Initiatives to Advance Clean Energy in the Low to Moderate Income Residential Market

June, 2016
Agenda

1. Who We Are
2. CT Residential Solar: Current Status
3. Single Family Initiatives
4. Multifamily Initiatives
5. What Else to Get to Scale?
Help ensure Connecticut’s energy security and community prosperity by realizing its environmental and economic opportunities through clean energy finance and investments.

Support the Governor’s and legislature’s energy strategy to achieve cleaner, cheaper and more reliable sources of energy while creating jobs and supporting local economic development.
19,600 homes with solar, and growing rapidly.

Solar potential in CT...
At least 150,000 homes
# Program Activity in Service Area

<table>
<thead>
<tr>
<th>Program</th>
<th>East Haven</th>
<th>Hamden</th>
<th>New Haven</th>
<th>Woodbridge</th>
<th>Statewide Total</th>
<th>Service Area’s % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart-E Loan</td>
<td>5</td>
<td>12</td>
<td>8</td>
<td>2</td>
<td>719</td>
<td>3.8%</td>
</tr>
<tr>
<td>CT Solar Lease</td>
<td>11</td>
<td>17</td>
<td>6</td>
<td>15</td>
<td>1,192</td>
<td>4.1%</td>
</tr>
<tr>
<td>CT Solar Loan</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>575</td>
<td>3.5%</td>
</tr>
<tr>
<td>PosiGen</td>
<td>8</td>
<td>12</td>
<td>6</td>
<td>0</td>
<td>280</td>
<td>9.3%</td>
</tr>
<tr>
<td>C-PACE</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>140</td>
<td>2.1%</td>
</tr>
<tr>
<td>Multifamily</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>46</td>
<td>2.2%</td>
</tr>
<tr>
<td>Residential Solar PV Projects</td>
<td>211</td>
<td>434</td>
<td>264</td>
<td>74</td>
<td>19,600</td>
<td>3.9%</td>
</tr>
<tr>
<td><strong>Amount Financed</strong></td>
<td><strong>$812,038</strong></td>
<td><strong>$1,173,050</strong></td>
<td><strong>$1.394722</strong></td>
<td><strong>$4,710,222</strong></td>
<td><strong>$216,558,095</strong></td>
<td><strong>3.8%</strong></td>
</tr>
<tr>
<td><strong># of Households</strong></td>
<td><strong>12,356</strong></td>
<td><strong>25,465</strong></td>
<td><strong>57,190</strong></td>
<td><strong>3,222</strong></td>
<td><strong>1,356,206</strong></td>
<td><strong>7.2%</strong></td>
</tr>
</tbody>
</table>
# CT Low-to-Moderate Income Market By the Numbers

<table>
<thead>
<tr>
<th>Income Level by AMI Band</th>
<th># Census Tracts</th>
<th>Tract Households</th>
<th>% of Households</th>
<th>Tract Owner Occupied Households</th>
<th>% OO HHs in AMI Band</th>
<th>Tract Renter Occupied Households</th>
<th>% Rental HHs in AMI Band</th>
<th>Average 2010 Tract Median HH Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;60% AMI</td>
<td>166</td>
<td>224,393</td>
<td>17%</td>
<td>66,067</td>
<td>29%</td>
<td>158,326</td>
<td>71%</td>
<td>$32,804</td>
</tr>
<tr>
<td>60%-80% AMI</td>
<td>118</td>
<td>216,437</td>
<td>16%</td>
<td>114,600</td>
<td>53%</td>
<td>101,826</td>
<td>47%</td>
<td>$52,657</td>
</tr>
<tr>
<td>80%-100% AMI</td>
<td>137</td>
<td>231,014</td>
<td>17%</td>
<td>158,812</td>
<td>69%</td>
<td>72,202</td>
<td>31%</td>
<td>$66,543</td>
</tr>
<tr>
<td>100%-120% AMI</td>
<td>160</td>
<td>278,174</td>
<td>21%</td>
<td>218,664</td>
<td>79%</td>
<td>59,510</td>
<td>21%</td>
<td>$78,522</td>
</tr>
<tr>
<td>&gt;120% AMI</td>
<td>246</td>
<td>406,185</td>
<td>30%</td>
<td>354,889</td>
<td>87%</td>
<td>51,296</td>
<td>13%</td>
<td>$117,136</td>
</tr>
<tr>
<td>Grand Total</td>
<td>833</td>
<td>1,356,206</td>
<td>100%</td>
<td>913,043</td>
<td>67%</td>
<td>443,163</td>
<td>33%</td>
<td>$74,522</td>
</tr>
</tbody>
</table>

Low Income = 80% AMI or lower, 1/3 of total or 440,000 households, 40% are homeowners

Moderate income – 81%-100% AMI, 17% of total or 230,000 households, 70% homeowners
## Residential Solar PV in CT Deployment by Area Median Income

<table>
<thead>
<tr>
<th>Census Tract Income Level (AMI)</th>
<th># of Census Tracts</th>
<th>Tract Households</th>
<th># of Projects</th>
<th>Installed Capacity (kW)</th>
<th>Projects per 1,000 Households</th>
<th>Watts/Tract Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 60%</td>
<td>166</td>
<td>224,393</td>
<td>868</td>
<td>5,206</td>
<td>3.9</td>
<td>23.2</td>
</tr>
<tr>
<td>60-80%</td>
<td>118</td>
<td>216,437</td>
<td>1,757</td>
<td>11,842</td>
<td>8.1</td>
<td>54.7</td>
</tr>
<tr>
<td>80-100%</td>
<td>137</td>
<td>231,014</td>
<td>3,087</td>
<td>22,071</td>
<td>13.4</td>
<td>95.5</td>
</tr>
<tr>
<td>100-120%</td>
<td>160</td>
<td>278,174</td>
<td>5,266</td>
<td>39,436</td>
<td>18.9</td>
<td>141.8</td>
</tr>
<tr>
<td>More than 120%</td>
<td>246</td>
<td>406,185</td>
<td>7,923</td>
<td>62,386</td>
<td>19.5</td>
<td>153.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>827</strong></td>
<td><strong>1,356,203</strong></td>
<td><strong>18,901</strong></td>
<td><strong>140,941</strong></td>
<td><strong>13.9</strong></td>
<td><strong>103.9</strong></td>
</tr>
</tbody>
</table>

For LMI to reach non-LMI market penetration, solar PV deployment in less than 60% AMI, 60-80% AMI, and 80-100% AMI, projects/1,000 households would have to increase by approximately **5 times, 2.4 times and 1.4 times** respectively.

### REFERENCES
Single Family
Residential 1-4 Owner Occupied
Low Income Portfolio

- Residential Solar Incentive Program
- Low-to-Moderate Income Performance Based Incentive for Third Party Owners
- $27 MM Solar for All campaign
- Solar Lease and Energy Efficiency Energy Services Agreement
- HES or HES-IE leveraged
- Alternative underwrite
- Community partnerships
- Low interest
- Unsecured loan
- 40+ measures
- 580+ FICO
- 25% of loan for health and safety upgrades
Reducing LMI Energy Burden
Solar Lease & EE ESA Model

Home
(New Haven – Oil Heat)

$59,250 HHI
$2,963 Energy Costs
5.0% HHI on
Energy Costs

Solar PV
(Lease)
Up to $85/month Lease
$427 Energy Savings
4.3% HHI on
Energy Costs

Energy Efficiency
(ESA)
Up to $15/month ESA
Energy Savings
Additional Savings
$543
3.4% HHI
on Energy Costs

REFERENCES
Note – analysis examines 20-year lease for a 6-kW system at an $85 monthly cost and an additional $15 for energy efficiency measures through a 20-year energy savings agreement with (i.e., HES core services plus insulation) expected energy savings. Based on oil-heated home in New Haven.
PosiGen Solar for All Campaign

- **Target** – 1,000 participating households for 6.00 MW of solar PV deployment

- **Solar PV Progress** – 225 installations in 9 months for 1.43 MW of solar PV deployment
  - $55-$70 solar PV lease payment/month for 20 years
  - 65% of contracts are LMI

- **Energy Efficiency Progress**
  - 100% of households installing solar PV undertake HES or HES-IE
  - 64% of households also undertake “deeper” energy efficiency projects (e.g., insulation, thermostats, etc.) through $10 ESA payment/month for 20 years

- **Jobs** – 33 hired in 2015, 19 additional in 2016 and 30 more planned
Multifamily
Reducing LMI Energy Burden
Multifamily Offerings

We help multifamily housing building owners:

- Better access green energy financing
- Save money on energy and operating costs and improve property values
- Achieve higher occupancy and improve tenant retention
  - More attractive profile of units with improved comfort and lower utility costs
Multifamily Energy Upgrades
Resources throughout the Process

Pre-Development Support
- Analyze property performance opportunity

Project Development Financing
- Design and engineer
- Fund viable project
- Install upgrades
- Operate and monitor improvements
Pre-Development Resources
In partnership with:

Pre-Development Financing

Sherpa Loan
- Designated service provider
- Standardized process and fee schedule

Navigator Loan
- Client managed contractor(s)
- Customized technical services

Announcing... Benchmark CT
Brought to you by CHFA, Green Bank and WegoWise
Term Financing Options

**Project Development Financing**
- **Fund viable project**
- **Install upgrades**
- **Operate and monitor improvements**

**LIME**
Affordable Low Income Multifamily Energy

**C-PACE**
Market-rate Commercial Property Assessed Clean Energy

**SOLAR**
Solar projects only Commercial solar lease

**Coming Soon... Green Booster Loan**
2+% rate, 12-15 year terms, layer with other funding, use for health & safety measures or to bring good projects across finish line
LMI Portfolio and Strategies – What Else?
Scaling Up – What Else?

- Clean energy upgrades as a “way in” to community development, neighborhood revitalization/stabilization
  - Energy + Housing – e.g. integrating with HOME, CDBG
  - Community strategies – neighborhood targeting across all sectors
    - Residential, nonprofits, institutions, businesses
    - Partnerships with municipalities, faith-based networks, social service nonprofits

- Energy + Health
  - Pulling in health sector dollars – opportunities with Affordable Care Act
  - Innovating on integrated service delivery, financing and business models
  - Explore regionally with NY, RI? – GHHI.org working with both
Scaling Up – What Else?

- **Solar solutions for small rentals – 2-4’s and 5-9’s**
  - Is this an owned model? Leased (but who?)
  - Suffer from incentive gaps/challenges, financing gap, sub-metering issue, developer gap

- **Community Solar policy… statewide, not just pilots**
  - Critical piece to making solar available to all LMI, especially renters and those who can’t go solar given roof condition/siting
  - Open question… is community solar a better solution for small rental market than installs?

- **Sub-metering policy**

- **Modifications to utility allowances in multifamily**

- **Grid 2.0**
  - Pilots targeting LMI communities and locational benefits
  - Data platform including grid, DER, LMI, housing, health et al data
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