Incentive Layering Workshop

June 30, 2020

Rory Cox, Analyst, CPUC
9 to 9:30 AM - Introduction
Panelist:
Rory Cox, California Public Utilities Commission

9:30 to 10:10 AM - Current landscape of incentives and evaluation methods
Panelists:
Carmen Best, Recurve
Katie Wu, Gridworks
Ralph DiNola, New Building Institute

10:10 to 10:50 – Non-IOU Program Administrator Perspective
Panelists:
Beckie Menten, East Bay Community Energy
Jennifer West, Bay Area Regional Energy Network
Scott Blunk, Sacramento Municipal Utilities District

10:50 to 11:00 - Break

11:00 to 11:40 - IOU Panel
What do IOUs propose for managing different incentive programs? IOUs to present a single proposal.
Panelists:
Michelle Thomas, SCE
Jose Buendia, SCE
Meghan Dewey, PG&E

11:40 to 12:20 – Questions and Comments
12:20 to 12:30 – Next steps
“Finally, we direct Energy Division staff to conduct a workshop, after the adoption of this decision, to focus on stakeholder concern for ‘fund-stacking.’ From this workshop, Energy Division staff will produce a staff proposal with a framework for how to address funding when combining incentives from separate program budgets.”
A Good Problem to Have…

…but a problem nevertheless.

- Building Decarbonization/SB 1477 - $200 million
- Self Generation Incentive Program - $44 million
- Low Income/DACA - $136 million
- Energy Efficiency - $TBD

Total - $380 million +

(Numbers are approximations)
Approved in Energy Efficiency Workpaper Process for “Fuel Substitution”:

• Residential Heat Pump Water Heater (to replace Natural Gas Water Heater)
• Ductless Mini-split HVAC (to replace window AC and gas wall furnace)
• Heat Pump HVAC (to replace AC and gas furnace)
• Induction Cooktop (to replace gas range)
• Heat Pump Clothes Dryer (to replace natural gas Clothes Dryer)

Workpapers available at http://www.deeresources.com/
## Summary of Program Categories and Goals

<table>
<thead>
<tr>
<th>Program</th>
<th>Goal</th>
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<tbody>
<tr>
<td>Energy Efficiency</td>
<td>kW savings &amp; GHG reductions</td>
</tr>
<tr>
<td>Self Generation Incentive Program (SGIP)</td>
<td>Load Shifting &amp; GHG reductions</td>
</tr>
<tr>
<td>Low Income/Disadvantaged Communities</td>
<td>kW savings &amp; home comfort and safety</td>
</tr>
<tr>
<td>Cap and Trade (BUILD and TECH)</td>
<td>GHG reductions</td>
</tr>
</tbody>
</table>

Image: [https://raywilliams.ca/](https://raywilliams.ca/)
Statewide Supply Chain Breakdown

**Upstream**
- TECH Initiative (C&T)
- HVAC Statewide Program (EE)
- Plug Load (EE)

**Midstream**
- TECH Initiative
  - Bay REN Electrification Program

**Downstream**

**IOU**
- San Joaquin Valley Clean Energy Pilot – Select communities in SJV
- Disadvantaged Community Pilot – SCE Territory
- Water Saver - Select communities in SJV, PG&E territory
- Electrification Pilot – SCE territory
- Wildfire Rebuild Programs – Post fire communities in PG&E, SCE, SCP, MCE territories

**Non-IOU**
- Low Income Families and Tenants (LIFT) - Marin Clean Energy territory
- Heat Pump Rebate Programs – SMUD territory
- Electrification Programs – MCE territory
- BUILD - Statewide

(Not a comprehensive list)
a. When is it appropriate to use multiple incentives for the same appliance? When isn’t it?

b. Should there be a minimum or maximum incentive cost for the customer? If so, how should it be determined?

c. How should program administrators in overlapping service territories address incentive layering?
a. Do the CPUC’s current evaluation metrics create a disincentive to take advantage of multiple incentives?

b. How best to ascribe energy savings, GHG emissions, or other metrics when one appliance gets multiple incentives?
Topic 3 – Shared Resources and Standards

a. What types of shared tools, technology, and/or program rules are required to make for a seamless customer or contractor experience?

b. What existing resources could be used to streamline incentive layering?

c. Should there be shared technical standards and specifications across all ratepayer funded programs in CA?
Questions?

Rory Cox
415-703-1093
rory.cox@cpuc.ca.gov
Barriers and Opportunities for Layering Incentives for Building Decarbonization

CPUC Workshop on Incentive Layering for Building Decarbonization
June 30, 2020
Presented by Katie Wu
Gridworks Introduction

To convene, educate, and empower stakeholders working to decarbonize electricity grids
Unprecedented Heat Pump Adoption Rates Needed

Source: E3
Finding Information and Programmatic Gaps Create Barriers to Entry

- Finding and understanding program information is difficult - Customers will rely on contractors’ knowledge and expertise
- Program gaps for retrofits and market rate, multifamily buildings, limiting incentives for support equipment and installation costs

Source: Savings by Design Website
Lack of uniform qualifying criteria complicates program selection best suited to project needs. Contributing factors include:

- Variety of program administrators with overlapping service areas
- Programs external to the ratepayer-funded programs can offer similar services and products
- Financing options from utilities and banks have different lending terms

Resources that received incentive payments or financing may be prohibited from participating in procurement solicitations. Examples include:

- SGIP and Automated Demand Response
- Incrementality rules within the Distribution Investment Deferral Framework
Varying Cost Effectiveness Methods Obscure Value

Standard Practice Manual Tests

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<th>TRC</th>
<th>PAC</th>
<th>RIM</th>
<th>Participant</th>
<th>DG SCT</th>
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<tr>
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<td>Avoided costs of electricity</td>
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<td>Non-energy social benefits</td>
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<td>Participant Value of Service Loss</td>
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**Blue** text indicates cost or benefit which is used only for DR and/or DG, not EE

Source: Joy Morgenstern, Energy Division, 2015

Source: E3, 2016
Oversights within Program Oversight

Program rules aim to limit “double dipping” to protect ratepayers from overspending on incentives to individuals and/or companies.

Recognize that low income and disadvantaged customers lag in receiving benefits from the clean energy economy.

DER value includes health, comfort, and safety benefits excluded from the decision-making framework, despite intention to achieve those benefits.
Solutions Already Exist!

Parties, including agencies, must remain accountable for results and transparently track the right metrics.
Implement and Track Existing Recommendations

Clarify that receipt of an incentive and/or financing does not automatically disqualify new or existing resources from participating in a procurement mechanism (CalSSA)

Design programs using a holistic approach that prioritizes overall energy efficiency, health, comfort, and safety (CEC)

Leverage the California Technical Forum to study market gaps and quantify building decarbonization co-benefits, including improvements to indoor air quality and workforce benefits (CEC and CPUC)

Track recommendations implementation via an advisory group (CEC and CPUC)
Initiate Innovative Solutions and New Partnerships

Aggregate authorized incentives into a balancing account as a pool for grants to community-based organizations’ projects in underserved communities

Provide technical assistance to community-based organizations to support project design and operations & maintenance

Determine project value with program participants throughout implementation and operations & maintenance

Develop a long-term framework to work with Community Development Financial Institutions to leverage public/private funding
Target via the CEC’s Energy Equity Indicator Tool

Shows census tract-level data where low levels of energy efficiency participation overlap with low levels of energy efficiency investment near low-income areas, especially where older homes exist. **These areas had on average eight households per 1,000 participating in energy efficiency programs.**
Thank you!

• Contact: https://gridworks.org/; katiewu@gridworks.org

• Resources:
Decarbonization Incentives

D.20-03-027 Workshop Hosted by the California Public Utilities Commission

Carmen Best, Recurve

June 30, 2020
The Total Resource Cost Test Disincentivizes Co-Funding

Two Residential Programs in PG&E’s 2017 Portfolio\(^1\):

<table>
<thead>
<tr>
<th>Program</th>
<th>$ Net Private Invest. per $ Program Spend</th>
<th>$ Benefits* per $ Program Spend</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$2.85</td>
<td>$1.56</td>
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<tr>
<td>B</td>
<td>$0.03</td>
<td>$0.68</td>
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*Utility Avoided Costs

Which program is more cost-effective?

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\(^1\) Data from PG&E’s 2017 CEDARS Annual Filing
Siloed Regulations & Programs

Integrated Resource Plan (Carbon Optimized)

NMEC Meter-Based Changes in Consumption

Integrated Distributed Energy Resources (tech neutral contracts)

Distributed Resource Plans (geographic need)

Demand Analysis Working Group (DAWG)

Energy Efficiency Portfolio (Business Plans)

Resource

BUILD - TECH Decarbonization

Resource

P4P

IEPR - CEC Load Forecast

Non-Resource

Codes & Standards

Market Transformation

Workforce E&T

Comparison Groups - Macro Analysis

DRIVE - Transportation

SGIP Decarbonization

Distribution Planning Advisory Group (DPAG) (modeling assumptions)

Should be 1st priority

BUILD - TECH Decarbonization

Should be 1st priority

P4P
Normalized Metered Energy Consumption
Framework & Tools Already Available

- Standard M&V Calculation Methods
- Monthly, Daily, and Hourly
- Public Stakeholders Empirical Process
- www.CalTRACK.org

- Python CalTRACK Engine
- Open Source Apache 2.0
- How It Works: https://www.lfenergy.org/projects/openeemeter/
- Code Repo: https://goo.gl/qFdW4P
Technology Agnostic Change In Consumption

CalTRACK Hourly
Time of Week Temperature Model
Comparison Groups
Enable System Analysis
Building Electrification and Hourly Carbon Accounting

Heat Pump Marginal GHG Impacts


Program Design → Market Design

- Marginal Cost of DERs
- Electrification
- Low Income
- Microgrids
- ZNE
- Policy / Surcharge
- Resource / Procurement

Price

Open Market Demand Flexibility

Market Value of Flexibility

Smart Tstat

Depth / Duration of Savings
Market-Based Decarbonization

3RD Party Providers (aggregators)

Savings  Comfort  Health

DEMAND FLEXIBILITY

BUSINESS MODELS

Carmen Best
Director of Policy & Emerging Markets
carmen@recurve.com
CPUC Incentive Layering Workshop

June 30, 2020
New Buildings Institute

**Vision:** We envision a transformed built environment that is carbon-free, sustainable, and energy-efficient and supports thriving economies that benefit all people and the planet.

**Mission:** We push for better buildings that achieve zero energy, zero carbon, and beyond – through research, policy, guidance, and market transformation – to protect people and the planet.
Program Areas

NBI works to make buildings more efficient. We shape a new energy future with innovation, research, design guidance, and advanced building policy.

• **Getting to Zero Leadership**
  Driving scale in zero energy and zero carbon buildings

• **Building & Program Innovation**
  Best practices in new and existing buildings

• **Advancing Codes & Policy**
  Continuous code and policy innovation
AB 32
Requires California to reduce its GHG emissions to 1990 levels by 2020 — a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario.

AB 3232
…”assess the potential for the state to reduce the emissions of greenhouse gases in the state’s residential and commercial building stock by at least 40 percent below 1990 levels by January 1, 2030.”

SB 350
(1) To increase from 33 percent to 50 percent, the procurement of our electricity from renewable sources.
(2) To double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

SB 1477
Article 12. Building Initiative for Low-Emissions Development (BUILD) Program
Article 13. Technology and Equipment for Clean Heating (TECH) Initiative

EO B-55-18
A new statewide goal is established to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing greenhouse gas emissions.
Incentive “Layering”

• Double-dipping: Taking advantage of multiple financial incentives offered by multiple programs for undertaking only one activity.

• Programs should be designed to eliminate potential double-dipping by program participants into more than one ratepayer- or taxpayer-funded public purpose program

• The risk of abuse can be minimized through careful participant tracking and coordination among programs

• Customers accepting financial incentives through any program approved by the Commission should be required to acknowledge the source of funds by signing an affidavit or other paperwork declaring that they have received no funds for the same activity from another program or source
Advanced Water Heating Initiative

~13.5 million water heaters in CA, ~95% gas/propane
| Org Type | Org Name | Program/Initiative | Program Type | New Construction (NC) or Existing Buildings (EB) | Program Type | Pilot? | Gas or Electric 2 Electric | Incentive Structure ($) | 2020 Forecasted Installs | 2019 Actual Installs | Unit/ Home Upgrade | Market Segment |
|----------|----------|--------------------|--------------|-----------------------------------------------|--------------|--------|----------------------------|-------------------------|-------------------------|------------------------|----------------------|---------------------|----------------|
| CA Codes | T2X      | Program            | Downstream   | NC                                            |              | N      | E2E                                      | 3000-3000                | 4000                    | 100                    | Unit Residential    | Residential         |
| Utility  | PARF     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | 500                     | Unit Residential      | Home Residential      | Residential         |
| Utility  | PARF     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | $12,500-17,500           | Home Residential      |                        | Residential         |
| Utility  | SFCE     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | 500                     | Unit Residential      |                        | Residential         |
| Utility  | SFCE     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | 500                     | Unit Residential      |                        | Residential         |
| Utility  | SFCE     | Program            | Downstream   | NC                                            | N            | N      | G3E, E2E                                | Est. $750 to $3,000      | Unit Residential      |                        | Residential         |
| Utility  | SFCE     | Program            | Upstream     | FLA                                          | N            | N      | $1,000                                  | 1720                    | Unit Residential      |                        | Residential         |
| Utility  | SFCE     | Program            | NC            | RSA                                          |              |        | Y/Planning                               | $200                    | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | $2,000                                  | 600                     | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | $2,000                                  | 300                     | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | $1,000                  | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | $1,000                  | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | $2,000                  | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | $1,780                  | Unit Residential      |                        | Residential         |
| Utility  | SMUD     | Program            | Downstream   | EB                                            | N            | N      | G2E, E2E                                | $12,500-17,500           | Home Residential      |                        | Residential         |
| Utility  | SMPD     | Program            | Downstream   | EB                                            | N            | N      | E2E                                      | $800                    | Unit Residential      |                        | Residential         |
| City     | Palo Alto| Program            | Downstream   | Y (limited spots)                            |              |        | $2000_base +1600 for CR-ready +1500 for low income +2500 for 200A service panel upgrade | $2000                    | Unit Residential      |                        | Residential         |
| City     | San Jose | Program            | Downstream   | Y (limited spots)                            |              |        | $6,000                                  | 600                     | Unit Residential      |                        | Residential         |
| City     | Marin    | Program            | Downstream   | Y (limited spots)                            |              |        | $1,000, $2,000                            | 500                     | Unit Residential      |                        | Residential         |
| Public Agency | BayREN (StepWash) | Initiative | Midstream | EB                                       | N            | N      | G2E                                      | $2,000                  | Unit Residential      |                        | Residential         |
| Public Agency | BayREN (StepWash) | Initiative | Central HPWH | EB                                      |              | N      | Up installations through BAMBE program | 250                     | Unit Residential      |                        | Residential         |
California Patchwork Quilt Pattern

100% of sale proceeds go to Wildfire Relief Fund

Database of State Incentives for Renewables & Efficiency®

Find Policies & Incentives Near You

Zip Code  Search
PG&E Marketplace
Search all major retailers at once and find energy efficient products.
Top picks for you

We analyze product data daily across major retailers to provide you with highly efficient recommendations.

**BEST OVERALL**

- Rheem XE50T10HD50U1
  - 50 gal. Electric Heat Pump
  - **$1,299**
  - $300 rebate

**LOWEST PRICE**

- Rheem PROPH50T2RH350DCB
  - **$1,455**
  - Up to a $300 rebate

**MOST EFFICIENT**

- Rheem PROPH65T2RH350DCB
  - **$1,825**
  - no rebate
## Top picks for you

We analyze product data daily across major retailers to provide you with highly efficient recommendations.

<table>
<thead>
<tr>
<th>BEST OVERALL 100</th>
<th>LOWEST PRICE 90</th>
<th>MOST EFFICIENT 100</th>
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<tbody>
<tr>
<td>Rheem PROPH80 T2RH350DCB</td>
<td>Atmor AT-905-11TB 12&quot; Digital Thermostatic</td>
<td>Rheem PROPH65 T2 RH350 DCB</td>
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<td><strong>$2,145</strong></td>
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© New Buildings Institute 2020
Top picks for you
We analyze product data daily across major retailers to provide you with the best options available.

**BEST OVERALL**
- Rheem PROPH80T2RH350D2 DCB
- Rheem PROPH80T2RH350DCB

**MOST EFFICIENT**
- Rheem PROPH65T2RH350D2 DCB
- Rheem PROPH65T2RH350DCB

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**Rebate Fast Track**

Before submitting an application, please review and understand the [Terms and Conditions](#) for rebates offered by Southern California Edison. You may be eligible for other rebates, not offered by SCE, view the links below for details.

- SoCalGas $50 Smart Thermostat Rebate
- South Coast AQMD Residential Lawnmower Rebate
- South Coast AQMD Commercial Lawn & Garden Incentive and Exchange Program
  *For professional landscapers/gardeners, local government, nonprofits, and schools/colleges

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Select your eligible product

Select the model name or number:
Nominal Capacity (Gallons): 50

Availability
- FREE Pickup Today at San Francisco Lowe's (change store)

Fuel Source
- Natural gas (18)
- Liquid propane (1)

Nominal Capacity (Gallons)
- 30 (4)
- 40 (24)
- 50 (19)
- 74 (3)
- 75 (2)

A.O. Smith Signature Select 50-Gallon Tall 9-Year Limited Natural Gas Water Heater
- Item: #962543
- Model: #G8-T5040NVR
- 4.8 stars (526)
- $531.50

A.O. Smith Signature Premier 50-Gallon Short 6-Year Limited Natural Gas Water Heater
- Item: #816136
- Model: #G6-PVS5040NV
- 3.9 stars (168)
- $1,008.16

A.O. Smith Signature 50-Gallon Tall 6-Year Limited Natural Gas Water Heater
- Item: #962540
- Model: #G6N-T5040NVR
- 4.6 stars (380)
- $476.22

A.O. Smith Signature 50-Gallon Tall 6-Year Limited Liquid Propane Water Heater
- Item: #962541
- Model: #G6N-T5040PVR
- 3.7 stars (41)
- $620.08
Heat Pump Water Heater (HPWH) Incentive for Contractors

BayREN and participating Bay Area electricity suppliers are offering an incentive up to $1,000—paid directly to licensed contractors—for replacing their customers’ natural gas or propane residential water heaters with high efficiency heat pump water heaters (HPWH).

You can browse Qualified Products by clicking here.
How to Enroll

Step 1. Eligible?
Review the eligibility criteria below. If you meet those, move forward.

Step 2. Agreement
Download, complete and submit the Contractor Participation Agreement.

Step 3. Confirmation
Once your eligibility and agreement is confirmed, you will be enrolled, and a log-in link to the Incentive Processing Platform will be provided.
BayREN Heat Pump Water Heater Incentive
for Contractors

BayREN and participating Bay Area electricity suppliers are offering an incentive up to $1,000—paid directly to licensed contractors—for replacing their customers’ natural gas or propane residential water heaters with high efficiency heat pump water heaters.

Now is the Time to Switch
Heat pump water heaters can cost more than conventional gas or electric water heaters, but the energy savings saves money over time. And with the BayREN $1,000 incentive for contractors—along with rebates and credits available for homeowners, including BayREN’s $1,000 Home+ incentive—there has never been a better time to switch to heat pump water heating.

Added value for homes with solar
If your customer has a solar electricity system or is considering installing one, they will see even greater benefits if they switch to heat pump water heating. They are powered by electricity, so the solar electric system can be sized to produce enough electricity to offset most or all of the water heater’s energy costs. For homeowners wishing to fully electrify their homes, an HPWH is a must.

Benefits
Heat pump water heaters are highly energy efficient. Homeowners who switch from a conventional natural gas water heater to an electric heat pump water heater can:
- Save energy and money
- Reduce air pollution
- Reduce carbon emissions that contribute to climate change

Contractor Application Process:
1. Review the eligibility criteria below.
2. Go to www.bayren.org/HPWH and complete the Contractor Participation Agreement.
3. Once enrolled, incentive processing is easy through a log-in portal.

Program Details
- Incentive Details: $1,000 per heat pump water heater installed
- Paid directly to the participating contractor

Contractor Eligibility
- Must be a licensed contractor holding C-20, C-36 or General B license
- Must complete the program participation agreement

Site/Customer Eligibility
- The homeowner must be a current customer of one of these participating electricity suppliers (expected incentive program start date is in parentheses):
  - East Bay Community Energy (May 2020)
  - MCE (May 2020)
  - CleanPowerSF (Summer 2020)

Equipment Eligibility
- The heat pump water heater must:
  - Be replacing an existing natural gas or propane water heater
  - Have a Uniform Energy Factor (UEF) of 3.1 or greater
  - Have grid-connected capabilities
  - Be listed on the program’s Qualified Products List

Ready to Get Started? Go to
www.bayren.org/HPWH
Connect & save

Earn $150 and save on your energy bill by signing up for the PowerMinder program.

Sign up today
$1,667.21 ($0.53 / oz) & FREE Shipping

Pay $138.93/month for 12 months (plus S&H, tax) with 0% interest equal monthly payments when you're approved for an Amazon Store Card

Arrives: July 9 - 17

Only 2 left in stock - order soon.
What kind of plumbing project do you need help with?

- Faucets, fixtures or pipes
- Water heater
- Clear a drain or blockage
- Sewers or water mains
- Shower or bathtub
- Addition or remodel

What type of water heater do you have?

- Traditional (has a tank)
- Tankless
13.5 million units (~90% gas), about 1 million replaced/yr.

15% = 2,025,000
2,025,000 x $700 = $1,417,500,000
Incentive Opportunities

• Connect programs goals to State climate goals and policy
• Move upstream and deliver cost parity
• Harmonize programs across the state and provide a dashboard
• Streamline and simplify customer journey – move complexity to the back-end
• Address new construction and retrofit in parallel
• Prioritize disadvantaged communities
Thank you!

Ralph DiNola
ralph@newbuildings.org
Questions?
Layering of Electrification Incentives

Beckie Menten, Program Manager
East Bay Community Energy
June 16, 2020
Overview

- Framing the issue: We need to electrify everything, now!
- Layering is key
  - “Will we be the only society to die because it wasn’t cost-effective to save ourselves?”
  - This is a pilot: learn from it!
- Learn from and work with early leaders – CCAs, POUs, local government

Disclaimer: This is the opinion of one community choice aggregator!
Framework

• Electrification needs to happen to meet climate goals
• Current adoptions rates are very low – 1-3%
• Existing funding much less than the need
• This is the first step in a larger effort – learn, adapt

What can we learn from CSI?

- Designed for market transformation
- Clear market signal
  - Incentive steps tied to volume
  - Statewide
  - Long-term committed funding
- Clear and transparent data
- Administratively simple
- Plays well with others (federal tax credit, PPA, rate design)

Is Additionality a Concern?

- Existing funding streams have built in controls
  - Energy efficiency: Avoided Cost
  - SGIP: Storage benefits
- SB 1477: GHG benefits
- Is there a risk that costs outweigh benefits?

Image source: Joel Pett for USA Today
(https://earthdesk.blogs.pace.edu/2013/07/21/climate-summit-by-joel-pett/)
Incentives Should Layer

• Design incentives for stacking
  – Invisible to consumer
  – Easy for installer
  – Consistent requirements (eligible technology, installer requirements)
  – Coordinated messaging
• Rate design should support electrification and flexible load
  – CCAs are key stakeholders in rate design
• Allow non-regulated dollars to layer
• Track data to understand cost / benefits
CCA Leadership in Building Electrification

• CCAs, Local Governments, POUs have been funding building electrification programs for years
• Important early market development
• CCAs are important stakeholders with important lessons learned
## CCA Electrification Programs

<table>
<thead>
<tr>
<th>CCA</th>
<th>Programs Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>CleanPowerSF</td>
<td>Regional HPWH incentives, upcoming EE programs</td>
</tr>
<tr>
<td>East Bay Community Energy</td>
<td>Regional HPWH incentives, Reach Codes, all-electric design assistance, induction cooking, P4P focused on EE / flexible load</td>
</tr>
<tr>
<td>MCE</td>
<td>Regional HPWH Incentives, LIFT program, Advanced Energy Rebuild Napa</td>
</tr>
<tr>
<td>Peninsula Clean Energy</td>
<td>Reach Code assistance, new construction electrification, HPWH rebates, Innovation grants</td>
</tr>
<tr>
<td>Redwood Coast Energy Authority</td>
<td>HPWH rebates, space conditioning HP rebates</td>
</tr>
<tr>
<td>San Jose Clean Energy</td>
<td>HPWH rebates, service panel rebates, induction cooking, Reach Codes</td>
</tr>
<tr>
<td>Silicon Valley Clean Energy</td>
<td>HPWH rebates, Showcase program, Innovation grants, community decarbonization planning, Reach Codes</td>
</tr>
<tr>
<td>Sonoma Clean Power</td>
<td>Advanced Energy Rebuild / Build, Lead Locally, GridSavvy, Reach Codes, Induction Cooking</td>
</tr>
<tr>
<td>Monterey Bay Community Power</td>
<td>Reach Codes, MUD Electrification Grant Program</td>
</tr>
</tbody>
</table>
EBCE Example: Water Heaters

- Objective: market development
- Informed by earlier efforts
  - Incentive level
  - Eligible technology
- Integrated with other programs
  - One application for mid-stream and Home+ program
  - Working to also integrate with WatterSaver
- Plan to shift when state funds available
  - Incentive shift to marginal value to CCA

This Photo by Unknown Author is licensed under CC BY-SA
THANK YOU!

EBCE.org
/EastBayCommunityEnergy
@PoweredbyEBCE
bmenten@ebce.org
(510) 988-1736
Sacramento Municipal Utility District (SMUD)

- Electric utility (PG&E gas territory)
- Community-owned not-for-profit
- Established 1946
- Population 1.5 million
- 2,219 employees
- 50% carbon free electricity
- 626,460 accounts
SMUD’s Net Zero Carbon Plan

2020 Carbon Emissions

SMUD Net GHG Emissions

Generation Decarbonization

Attributed Building Decarbonization

Attributed Vehicle Decarbonization

Community Impact
Great news

BUILD, TECH, SGIP and others supporting decarbonization

• Utility budgets are taking a big hit from COVID fallout
  – Suspension of many SMUD programs in May due to reduced income
• Layering these programs in support of utility programs will help keep the state’s market transformation progressing
• We have a good problem of many different incentives
Customer perspective

- Ideally, SMUD would have the customer touch point
- Other incentives/programs would be invisible to the customer

*Customers sees the cake, not the layers*
All about market transformation

- Better to get the money in the market than put onerous control in place to safeguard “double dipping”
- Use these funds to enhance existing programs not usurp them
- The carbon is in the gas!
  - Let code set minimum efficiencies where possible
Reduce carbon = eliminate gas

The amount of carbon in electricity diminishes greatly over time.
What is being incentivized

• SGIP: HPWH (possibly panels)
• TECH: HPWH and HP-HVAC
• BUILD:
  – Low income MF central HPWH
  – Disproportionate amount will go to central HPWH
    • And that is OK – It is needed
Concepts on layers

• As high upstream as possible
  – Set incentives so equipment is less expensive than gas counterpart at point of purchase

• Augment existing program budgets
  – Move funds to existing programs
  – Program verifies installation and additional receipts/permits
  – Program assumes upstream incentives

• Where existing programs do not exist use a state-wide administrator for installation
<table>
<thead>
<tr>
<th>Program Type / Time Frame</th>
<th>Launch Date</th>
<th>Total Possible Incentive</th>
<th>Base Incentive</th>
<th>HP-HVAC</th>
<th>HPWH</th>
<th>Induction</th>
<th>Bonus</th>
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</thead>
<tbody>
<tr>
<td>Single Family New</td>
<td>March 2018</td>
<td>$6,000</td>
<td>$3,000</td>
<td>✓</td>
<td>✓</td>
<td>$1,000</td>
<td>$2,000</td>
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<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multifamily New</td>
<td>March 2018</td>
<td>$2,000</td>
<td>$1,500</td>
<td>✓</td>
<td>✓</td>
<td>$500</td>
<td>x</td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Family Existing</td>
<td>May 2018</td>
<td>$10,000</td>
<td>n/a</td>
<td>$4,500</td>
<td>$2,500</td>
<td>$500</td>
<td>$2,500</td>
</tr>
<tr>
<td>HPWH Equipment Efficiency</td>
<td>June 2018</td>
<td>$2,500</td>
<td>$2,500</td>
<td>n/a</td>
<td>✓</td>
<td>n/a</td>
<td>x</td>
</tr>
<tr>
<td>Multifamily Existing</td>
<td>December 2018</td>
<td>$2,500</td>
<td>n/a</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$500</td>
<td>25%</td>
</tr>
<tr>
<td>HP-HVAC Equipment</td>
<td>3(^{rd}) Quarter 2019</td>
<td>$4,500</td>
<td>$1,500</td>
<td>$2,500</td>
<td>n/a</td>
<td>n/a</td>
<td>$500</td>
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<tr>
<td>Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HPWH Direct Install</td>
<td>On Hold</td>
<td>$2,500</td>
<td>n/a</td>
<td>n/a</td>
<td>✓</td>
<td>n/a</td>
<td>x</td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank you

Scott Blunk
scott.blunk@smud.org
BayREN Regional Heat Pump Water Heater Program:
A Case Study in Layering

Jennifer West, StopWaste

jwest@stopwaste.org
(510) 891-6555
Key points

- Keep the market in mind
- Consistent standards across programs
- Hard work pays off: streamline applications
- It takes a village
Bay Area Regional Energy Network (BayREN)

BayREN is:

- One of three regional energy networks (RENS) in California funded by the CPUC
- A collaboration of the nine counties that make up the San Francisco Bay Area
- Energy efficiency and related efforts with local governments
Regional HPWH Program

- Simple, uniform program
- Catalyze residential market
- Midstream contractor program
- $1,000/HPWH
- Grid-capable
- Incentives from local energy providers
- BAAQMD provided set up program funding
Regional HPWH Program Operating Territories

EBCE and MCE territories
- May 2020

CleanPowerSF
- August 2020

6 of 9 counties
Challenges for our program

- Limited incentive
- Simple enough to entice contractors
- Helping low-income residents
- Perfect is not possible
- Simultaneous parallel efforts
- No double-dipping
Here’s the Village

- **BAAQMD**
- **CCAs**
- **BAMBE**

Our Program

- **Watter Saver PG&E**
- **Home +**
- **Low-income installations**

Add grid connectivity for load shifting

One application and grid-capable

Program set up Funding

Incentives Funding
Layering Success

• Home +
  • Downstream program focused on EE
  • Ratepayer funds through BayREN
  • + $1,000 (looking for layering, contractor training)
  • Started March 2020

• Watter Saver
  • Customer serving program using CPUC funds through PG&E
  • Load shifting, grid-connectivity
  • Starts Summer 2020
Here are the people...
Other considerations

- Data sharing and privacy
- Meta-program facilitator role created
- Regulatory bodies: allow flexibility for collaboration
- Equity – public funds must address inequities
- Nothing is perfect
Key points

- Look at incentives from the user’s point of view
- The market prefers consistent, predictable standards across programs
- Hard work pays off: streamline applications
- Build your connections
Thank you!

Questions?

Jennifer West, StopWaste

jwest@stopwaste.org
(510) 891-6555
Questions?
Incentive Layering Workshop

IOU Approach

June 30, 2020
What We’ll Cover

• CA’s BE Adoption Targets
• Lessons Learned from New York
• Guiding Principles
• How to Optimize Layering Incentives
• Examples and Approach (*Illustrative*)
• Development Phrases (*Illustrative*)
CA’s Ambitious 2050 Targets for BE Adoption

Residential Heat Pump Space Heating

- SCE’s Pathway, 2045
- NREL - High Scenario
- CEC High Electrification Scenario
- CARB Scoping Plan (No Cap-and-Trade)
- CEC Current Policy Scenario
- CARB Scoping Plan (Reference)

Residential Heat Pump Water Heating

% of Stock

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

2020 2025 2030 2035 2040 2045 2050
Lessons Learned from New York’s Layering Approach

**Useful Definitions:**

- **Layered/Overlapping Incentives**: Financial or non-financial incentives being offered to the same market segment, customer, or technology measure at the same time.

- **Duplicative Incentives**: Incentives that provide no incremental value over another incentive or market development activity that is already being provided.

- **Complementary Incentives**: A layered or overlapping incentive that provides incremental value to ratepayers or society even when an existing incentive or market development activity is already being provided.

**Recommendations:**

- Develop Guiding Principles to align stakeholders
- Develop formal Program Coordination process
- Develop “Incentive Inventory”
- Recognize incentive layering in EM&V

Guiding Principles

1) The Customer Comes First
   • Maximize customer benefits and ease of participation
   • Ensure ratepayer benefits (e.g., consider incrementality)
   • Minimize market confusion while maintaining customer choice

2) Increase Penetration and Adoption
   • Provide the right incentive for the right customer at the right time
   • Consider flexible financing approaches

3) Be Efficient
   • Reduce admin burden and overall program costs
   • Minimize cost shifts
   • Mitigate double-dipping
How to Optimize Layering Incentives

Problem Statement
- TECH and BUILD Pilots overlap with other residential DSM programs and incentives, which causes market confusion
- Potential to overpay projects if program incentives exceed optimal incentive levels
- Potential to under-serve segments if programs are unable to extend customer reach by layering
- Each program “brings to the table” its own rules and legislative mandates that could inhibit layering

Goals
- Maximize GHG reductions
- Simplify customer participation in multiple programs
- Identify and eliminate duplicative incentives; identify opportunities for complementary offerings and/or incremental incentive benefits

Recommendations
- Develop framework focused on continuous program coordination, while preserving programs’ existing requirements
- Leverage/enhance statewide or national existing inventory databases for tracking
- Leverage a “partnership” agreement concept across programs
- Explore long-term, consolidated market transformation incentive framework (e.g., California Solar Incentive framework)
Incentive Layering Examples and Approach (Illustrative)
Sample List of Existing or Planned HPWH Related Incentives *(not exhaustive)*

<table>
<thead>
<tr>
<th>Proceeding</th>
<th>Program/Offering</th>
<th>Incentives For</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Storage Procurement and Investment Plan (ESP&amp;IP)</td>
<td>PG&amp;E – WatterSaver Pilot SCE – Smart HPWH Pilot</td>
<td>Smart Controls and Pay for Performance</td>
<td>Testimony Filed, Pending CPUC Approval (P4P)</td>
</tr>
<tr>
<td>Self-Generation Incentive Program (SGIP)</td>
<td>HPWH Incentive</td>
<td>Equipment and Labor</td>
<td>Pending Staff Proposal, and CPUC Final Approval. Expected implementation Q1-2021 (TBD)</td>
</tr>
<tr>
<td>SB1477 – Low Emission Buildings and Sources</td>
<td>Technology and Equipment for Clean Heating (TECH) Initiative</td>
<td>Equipment, Labor, and Panel Upgrade</td>
<td>TECH Initiative RFP released on June 22nd. Expected Launch Q1-2021 (Upstream/Midstream)</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>Plug Load &amp; Appliance Program</td>
<td>Equipment</td>
<td>SW RFP for PLA Program currently under way. Expected Launch in 2021 (Upstream/Midstream)</td>
</tr>
<tr>
<td>Income Qualified</td>
<td>SCE - Clean Energy Homes Pilot</td>
<td>To Code, All-Electric Affordable Housing</td>
<td>Testimony Filed in SCE’s 2021-2026 Energy Savings Assistance (ESA) Application</td>
</tr>
</tbody>
</table>
### Retrofit Heat Pump Water Heater Incentive Layering Example

**Illustrative Example: Single Family**

<table>
<thead>
<tr>
<th>Cost</th>
<th>Incentive Layer</th>
<th>Program</th>
<th>Incentives For:</th>
<th>Potential Incentive Amount</th>
<th>Benefit Claim (% of Share)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart Controls $400</td>
<td>4</td>
<td>ESP&amp;IP</td>
<td>Smart Controls Only</td>
<td>$300?</td>
<td>• Peak Demand Reduction • GHG Reduction</td>
</tr>
<tr>
<td>Labor $700-$1,000</td>
<td>3</td>
<td>SGIP</td>
<td>Equipment and Labor</td>
<td>$1,700?</td>
<td>• Peak Demand Reduction • GHG Reduction</td>
</tr>
<tr>
<td>Wiring $300-$1,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel Upgrade $3,000-$4,000</td>
<td>2</td>
<td>TECH Pilot</td>
<td>Equipment, Labor, and Panel Upgrade</td>
<td>$2,500?</td>
<td>• GHG Reduction</td>
</tr>
<tr>
<td>50G HPWH $1,500</td>
<td>1</td>
<td>Energy Efficiency</td>
<td>Equipment</td>
<td>$500?</td>
<td>• Energy Efficiency Savings • GHG Reduction</td>
</tr>
</tbody>
</table>

Total Installed Cost: $6,000

Potential Incentives $\leq$ $5,000

Customer Installed Cost after Incentives $\geq$ $1,000
# New Construction Incentive Layering Example

**Illustrative Example: All-Electric Affordable Low-Rise Multifamily**

<table>
<thead>
<tr>
<th>Cost</th>
<th>Incentive Layer</th>
<th>Program</th>
<th>Incentives For:</th>
<th>Potential Incentive Amount</th>
<th>Benefit Claim (% of Share)</th>
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</thead>
<tbody>
<tr>
<td>Battery $8,000</td>
<td>3</td>
<td>ESP&amp;IP (New Homes Energy Storage Pilot)</td>
<td>Battery Storage</td>
<td>$7,650?</td>
<td>• Peak Demand Reduction</td>
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<tr>
<td>Smart Controls $400</td>
<td></td>
<td></td>
<td></td>
<td>$300?</td>
<td>• GHG Reduction</td>
</tr>
<tr>
<td>HPWH $1,120, HP SH $620, Dryer $820, Cooking $1,800</td>
<td>2</td>
<td>BUILD Pilot</td>
<td>Above EE Emissions Reductions</td>
<td>$1,000?</td>
<td>• GHG Reduction</td>
</tr>
<tr>
<td>Development Costs $1,595</td>
<td>0</td>
<td>SCE Clean Energy Homes</td>
<td>To Code</td>
<td>$1,595?</td>
<td>• Bill Savings, GHG Reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$14,355 Total Installed Cost</td>
<td>Potential Incentives &lt;= $11,545</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Customer Installed Cost After Incentives &gt;= $2,810</td>
<td></td>
</tr>
</tbody>
</table>
Streamlined Delivery Approach

Sample Construct

- Deliberate coordination mechanism across program administrators
- One single-point-of-contact (SPOC) for all the programs; can be measure specific
- Mechanism will be developed to parse out the program costs and coordinate Measurement & Valuation to the contributing programs
- Requires infrastructure to facilitate tracking, accounting, etc.
- Market Transformation concept fits
- Aligns with policies to improve coordination and integration of programs (e.g., Integrated Resources Plan (IRP) and Integrated Distributed Energy Resources (IDER))
Streamlined Delivery Approach

Benefits

• Improves overall Customer Experience
• Simplifies offering(s) for all participants; Customers and Supply Chain (Manufacturers, Distributors, Installation Contractors, etc.)
• Eliminates redundancies and increases implementation cost-efficiency
• Facilitates the potential use of a single intake, application and payment to participant
Incentive Layering Development Phases (Illustrative)
A Phased Approach Allows Us to Continuously Improve the Process

PHASE 1: Scope Feasibility

PHASE 2: Program Coordination & Accounting Solutions

PHASE 3: Test & Learn

PHASE 4: Scale

Refresh program rules, processes and policies improvements along the way
Phase 1 – Scope Feasibility: Key Questions

Program
- When is it appropriate to layer incentives?
- How can BD Pilot incentives accommodate other programs’ incentives changing over time?
- How do differences in methodologies for calculating GHG reductions and other benefits affect layering?
- How will CCA/REN programs layer? EE Third Party contracts? CARB programs? Other local programs?

Process
- How will program coordination function? Quarterly meetings? Automated mechanism? Third Party administrator?
- Customer communication and intake (Single Point-of-Contact)?
- How will program costs be shared for administering incentive layering, such as building an inventory database and administrative meetings?
Takeaways

• Layering supports achievement of state’s ambitious GHG reduction goals
• Layering has the potential to improve the customer’s experience
• Recommend setting up program coordination mechanism
• Recommend a phased approach as experience matures... and explore long-term market transformation approaches
Questions?
Thank You!

• TECH RFP released on June 23

• Draft staff proposal for these three topics will be noticed on R.19-01-011 proceeding

• TECH Contract to take effect Q1 of 2021*

• Please contact Rory if you have questions or ideas for the staff proposal

Rory Cox
Rory.cox@cpuc.ca.gov
Ph: 510-459-0933

*RFP available through SCE’s Ariba dashboard. For more info, go to https://www.sce.com/partners/buying-selling/supply-chain-management