Programs Review – Buildings

Citizen’s Advisory Committee
February 2021

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Agenda

- Programs Objectives
- Programs Portfolio and Budget
- Methane Gas breakdown
- Water Heater Drawdown Example
- HPWH Rebate Program
- Income Qualified Home Upgrade Program
- Harvest Thermal Pilot Program
Programs Objectives

- GHG reductions
  - Match renewable supply & demand
  - Aligns with and builds capacity

- Delivers benefits
  - Builds support

- Program Strategy
  - Speed/Scale
  - Transportation
  - Buildings
  - Shape load
  - Generation
  - Responsiveness
  - Aggregation
  - Grid services
  - Staffing
  - Technical
  - Financial

- Customers
- Equity
- Resilience
- Workforce
- Geography
Peninsula Clean Energy Programs Portfolio and Budget

Board Approved ~$40M over 4 years

- **Resiliency** $2.75M, 7%
- **EV Infrastructure** $16M, 42%
- **EV Charging Pilots** $1M, 3%
- **Resilience** $10M, 27%

**New Mobility**
- **E-Bikes** $400k, 1%
- **Ride-Hailing** $800k, 2%

**New Buildings**
- **Appliance Incentives**
- **Low Income Homes**
- **Marketing & Training**

**Existing Buildings**
- **Commercial Storage**
- **Resilience Centers**
- **Muni PV+Storage**
- **Reach Codes & Tech Asst.** $775k, 2%
- **Electrification Awareness** $400k, 1%
- **Existing Buildings** $6.1M, 16%

**Fleet**
- **Muni Fleets**
- **EV Incentives**
- **Load Shaping**
- **EV Ready Incentives & Tech. Asst.**
- **Marketing & Training**

**Private**
- **Residential**
- **Commercial**
- **Residential Resilience**
- **Residential Buildings**
- **Residential Transportation**

**Existing**
- **Appliance Incentives**
- **Low Income Homes**
- **Marketing & Training**

**All Programs Budget, incl Resilience**
- **EV Infrastructure** $16M, 42%
- **EV Charging Pilots** $1M, 3%
- **EV Incentives** $2.75M, 7%
- **Resilience** $10M, 27%
- **New Mobility** $4.7M, 9%
- **New Buildings** $16M, 32%
- **Existing Buildings** $6M, 12%
- **Fleet** $1.8M, 4%
- **Private** $1.8M, 4%
- **Resiliency** $1M, 2%
- **Commercial Storage** $2.1M, 4%
- **Resilience Centers** $10M, 21%
Methane Gas Use & Appliance Costs

Appliance | Electric Installed Cost (Heat pump) | Methane Gas alternative
---|---|---
Water heater | $4,500 | $2,500
Space heater | $16,000 - $25,000 | $22,000 - $25,000

Biggest costs are labor

Cost depends on:
- Age of home
- If panel upgrade needed
- If AC present or to be added

Sources: 2018 PG&E Gas data
2010 California Residential Appliance Saturation Survey,
2006 California Commercial End-Use Study
Water Heater Drawdown Example

- **Phase 1**
  - **Volume**: ~ 500 units/year average
  - **Dynamics**: many barriers, no momentum
  - **Program**: incentives, contractor training

- **Phase 2**
  - **Volume**: 1-3k/yr, exceeds incentive budget
  - Likely incentive shifts to low income only
  - "Light" mandate support (ex: time of sale)
  - On-bill finance introduced

- **Phase 3**
  - **High volume**: 3-10k+/yr
  - **Broad mandate**: ex: burnout reqts in some cities, with hardship exceptions
  - On-bill finance with large capital fund

- **Phase 4**
  - **Market momentum**: state-wide mandate
  - **Low-income incentives continue**
  - Early replacement program

- **Phase 5**
  - Electric to electric upgrades a dominant portion due to all-electric construction and past HPWH upgrades
  - Incentives phase out
Overview

- Rebates for San Mateo County residents installing HPWHs
- 4-year program with $2.6 M rebate budget available
- Rebates offered in partnership with BayREN Home+ program – Only one application needed!
- Program launched Jan 01, 2021
### Incentive Details

<table>
<thead>
<tr>
<th>Heat Pump Water Heater (3.1 UEF or greater efficiency)</th>
<th>PCE</th>
<th>BayREN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacing Existing Natural Gas Water Heater (any size)</td>
<td>Until Sep 30, 2021 $1,500</td>
<td>$1,000</td>
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<tr>
<td></td>
<td>From Oct 01, 2021 $1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>Replacing Existing Electric Resistance Water Heater (&gt;60 gals size)</td>
<td>$500</td>
<td>$1,000</td>
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</table>

<table>
<thead>
<tr>
<th>Additional Bonus Incentives</th>
<th>PCE</th>
<th>BayREN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARE Customers</td>
<td>$1,000</td>
<td>$0</td>
</tr>
<tr>
<td>Electrical Panel Update up to 100A</td>
<td>$1,500</td>
<td>$0</td>
</tr>
<tr>
<td>Electrical Panel Update up to 200A</td>
<td>$750</td>
<td>$0</td>
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</tbody>
</table>

*Combined PCE and BayREN Incentives are not to exceed project costs.*
Program Structure

1. COMPLETE THE PROJECT: Customers install an eligible HPWH through a BayREN Participating Contactor. The BayREN Home Energy Advisors are available to assist the customer throughout the process.

2. SUBMIT APPLICATION: The Participating Contractor submits the application for the customer through the BayREN portal. Only one application is submitted to receive both PCE and BayREN rebates.

3. RECEIVE REBATE: The application will be processed by BayREN and PCE for approval. Separate rebate checks will be sent by PCE and BayREN to customers.
Overview

• Turnkey no-cost home repairs and upgrades, energy efficiency, and electrification for income qualified single-family households
• Goal of 200 homes in 2 years

Approach

• Targeted outreach for residences with critical home needs
• Turnkey and hands-on program covering 100% of installed cost
• Leverage funding from existing income-qualified programs (e.g. Energy Saving Assistance Program, Peninsula Minor Home Repair, Single Family Affordable Solar Housing)
• PCE provides gap funding such as electrification & health-related measures, up to $8,000/home
Harvest Thermal Technology Pilot

- Combined space conditioning and hot water
- Single high-efficiency heat pump
- Inexpensive energy storage using hot water tank
- Uses standard HVAC delivery systems
- Patented methods to know energy state of tank using sensors in Harvest pod
- Plan to include air conditioning

Example shown for forced air system – can also be implemented for radiant floors and radiators
Harvest Thermal Technology Pilot

Overview & Objectives

• Pilot new Harvest Thermal technology in homes to prove viability
• Technology provides simultaneous water and space heating through one heat pump
• Help technology development to address market needs

Scope

• Install technology in 5 homes in SMC
• Support development of installation guidelines
• Provide detailed assessment of technology (install costs, energy, bill savings, customer satisfaction)
• Preferred pricing for PCE if technology is scaled for larger market penetration
• Independent measurement and verification

Budget

• Total program budget of $250,000
Thank You

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