Clean Energy Partnership
Q2 Board Meeting
June 17, 2019
Agenda

1. Welcome and Introductions
2. Review and Approve Agenda and Q1 Minutes
3. EVAC Co-Chairs Update
4. Inclusive Financing
5. Other Partner Updates – Home Energy Squad Wait Times and Reduction Efforts
EVAC Co-Chair Update
Inclusive Financing
Energy Transition Lab introduction and Cadmus presentation of Minnesota Tariffed On-Bill Financing Feasibility Study
Tariffed On-Bill Financing Overview

• **On-Bill Financing (OBF):** A common energy program, the utility bill is used as the mechanism to repay a home energy loan

• **Tariffed On-Bill Financing (OBF):** Rather than a loan, the utility invests in home energy improvements and recovers costs through a tariffed charge
  • Investments calculated based on the amount that can be repaid by a portion (e.g. 80%) of expected savings
  • Considered an inclusive financing approach because of accessibility to low-income residents and renters
  • **Pay As You Save® (PAYS®)** is a branded TOBF program that is gaining popularity, in particular among rural electric cooperatives

• This study is assessing the feasibility of tariffed on-bill financing in Minnesota
Analysis Tasks

1. **Market Segmentation**: Comparison of low-income/rental building stock to overall building stock
2. **Measure Screening**: Identifying measures and packages that can be financed through a TOBF program
3. **Benchmarking Study**: Understanding program costs and participation rates of prior and similar programs
4. **Cost-Effectiveness**: Assessing costs and benefits from societal, utility, and ratepayer, and participant perspectives
5. **Report**
Stakeholder Advisory Group

• Study is supported by a 26-member advisory group
• Group *advises* on approach and *vets* inputs and assumptions

• Members include:
  • Utilities (including Xcel and Centerpoint)
  • State and local government (including City of Minneapolis)
  • Community groups
  • Industry experts
Status

• June 6: presented preliminary results to advisory group for feedback

• Currently: collecting feedback from advisory group and preparing revised and final analysis and report

• Week of July 15: anticipated release of final results and stakeholder briefing
Initial Results: Market Segmentation

In Minneapolis, LMI and rental households disproportionately live in large multi-family housing and electric-heated homes (though majority uses gas)

<table>
<thead>
<tr>
<th></th>
<th>Statewide</th>
<th>Minneapolis</th>
<th>Minneapolis LMI</th>
<th>Minneapolis Rental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Households</td>
<td>2,382,845</td>
<td>183,682</td>
<td>78,500</td>
<td>87,944</td>
</tr>
<tr>
<td>Heating Fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>15%</td>
<td>19%</td>
<td>27%</td>
<td>32%</td>
</tr>
<tr>
<td>Utility Gas</td>
<td>59%</td>
<td>71%</td>
<td>68%</td>
<td>63%</td>
</tr>
<tr>
<td>Propane</td>
<td>9%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>16%</td>
<td>9%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Building Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Family</td>
<td>75%</td>
<td>48%</td>
<td>32%</td>
<td>16%</td>
</tr>
<tr>
<td>2-4 Unit</td>
<td>4%</td>
<td>13%</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>5+ Unit</td>
<td>17%</td>
<td>39%</td>
<td>54%</td>
<td>66%</td>
</tr>
<tr>
<td>Other/Unknown</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>5+ Unit MF Home and Electric Heat</td>
<td>7%</td>
<td>14%</td>
<td>21%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Initial Results: Measure Screening

Prior Programs

• Existing TOBF/PAYS programs tailor installed measures to cost-effective opportunity in a specific home

• A typical TOBF/PAYS participant is likely to:
  • Reside in a poor-efficiency, high-bill home, most commonly with electric resistance heat
  • Install a suite of insulation and air sealing measures, often in tandem with an ASHP or other heating system
  • Have strong opportunities for cost-effective energy improvements
Initial Results: Measure Screening

Measures Evaluated

**HVAC Equipment**
- ASHP
- GSHP
- Ductless mini-split
- Furnace
- Boiler
- Central AC

**Envelope Measures**
- Attic Insulation + Air Sealing
- Wall Insulation

**DHW Equipment**
- Heat Pump Water Heater
- Gas Tank Water Heater
- Gas Tankless Water Heater

**Distributed Energy**
- Solar PV

*Equipment measures evaluated both on standalone basis and in combination with envelope upgrades & small measures*
Initial Results: Measure Screening

Key Scenarios

Program Cost of Capital Scenarios:
- Market-Rate (base case): 4.99% (current CEE Home Energy Loan rate)
- Subsidized Rate: 0% (akin to Massachusetts HEAT Loan)
- Utility Commercial Rate: 9.05% (utility pre-tax WACC)

Household Energy Consumption Scenarios:
- Normal (based on utility averages and TRM EFLH)
- High (assumed larger system sizes and reduced existing insulation)
Cost and Participation Benchmarking

- Substantially different benchmarks sourced from:
  - Prior TOBF/PAYS programs (primarily from rural electric cooperatives)
  - IOU-run On-Bill Loan Programs (e.g. Centerpoint On-Bill Recovery Program)

<table>
<thead>
<tr>
<th></th>
<th>Prior PAYS Program</th>
<th>Centerpoint OBR Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participation Rate</strong></td>
<td>Up to 5% participation over several years (e.g. OECC with 520 installs out of 8,500 residential meters)</td>
<td>500 participants/year (0.32% of residential accounts over 5 years)</td>
</tr>
<tr>
<td><strong>Program Costs</strong></td>
<td>Minimal upfront / admin costs; Implementation Costs ~$1000 per participant</td>
<td>Startup costs of $475,000; Annual administration of $125,000; Implementation Costs ~$1,000 per participant</td>
</tr>
</tbody>
</table>
# Initial Results: Measure Screening

## Indicative Results

<table>
<thead>
<tr>
<th>Technology</th>
<th>Opportunity</th>
<th>Targeted Segments/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic Insulation</td>
<td>Strong</td>
<td>Strong opportunity for financing against electric and propane heat</td>
</tr>
<tr>
<td>Wall Insulation</td>
<td>Strong</td>
<td>Strong opportunity for financing, even against gas heat in high-consumption / low-insulation cases</td>
</tr>
<tr>
<td>ASHP</td>
<td>Potential</td>
<td>Potential option in electric resistance homes (unless home is charged at low all-electric tariff)</td>
</tr>
<tr>
<td>GSHP</td>
<td>Some</td>
<td>Some possibility in all-electric homes, but large copayments still likely required</td>
</tr>
<tr>
<td>Ductless Mini-Split</td>
<td>Better</td>
<td>Better opportunity in all-electric homes, especially when paired with insulation package</td>
</tr>
<tr>
<td>Central AC</td>
<td>Not viable</td>
<td>Not viable for OBF</td>
</tr>
<tr>
<td>Furnace</td>
<td>Could be</td>
<td>Could be useful in financing incremental cost of upgrade to efficient unit, or when paired with insulation or provided a low financing rate</td>
</tr>
<tr>
<td>Boiler</td>
<td>Limited</td>
<td>Limited opportunities, but could help financing incremental upgrade to efficient unit</td>
</tr>
<tr>
<td>HPWH</td>
<td>Limited</td>
<td>Limited opportunities, except when paired with insulation package</td>
</tr>
<tr>
<td>Gas Water Heater</td>
<td>Limited</td>
<td>Limited opportunities to finance full cost of unit</td>
</tr>
<tr>
<td>Solar PV</td>
<td>Could</td>
<td>Could finance a significant share of a system, especially when paired with existing subsidies</td>
</tr>
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</table>

**Notes:**

Results are generalized here but vary based on heating fuel, geographic area, cost of capital, and other factors.

Results are preliminary and are currently being refined with stakeholder input.
# Preliminary Conclusions

## Measure Screening & Cost-Effectiveness

- Expected to be **numerous economic opportunities** for TOBF

<table>
<thead>
<tr>
<th>Strongest opportunities:</th>
<th>Targeted opportunities based on circumstance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Homes with electric heat</td>
<td>• Homes with gas heat</td>
</tr>
<tr>
<td>• Homes with poor efficiency</td>
<td>• Average-consumption homes</td>
</tr>
<tr>
<td>• Insulation and air sealing measures</td>
<td>• Equipment measures</td>
</tr>
<tr>
<td></td>
<td>(e.g. combined with insulation &amp; air sealing)</td>
</tr>
<tr>
<td></td>
<td>• Solar PV</td>
</tr>
<tr>
<td></td>
<td>(e.g. when paired with existing Solar Rebates)</td>
</tr>
</tbody>
</table>
Preliminary Conclusions

Cost of Capital

• Impact of Cost of Capital:
  • For a majority of scenarios assessed, changing the cost of capital would have an incremental impact and not change the interpretation of results
  • However, the program cost of capital has a significant impact on measures with marginal TOBF feasibility
    • For these measures, a low cost of capital may enable participation while a high cost of capital may preclude it
  • Adopting a lower cost of capital for the program would enable a broader set of feasible measures, but would also increase program costs
    • Programs operated by rural cooperatives and municipal utilities may be able to secure low-cost financing from USDA as prior programs have done
    • A subsidy would be required to enable a below-market cost of capital for an IOU-implemented program
Preliminary Conclusions

Program Design

• **Program Cost-Effectiveness**
  • Overall program *BCA would vary on a range of factors* that must be defined, including:
    • Eligible measures (e.g. solar and propane savings harm the UCT)
    • Program cost of capital
    • Participation rates

• **Program Planning Considerations**
  • Several *factors regarding program cost and participation remain uncertain* due to lack of direct precedent
    • Prior program estimates are from loan-based programs implemented in large jurisdictions, and tariff-based programs implemented in small jurisdictions
  • This analysis does not address key planning factors such as the program design for potential switching or propane-heat measures.
  • A process is needed to reconcile home-specific savings estimation with the CIP process
State Energy Office-sponsored Cadmus Legal/Regulatory Analysis Update
Partnership Activity Pilot Program Status Update and Next Steps
Home Energy Squad –
Current Wait Times and Reduction Efforts
Adjourn

Next Board Meeting
August 5, 2019
3:30 - 5:30 pm
Minneapolis Public Library, Doty Board Room