



November 30, 2023

Day 1:
Market Transformation
Advisory Board (MTAB)
Meeting



1

Welcome & Agenda

Stacey Hobart

Principal, Stakeholder Engagement & Communications

Agenda Day 1



Time	Agenda Item	Presenter
12:00 p.m.	1. Welcome & Agenda	Stacey Hobart
12:05 p.m.	2. Safety Minute	Randall Higa
12:08 p.m.	3. Declaration of COI	Stacey Hobart
12:10 p.m.	4. Introductions & Ice Breaker	MTAB & CalMTA
12:25 p.m.	5. Review October 13 meeting notes	Stacey Hobart
12:30 p.m.	6. Review MTI Development Schedule	Stacey Hobart
1:00 p.m.	7. Stage 1 Disposition Report	Jennifer Barnes
1:10 p.m.	Break (15 min)	
1:25 p.m.	8. Discuss & Prioritize Batch 2 MTI Ideas	Jeff Mitchell & Lynette Curthoys

Time	Agenda Item	Presenter
3:15 p.m.	Break (15 min)	
3:30 p.m.	Discuss & Prioritize Batch 2 MTI Ideas – cont.	Jeff Mitchell & Lynette Curthoys
5:20 p.m.	9. Public Comment	
5:30 p.m.	Adjourn -- continued Day 2	

Phone participants will be muted throughout the meeting and can raise their hand during the public comment period to be unmuted.

Safety Minute



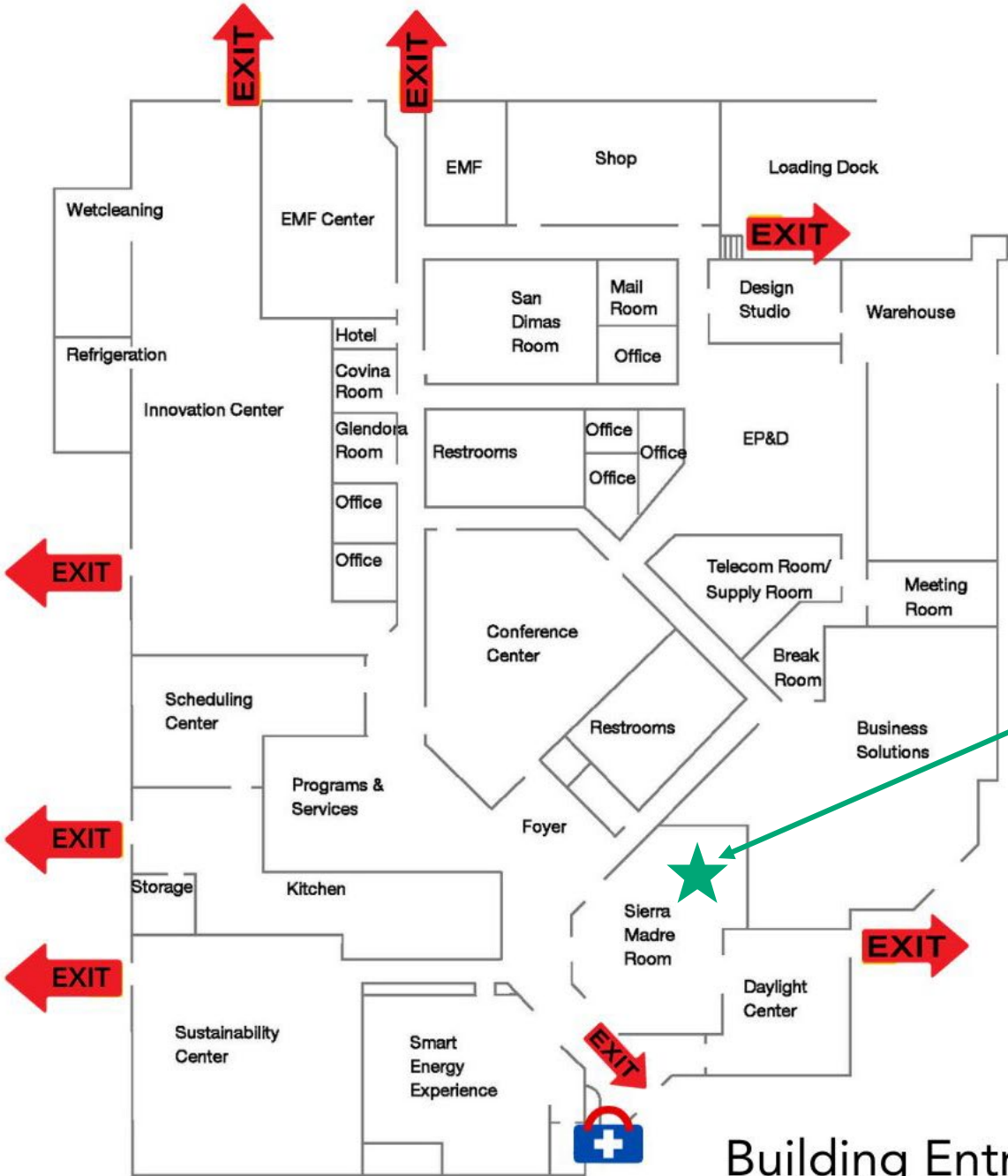
AED & First Aid Kit near Smart Energy Experience room



Exits on all sides of the building



Evacuation Gathering Destination



You are here



Building Entrance

MTAB Declaration of COI



MTAB Eligibility

- Can't receive funding from CalMTA or be in pursuit of funding

Recusal Requirements

- Can't bid on RFP/RFQ if give input on MT idea after Concept Development Phase I
- Can recuse from that MT idea discussion, but must leave MTAB if respond to RFP
- If have competitive interest to an MTI or strategic prioritization, recuse from that discussion
- Agree to not influence remaining MTAB
- Interpretation if needed done by CPUC staff

Transparency

- Public meetings & process where COI concerns can be raised by the public

[MTAB Charter with Conflict of Interest](#)

CalMTA COI Policies



- The CalMTA program has robust COI policies to ensure decision-making is transparent, impartial, and unbiased.
- The Resource Innovations team that administers CalMTA has deep experience implementing market transformation and other energy efficiency programs in California and throughout North America.
- Resource Innovations employees and subcontractors who function in decision-making roles for CalMTA are firewalled from any ongoing work with California utilities or other covered entities and sign COI certifications.
- CalMTA seeks CPUC approval when there is a need to draw on specialized expertise from subject matter experts who also support work with covered entities.

4 Introduction & Ice Breaker



Ice Breaker



What kind of job/career did you dream about as a kid?



October 13 Meeting Notes

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



6

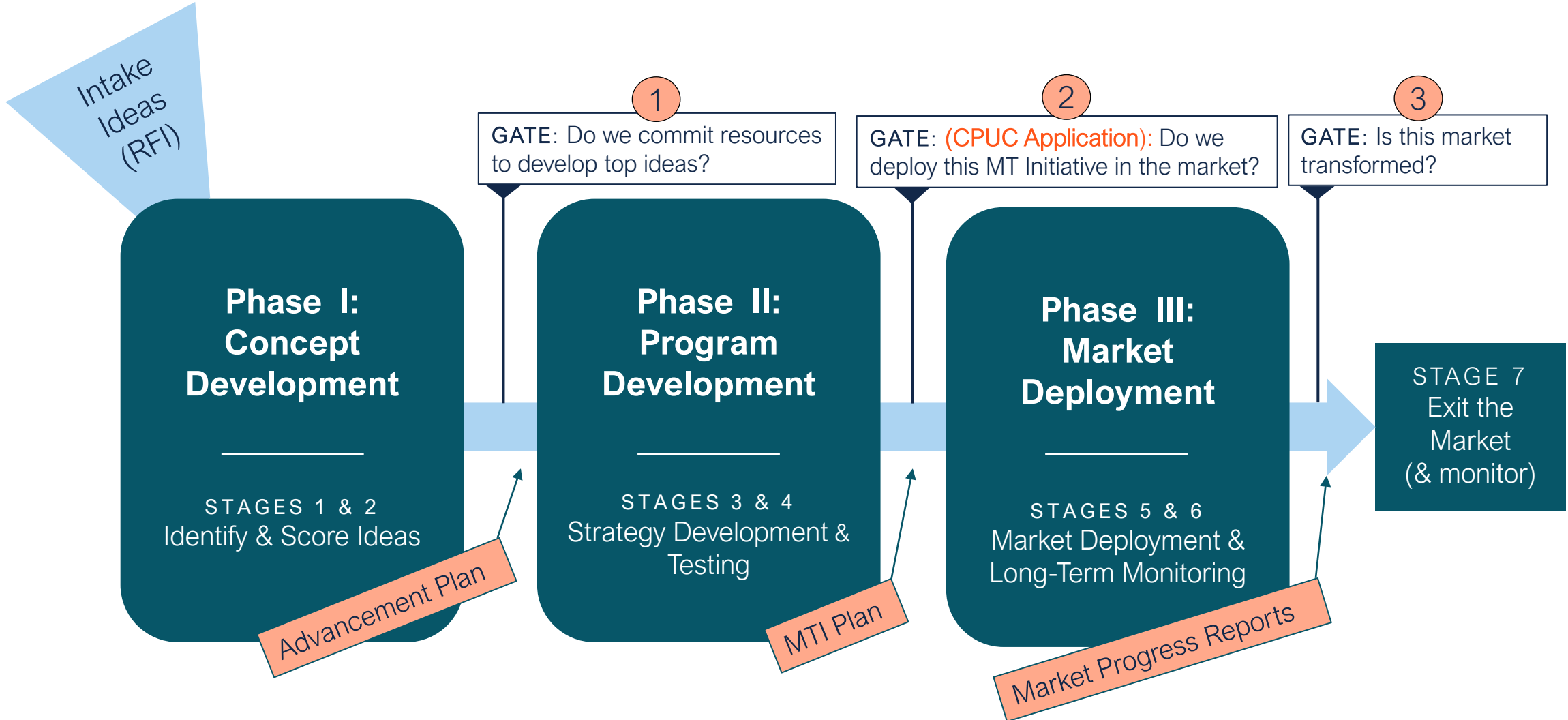
Review MTI Development Schedule

Stacey Hobart

Principal, Stakeholder Engagement & Communications




















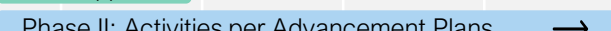












MTI Development / Deployment Process



2023-2024 Planning

	MTAB meeting
	Milestone
	MTAB comment period
	Public comment period
AP	Advancement Plans

	2023		2024												2025			
	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb		
MTAB meetings																		
Batch 1 3 MTIs	Draft AP		Final AP			 Draft MTI template							 Draft MTI Plans	 Application filed				
		 																
Batch 2 1-5 MTIs				Draft AP					Final AP			 						
													Draft AP		Final AP			
Batch 3 1-5 MTIs															 			
Disposition Report	 Stage 1 Draft Disposition Report		 Stage 1 Final Disposition Report					 Phase I Draft Disposition Report		 Phase I Final Disposition Report								

7 Draft Stage 1 Disposition Report

Jennifer Barnes

2050 Partners



Disposition Report Scope Change



- Disposition Report scope was revised to focus on the results of the scoring, methodology, and outreach through Stage 1: Scan & Identify Ideas
- A comprehensive report will be delivered in June 2024 that will cover all Phase I activities including:
 - Stage 1: Scan & Identify Ideas
 - Stage 2: Develop & Assess Ideas
- Provides more time to collaborate with MTAB on idea prioritization

Disposition Report Scope Change



Report Section	Stage 1 Disposition Report	Phase 1 Report (including Stage 2)
Introduction	X	Updated
Scoring Framework	X	Same
RFI Outreach	X	Same
Summary of MTI Ideas Received	X	
Submission Scoring:		
• Stage 1: Scan & Identify Ideas	X	Same
• Stage 2: Develop & Assess Ideas		X
Recommendations	Batch 1: Stage 1 only	Batch 1 updates; Batch 2 Stage 1 & 2 Recs
MTAB Feedback:		
During 11/30 MTAB meeting & via form	Batch 1; Stage 1 only	
At June MTAB meeting & via form		Batch 1 & 2
Appendix: Scoring rubric and guidance	X	Same
Appendix: RFI submission list, description, and disposition, including reasons for archiving	X	Updated
Appendix: List of organizations and briefings held	X	Updated
Appendix: Advancement Plans	Batch 1	Batches 1 & 2

Disposition Report Contents

- Scoring Framework
 - Categories & Criteria
 - Weighting
 - Scoring Rubric
- Intake Questions & Portal
- RFI Outreach
- Summary of MTI Ideas Received
- Stage 1 Scoring
 - Archived @ Threshold
 - Archived @ Stage 1
 - Research & Refinement
- Front Runners/Batch 1 MTIs

Note that some idea names included brand or company names. These idea names were anonymized in the Disposition Report.

Disposition Report Contents



- Scoring Framework
 - Categories & Criteria
 - Weighting
 - Scoring Rubric
- Intake Questions & Portal
- **RFI Outreach**
- Summary of MTI Ideas Received
- **Stage 1 Scoring**
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Note that some idea names included brand or company names. These idea names were anonymized in the Disposition Report.

Today we'll focus on the subset of the Disposition Report topics that are before the MTAB for the first time.

RFI Outreach



GOT GAME-CHANGING IDEAS?
Help California **catalyze**
market change for the
energy future we need.
Request for Ideas is **open** 6/15 through 8/18.

The graphic has an orange background with a pattern of small red dots in the upper right corner. The text is in a bold, black, sans-serif font.

RFI Outreach



Stakeholder Segments

- Industry experts and implementers with California presence
- Research laboratories and centers
- Environmental and social justice (ESJ) and workforce, education, and training (WE&T) organizations
- Regional utilities and energy providers
- Emerging or advanced energy efficiency technology stakeholders

Outreach Activities Conducted

Public Awareness Building

- 2 webinars--112 registrants & 32 on demand
- MTAB meetings that were open to the public
- Regular push email notices & social media

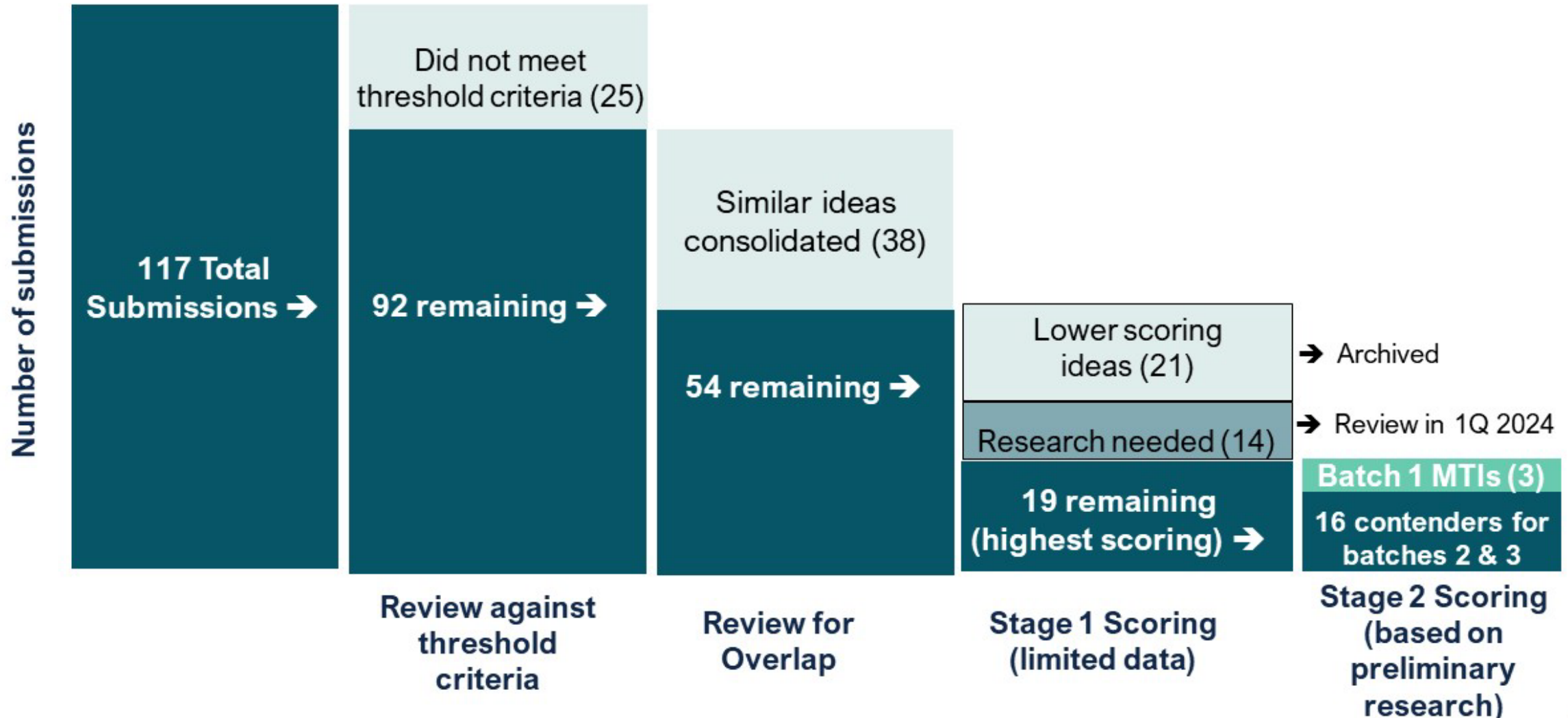
Direct Outreach

- Personalized emails from CalMTA team with updates and requests to share
- 1-on-1 briefings with high-priority stakeholders

Industry Events

- CEDMC Spring Forum
- 2023 ASHRAE National Conference
- 14th Annual California Climate & Energy Forum

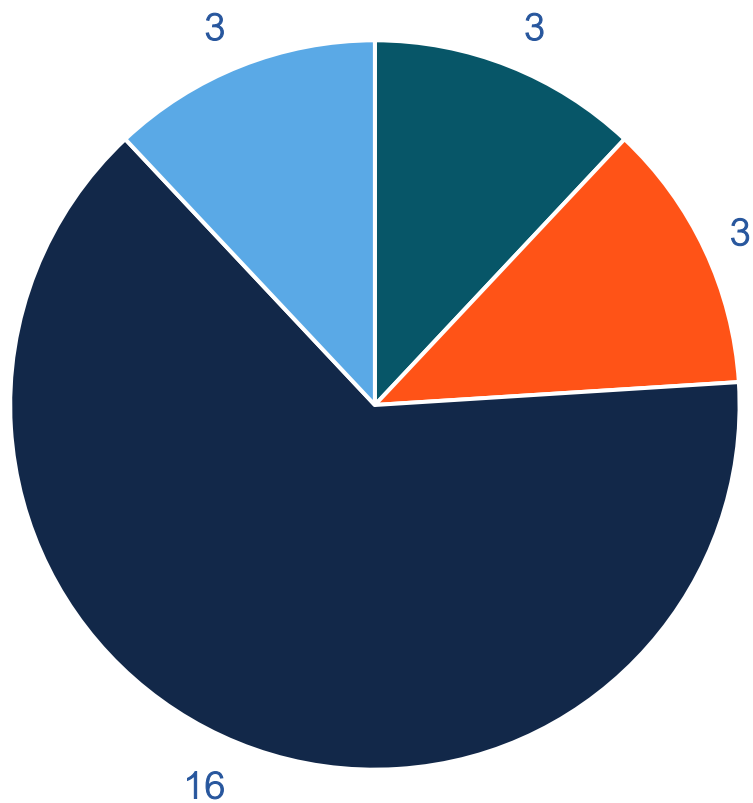
Disposition of Submitted Ideas



Ideas Archived at Threshold



Summary of 25 Ideas Archived @ Threshold

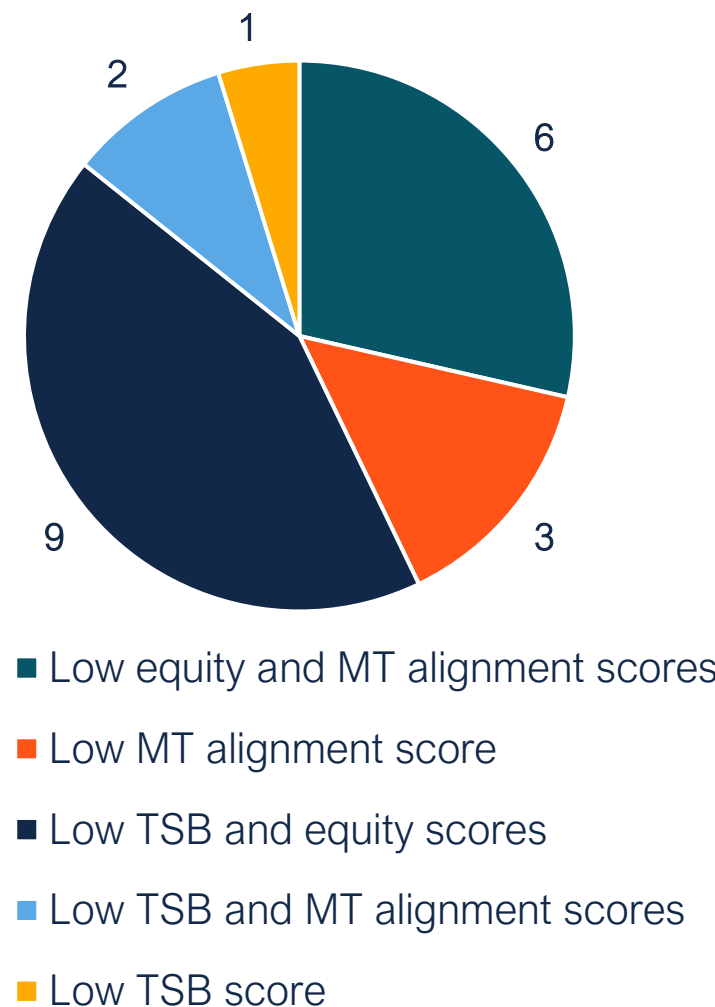


- Idea is a tactic:
 - May be combined with other, similar ideas in the future
 - Statewide consumer product marketplace
 - ESRPP
- Insufficient information:
 - Radiant barrier window insulators – no MT support needed/need a CA distributor
- Does not generate energy savings:
 - Climate-health warning labels on gas pumps
- Not commercially available
 - Closed-loop HVAC sensor-controller that predicts occupant comfort and adjusts accordingly

Ideas Archived at Stage 1

- In general, ideas needed to have strong scores across both the TSB and MT alignment categories to score at the top of the ranking
- Over half of the scored ideas advanced to Stage 2; only 21 of 54 projects were archived @ Stage 1
- “Archive” language is intentional as ideas will be reviewed periodically
 - Could be combined with new submissions, in subsequent RFIs

21 Ideas Archived @ Stage 1



Needs Research & Refinement



- 14 ideas had insufficient detail in the response or readily available through light secondary research
- Research questions were identified to understand the market or MT theory and enable Stage 2 scoring
- CalMTA will conduct light research in early 2024 and rescore the Research & Refinement ideas in the next RFI
- Changes to idea status will be described in the Phase I Report to be delivered in June 2024

Work-based Learning to Achieve Equitable Climate Cool Schools

- Idea scored in the middle of the pack, but the scoring team likes the potential to generate benefits for ESJ communities
- The team would like to understand how/whether it could persist without continuous intervention

Industrial smart pumps & fans

- Several ideas related to smart industrial motors
- Most scored well but it's unclear how these would work together to address the industrial fan/pump market

Questions & Discussion

15 min break
We will be back soon.



8

Discuss & Prioritize Batch 2 MTI Ideas

Jeff Mitchell | CalMTA Principal of MTI Development,
Market Transformation

Elaine Miller | CalMTA Strategy Consultant

Jennifer Barnes | 2050 Partners

Lynette Curthoys | CalMTA Vice President



Process / Purpose

- Review Stage 2 scores
- Gather MTAB feedback and input
- Prioritize possible 'Batch 2' MTIs

**Phase I:
Concept
Development**

STAGE 2
Develop & Assess Ideas

Stage 2: Develop & Assess



- Estimate unit impacts (energy savings, grid impacts, GHG reductions)
- Develop preliminary baseline market adoption and total market adoption estimates
- Conduct an external program review
- Draft a preliminary product definition and MT theory

**Phase I:
Concept
Development**

STAGE 2
Develop & Assess Ideas

Stage 2: Develop & Assess



- Estimate unit impacts (energy savings, grid impacts, GHG reductions)
 - Established baseline / proposed conditions
 - Ran hourly simulation for all baseline / proposed conditions across 3 climate zones
- Develop preliminary baseline market adoption and total market adoption estimates
- Conduct an external program review
- Draft a preliminary product definition and MT theory

**Phase I:
Concept
Development**

STAGE 2
Develop & Assess Ideas

Stage 2: Develop & Assess



- Estimate unit impacts (energy savings, grid impacts, GHG reductions)
- Develop preliminary baseline market adoption and total market adoption estimates
 - Abbreviated delphi panel informing a Bass model(3 panel members, 2 rounds) OR
 - Leveraged forecasts from EIA, CEC, and/or Ca potential studies
- Conduct an external program review
- Draft a preliminary product definition and MT theory

Estimated Total System Benefit



Idea Name	Preliminary		
	TSB	TRC	PAC
Portable HP	\$4,027M	14.11	310.76
AC must be HP	\$3,716M	9.35	794.79
Bi-directional EV Charging - SF Res	\$3,368M	2.89	119.13
Unitary HPWH	\$3,099M	2.19	81.48
Combination HP	\$2,354M	1.25	60.98
Residential Variable Speed HP	\$2,025M	1.19	32.21
Efficient RTUs	\$1,715M	4.12	61.24
Foodservice Decarbonization	\$1,492M	1.82	15.49
Smart Electric Panels	\$721M	1.07	19.71
Induction Cooktop	\$690M	0.76	35.11
BPS Accelerator	\$566M	1.35	12.67
High Performance Windows	\$442M	0.07	27.99
Modernizing BAS	\$384M	0.19	13.12
Efficient Streetlights	\$256M	0.80	20.93
Single Pane Retrofit	\$144M	0.46	5.10
Bi-directional EV Charging - Fleet	\$43M	0.58	1.41
LLLC + HVAC	\$26M	0.71	0.71
HP Integrated Mechanical Ventilation	\$25M	0.11	1.12
HPWH for MF	\$1M	0.10	0.09

Estimated Total System Benefit



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Scenario Analysis-Baseline Score



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi-Directional EV Charging Residential	IDEA-0165 Foodservice Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performance Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
Stage 2 Score:	9.28	8.25	8.11	7.54	7.50	7.39	7.36	7.22	7.02	7.00	6.96	6.79	6.58	6.11	6.02

Scenario Analysis-TSB



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi- Directional EV Charging Residential	IDEA-0165 Foodservic e Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performanc e Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
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Scenario 1: TSB High	10.00	10.00	10.00	7.34	6.67	8.67	7.33	8.00	6.67	8.00	4.67	4.67	5.33	6.00	6.67



Scenario Analysis-Total System Benefit



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi- Directional EV Charging Residential	IDEA-0165 Foodservice Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performanc e Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
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Scenario 1: TSB High	10.00	10.00	10.00	7.34	6.67	8.67	7.33	8.00	6.67	8.00	4.67	4.67	5.33	6.00	6.67



Large market, may be some overlap in TSB



Scenario Analysis-Total System Benefit



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi- Directional EV Charging Residential	IDEA-0165 Foodservice Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performanc e Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
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BPS may accelerate ERTU adoption



Scenario Analysis-Equity



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi- Directional EV Charging Residential	IDEA-0165 Foodservic e Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performanc e Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
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Scenario 2: Equity High	8.38	2.50	3.38	2.50	5.00	5.00	5.88	2.50	5.00	2.50	5.00	5.00	5.00	2.50	-



Scenario Analysis-Equity



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Scenario 2: Equity High	8.38	2.50	3.38	2.50	5.00	5.00	5.88	2.50	5.00	2.50	5.00	5.00	5.00	2.50	-

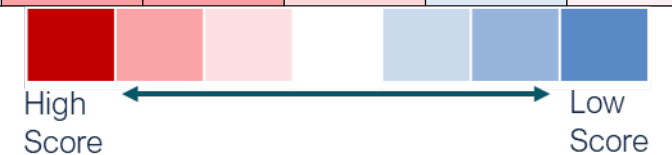
Represents MTI's with:

- About half of the benefits generated by the initiative will accrue to ESJ communities
- An identified role for a CBO partner and/or ESJ agency to support MTI delivery, however, a specific partner has not been identified

Scenario Analysis-MT Alignment



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi- Directional EV Charging Residential	IDEA-0165 Foodservice Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performanc e Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
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Scenario 2: Equity High	8.38	2.50	3.38	2.50	5.00	5.00	5.88	2.50	5.00	2.50	5.00	5.00	5.00	2.50	-
Scenario 3: MT Alignment High	9.25	8.75	7.00	7.50	7.50	8.25	5.75	7.25	7.00	6.25	8.75	8.75	7.50	5.50	7.00



Scenario Analysis-MT Alignment



	IDEA-0097 Portable Heat Pumps	IDEA-0171 Residential Variable Speed Heat Pump	IDEA-0085 Combined Heat Pump	IDEA-0021 Bi-Directional EV Charging Residential	IDEA-0165 Foodservice Decarb	IDEA-0116 ERTUs	IDEA-0194 Heat Pump Water Heater	IDEA-0193 Building Perf Standards Accelerator	IDEA-0010 High Performance Windows	IDEA-0068 AC must be HP Policy	IDEA-0157 Single Pane Retrofit	IDEA-0107 Induction Cooktops	IDEA-0105 Streetlight Efficiency	IDEA-0080 Smart Electric Panels	IDEA-0149 Mod Building automation system
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Scenario 2: Equity High	8.38	2.50	3.38	2.50	5.00	5.00	5.88	2.50	5.00	2.50	5.00	5.00	5.00	2.50	-
Scenario 3: MT Alignment High	9.25	8.75	7.00	7.50	7.50	8.25	5.75	7.25	7.00	6.25	8.75	8.75	7.50	5.50	7.00



Batch 1 MTIs

Takeaways / Comments

15 min break
We will be back soon.



Variable Speed Heat Pump



Product Definition

Residential variable-speed centrally ducted heat pump providing space heating and cooling, capable of demand response.

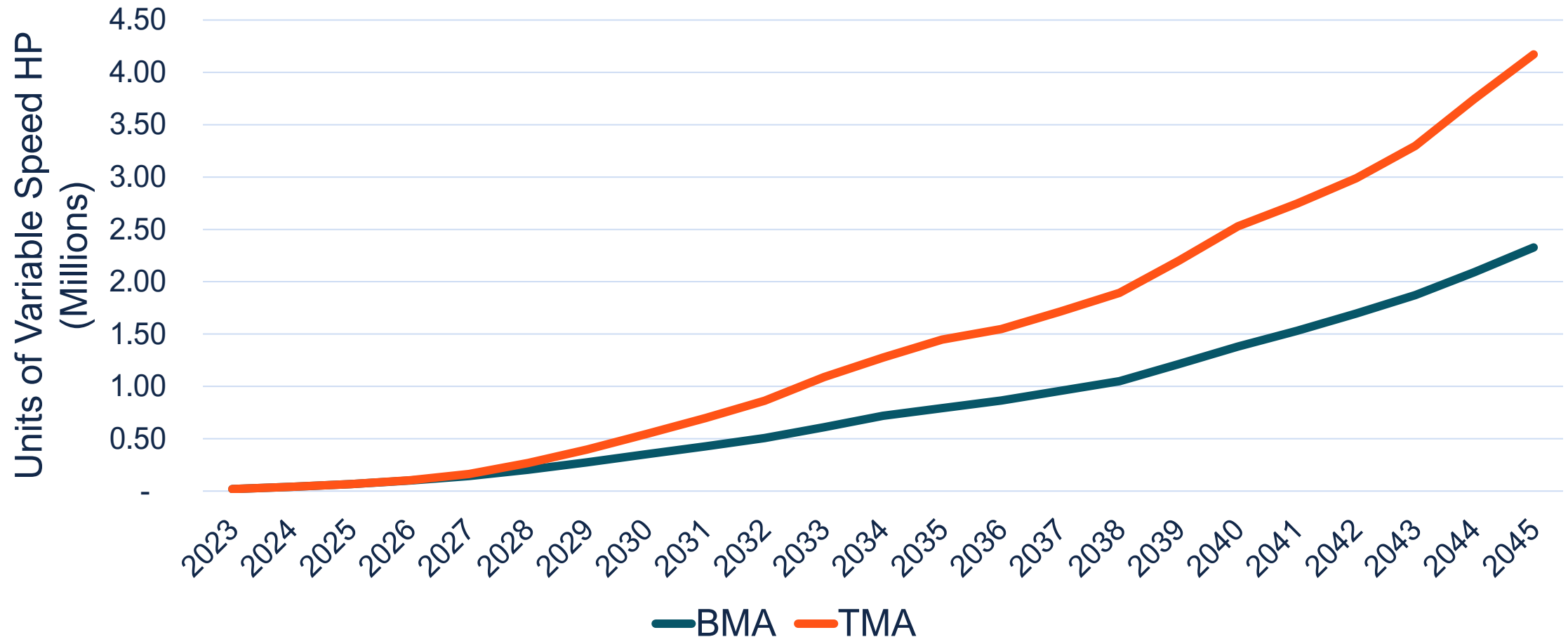
Enables

- Improved efficiency
- Low temp operation (reduces need for aux heat)
- MTI would support the transition to ultra-low GWP refrigerants

MTI #171: Variable Speed HP



Adoption of Variable Speed Heat Pumps



MTI #171: Variable Speed HP



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 155M	\$ 458M	\$1,412M	\$ 2,025M

Stage 1 Score	Stage 2 Score
8.00	8.25

Program Budget: \$76M

PAC: 32.21

TRC: 1.19

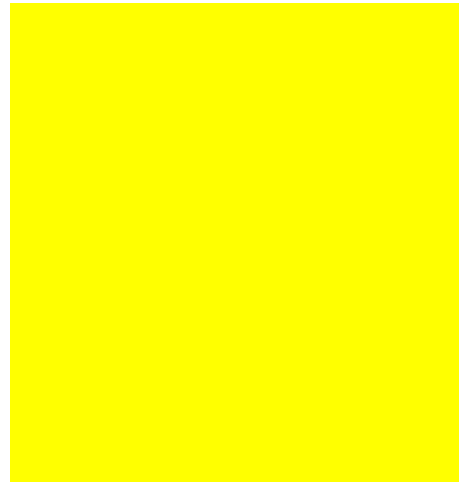
What do you think?



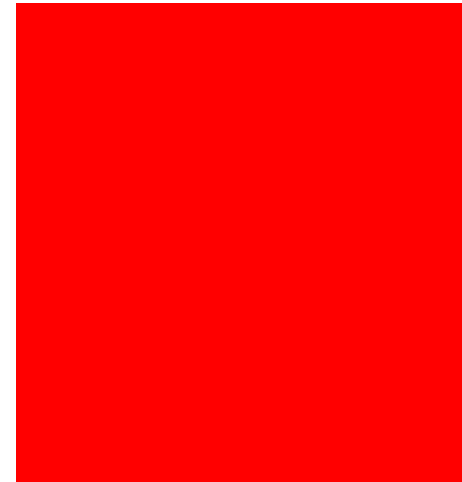
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way

Multifunction Heat Pumps



Product Definition

Combined, multi-function two-way and/or three-way residential heat pump systems that generate hot water for domestic consumption (DHW) and provide space heating only (two-function HP) or both space heating and cooling (three-function), all within the same system.

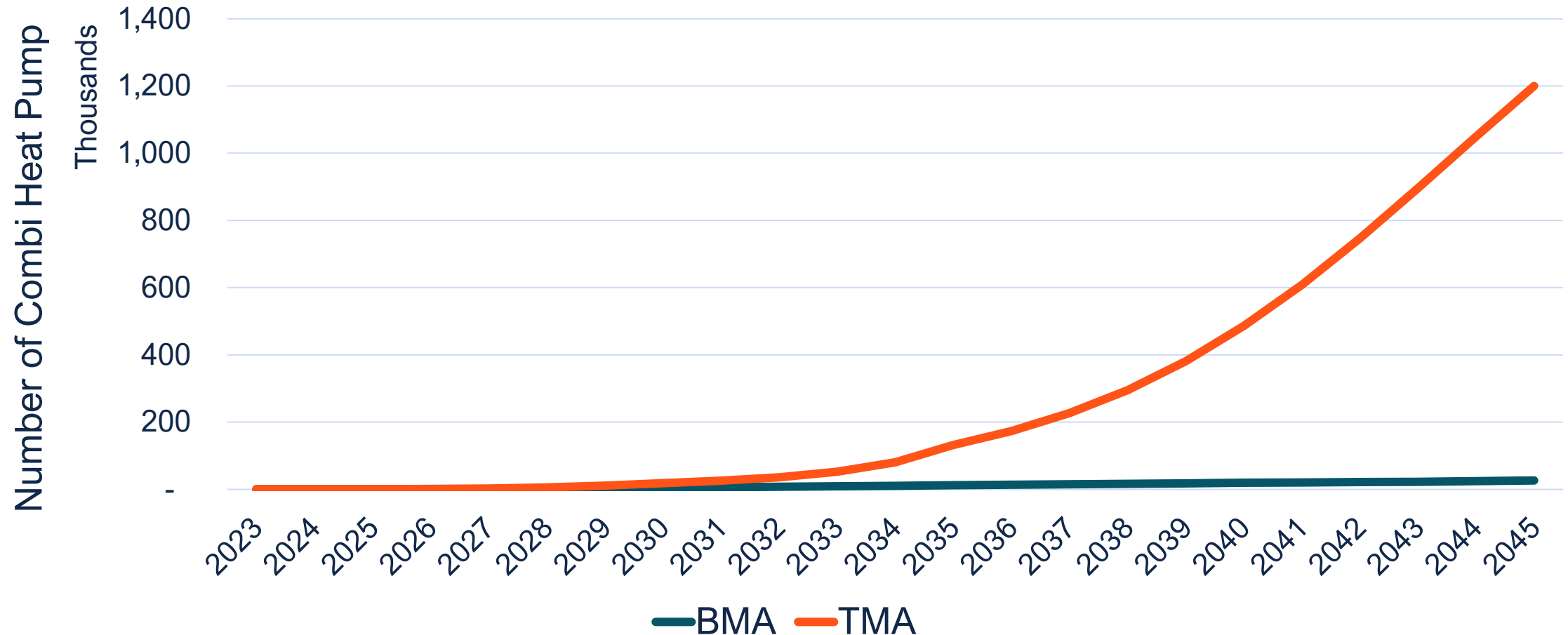
Enables

- Improved efficiency
- MTI would support the transition to ultra-low GWP or natural refrigerants

MTI #85: Multifunction Heat Pumps



Adoption of Combination Heat Pumps



MTI #85: Multifunction Heat Pumps



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 351M	\$ 618M	\$ 1,199M	\$ 2,354M

Stage 1 Score	Stage 2 Score
8.11	8.11

Program Budget: \$58M

PAC: 60.98

TRC: 1.25

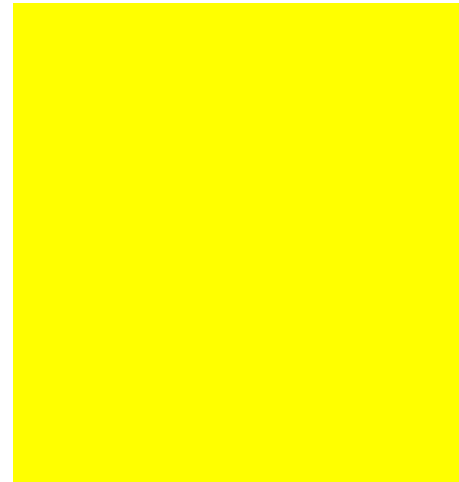
What do you think?



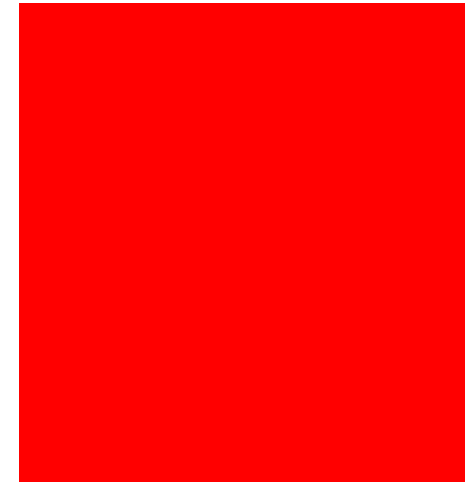
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way

Vehicle to Grid Charging- Residential



Product Definition

Bidirectional Electric Vehicle Supply Equipment (EVSE) coupled with a bidirectional electric vehicle (EV) enable both grid charging and vehicle battery power export

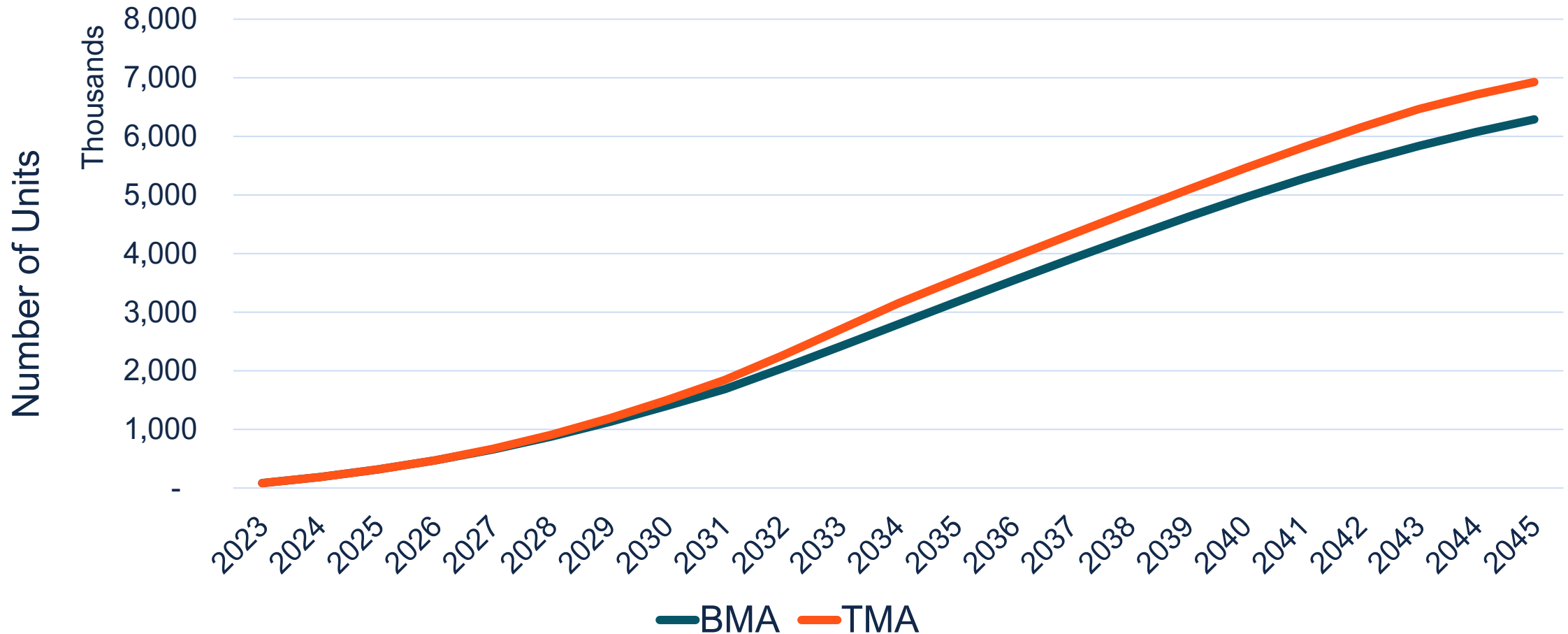
Enables:

- Demand response
- Grid support
- Increased Resiliency

MTI #21: Bidirectional EV Chargers



Adoption of Bidirectional EV Chargers



MTI #21: Bidirectional EV Chargers



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 53M	\$ 3,296M	\$ 20M	\$ 3,369M

Stage 1 Score	Stage 2 Score
8.13	7.54

Program Budget: \$37M

PAC: 119.13

TRC: 2.89

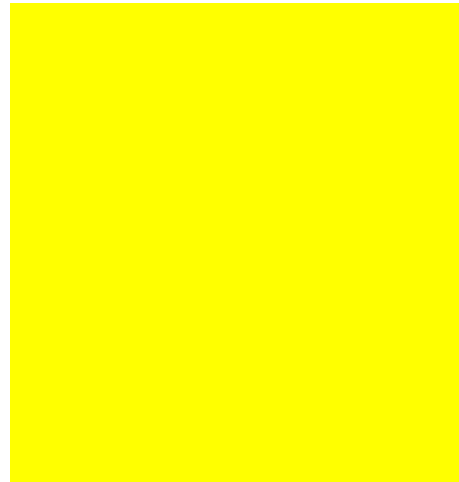
What do you think?



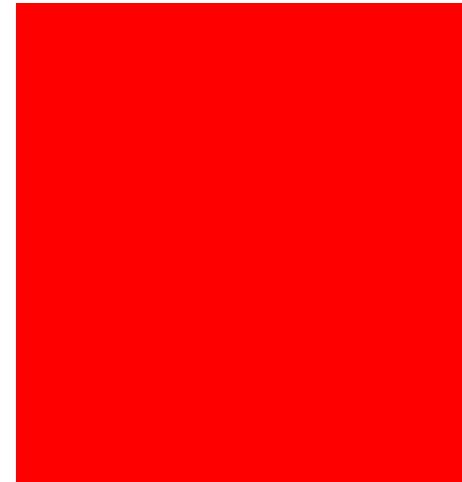
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way



Food Service Decarbonization

Product Definition

Efficient-electric commercial kitchen equipment used for the preparation, service or cooking of food. Common technologies include: Ovens, fryers, griddle, broilers, ranges, and woks.

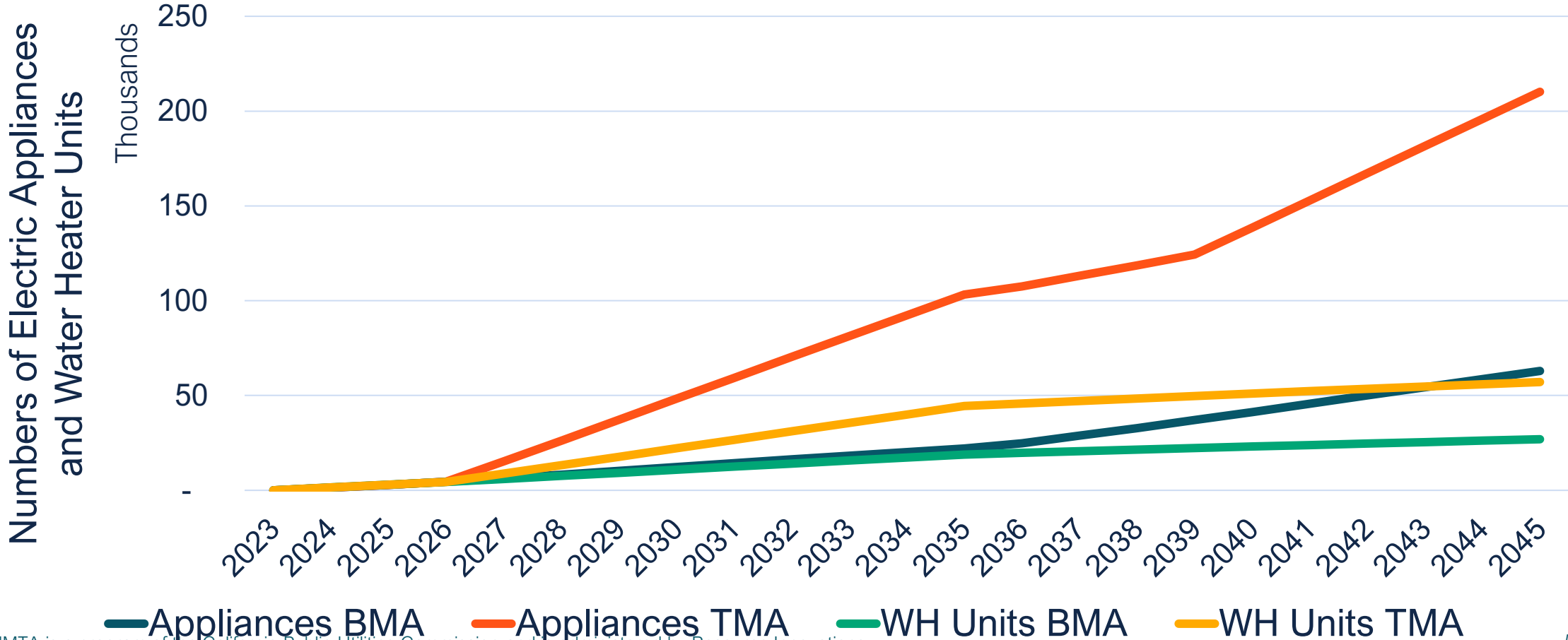
Enables:

- Efficiency
- GHG reduction
- Improved work conditions

MTI #165: Food Service Decarbonization (Appliances + Water Heating)



Adoption of Food Service Decarbonization



MTI #165: Food Service Decarbonization (Appliances + Water Heating)



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 355M	\$ (47.5)M	\$ 1,992M	\$ 1,492M

Stage 1 Score	Stage 2 Score
7.17	7.50

Program Budget: \$118M

PAC: 15.49

TRC: 1.82

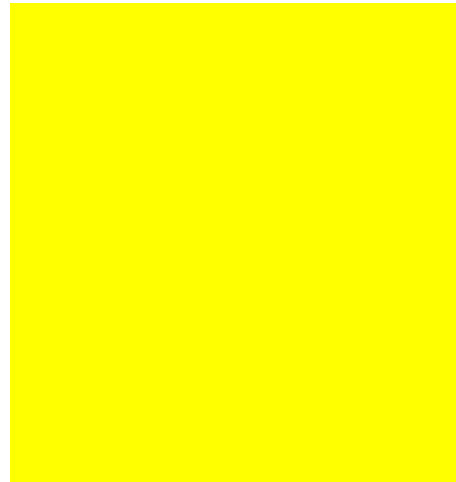
What do you think?



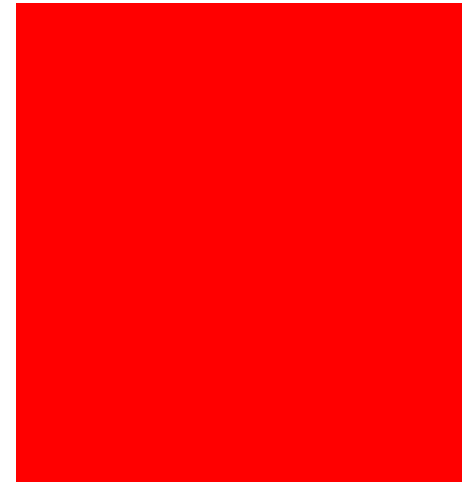
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way

HP Water Heater Single Family

Product Definition

ENERGY STAR qualified heat pump water heater 80-gallons or less with a minimum UEF of 3.3 and a decibel rating below 55db.

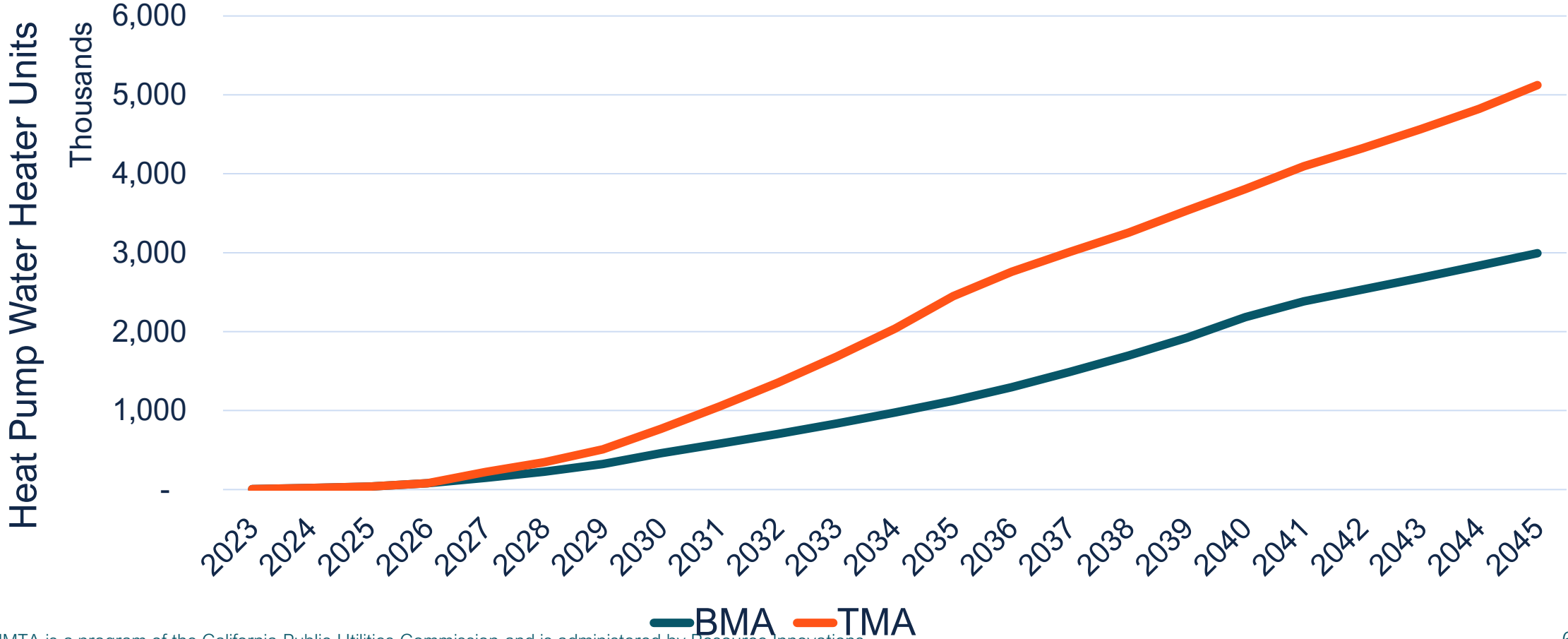
Enables:

- Efficiency
- GHG reduction
- Grid flexibility (load shifting, storage)

MTI #194: Heat Pump Water Heater – Single Family



Single-Family Adoption of Heat Pump Water Heaters



MTI #194: Heat Pump Water Heater – Single Family



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 272M	(\$ 45M)	\$ 2,748M	\$ 3,099M

Stage 1 Score	Stage 2 Score
7.86	7.36

Program Budget: \$46M

PAC: 81.48

TRC: 2.19

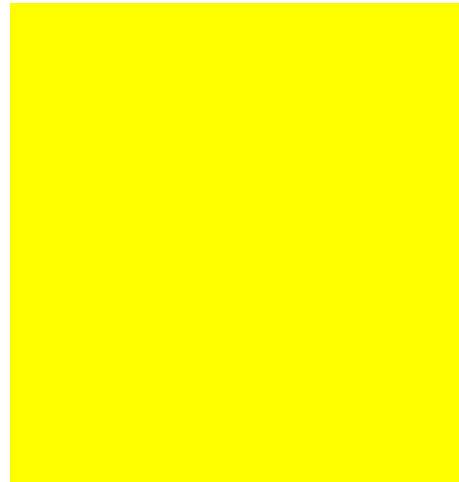
What do you think?



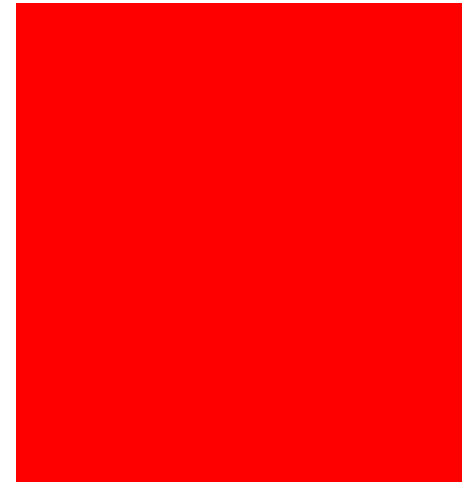
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way

Building Performance Standards Acceleration



Product Definition

Outcome-based policies and laws aimed at reducing the carbon impact on the built environment larger than 25,000 SF by requiring existing building to meet energy and/or greenhouse gas emissions-based performance targets.

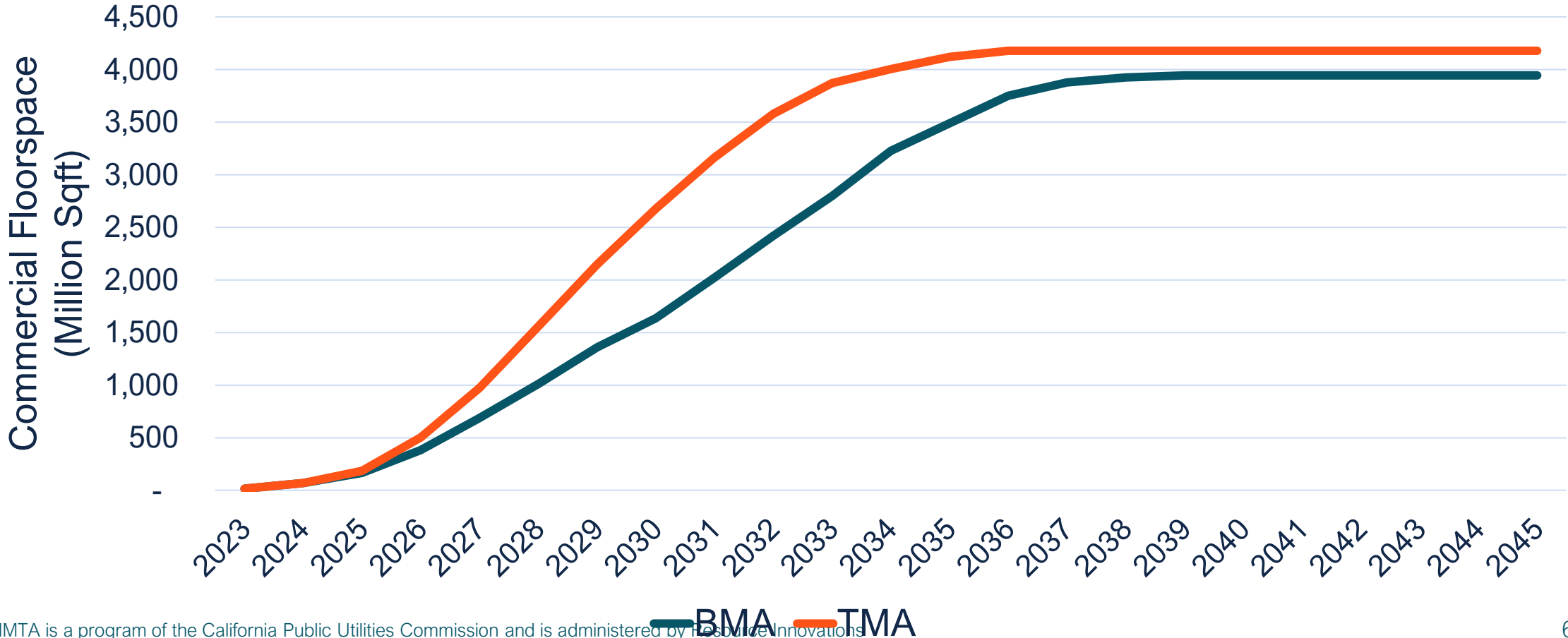
Enables:

- Efficiency
- GHG reduction
- May spur greater adoption of EE tech or practices

MTI #193: Building Performance Standards Acceleration



Adoption of Building Performance Standards



MTI #193: Building Performance Standards Acceleration



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 148M	\$ 223M	\$ 195M	\$ 566M

Stage 1 Score	Stage 2 Score
7.30	7.22

Program Budget: \$54M
 PAC: 12.67
 TRC: 1.35

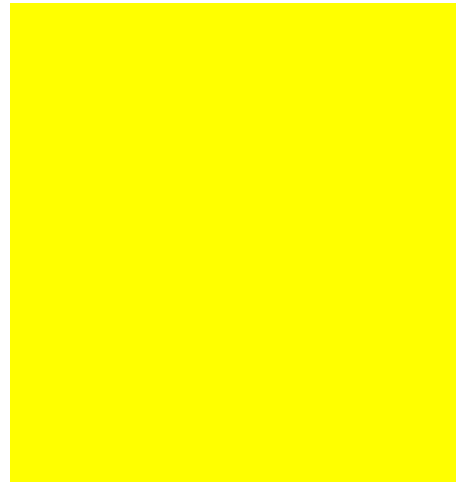
What do you think?



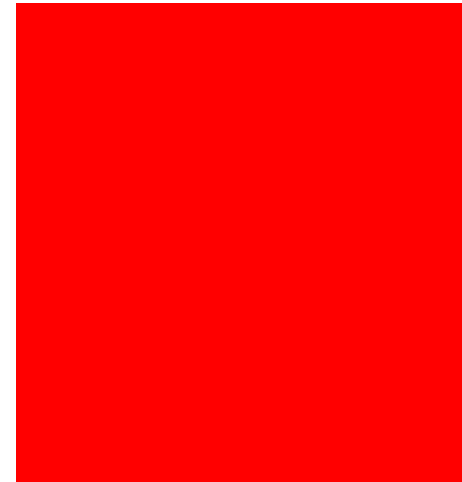
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way

High Performance Windows

Product Definition

Residential window with a U-factor of less than 0.22 and can be installed in a standard wall configuration. U-factor may be achieved through additional panes, materials, or fill gases.

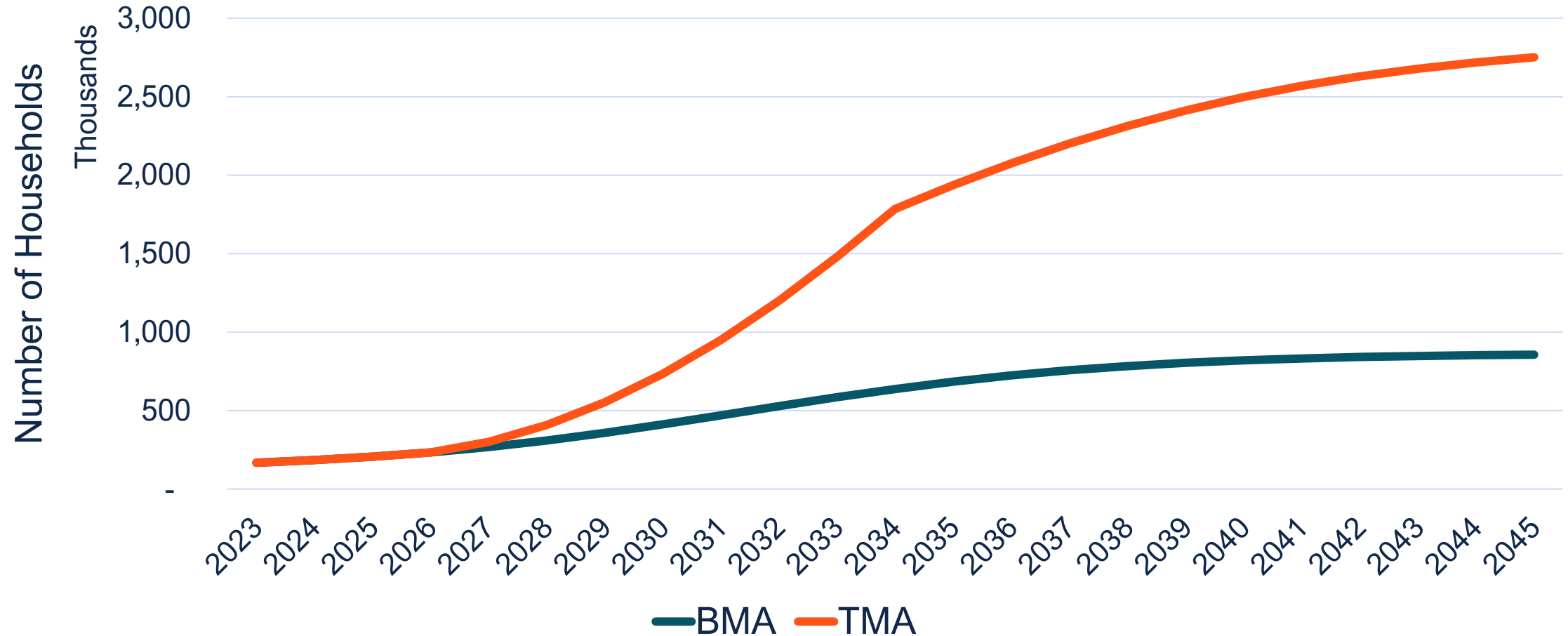
Enables:

- Efficiency
- GHG reduction
- Fuel neutral savings

MTI #10: High Performance Windows



Household Adoption of High Performance Windows



MTI #10: High Performance Windows



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 71M	\$ 161M	\$ 211M	\$ 443M

Stage 1 Score	Stage 2 Score
8.02	7.02

Program Budget: \$24M

PAC: 27.99

TRC: 0.07

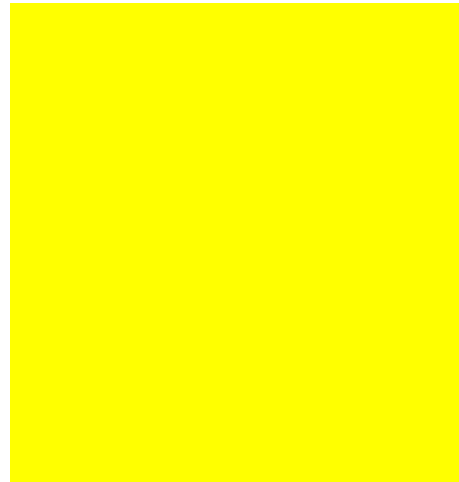
What do you think?



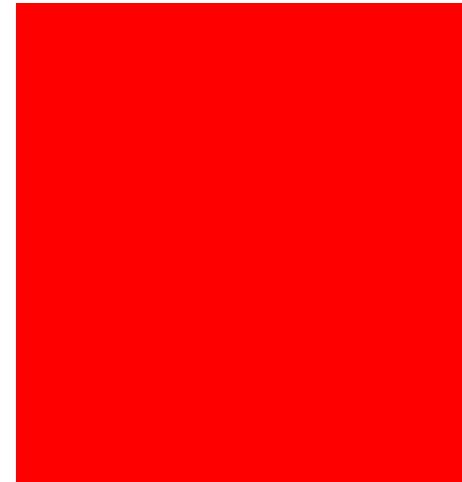
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or unsure



No way

AC must be HP – Policy



Product Definition

Policy that requires any residential forced air AC unit must be supplied with heat pump capabilities that meet current code requirements.

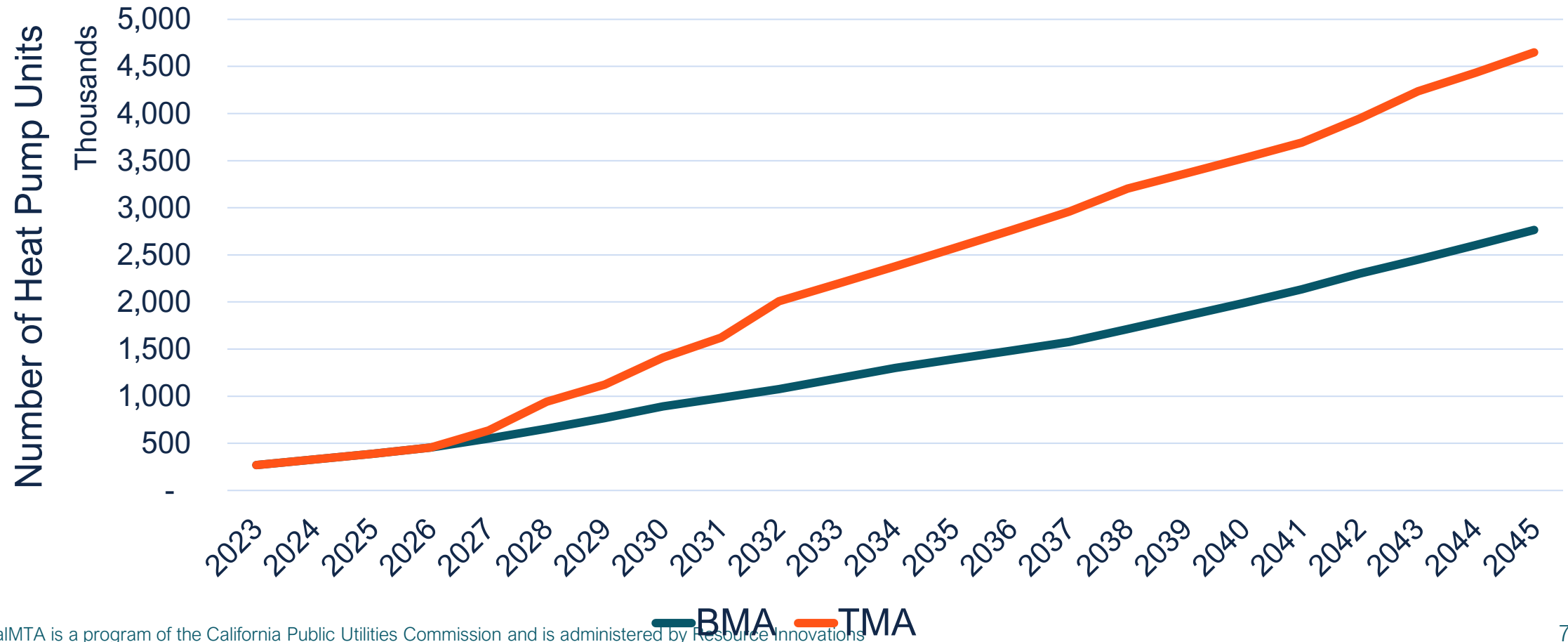
Enables:

- Efficiency
- GHG reduction
- Grid support and flexibility

MTI #68: AC must be Heat Pump



Adoption of Heat Pumps (Instead of Air Conditioners)



MTI #68: AC must be Heat Pump



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 88M	\$ 76M	\$ 3,551M	\$ 3,716M

Stage 1 Score	Stage 2 Score
7.25	7.00

Program Budget: \$6M

PAC: 794.8

TRC: 9.35

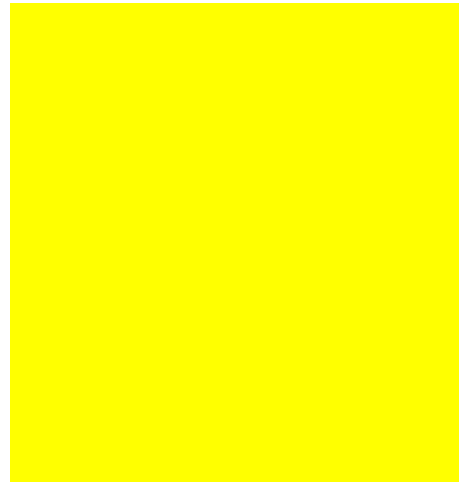
What do you think?



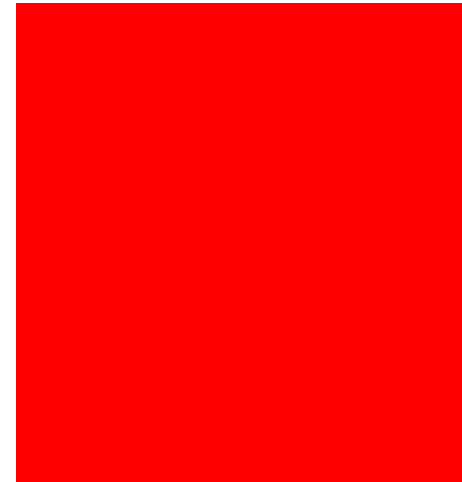
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or
unsure



No way

Single Pane Retrofit



Product Definition

Targeting commercial buildings with existing single pane windows for replacement with vacuum insulated glass (VIG) units.

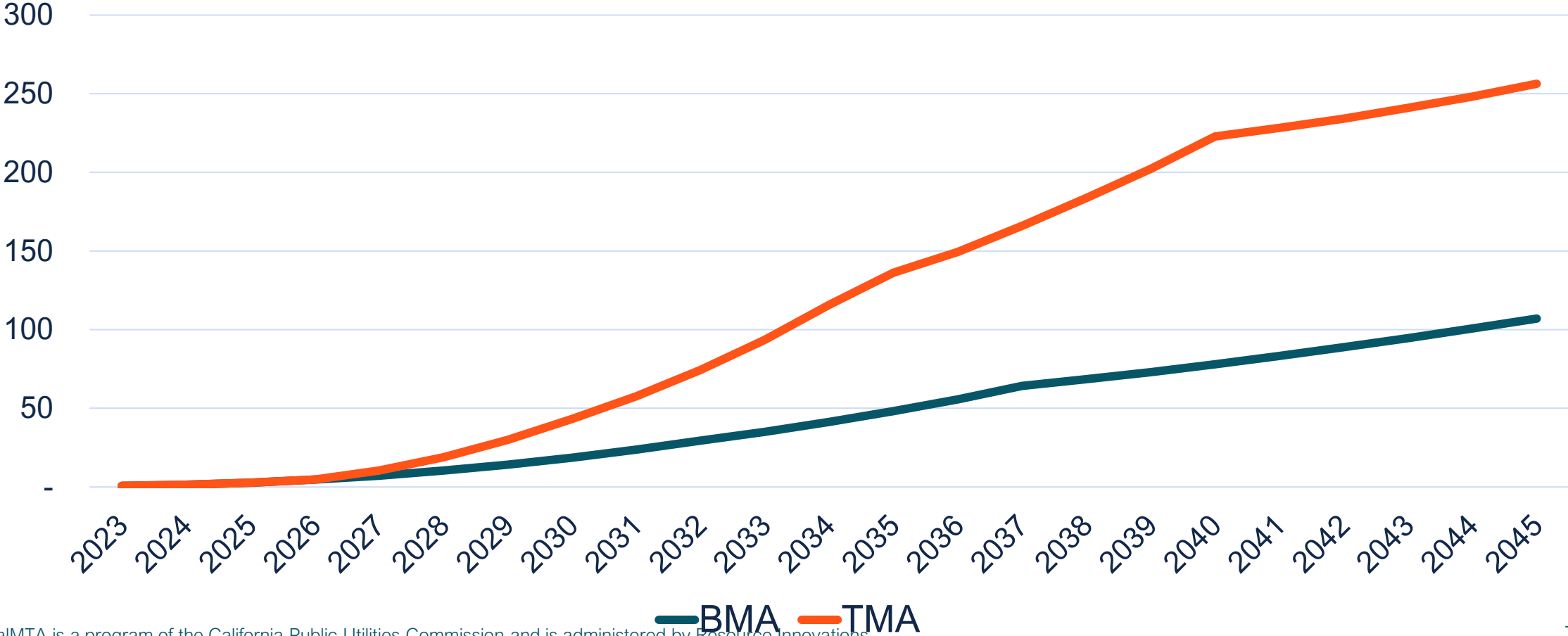
Enables:

- Efficiency
- GHG reduction
- On peak demand reductions
- Fuel neutral savings

MTI #157: Single Pane Retrofits in Commercial Buildings



Million Square Feet of Floorspace with VIG



MTI #157: Single Pane Retrofits in Commercial Buildings



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 24M	\$ 511M	\$ 71M	\$ 145M

Stage 1 Score	Stage 2 Score
8.38	6.96

Program Budget: \$44M
PAC: 5.10
TRC: 0.46

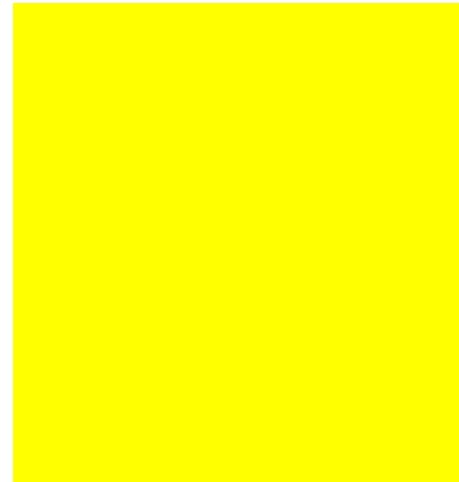
What do you think?



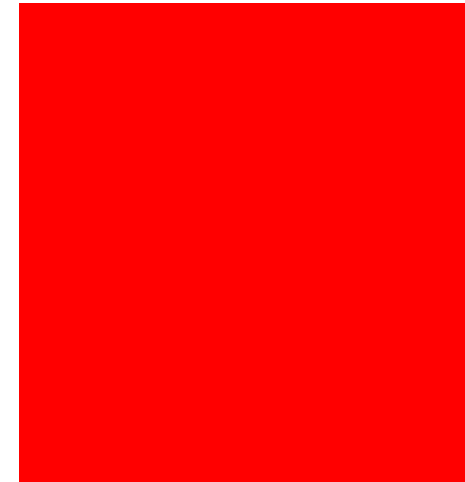
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or
unsure



No way

Highly Efficient Streetlights

Product Definition

Efficient, well-designed streetlighting systems with controls

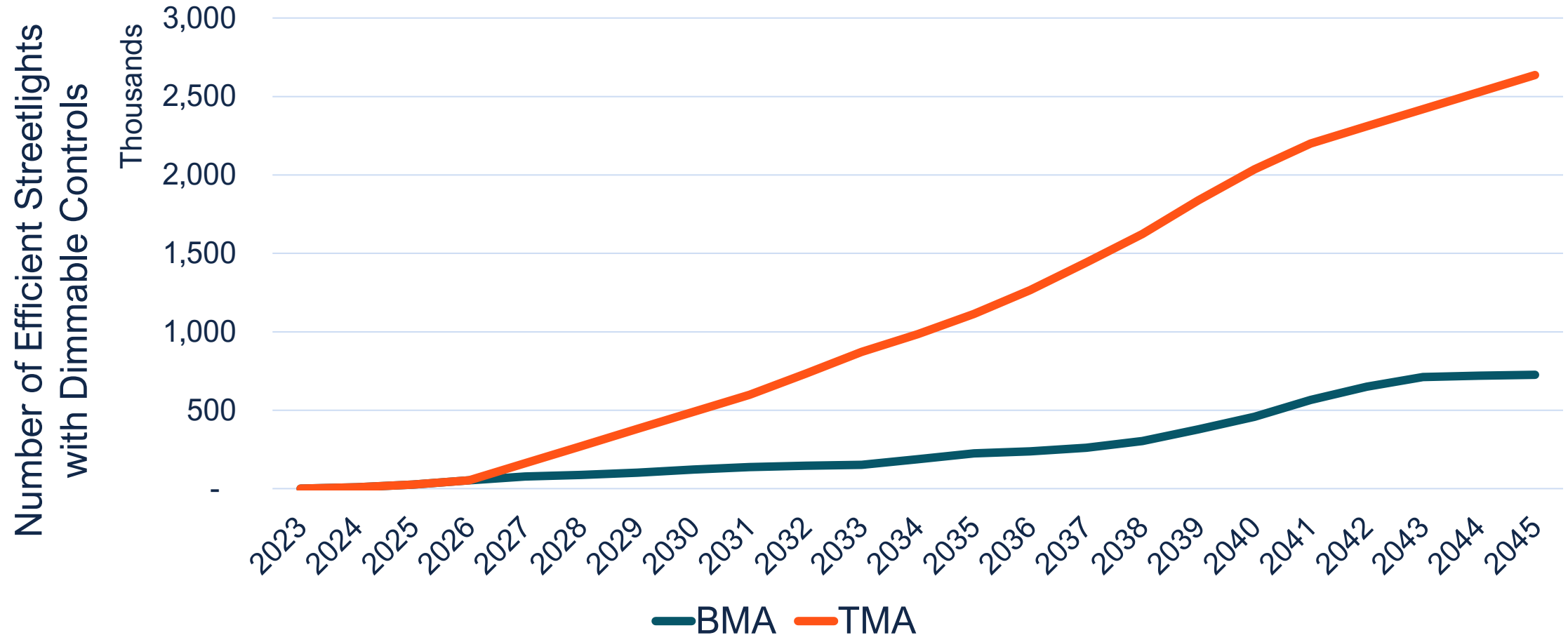
Enables:

- Efficiency
- GHG reduction
- Grid flexibility

MTI #105: Highly Efficient Streetlights



Adoption of Highly Efficient Streetlights



MTI 105: Highly Efficient Streetlights



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 114M	\$ 46M	\$97M	\$ 257M

Stage 1 Score	Stage 2 Score
7.21	6.58

Program Budget: \$9M

PAC: 20.93

TRC: 0.80

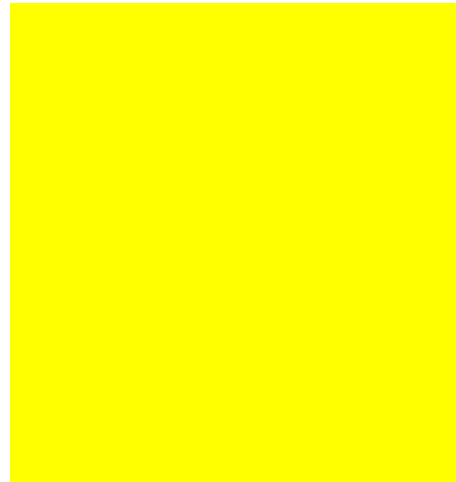
What do you think?



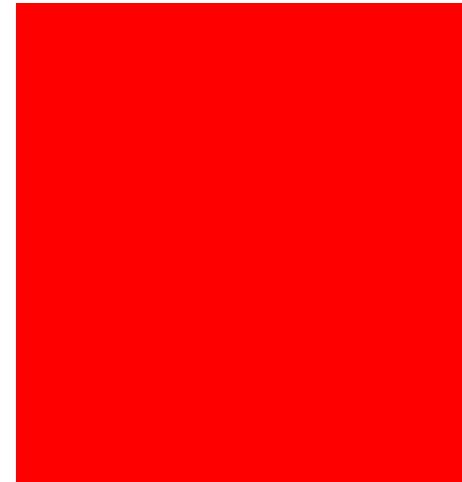
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or
unsure



No way

Smart Electric Panel



Product Definition

Smart electric panels include integrated or add-on software controls allowing individual circuit control.

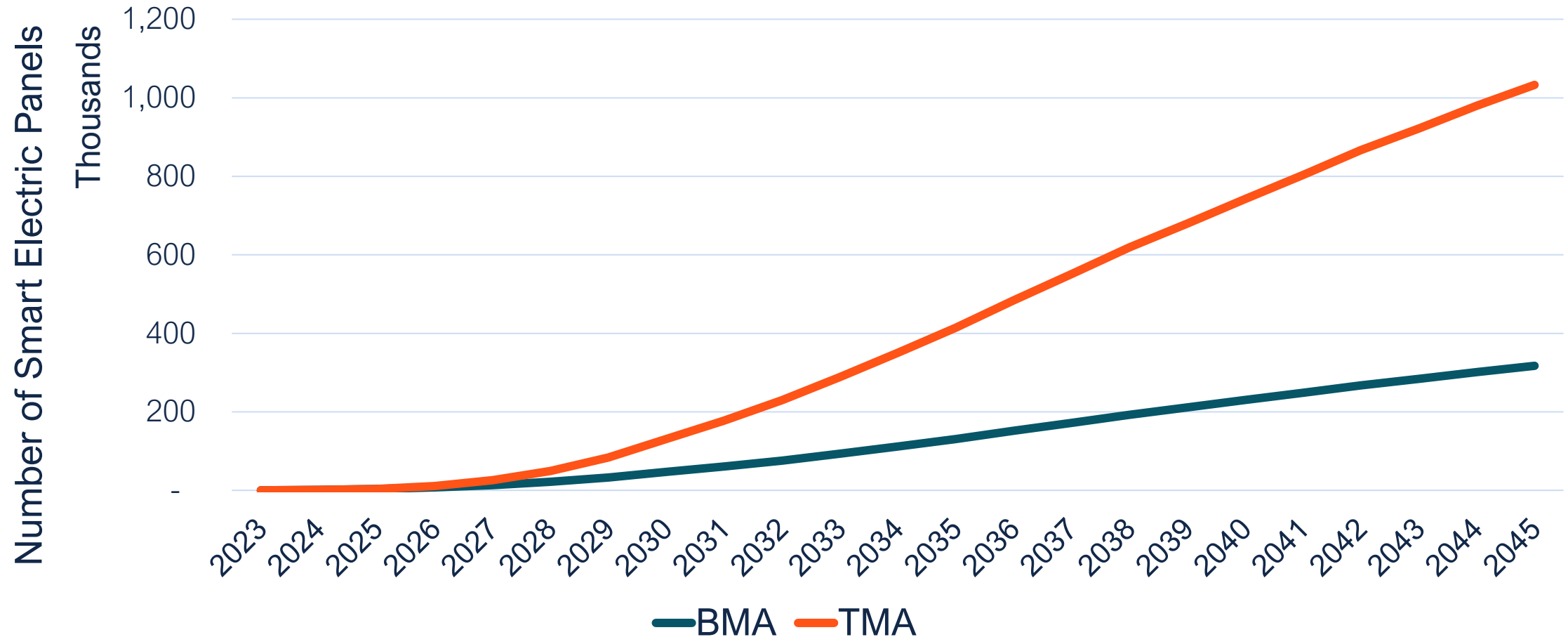
Enables:

- Load Management
- Participation in DR programs
- Simplifies addition of solar, storage, EVSE, EE measures limited by panel capacity.

MTI #80: Smart Electric Panels



Adoption of Smart Electric Panels by Existing SF



MTI #80: Smart Electric Panels



TSB Electric	TSB Grid	TSB GHG	TSB Total
\$ 39M	\$ 654M	\$ 28M	\$ 721M

Stage 1 Score	Stage 2 Score
6.44	6.11

Program Budget: \$57M

PAC: 19.71

TRC: 1.07

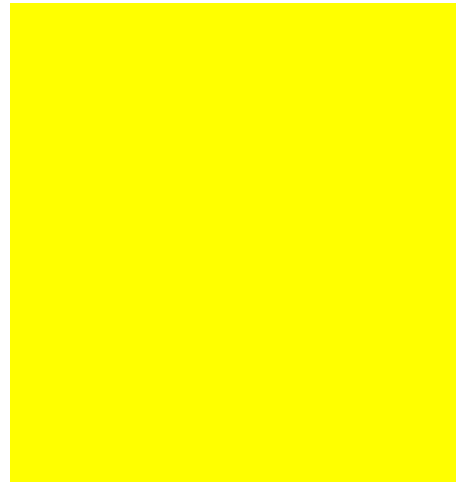
What do you think?



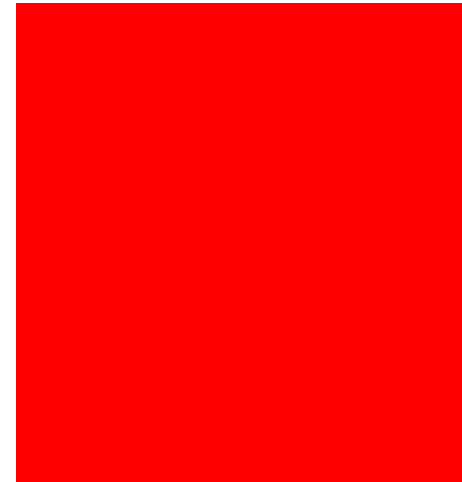
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or
unsure



No way

Building Automation System



Product Definition

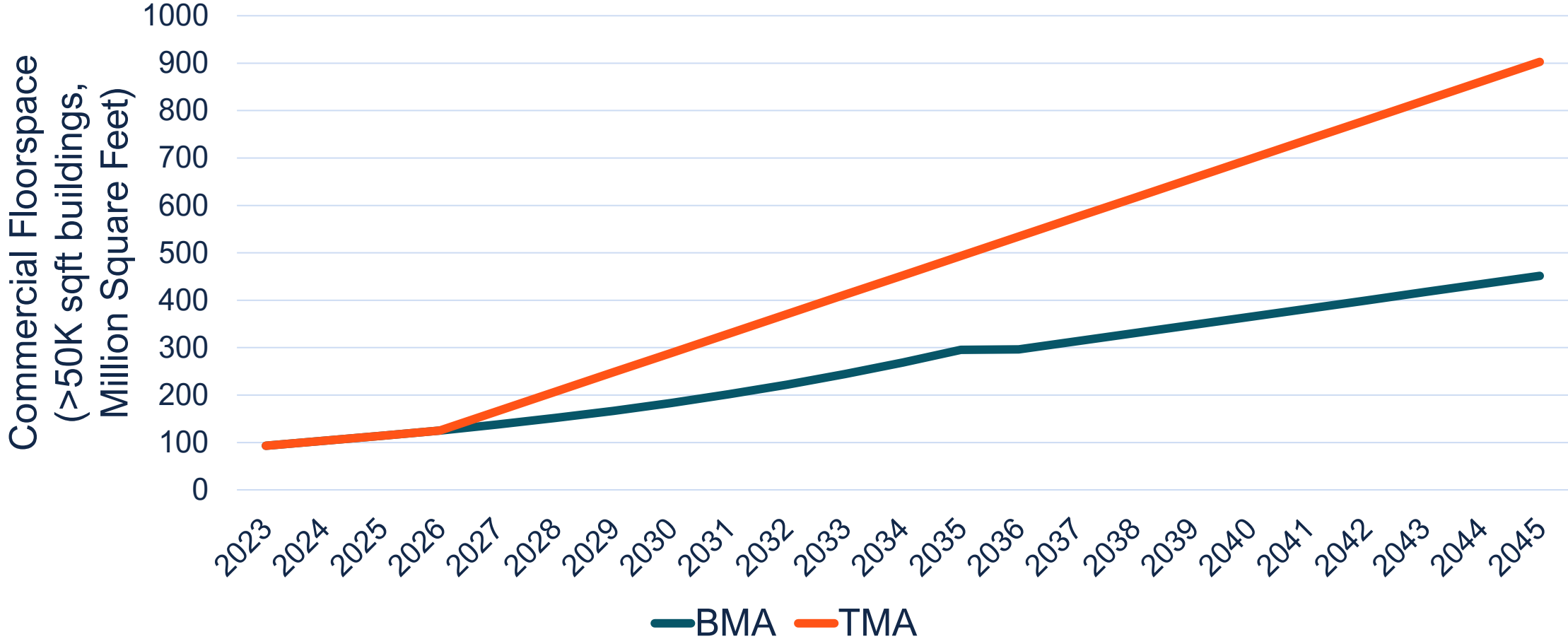
The software and hardware (controllers/sensors) for building automation systems (BAS) required to standardize and optimize the control sequence of operation (SOO) for heating, ventilating, and air-conditioning (HVAC) systems and equipment in existing buildings as defined by AHRAE G-36.

Enables:

- Efficiency
- GHG reduction
- On peak demand reductions
- Fuel neutral savings

MTI 149 Building Automation System (ASHRAE GDL 36, Large Buildings)

Adoption of Building Automation Systems



MTI #149 Building Automation System (ASHRAE GDL 36, Large Buildings)



TSB – Electric	TSB – Grid	TSB – GHG	TSB – Total
\$ 69M	\$ 196M	\$ 119M	\$ 384M

Stage 1 Score	Stage 2 Score
7.02	6.02

Program Budget: \$31M

PAC: 13.12

TRC: 0.19

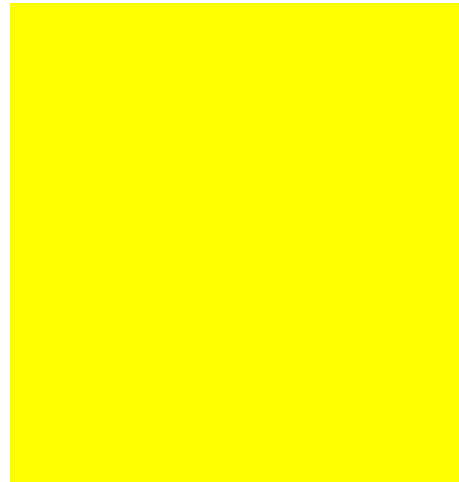
What do you think?



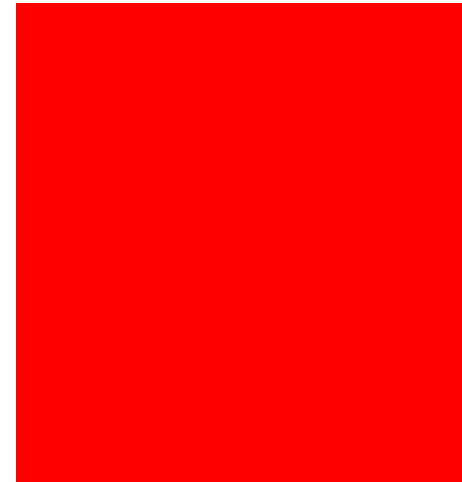
Hold up one of the three color cards to indicate your reaction.



Excited



Neutral or
unsure



No way

Batch 2 Prioritization Exercise



STEP 1: Individual reflection on the presentation

- Which ideas excited you? Did it change as you heard about other ideas?
- What resonates with you about each promising idea?
- Which ideas would be strong candidates for further development in Batch 2?
- Why do you think the idea could be successful in California?
- Do you have any concerns, reservations, or questions?

Batch 2 Prioritization Exercise



STEP 2: Questions or clarifications about the ideas from the CalMTA team

STEP 3: Place your post-it notes on the best candidates for Batch 2

- You can't have more than five post-it notes
- You don't have to use all your post-it notes

Batch 2 Prioritization Exercise

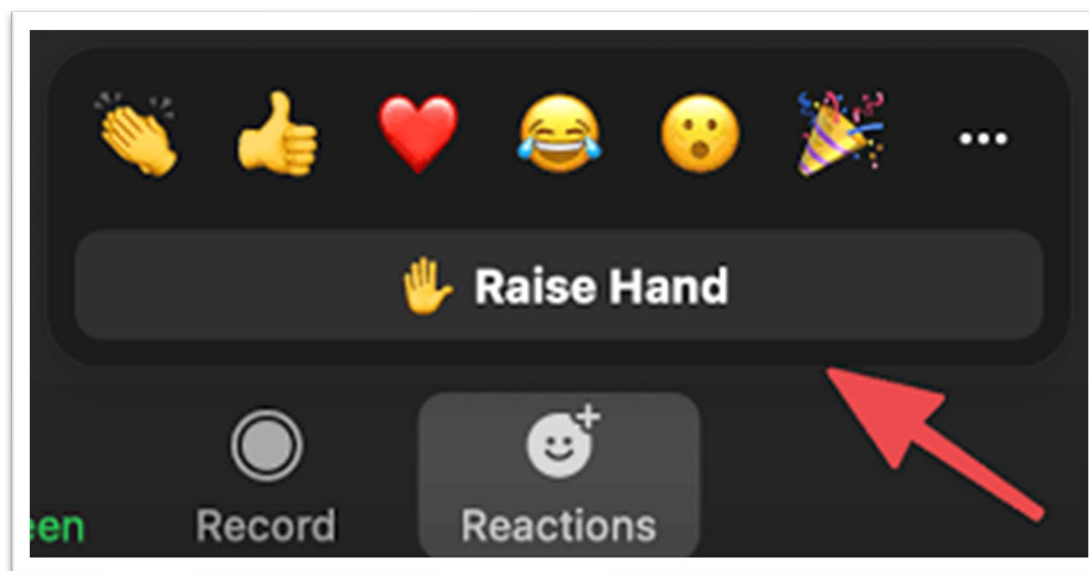
STEP 4: Facilitated discussion of results

- Where are we aligned?
- Are there any significant outliers?
- Opportunity for MTAB members to share their thinking

STEP 5: Opportunity to revisit initial prioritization

Public Comment

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





Thank you for attending!
See upcoming meetings & events at calmta.org