SAN MATEO COUNTY ENERGY WATCH

OFFICE OF SUSTAINABILITY
COUNTY OF SAN MATEO

RICAPS

Regionally Integrated Climate Action Planning Support

Multi-city Working Group

February 28, 2022

RICAPS technical assistance is available through the San Mateo County Energy Watch program, which is funded by California utility customers, administered by Pacific Gas and Electric Company (PG&E) under the auspices of the California Public Utilities Commission and with matching funds provided by C/CAG and additional funding provided by Peninsula Clean Energy.

Agenda

1. **Recent Electrification Work Share-out (5 min)**
    - Real Estate Listening Sessions, Alero Moju, OOS
    - Single-Family Home Electrification Recap

1. **Next steps for Existing Building Electrification (35 min)**
    - **January Recap: Jurisdiction-driven building electrification in San Mateo County (hurdles and solutions**, Ryan Gardner, Rincon Consultants
    - **Building Electrification v2 (Peninsula Clean Energy electrification programs under consideration)**, Blake Herrschaft, Building Electrification Programs Manager, Peninsula Clean Energy

1. **Break (5 min)**

4. **Breakout Rooms: rank electrification solutions for RICAPS (30 min)**

5. **Reconvene to discuss & vote (15 min)**

Recap

- *Where we are in the trajectory of a county-wide strategy for existing building electrification?*
- *Recap of last meeting*

Timeline: how can existing building electrification happen in San Mateo County?

What role do jurisdictions, RICAPS, PCE play?

2023: PCE/ RICAPS launch programs to enable local passage of existing building electrification policy

2024-5: Jurisdictions pass electrify on replacement policies

2025-45: Gas appliances are replaced with electric across all building types, achieving carbon neutrality by 2045

2023 **2045**

Meeting Recap (First in-person!)

- Thank you to those who attended our January meeting!
- Group-wide share-out of electrification solutions
- Identifying programs to support a county-wide strategy for building decarbonization
- TODAY We will be sharing out a synthesis and next steps from the last session today

Meeting Question:

What are the top 3-4 solutions that RICAPS should focus on in the coming months?

Feedback for proposed PCE program offerings

Announcements!

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COUNTY OF SAN MATEO

Update on Residential Case Studies Webinar and Real Estate Professionals Listening Session

February 28, 2023

Registered: ~187

Attended: ~100

COSTS TO DECARBONIZE SINGLE-FAMILY HOMES

26 January 2023
9:00-11:00AM Presentation
11:00-11:30AM Q&A

REGISTER HERE

Join us in discussion with consultants Josie Gaillard and Tom Kabat who developed case studies for decarbonizing 10 homes in San Mateo County. They will present customized strategies, contractor quotes, and cost results for the individual homes, plus share insights about how to decarbonize existing homes at scale.

HOMEOWNER ECONOMICS
See upfront costs (incorporating the latest incentives) plus projected savings over time.

DECARBONIZATION PLANS
Learn about the benefits for homeowners and contractors of developing a detailed strategy.

WORKING WITH CONTRACTORS
Hear about some misperceptions that impact electrification projects, plus suggestions for overcoming them.

POTENTIAL SOLUTIONS
Hear ideas for beneficial policies and programs to reduce barriers to home decarbonization.

FEEDBACK
Share your thoughts about how we can move forward from here.

THE PRESENTERS

Josie Gaillard

Josie's decarbonization journey started in the solar industry. She serves on Menlo Park's Environmental Quality Commission and has a special interest in rapid electrification.

Tom Kabat

Since retiring from 30 years as an energy engineer for the City of Palo Alto, Tom has been applying his analytical skills as a board member and consultant for multiple environmental organizations.

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BAYREN

Electrification industry professionals statewide, city staff across the Bay Area, case study participants, posted on LinkedIn

Cost Plans Now Available on OOS Website

2,000 Sq Ft
5 Occupants
Built in 1965
3 Bedrooms
2 Baths

View Cost Plan

1,500 Sq Ft
2 Occupants
Built in 1934
3 Bedrooms
2 Baths

View Cost Plan

1,010 Sq Ft
3 Occupants
Built in 1952
3 Bedrooms
1 Bath

View Cost Plan

2,244 Sq Ft
3 Occupants
Built in 1979
3 Bedrooms
3 Baths

View Cost Plan

1,150 Sq Ft
2 Occupants
Built in 1974
3 Bedrooms
2 Baths

View Cost Plan

1,950 Sq Ft
4 Occupants
Built in 1960s
4 Bedrooms
2 Baths

View Cost Plan

www.smcsustainability.org/energy/decarbonizing-homes/

Next Steps

- Meet with a self identified group of webinar participants that are interested in furthering the discussion.
- Present at the CCEC Conference.
- Train the trainer for home electrification plans.
- Template for electrification plans/ Zero Carbon Home

Registered: ~60

Attended: ~25

SAMCAR membership, and real estate professionals that serve San Mateo County

Goal

- Build relationships
- Learn from real estate professionals' experience – alternate ways to reach electrification goals
- Share more accurate costs and alleviate concerns

SAN MATEO COUNTY ASSOCIATION *of* REALTORS®

Potential Cost Range of All-Electric Conversion

Building Electrification Cost Study Published: August 27, 2021

STRUCTURAL COSTS	Low End*	High End*
APPLIANCES		
Air/Heating System	$10,000	$25,000
Range Cooktop	$1,500	$4,000
Water Heater	$2,000	$5,000
Clothes Dryer	$1,000	$2,000
SERVICES		
Rewiring & New 220 Amp Outlets	$5,000	$10,000
Construction Access to Electrical	$3,000	$6,000
Abatement of Asbestos & Lead	$5,000	$10,000
Replacement Housing During Asbestos Removal & Construction Upgrades	$5,000	$10,000
Electric Panel Upgrade from 50-100 to 200 amp	$4,000	$6,000
Undergrounding of Lines	$5,000	$10,000
To Accommodate 200 Amp Service, Replacement of 2 Inch Pipe with 3 Inch Pipe Under Driveway from House to Street	$5,000	$20,000
PG&E Capping-Off Gas Line	$10,000	$15,000
SUBTOTAL APPLIANCES & SERVICES	**$56,500**	**$123,000**
ADDITIONAL FACTORS		
Solar Panels	$25,000	$60,000
New Roof	$20,000	$40,000
Backup Battery	$9,000	$20,000
Swimming Pool/Spa Conversion**	$8,000	$10,000
Trigger for fire sprinklers?		
Trigger for sewer lateral?		
***Biggest unknown = cost of labor**		
****Discouraged by Pool Company due to significant inefficiency**		
TOTAL STRUCTURAL COST	**$118,500**	**$253,000**

Sources: Based on a study commissioned by the SAMCAR Government Affairs Committee with estimates from eight (8) electrical contractors in San Mateo County and a pool service company.

These appliances, services, and range of costs comprise a "menu" of possible options. Some homes will require only few of the options, others will require most, and some may require all.

850 Woodside Way, San Mateo, California 94401 · (650) 696-8200 · fax. (650) 342-7509 · **www.samcar.org**

Objectives

Listening Session Objectives

Provide a safe space for Real Estate Professionals to share their thoughts, questions and ideas about the transition from natural gas to all-electric equipment and explore opportunities to collaborate on home electrification.

Medium-term Objectives

Host a series of focus groups addressing topics, ideas or concerns brought up during the Listening Session.

Long-term Objectives

Start a Real Estate Professionals Advisory Group to enable ongoing dialog about home electrification.

Themes of questions

- Electrical upgrades that trigger other code compliance upgrades such as sewer lateral.
- A tiered response to reach codes.
- Grid Stability.
- Panel Optimization.
- CARB focus on water heaters and furnaces. Do we need to reach beyond this?
- Split incentive issue for rental market

Response and next steps

“Thank you. It's important to have this info. I strongly believe in the goal. We want to make sure if there's a regulation, it's something our clients can comply with in a reasonable fashion.”

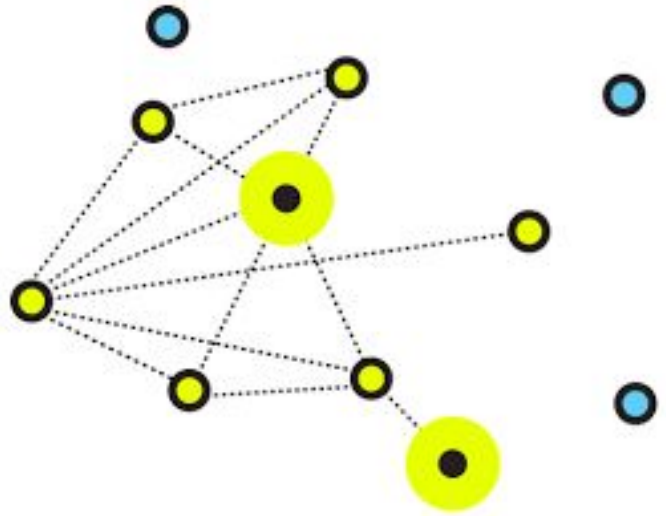
Next step: Invite individuals to participate in follow-up focus group

What We Heard: Hurdles & Solutions for Existing Building Electrification

Ryan Gardner, Rincon Consultants

What we did: synthesized your solution brainstorm and feedback from January

Meeting notes & transcripts from January brainstorm session



Mapped as a theory of change, list of hurdles, outcomes, solutions to help us plan for the future

Timeline: how can existing building electrification happen in San Mateo County?

What role do jurisdictions, RICAPS, PCE play?

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2023 **2045**

What we heard: Hurdle >> Outcome Map

Hurdles block the strategy outcome needed for existing building electrification

'Home Depot Effect' (lack of appliance availability at retailers)	Technical
Interconnection Delay Issues	
Grid Upgrades Needed	
Backup Power Needed	
Lack of qualified contractors	Contractor/Workforce
Lack of contractor knowledge	
Lagging replacement times	
Cost unknowns / Variable Costs	Costs
Unfair cost burden on low-income	
Increased upfront costs to replace equipment	
Misinformation on electrification	Communication/Perception
PG&E lack of coordination & participation	
Electrification processes and incentives can be hard to understand	
Staffing needs (local gov)	Staffing Resources/Compliance
Low permit compliance	

Even if local policies **are** passed, hurdles remain →

- Potentially significant equity impacts: low-income people are left out of the clean energy transition, or are saddled with rising costs.
- Homeowners install gas because of cost unknowns and compliance avoidance
- Upset community members
- Continued gas install (unpermitted) + low compliance rates

Theory of Change: Solutions Lead to Existing Building Electrification

Technical Solutions

Contractor/ Workforce Solutions

Cost Solutions

2024-5 Outcome
Gas appliances are replaced with electric across all building types in San Mateo County

Staffing Resources/ Compliance Solutions

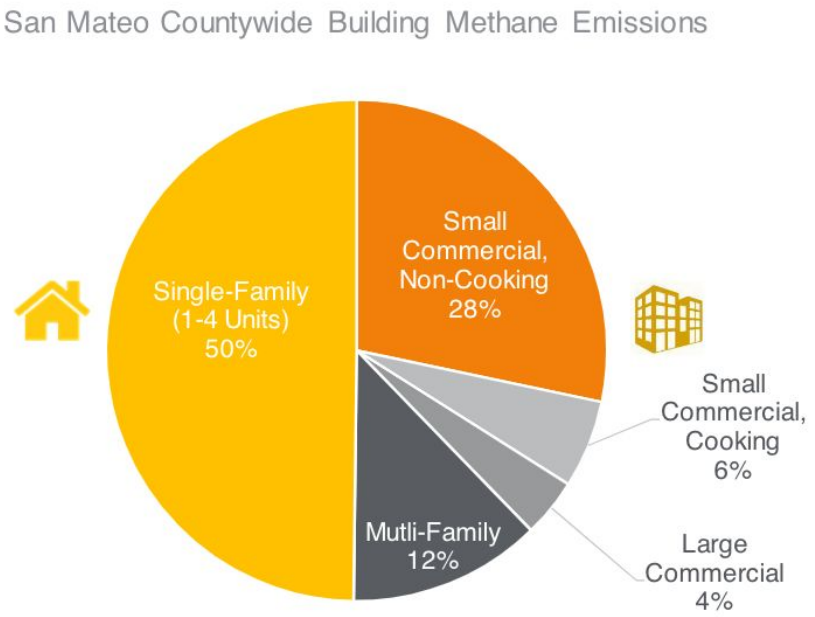
Communication / Perception Solutions

2035 Decarbonization Analysis

Results Refresher

2035: PCE Scope

- Primary Scope
  - Transportation
    - private passenger, local gov & small commercial fleets,
    - ride-hailing, alternative mobility
  - Buildings
    - residential (single family & small multifamily),
    - Office (incl. local gov.), small commercial



- Not in scope, or limited* (others lead)
  - Transportation: heavy-duty vehicles, off-road
  - Buildings: industrial, large commercial*, large multifamily*
  - Non-energy: land-use, compost, stationary sources, landfills
  - Out of territory: SF airport
  - Embedded carbon, Climate Adaptation, Sequestration/restoration

2035: Buildings Electrification

1. **Flexible Incentives**
   - All measures, incl. prewiring and panels
   - Broader building segments
   - Integrated load shaping & solar+storage options
2. **High touch support**
   - Advanced “right-sizing” design
   - One-stop shop, hotline assist, turnkey option
   - Procurement aggregation to lower costs
   - Greater contractor support
3. **Links to Finance**
   - Specific linkages by customer segment

Building Electrification v2

Goals and Architecture

What we have

All-electric homes
Learn about the benefits and next steps to power your home with clean electricity

Zero interest loans
Get a loan of up to $10,000, with no interest, no credit check, and no fees

Heat pump water heater rebates
Find out about heat pump water heaters and the available rebates

Heat pump heating, ventilation and air-conditioning (HVAC)
Find out about heat pump HVAC and the available rebates

Home Upgrade Program
This program provides income-qualified homeowners with home repairs and energy efficiency upgrades at no cost

Needs for Building Electrification 2.0 (“BE v2”)

- Current program provides incentives but minimal guidance/support
- Updated program needs to address barriers customers face
  - Especially important to ensure city councils are comfortable adopting existing buildings reach codes
- Customer challenges include:
  - Lack of clear information
  - Difficulty selecting contractors and equipment
  - Technically complicated installations
  - Emergency replacements
  - Limited time and money

Types of Residential Customers - Profiles

- "I want to choose“/DIY
  - We need to take action on climate
  - I’m interested in technology
  - I like sorting it out myself
- “Just get it done”
  - I’m busy (single parent)
  - My water heater went out and I need one immediately
- "I cannot afford this"
  - I’ve been without heating the last two years. My home has lots of problems.
  - I don’t have the time or funds

Draft Residential Programs – BE v2

"I want to choose"
(DIY or self-managed)

"Just get it done" &
"It's an emergency"

"I cannot afford this"
(low income)

Retail Partners
- Brick & mortar presence
- Dev supply chain
- Bulk buy

One-Stop Website
- Appliance marketplace
- Contractor network
- Info & education
  Why, how, rebates, etc.
- Energy calculator

Hotline
- Program navigation
- Project planning
- Technical guidance

Turnkey install option
- Appliance install
- Bulk buy
- Emergency loaner
- Workforce development
- Whole home planning
- Pilot tech

Finance Options
- PCE financing
- Third-party financing

Load Shaping

PV + Storage

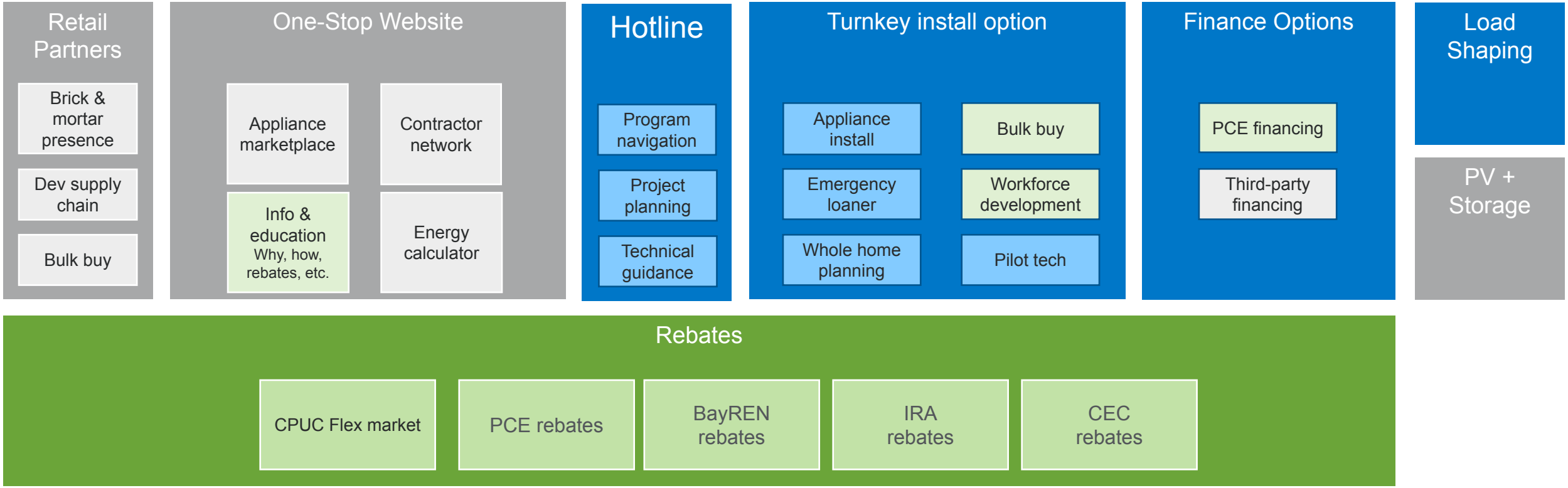
Rebates
- CPUC Flex market
- PCE rebates
- BayREN rebates
- IRA rebates
- CEC rebates

First Priorities: Turnkey, Hotline, One-Stop-Shop Website

- **Turnkey install**
  a) Direct install electrician and contractor
  b) Gas WH loaner unit
     - Supports emergency replacements
     - Essential for deeper existing building reach codes
  c) Point of sale finance option (OBF &/or 3rd pty)
- **Hotline**
  a) Customer call support for
     - basic program participation
     - navigating PCE & other support
     - basic project process
     - technical support
  b) Whole home electrification planning
- **One-stop-shop website v1**
  a) Info & education: why, how, rebates

Draft Residential Programs – BE v2

- RFP
- Future PCE scope
- PCE Internal



What We Heard: Solutions

Technical solutions

Contractor/ Workforce Solutions

Cost Solutions

Communication/ Perception Solutions

Staffing/ Resources/ Compliance Solutions

PENINSULA CLEAN ENERGY — Potential programming (2023)

- Develop supply chain
- Load shaping
- Bulk buy
- Brick and mortar presence
- PV and storage
- Turnkey Install Option
- Pilot tech
- List of trusted contractors
- Whole home planning
- Contractor Training - local workforce development
- Emergency Loaner
- PCE Financing
- Third-party financing
- Energy Calculator (website)
- Info & education (website)
- Contractor Network (website)
- Hotline: technical guidance, project planning, program navigation
- Building Electrification hub/Genie
- Appliance Marketplace (website)

RICAPS — Potential new RICAPS programs

RICAPS programs compliment PCE programming

- Grid upgrade cost sharing mechanism
- incentives for battery storage
- Zonal electrification pilots
- Coordination with PG&E
- Collaboration with real estate professionals
- Workforce Development
- Training on electrification plan development
- Encourage contractor networking/ collaboration
- Incentives for rental properties
- Subsidy coordination: stacking PCE, BayREN, IRA, CEC
- Point of sale rebates/discounts
- Innovative financing (green bonds etc)
- Support for outreach/engagement
- Outreach targeting outreach to encourage scale
- Targeted outreach
- Support for commercial electrification
- Floating Staffing Support (JPA?)
- Regional Compliance Program (at sale)

Breakout Rooms

Goals of breakout rooms:

Peer-to-peer discussion of electrification solutions on the table

Consolidate 3-4 top solutions for RICAPS to move on with & provide feedback for PCE programs

Breakout Room Instructions

1. Select a reporter.
2. Walk through the solutions by solution type (technical, workforce, etc), assigning impact criteria;
3. Pull top three RICAPS solutions with the most criteria checked and 2-3 dealbreaker solutions that stood out to your group into **Slide 71** for share-out with the group

Criteria for program effectiveness

Programs that fall under more criteria are more effective

Equity - *increasing access to power, redistributing and providing additional resources and eliminating barriers to opportunity to empower low-income communities of color to thrive, Greenlining Institute, 2019*

Climate benefit - *GHG reduction potential*

Co-Benefits - *clean indoor air, energy efficient homes*

Technological Feasibility - *(infrastructure & technology) enables easy clean energy transition from an appliance and infrastructure perspective (grid, market-available appliances)*

Ease of Adoption- *is it easy to implement equipment replacement? includes: cost to owner/ institution, clear and simple process for implementation, workforce feasibility*

Dealbreaker/ nice to have*: *can electrification not proceed w/o this solution?

Example slide for criteria ranking

Blue text= potential PCE solution

Green text= potential RICAPS solution

	Dealbreaker or nice to have?	Equity	Climate	Co-Benefit	Technological Feasibility	Ease of Adoption
Develop supply chain	Dealbreaker				x	x
Bulk Buy	Nice to have	x		x	x	
Brick and mortar presence	Nice to have				x	x
Load shaping	Dealbreaker				x	x
PV & Storage	Nice to have		x		x	x
Grid update cost sharing mechanism	Nice to have	x				
Zonal electrification pilots	Nice to have		x			
Incentives for battery storage	Dealbreaker			x	x	x
Coordination with PGE	Dealbreaker	x			x	

Breakout Room 1

1. Walk through the solutions by solution type (technical, workforce, etc), assigning impact criteria
2. Pull top three RICAPS solutions and 2-3 dealbreaker solutions into slide 74