Connecticut Green Bank
Solar for All with PosiGen
Connecticut Green Bank
Delivering Results for Connecticut

- **Investment** – mobilized nearly $1.3 billion of investment into Connecticut’s clean energy economy so far, using a 8:1 leverage ratio

- **Energy Burden** – reduced the energy burden on over 30,000 households and businesses, including “beyond parity” for LMI solar

- **Jobs** – created over an estimated 16,000 total job-years – 6,200 direct and 9,700 indirect and induced*

- **Clean Energy** – deployed more than 285 MW of clean renewable energy helping to reduce over 4.6 million tons of greenhouse gas emissions that cause climate change

REFERENCES
CT Green Bank data warehouse report from July 1, 2011 through February 28, 2018
*62,500 private non-farm jobs created in the state over 5 years since Green Bank creation mid-2011. Green Bank statistics are in job-years; “total jobs” include direct, indirect and induced. CT DOL statistics are aggregated from monthly point-in-time estimates. CT Department of Labor - [http://www1.ctdol.state.ct.us/lmi/privatesectoremployment.asp](http://www1.ctdol.state.ct.us/lmi/privatesectoremployment.asp)
Low-to-Moderate Income Strategy

- **Residential Solar Investment Program** provides incentives for solar PV on 1-4 unit owner-occupied homes (32,000 projects to-date)

- Low-to-Moderate Income **Performance Based Incentive** for Third Party Owners launched in 2015
  - Income screen of <100% AMI
  - Non-escalating lease terms
  - Energy Burden model test
  - Not enough tax burden for ITC, not credit qualifying for financing
  - Nearly 3x market rate incentive

- 2015 LMI Solar Financing RFQ helped create a $45MM+ Fund
- $5MM CGB initial investment
- Product offering combines non-escalating solar lease with energy efficiency services
- Utility weatherization programs leveraged
- Alternative underwrite (no credit check)
- Community partnerships
Solar For All with PosiGen
Lease & ESA for Single Family LMI Market

Home (New Haven – Oil Heat)
$59,250 HHI
High Energy Costs
High Energy Burden

Solar PV (Lease)
$60 to $110/month Lease
Solar $ Savings
Moderate Energy Burden

Energy Efficiency (ESA)
$10/month ESA Energy Savings
<<Additional Savings>>
Solar + EE $ savings

Reasonable Energy Burden

Average $500 in savings after first year
**Solar For All with PosiGen**  
**Case Study: Saul Almazan**

<table>
<thead>
<tr>
<th>Description</th>
<th>6.16kW Solar + Energy Efficiency Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Bank Incentive</td>
<td>$3,597.00</td>
</tr>
<tr>
<td>Monthly cost</td>
<td>$79.99 for solar + $10 for ESA</td>
</tr>
<tr>
<td>Terms</td>
<td>20 year lease</td>
</tr>
<tr>
<td>Customer 20-yr Cost</td>
<td>$21,597.60</td>
</tr>
<tr>
<td>Pre-Solar Electric Costs</td>
<td>$53,017 (7,601 kWh/year)</td>
</tr>
<tr>
<td>Post-Solar Electric Costs</td>
<td>$32,682 including lease + ESA</td>
</tr>
<tr>
<td>First Year Savings</td>
<td>$564</td>
</tr>
<tr>
<td>Net 20-yr Savings</td>
<td>$20,334 Not including EE savings</td>
</tr>
</tbody>
</table>
Solar for All Campaign Progress

- ~2,110 contracts since 2015, ~14 MW of solar PV
- ~61% of contracts are LMI (getting the LMI tiered incentive)
- ~60% of projects in census tracts <80% AMI

Energy Efficiency Progress

- 87% of households get Direct Install EE measures, 21,708 MMBTUs saved
- 62% of households also undertake “deeper” energy efficiency projects through $10 ESA payment/month for 20 years
Emily Basham
Connecticut Green Bank
Emily.Basham@CTGreenBank.com
860-258-7839
Solar Access for the Underserved:

How Property Owners Can Help Support Community Solar

Andrew Breiter-Wu
President
Breiter Planet Properties
Andrew@breiterplanet.com
Problem: Focus of Solar Industry

- The solar industry has historically focused on single family households with:
  - Strong credit scores
  - Roofs facing ideal azimuths
  - Minimal obstructions on roof
  - Minimal shading
- This focus skips the majority of low to moderate income families that would greatly benefit from the energy savings of solar.
Problem: 100+ Million Renters

- There were over 100 million renters in the US as of 2016
- With $\frac{1}{3}$ of Americans unable to traditionally benefit from solar, it creates a significant demand for energy options that renters can benefit from
Problem: Solar Inclusion

- Black and Hispanic Americans are more likely to rent
- Younger Americans from 20-35 years old, are more likely to be renting as they establish their financials and career
- Overall, the likelihood of owning a home is relatively low across all minorities in the US over a given lifetime
Problem: Solar Qualification
Solution: Community Solar

**STEP 1:** A community solar project generates clean, solar energy.

**STEP 2:** Individuals, local businesses, schools and others sign up to receive the energy from a certain number of panels. These panels can be purchased upfront or participants can opt for a "pay-as-you-go" solution.

**STEP 3:** Community solar subscribers will receive a credit on their bill based on the amount of energy produced by their community solar panels.

**STEP 4:** Signing up for community solar should provide tangible economic benefits and savings on your utility bill.
Community Solar Helps Renters, Non-Profits, Small Businesses, and Homeowners

- Electricity produced by community solar gardens allows you to save 10% on your monthly electric bill ($20-30/month for homeowners)
- Can help most electric ratepayers regardless of property conditions
- Great option for renters, non-profits, small businesses, and homeowners to reduce electric costs
Agreement Structure & Considerations

- Offer: Discount of normal retail electric rates
- Contract Type: Fixed Rate, Escalator, Upfront, etc.
- Term: Pay-as-you-go, 1 year, 5 years, 20 Years, etc.
- Cancellation Fees and requirements (i.e. requiring a transfer or providing a 90 day notice)
Massachusetts SMART Program: Community Solar

- The new solar incentive program in MA allows for solar gardens to produce Alternative On-Bill Credits (AOBC) and be allocated to offsite electricity consumers.
- The SMART Program allows for the transfer of AOBC across different load zones increasing the access larger solar farms can provide to urban energy off-takers.
- SMART incentivizes projects serving low income customers by adding $0.03/kWh for low income energy off-takers.
How Property Owners Can Help: Land Lease

- Lease your land to a solar developer and allow us to install a solar farm on the property
- Electricity produced from the system gets sold to a wide range of energy offtakers including residential renters, small/medium sized businesses, industrial facilities, non-profits, etc.
- Supports the local economy through the development, operation, and maintenance of the facility
How Property Owners Can Help: Roof Lease

- Lease your roof space to a solar developer and receive rental income or have the costs of a new roof covered.
- In urban settings, this is a popular option for property owners that rent their real estate to tenants and want to allow their tenants to benefit for solar while fully monetizing their real estate.
- Recent Project in Southeastern MA >
THANK YOU!

Andrew Breiter-Wu
President
Breiter Planet Properties
Andrew@breiterplanet.com
SOLAR ACCESS FOR THE UNDERSERVED

MASS SOLAR LOAN

March 2019
OUR MISSION

Grow the state’s clean energy industry while helping to meet the Commonwealth’s clean energy and climate goals.

INVEST

Invest in programs to increase renewable energy adoption by residents, businesses and communities.

CONNECT

Connect employers, job seekers, students, communities and investors to the clean energy industry.

INNOVATE

Help to spur innovation through infrastructure, funding and technology development support.
REACHING LOW-MODERATE INCOME (LMI) COMMUNITIES IN MASSACHUSETTS

- Solar has seen remarkable growth over past 10 years
- MassCEC programs designed to grow and support industry
- Programs for LMI community
  - Mass Solar Loan
  - ACRE (Combined Heat Pump and Solar Programs)
  - State Incentive Program (SMART) – LMI Adder ($0.03/kWh)
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MASS SOLAR LOAN PROGRAM

• **Sparked** by 2013 DOER study demonstrating benefits of direct solar ownership over third party owned solar

• Designed to **expand financing options**- and **increase access** to solar for income qualified residents

• Partnered with 17 local lenders to leverage expertise and local capital

• Over 100+ installers helping to reach underserved markets
MASS SOLAR LOAN PROGRAM

• Launched in December 2015 – connecting customers purchasing solar with local lenders

• Lenders offer solar loan products with standard underwriting
  • Fixed rate loans – capped interest rates and closing costs / fees

• Three types of loan support incentives available

• Over course of program incentives have stepped down to focus support on Income eligible participants
LOAN SUPPORT INCENTIVES

Income Based Loan Support

Principal Reduction of the loan

<table>
<thead>
<tr>
<th>Below 80% State Median Income</th>
<th>Below 120% State Median Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>30% Principal Reduction – Capped $10,500</td>
<td>10% Principal Reduction – Capped $3,500</td>
</tr>
</tbody>
</table>

Interest Rate Buy Down

1.5% Reduction in Interest Rate for customers below 80%

Loan Loss Reserve

Funding set aside of 10-20% of the loan, lender can recover a portion of lost principal from this pool in the event of a loan default

- Available for income qualified customers with credit scores below 720.
PROGRAM RESULTS

The Results
• 4,770 loans closed
  Over 2,300 (~50%) Income qualified
• Over $150 million loan value
• $34.7 Million in awards
  • 74% Income qualified
• ~40 MW of residential solar

Typical Project
• $32,252 average loan
• 8.32 kW average project
• $3.84 per watt
EXAMPLE

Below 80% State Median Income
5kw System at $4.00/W

$20,000 Total System Cost
-$6,000 30% Principal Reduction
-$6,000 30% Federal Tax Credit *
-$1,000 State Tax Credit *

$7,000 Net Cost financed over 10 year term

4.5% Interest Market Average 6% - 1.5% Buy Down

Assuming above and maximum state incentive – ~$1,000 in average savings per year
LOAN PERFORMANCE

- Loan performance to date has been strong
- **Default rate of 0.2% on nearly 4,500 loans**
- Limited correlation to Income
  - Loans in Below 80% Income Category:
    - Have a **0.25% default rate** and a lower delinquency rate (4.2% - 30 days late) than higher incomes (6%)
- Better correlation to FICO (2.2% default rate)
  - **Caveat** - this is distorted by the Loan Loss Reserve

<table>
<thead>
<tr>
<th>Income Category (% of Median)</th>
<th>Count of Projects</th>
<th>Average Months Seasoning</th>
<th>Count 30 Days Late</th>
<th>% 30 Days Late</th>
<th>Count Defaulted</th>
<th>% Defaulted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Income Qualified</td>
<td>2349</td>
<td>19</td>
<td>141</td>
<td>6.0%</td>
<td>2</td>
<td>0.09%</td>
</tr>
<tr>
<td>80 to 120%</td>
<td>874</td>
<td>14</td>
<td>33</td>
<td>3.8%</td>
<td>3</td>
<td>0.34%</td>
</tr>
<tr>
<td>Below 80%*</td>
<td>1188</td>
<td>15</td>
<td>50</td>
<td>4.2%</td>
<td>3</td>
<td>0.25%</td>
</tr>
</tbody>
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QUESTIONS

Emily Basham – Connecticut Green Bank
Emily.Basham@CTGreenBank.com / www.ctgreenbank.com

Andrew Breiter-Wu – Breiter Planet Properties
Andrew@breiterplanet.com / www.breiterplanet.com

Kelsey Read - Mass Clean Energy Center
kread@masscec.com / www.masssolarloan.com