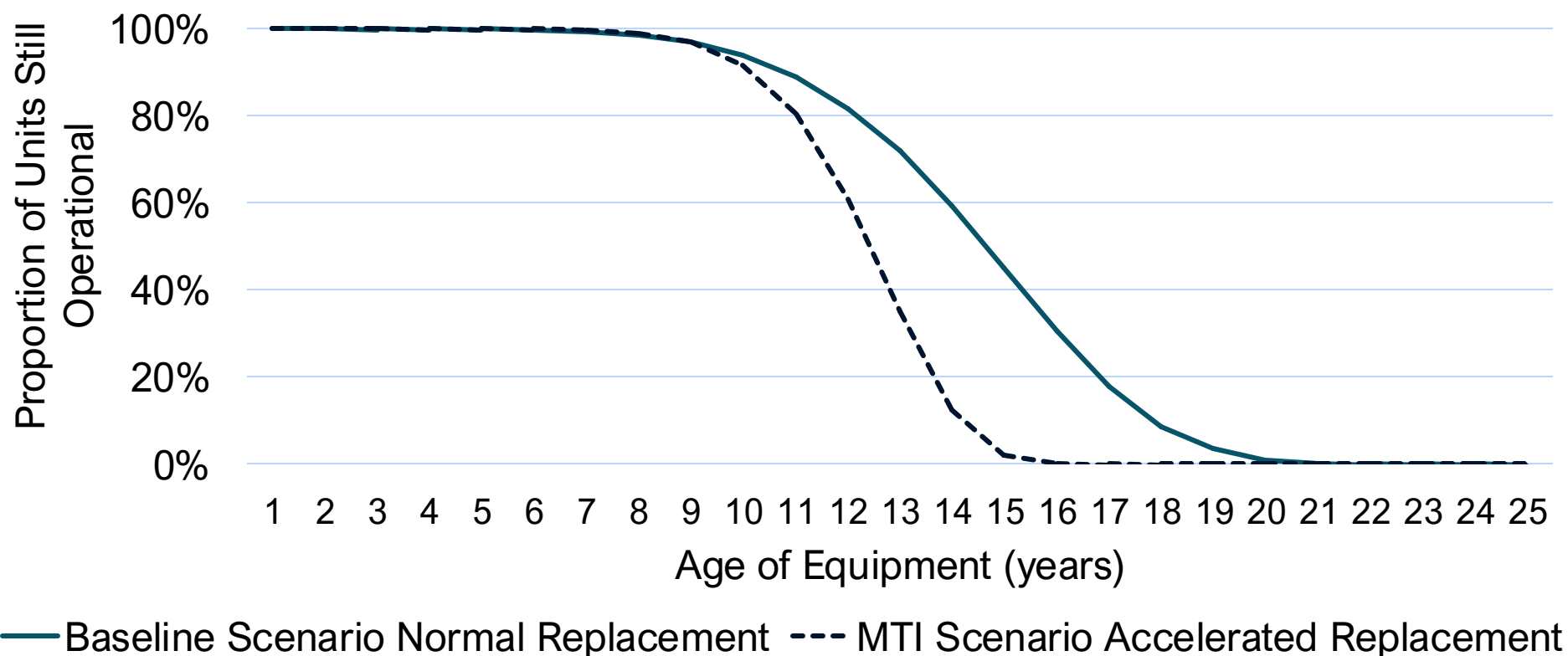
## Retirement of gas cooking products: historical trends



# Case Study: Transition from gas cooking and adoption of efficient cooking products (1/3)



## Retirement of gas cooking products: accelerated



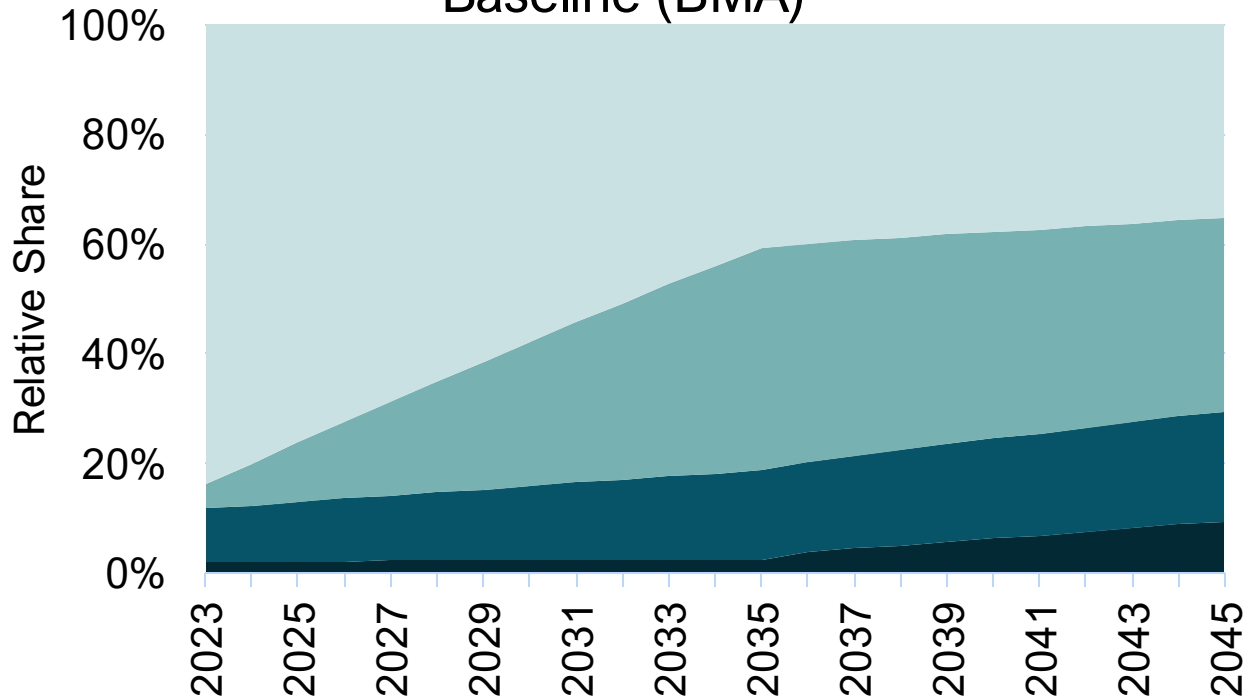


# Case Study: Transition from gas cooking and adoption of efficient cooking products (2/3)

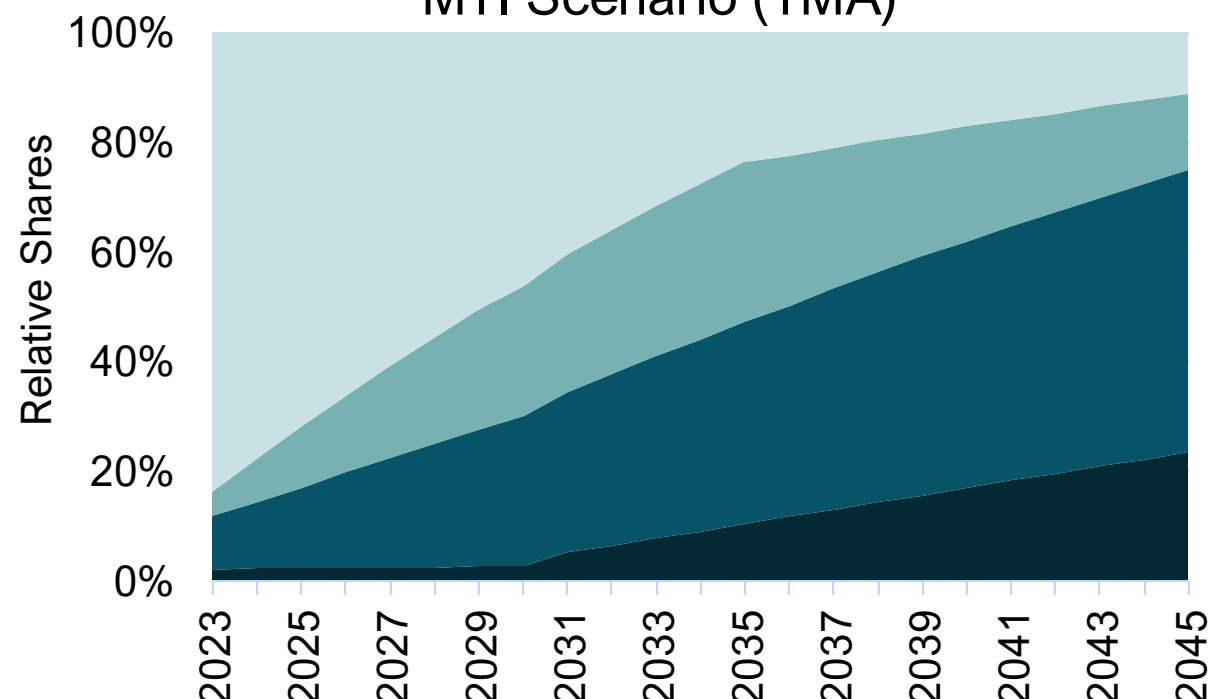


## Assumed market share of competing technologies

Baseline (BMA)



MTI Scenario (TMA)



BMA 240V Radiant (non-ES)
  BMA 240V ES Radiant  
 BMA 240V Induction
  BMA 120V Induction

TMA 240V Radiant (non-ES)
  TMA 240V ES Radiant  
 TMA 240V Induction
  TMA 120V Induction

# Case Study: Transition from gas cooking and adoption of efficient cooking products (3/3)



## Results: Cumulative adoption in the forecast period

	BMA			TMA	
	# of Units (000s)	Proportion of total		# of Units (000s)	Proportion of total
120V Induction	45	7%		468	13%
240V Induction	124	18%		1,409	40%
Radiant	510	75%		1,687	47%
<b>Total</b>	<b>678</b>			<b>3,564</b>	

**Break (15 min)**  
**We will be back soon.**





# Cost-Effectiveness Modeling

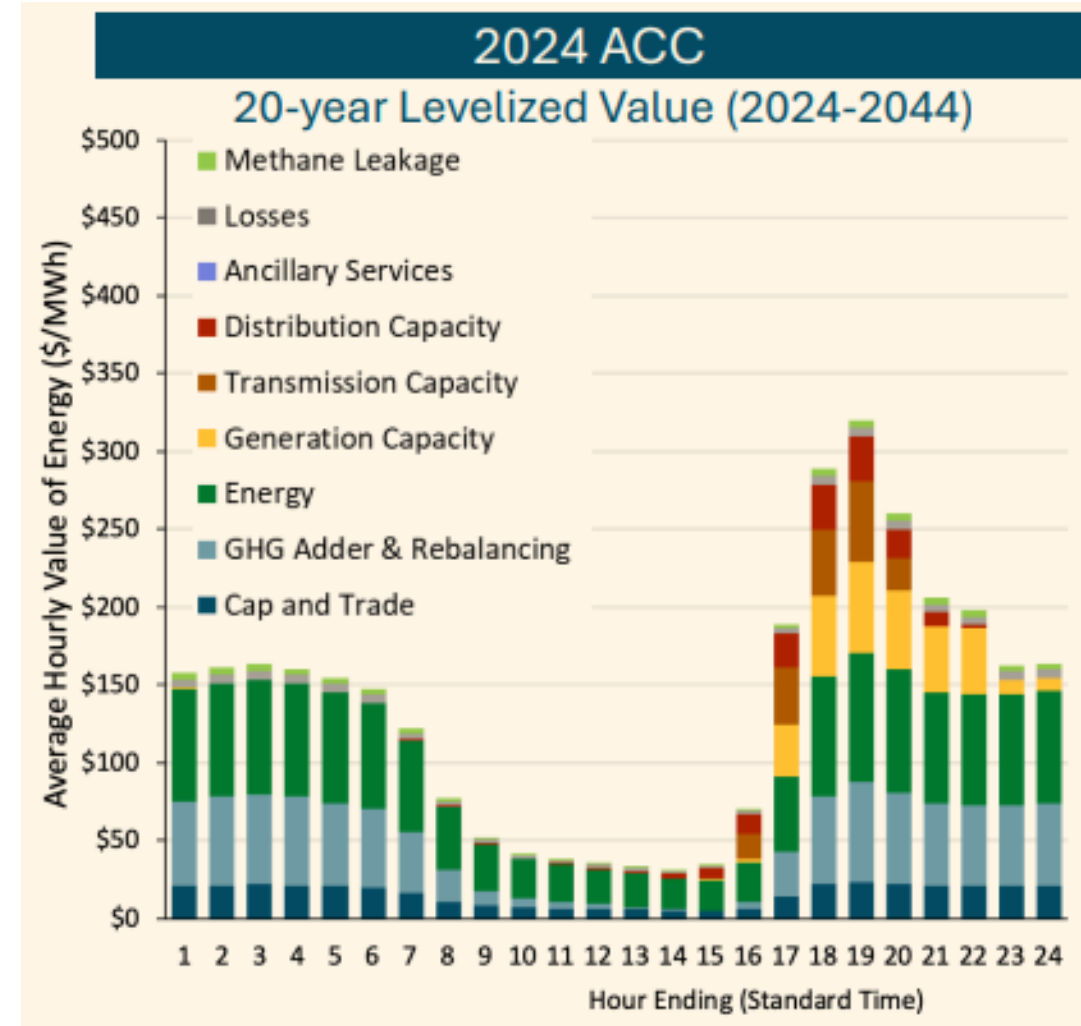
Matt Wisnefske  
Senior Associate, Cadmus

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# Total System Benefit

- Adopted by the CPUC in 2024
- Composed of Lifecycle Energy, Capacity, and Greenhouse Gas Benefits
- Designed to measure the total value to the electric and natural gas systems





# Cost-effectiveness tests

## Total Resource Cost Test

- Energy system perspective
- Includes initiative costs and Incremental Measure Costs

## Program Administrator Cost Test

- MTI administrator perspective
- Includes initiative costs and incentive costs

## Societal Cost Test

- California-as-a-whole Perspective
- Includes initiative costs and Incremental Measure Costs
- Includes more GHG value and lower discount rate

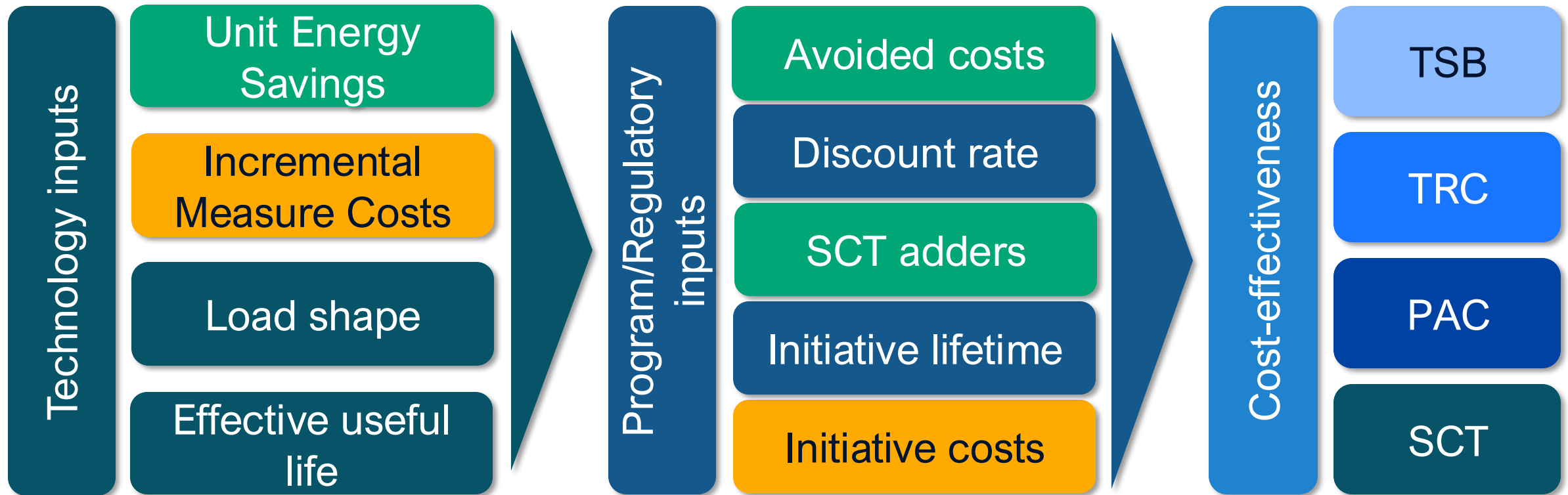


# Replacement scenarios



Segment	Counterfactual equipment	Efficient equipment	Decision type	First-year IMC
MF / SF	Electric resistance coil or non-ENERGY STAR radiant cooktop	Induction or ENERGY STAR radiant cooktop	Replacement	\$200
MF / SF	Gas burner cooktop	Induction or ENERGY STAR radiant cooktop	Replacement	(\$130)
MF / SF	Electric resistance coil or non-ENERGY STAR radiant range	Induction or ENERGY STAR radiant range	Replacement	\$676
MF / SF	Gas burner range	Induction or ENERGY STAR radiant range	Replacement	\$501
MF / SF	Electric resistance coil or non-ENERGY STAR radiant cooktop	Induction range with battery	Replacement	\$5,125
MF / SF	Gas burner range	Induction range with battery	Replacement	\$4,950

# Induction Cooking: Cost-effectiveness methodology - inputs and assumptions



# Technology definition inputs

## Unit Energy Savings

- Savings determined by energy modeling using DOE data
- Both in terms of Electricity (kWh) and Natural Gas (Therms)
- Can be negative if there is fuel substitution (through electrification)

## Incremental Measure Costs

- Determined by California retailer price data collected in 2024
- Can be negative if an Induction/Radiant cooktop or range is less costly than the technology it replaces

## Load shape

- Probability that a technology is in use in every hour of the year (8,760)
- Based on Residential Building Stock Assessment EPRI load shape

## Effective useful life

- Number of years a technology is expected to be used after installation before failure or replacement
- Induction/Radiant cooking gets 16 years per California eTRM values

# Program/regulatory inputs

## Avoided costs

- Value of reduced energy consumption in every hour of the year (8,760)
- Composed of Energy, Grid, and Greenhouse Gas avoided costs

## Discount rate

- Used to discount future costs and benefits to 2024 values
- 7.3% for TRC and PAC, 3% for SCT

## SCT adders

- Additional benefits based on Social Cost of Carbon (high and base cases)
- Additional methane leakage benefit

## MTI lifetime

- Number of years that the initiative will run in California
- Phase III runs from 2026 through 2045

## Initiative costs

- Costs incurred by California MTA when running the initiative, including administration, research and evaluation, marketing, and incentives

# TSB and cost-effectiveness 2024 - 2045



Test	TSB – Energy	TSB – Grid	TSB – GHG	TSB – Total
TRC	\$ 29M	(\$ 147M)	\$ 679M	\$ 561M
SCT	\$ 72M	(\$ 346M)	\$ 2,772M	\$ 2,499M

	TRC Ratio	PAC Ratio	SCT Ratio
With Negative IMCs	0.90	14.99	2.58
With Negative IMCs set to Zero	0.87	14.99	2.48

# Cost-effectiveness “schedule”



Forecasting Metric	2030	2035	2045
TSB	\$ 52M	\$ 173M	\$ 561M
TRC Ratio	0.29	0.48	0.90
TRC Ratio (adjusted)	0.28	0.46	0.87
PAC Ratio	1.58	4.76	14.99
Estimated incremental investment	\$ 28.9M*	\$ 3.5M	\$ 1.1M
Approximate breakeven year for TRC: N/A			

\*Phase III 2026-2030 investment

# TSB and Cost-Effectiveness: Statewide impacts included



Forecasting Metric	Net Incremental Impacts (IOU territory only)	Net Incremental Impacts (statewide)
TSB	\$561 M	tbd
TRC Ratio	0.90	
TRC Ratio (adjusted)	0.87	
PAC Ratio	14.99	





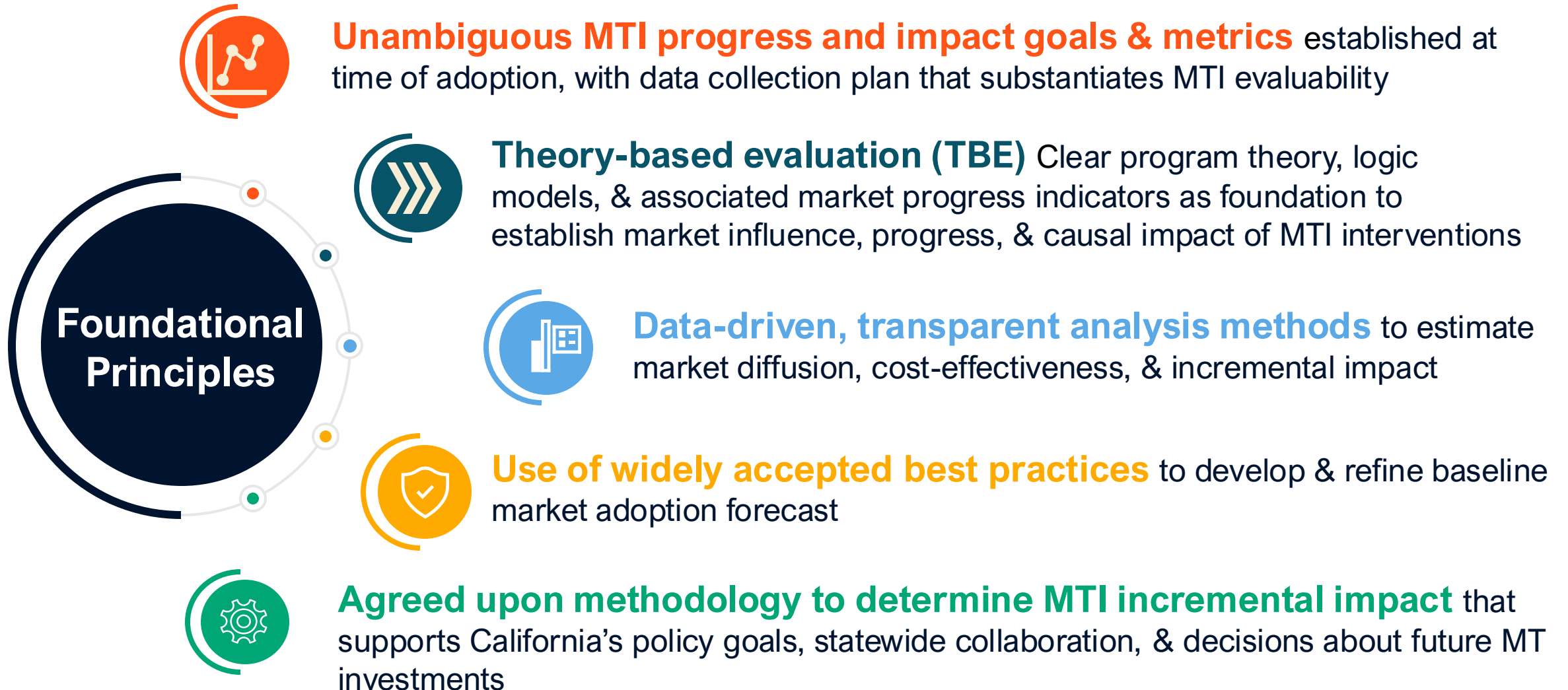
# MTI Evaluation Plan

Karen Horkitz  
Lead, Market Research and Evaluation

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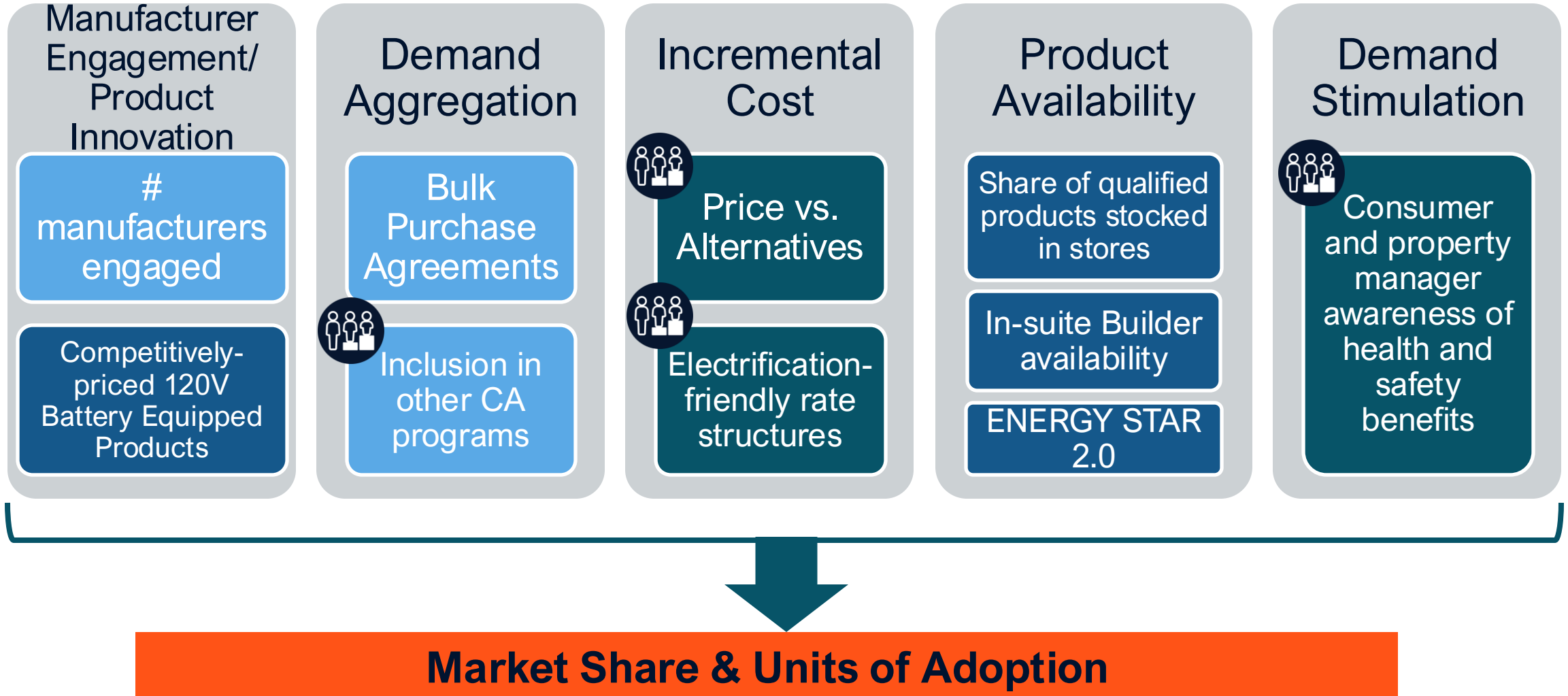
# Evaluation approach overview



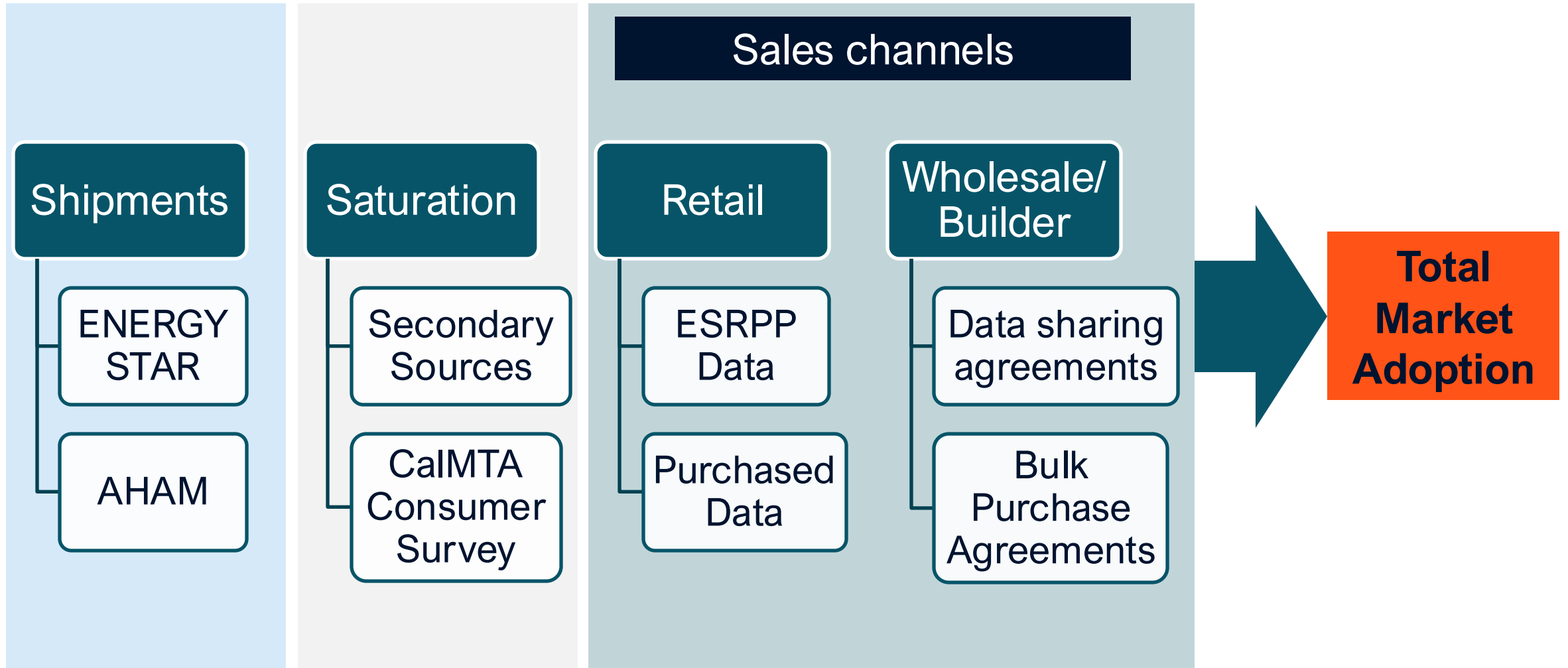
# Evaluation objectives

- Monitor market dynamics and characteristics; assess market developments
- Review and assess the MTI logic model and program theory
- Measure market progress and equity, per the MPis
- Assess MTI causality per the logic model
- Identify opportunities to adjust MTI strategy & tactics, to improve MTI effectiveness
- Review baseline & total market adoption forecasts, TSB & cost-effectiveness model inputs & assumptions
- Assess ancillary benefits and costs

# Key Market Progress Indicators



# Estimating units of adoption



# Induction milestones



2 manufacturers sign on to tech challenge

Share of induction products in ESRPP brick-and-mortar retailers increases; prices lower in stores serving ESJ communities

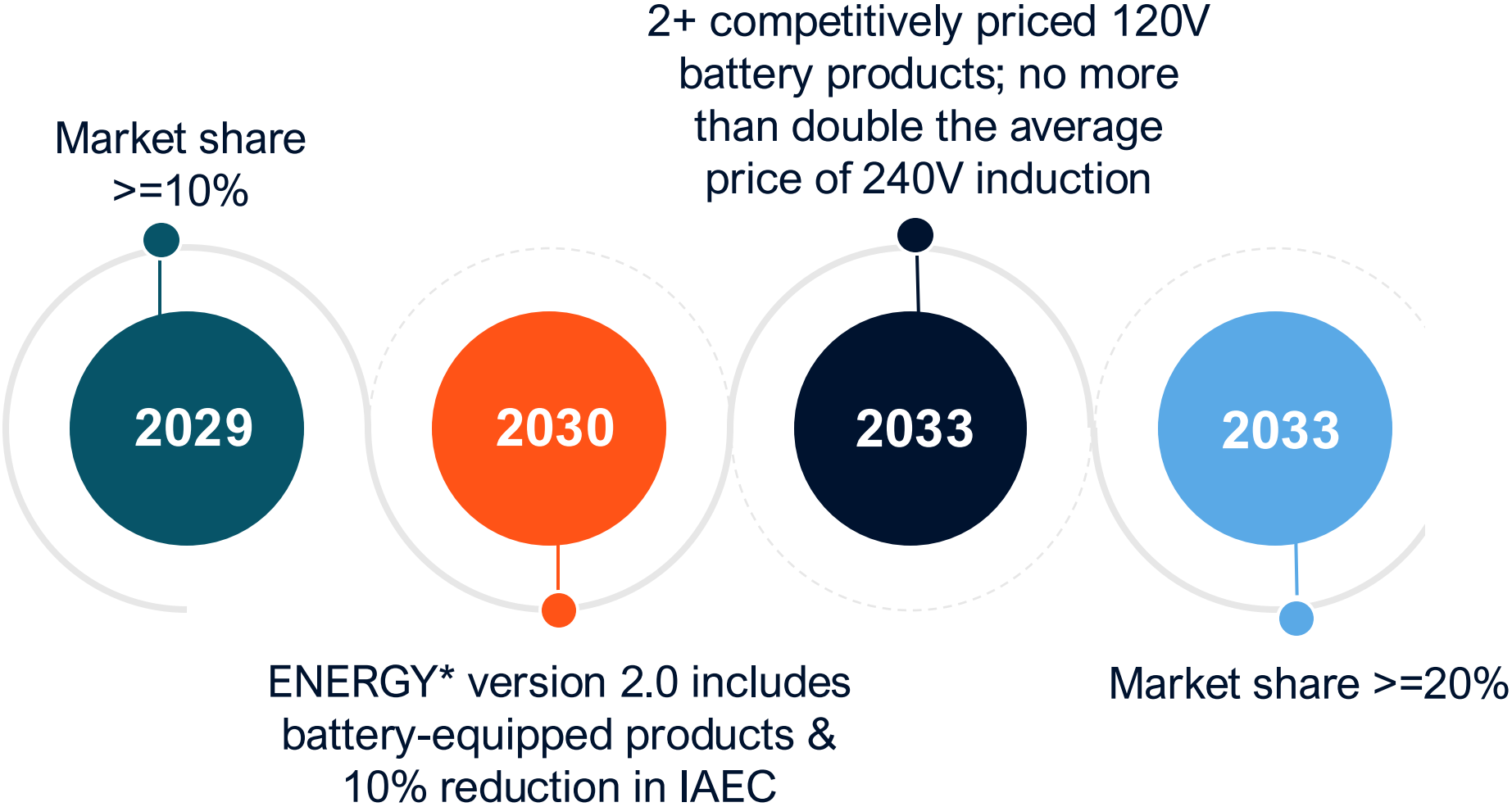
Incremental cost of 240V induction vs. electric radiant <10%



3 bulk purchase agreements in place with CA production builders

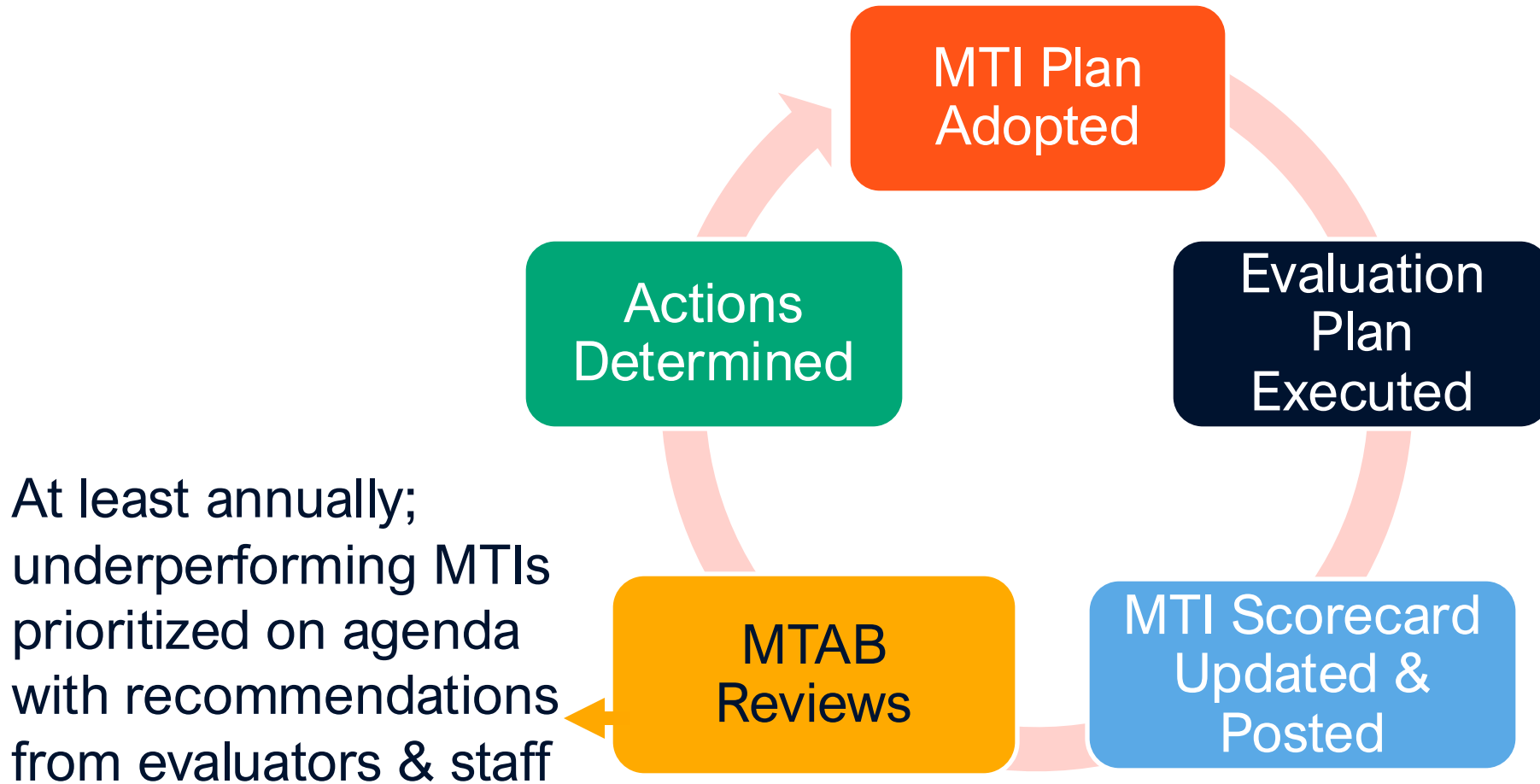
4 brands offer in-suite induction models in most builder packages with normal shipping timelines

# Induction milestones (cont.)



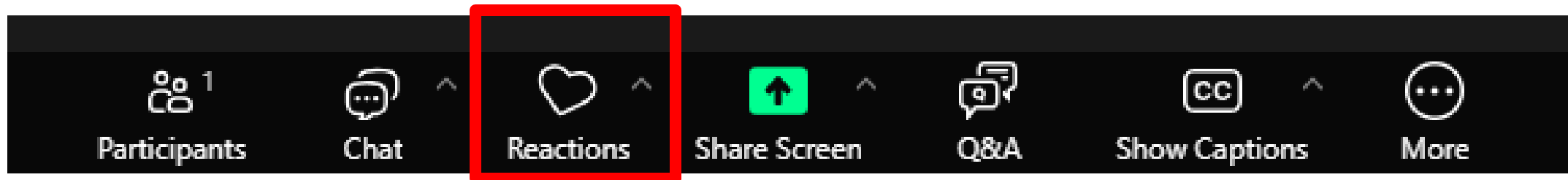


# Monitoring, reporting, and review process



# 11. Public Comment

Raise your hand using the “Reactions” feature and we will allow you to unmute yourself.



**Lunch (45 min)**  
**We will be back soon.**





# 16 Induction Cooking: Budget, Risks, & Discussion

Elaine Miller, Senior Strategy Manager  
Jeff Mitchell, Principal of MT

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# Stage III budget

Activity	Total Phase III cost estimate
Program Implementation including the following line items: 1.MTI oversight, strategy and management 2.Marketing & awareness building 3.Policy development and support 4.Supply chain management	\$20,098,000
Market Research including the following line items: 1.Market research 2.Data collection	\$1,835,000
Mid/upstream incentives include those to retailers or builders	\$8,700,000
Downstream incentives includes those to consumers	\$0
Program Evaluation	\$2,843,000
<b>Total</b>	<b>\$33,477,000</b>

# Key risks

- Can we generate a large enough demand signal for manufacturers to invest in 120V battery-equipped products?
- Can we build consumer and builder awareness of health impacts of gas cooking?
- Can we change consumer and builder perception about induction?
- Will electric cooking continue to be associated with culture wars?

- Will electrification rates become available, especially for ESJ communities, to support adoption of electric cooking?
- Will prices for induction cooking products decline enough to compete with gas cooking?



# Why this? Why now for California?

- Last end-use electrification focus to disconnect from gas grid
- Leverages and builds upon new market entrants and national momentum
- Fills a product gap and builds availability so multifamily, ESJ not left behind
- Builds market for battery-equipped 120V products allowing charging and use during off peak; mitigates challenge in moving from gas to electric
- Growing momentum on health benefits which CalMTA can amplify
- Move the market beyond high-end niche, to mass adoption
- **Clear role, timing, and MT Theory for CalMTA**

# Questions/Conversation

- Bright spots and possible challenges
- Questions of clarity for CalMTA
- Questions for other MTAB members
- Other feedback

**Break (15 min)**  
**We will be back soon.**



# 17 Application Overview

Lynette Curthoys  
Vice President, Market Transformation







# Background

- OP 9 of D.19-12-021 (the MT decision) requires PG&E to file an application on behalf of CalMTA for approval of the initial MTIs
- Approval of the application releases the approved budget for the five-year implementation period
- MT decision envisioned that future MTIs would be approved via advice letter – this will be determined in the application decision
- MT decision did not set C/E or energy savings goals, but directed that MTIs be managed C/E as a portfolio



# Timing/Funding Considerations



- The contract between PG&E and Resource Innovations to administer MT was approved via an advice letter with an effective date of November 23, 2022
- CalMTA has a start-up cap of 36 months and associated budget





# Timing/Funding Considerations



- CalMTA plans to submit the application to PG&E in time to file on December 20, 2024
  - The MT decision assumed that the Commission would take six to nine months to review and approve
- Commission approval of the application is needed by November 23, 2025 to prevent a funding gap and disruption of CalMTA operations

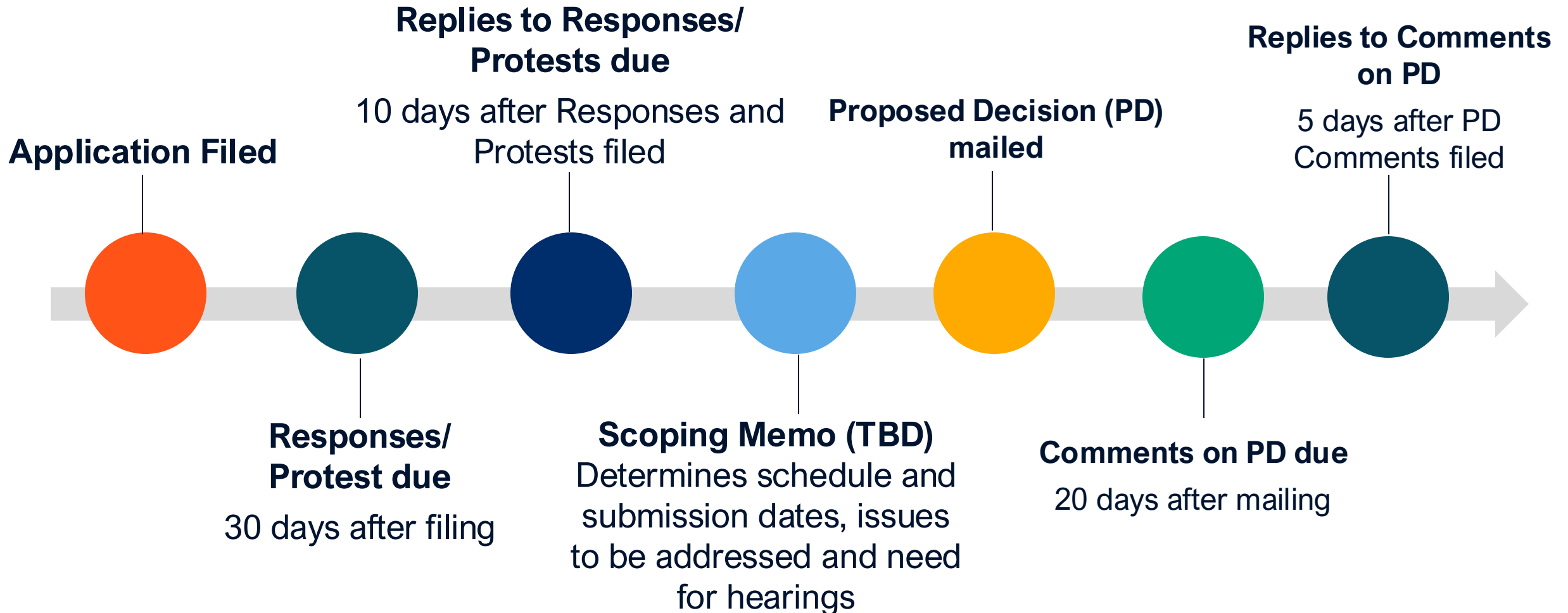
# Contents of CalMTA's Application



- Application
- Supporting testimony
- Estimated costs by cost-category for five-year implementation budget
  - First five years of MTI Plan Appendix H budgets
  - Budget assumptions and supporting tables
- Request to approve the MTI Plans
- Request to approve future MTIs & cost estimates via Tier 2 advice letters

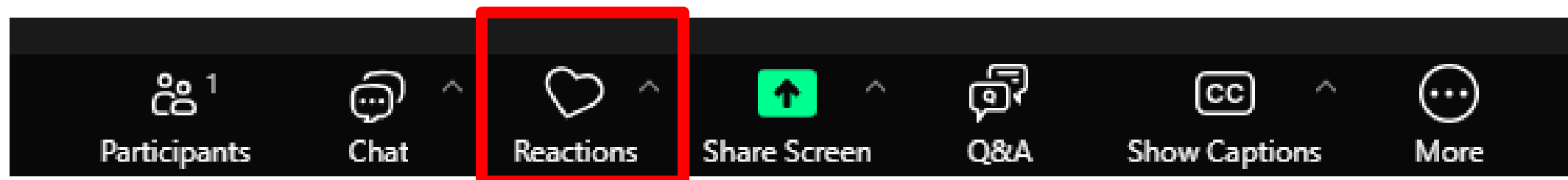


# Key Milestones of Application Proceeding



## 18. Public Comment

Raise your hand using the “Reactions” feature and we will allow you to unmute yourself.



# 20 Wrap-up & 2025 Meeting Plans

Stacey Hobart  
Principal, Engagement and Communications





# Equity Sounding Board members

**Adriana Ayala, Ph.D.**, Executive Director, Chicana Latina Foundation

**Alicia Bohigian**, Assistant Program Director, Self-Help Enterprises

**Dr. Federico Castillo**, Project Scientist and Lecturer, University of California, Berkeley

**Maria Dahlin**, Tribe Council Member, N'de Apache Tribe

**Michelle Engel-Silva**, CEO, Proteus, Inc.

**Elisa Gallegos Jackson**, Nurse, Retired Public Health Nurse, Community Health Educator and Independent Consultant

**Joaquin Narvaez**, Owner, West Coast Green Builders LLC

**Johng Ho Song**, Executive Director, Koreatown Youth and Community Center

# 2025 MTAB Meetings



2025												2026
Q1			Q2			Q3			Q4			Q1
JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN
Jan. MTAB Meeting rescheduled												
	Q4 2024 Update			Q1 2025 Update			Q2 2025 Update			Q3 2025 Update		
	MTAB Meeting		MTAB Meeting				MTAB Meeting	MTAB Meeting		MTAB Meeting		MTAB Meeting



# Transformative Energy Solutions for the public good

Market transformation is a proven approach that works to remove market barriers so that energy efficient, equitable, and climate-friendly approaches become the new standard practice for all Californians.

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