Solar for Multifamily Housing Properties in Connecticut

February 21, 2020
Agenda

1. Market Trends
   • Installed solar capacity in CT
   • Solar Forecasts
   • Solar + Storage

2. Current Solar Policy in CT
   • Net Metering, State and Federal Incentives

3. Solar PV for Multifamily buildings
   • Financing Options
   • Challenges & Opportunities

4. CT Solar Policy Changes
   • End of net metering, new tariff structure
   • End of ZREC program
Connecticut Green Bank
Mission Statement and Goals

Confront climate change and provide all of society a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy.

- Leverage limited public resources to scale-up and mobilize private capital investment in the green economy of Connecticut.

- Strengthen Connecticut’s communities by making the benefits of the green economy inclusive and accessible to all individuals, families, and businesses.

- Pursue investment strategies that advance market transformation in green investing while supporting the organization’s pursuit of financial sustainability.
Solar PV Market Trends
Market Trends – National Growth

https://www.seia.org/solar-industry-research-data
Megawatts of Solar PV Installed & Operational by Year Approved*

- **Residential**
- **Non-Residential**

*United Illuminating projects not included

Source: CT Green Bank, Eversource
Market Trends – Solar PV in NE

Connecticut

Note: Legend to the right of each state plot shows color scale of nameplate megawatts per town

Source: ISONE
PV Growth: Reported Historical vs. Forecast

Source: ISONE
**Market Trends – Battery Storage**

Solar + storage is on the rise

Solar combined with storage can maximize the benefits of solar to the grid and increase resilience

Source: Wood Mackenzie
Solar 101
## Current Revenue Streams for Solar PV

<table>
<thead>
<tr>
<th>Net Metering</th>
<th>State Policy</th>
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</thead>
<tbody>
<tr>
<td>ZREC</td>
<td>State Policy</td>
</tr>
<tr>
<td>Federal Tax Credits</td>
<td>Federal Policy</td>
</tr>
</tbody>
</table>
What is Net Metering?

Solar PV systems that are located **behind the meter** are intended to generate electricity **for onsite use**

**Net metering** is a billing mechanism allowing electricity in excess of customer usage to be banked at the full retail rate and credited on an annual basis

- At year end, excess electricity generation for the year is reimbursed at wholesale rate
- Wholesale rate generally much lower than retail electricity tariff
Net metering example – Ashford Senior Housing Center

Estimated vs. Actual Solar Power Generation 2015

- Estimated generation: 80,462 kWh
- Actual generation: 80,724 kWh
- Difference: 262 kWh

Note: Solar PV system is sized based on annual electricity usage
Two main types of incentives available in Connecticut

1. Federal Income Tax Credit (ITC) for PV owners
   a) 26% of qualified systems costs*
   b) Non-transferable and subject to 5-year recapture if sold or decommissioned
   c) Accelerated depreciation over 5-year period (MACRS)

2. State-level Renewable Energy Certificates (RECs)
   Solar PV generation qualifies for Class I RECs for under Connecticut’s Renewable Portfolio Standard
   a) ZREC / LREC contracts between utilities and renewable energy project owners provide 15-year fixed compensation for each MWh of electricity generated

<table>
<thead>
<tr>
<th>Type</th>
<th>System size</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small ZREC</td>
<td>≤ 100 kW</td>
<td>Lottery</td>
</tr>
<tr>
<td>Medium ZREC</td>
<td>&gt; 100 kW &amp; &lt; 250 kW</td>
<td>Reverse auction</td>
</tr>
<tr>
<td>Large ZREC</td>
<td>≥ 250 kW &amp; ≤ 1000 kW</td>
<td>Reverse auction</td>
</tr>
<tr>
<td>LREC</td>
<td>Up to 2000 kW</td>
<td>Reverse auction</td>
</tr>
</tbody>
</table>

* For systems placed in service by 12/31/2020. Decreases to 22% of qualified costs thereafter until 12/31/2021, 10% of qualified costs thereafter
Solar for Affordable Multifamily Properties
Definitions

“Multifamily”

• 5+ units
• Income eligible and market rate
• Private and non-profit owners
• Public housing authorities
• Senior / assisted living communities
• Condominiums
• Co-operatives

“Affordable”

• >60% of property’s units must offer rents affordable to tenants earning <80% of area media income (AMI)
• Affordable rents assume <30% of household income is spent on housing costs
• Affordable rent figures include all utility costs
• For condos and co-ops, total housing costs are considered, rather than rents
  • Mortgage
  • Insurance
  • Taxes
  • Utilities
  • Association Fees
# Product Comparison for Affordable MFH Properties

<table>
<thead>
<tr>
<th>Solar PPA</th>
<th>LIME Loan</th>
<th>C-PACE</th>
<th>SCEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Off-balance sheet</td>
<td>- Unsecured (UCC-1 filing)</td>
<td>- Secured to property (1st position lien)</td>
<td>- “Shared Clean Energy Facilities”</td>
</tr>
<tr>
<td>- Ancillary project-related work may be financed (if identified prior to PPA execution)</td>
<td>- Ancillary project-related work may be financed (as identified prior to loan document execution, subject to ESCR reqs)</td>
<td>- Ancillary project-related work may be financed (as identified prior to loan document execution, subject to ESCR reqs)</td>
<td>- Solar is not sited on property</td>
</tr>
<tr>
<td>- Monetizes and passes along financial benefit of ITC to property owner</td>
<td>- ITC monetized by owner, independent of loan</td>
<td>- ITC monetized by owner, independent of loan</td>
<td>- Does not utilize net metering</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Bill credits are assigned to “subscribers” based on system production and subscription size</td>
</tr>
</tbody>
</table>

ITC: Investment Tax Credit
ESCR: Environmental Site Compliance Report
What is a Power Purchase Agreement ("PPA")?

Contract between Seller (generates electricity) and Buyer (purchases electricity)

**Seller**: Oversees development, financing, construction, & asset management

**Customer is Buyer**: Purchases electricity from solar installed on property, receives net metering credits
Who gets what with a PPA?

The value of solar PV to the customer comes from electricity cost savings!

- **Utility Bill**
  - Grid Electricity Only
  - Customer with Solar PV System
  - Solar PPA Payments

- **Savings**
- **Solar Electricity via PPA**
- **Federal Tax Incentives**
  - ZREC Payments
  - Solar PPA Payments

Savings come from cost savings in electricity expenses.
What are the Benefits of a PPA?

- No upfront costs
- Lock in low electricity rate
- Positive cash flow
- No operations & maintenance costs
- Preserve capital & credit lines
- Managed by a third-party solar system owner
Multifamily Challenges

**Metering:** Multi-metered buildings may not benefit as much from solar

- Only common areas and other electric loads paid for by the property owner can be offset by solar
- Master Metered for Electricity or large common areas are best opportunities

**Health and Safety:**

- Over 70% of residential units built before 1979 – in need of capital improvements that include health and safety
- H&S issues must often be addressed before energy improvements can be implemented
- Green Bank has a revolving Health and Safety Loan Fund to address these types of challenges
Other Opportunities: Shared Clean Energy Facilities

AKA “Community Solar”

- Utility procures up to 25MW a year of solar (or other clean energy systems)
- $0.025/kWh credit available to subscribers (Process to identify & enroll subscribers TBD)
- Eligible Subscribers/Subscriber requirements:
  - 20% Low Income households
  - 40% Low Income or Moderate-Income households, or Landlords of affordable housing facilities
  - 20% Small Businesses
  - 20% Any of the above or Gov’t, Commercial or non-LMI households unable to install solar
The Future of Solar in CT
Significant Changes to CT Solar Policy

Many policies are phasing out

- Net Metering will end December 31, 2021. Existing systems will be grandfathered until 2041
- The final ZREC Auction will take place in 2021
- The Federal Investment Tax Credit will step down to 10% for non-residential systems by 2022

What will replace these programs?

- The state will transition to a tariff structure in 2022
- A tariff is a combined purchase price for the energy and the RECs generated by the solar PV system
- State regulators are currently working to determine what the tariff price will be

Solar ITC Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>ITC</th>
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<tbody>
<tr>
<td>2019</td>
<td>30%</td>
</tr>
<tr>
<td>2020</td>
<td>26%</td>
</tr>
<tr>
<td>2021</td>
<td>22%</td>
</tr>
<tr>
<td>2022</td>
<td>10%</td>
</tr>
</tbody>
</table>

SCEF program just ramping up – first procurement in 2020, program will run for six years
Questions?
Additional Information

- Solar PPA – 30 kW minimum system size
- Master Metered for Electricity or large common areas are best opportunities
- All MFH solar PPA projects will be required to have snow guards installed above property entryways as part of standard terms
- CT Green Bank developing snow guard solution for existing solar PPA lessees
- PPA projects have long development timelines – frequently 8 months or more. Fastest moving projects have an *internal champion*
- 23 currently eligible installers – contact CT Green Bank for a list
- To get started, recommend seeking 2-3 project vendor quotes (like any home improvement)
Green Bank MFH Solar Financing to-date*

- 30 solar projects
  - 19 PPAs
  - 11 LIME
- Average system size – 97 kW
- Average No. units - 70

* Last Updated April 2019
Green Bank CPACE-Secured Power Purchase Agreement

Contract between Seller (generates electricity) and Buyer (purchases electricity)

Green Bank is Seller: Oversees development, financing, construction, & asset management

Property Owner is Buyer: Purchases electricity from solar installed on property

Owner repays over time through a senior assessment placed on the property

Assessment stays with the property regardless of ownership
Relationships between Green Bank, Contractor, and Customer

Developing & Engineering:
- Green Bank develops financing agreement with Municipality.
- Green Bank & Contractor develop & engineer project.
- Green Bank & Contractor coordinate on documentation.

Construction:
- PPA signed between Green Bank & Municipality; EPC signed between Contractor & Green Bank.
- Contractor constructs project & receives construction payments from Green Bank.

Operation & Payment:
- After Construction Completion, Green Bank operates & maintains solar system over the term of the agreement.
- Municipality pays the PPA on a monthly “actuals” basis directly to the Green Bank.
  - “Actuals” = paying for exactly what is generated based off of the solar monitoring system.
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**Operation & Payment**
- After Construction Completion, Green Bank operates & maintains solar system over the term of the agreement.
- Customer pays the PPA through a CPACE Benefit Assessment Lien* on the property
  - Payment schedule is based on estimated annual production
  - Semi-annual payments paid to Town & Town remits payment to Green Bank
  - Annual “true-up” directly with Customer to allow payment only for electricity generated