



# Efforts to Advance Low-to-Moderate Income Residential Market for Clean Energy Improvements

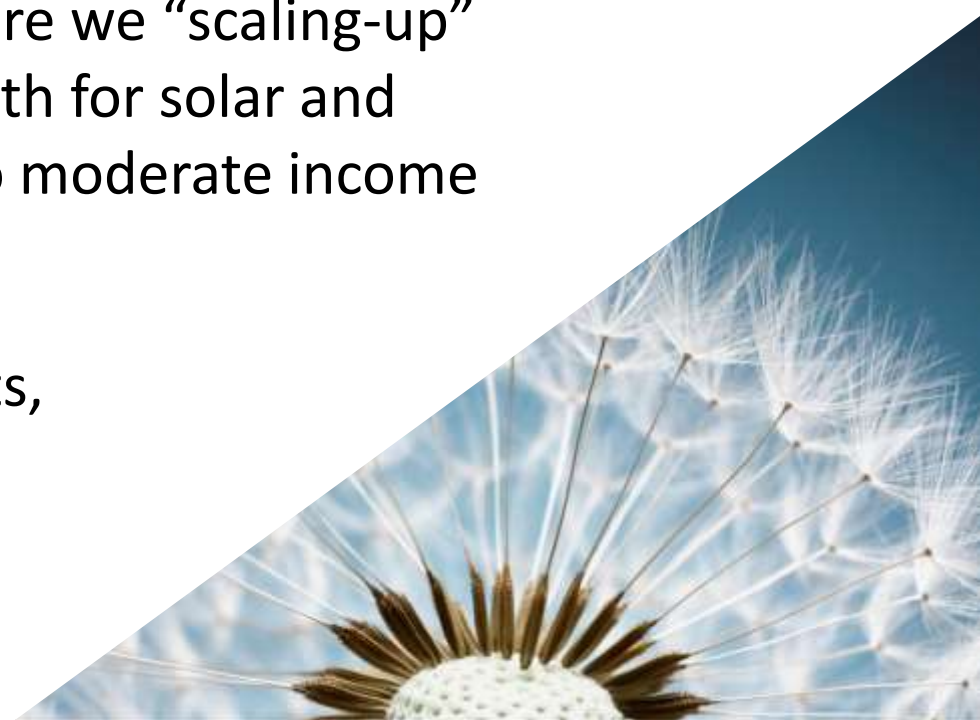
Green Bank Congress, Tokyo  
October 2016



# Topics



- **Who We are** – and what impact is the Connecticut Green Bank making
- **Who is Being Left Behind** – what are the issues and market segments that aren't being served
- **Strategies to Address** – how are we “scaling-up” our impact to accelerate growth for solar and energy efficiency in the low to moderate income market segment
- **Lessons Learned** – and insights, recommendations



# **Who we are & the Impact we are Making**

# Who is the CT Green Bank?



**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**

# Connecticut Green Bank



## About Us

- **Quasi-public organization** – created 2011 – successor to the Connecticut Clean Energy Fund
- **Focus** – finance clean energy (i.e. renewable energy, energy efficiency, and alternative fuel vehicles and infrastructure)
- **Balance Sheet** – approximately \$130 million in assets
- **Support** – supported by
  - a \$0.001/kWh surcharge on electric ratepayer bills  
(~ \$10 per household / year) ... approximately \$27-30 MM a year
  - A “Carbon Tax” ... approximately \$5 MM a year for renewable energy
  - Portfolio Income ... approximately \$2 - \$3 million / year
  - Private capital, private foundations, US Govt competitions (i.e. SunShot Initiative) and non-competitive resources (i.e. ARRA-SEP)

# What are Green Bank Products and Programs

## Incentives

Green Bank  
Capital



Project



SPARKED BY CONNECTICUT GREEN BANK



SPARKED BY CONNECTICUT GREEN BANK

## Co-Investment

Green Bank  
Capital



Project



Private Capital



SPARKED BY CONNECTICUT GREEN BANK

## Credit Support

Senior Private  
Capital

Green Bank  
Credit  
Enhancement



Project



SPARKED BY CONNECTICUT GREEN BANK

## Aggregation & Warehousing

Project



Green Bank  
Origination



Private  
Purchase of  
Portfolio



SPARKED BY  
CONNECTICUT GREEN BANK

# Connecticut Green Bank

## Accelerate Green Energy Deployment



|                     | FY 2000-<br>FY 2011<br>(CCEF) | FY 2012-<br>FY 2016+<br>(CGB) <sup>1</sup> |
|---------------------|-------------------------------|--|
| Model               | VC and Subsidy                | Financing                                  |
| Years               | 11.00                         | 5.25                                       |
| Energy (MW)         | 43.1                          | 208.2                                      |
| Investment (\$MM)   | \$349.2                       | <b><u>\$1 Billion</u></b>                  |
| Leverage Ratio      | 1:1                           | 3:1 to <b><u>11:1</u></b>                  |
| % of Funds as Loans | 10%                           | 50%  |

Deploying **more** green energy at a **faster** pace while using ratepayer-taxpayer resources **responsibly**

### REFERENCES

1. Approved, closed, and completed transactions

# Who is Being Left Behind



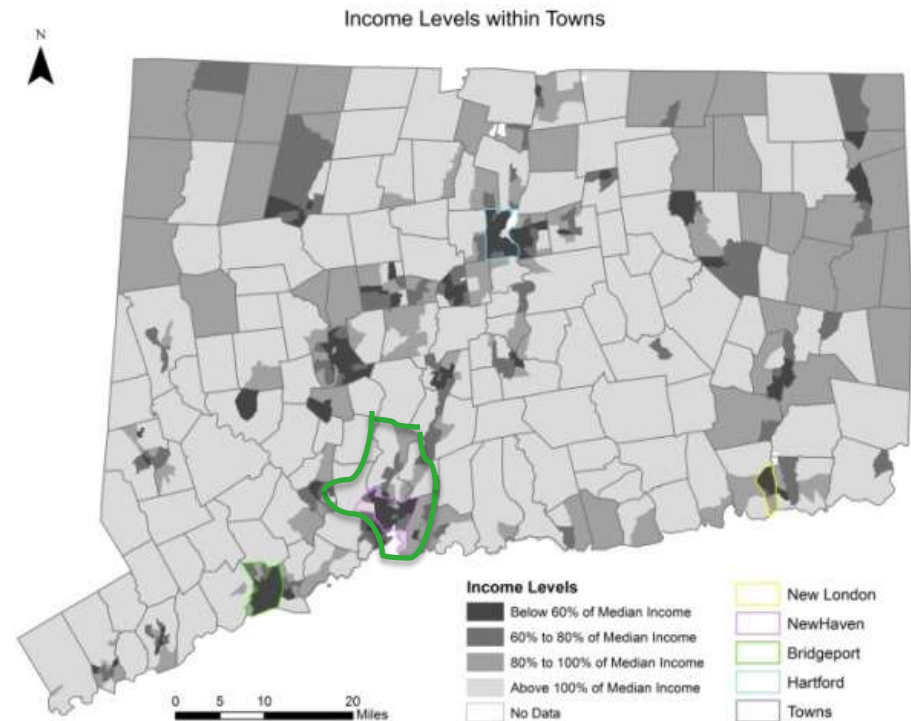
# CT Low-to-Moderate Income Market By the Numbers



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

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

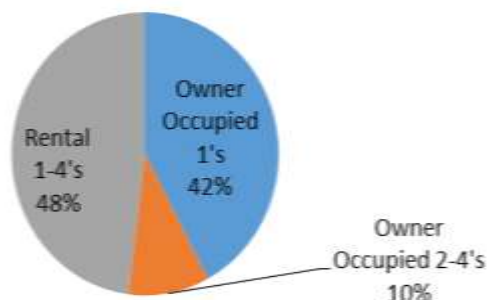


# Residential 1-4 Sector By the Numbers



## Low Income Housing Types

*(305,000, 27% of Single Family Units)*



**Connecticut Population - 3,592,000**

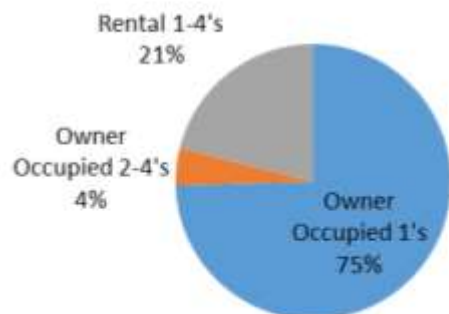
**Total Housing Units – 1,356,000**

**Total Residential 1-4 Units – 1,125,000 (83%)**

**% Low Income in 1-4 Units – 27% (305,000)**

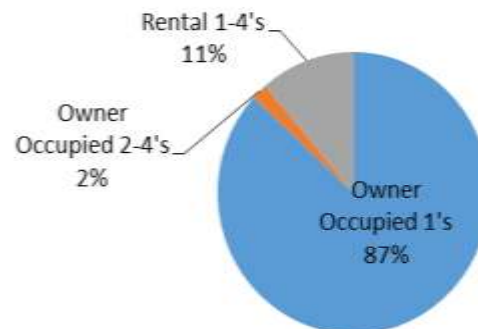
## Moderate Income Housing Types

*(190,000, 17% of Single Family Units)*



## Non-LMI Housing Types

*(630,000, 56% of Single Family Units)*



# Multifamily Sector By the Numbers



Connecticut Population - **3,592,00**

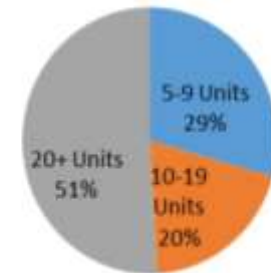
Total Housing Units – **1,356,000**

Total MF (5+) Units – **240,000 (17%)**

% Low Income in MF Units – **134,000 (58%)**

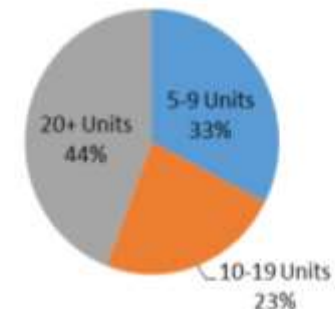
## Low Income Property Size

*(134,000, 58% of Total Multifamily Units)*



## Non-Low Income Property Size

*(96,000, 42% of Total Multifamily Units)*



## Low-to-Moderate Income Residential Properties: Old and Aging (In Place)



3 in 4 homes built before 1979:

- 25% of housing units in CT were built prior to 1939; 50% were built from 1940-1979
- Many properties are in need of significant capital improvements

**Low income households are concentrated in older properties that are in poor condition, including many multifamily units.**



# Older Housing Stock is NOT Just about Energy!



# Older Housing Stock

Health and Safety Issues (25-40% of units)

**Knob & Tube Wiring**



**Mold/ Water Leaks**



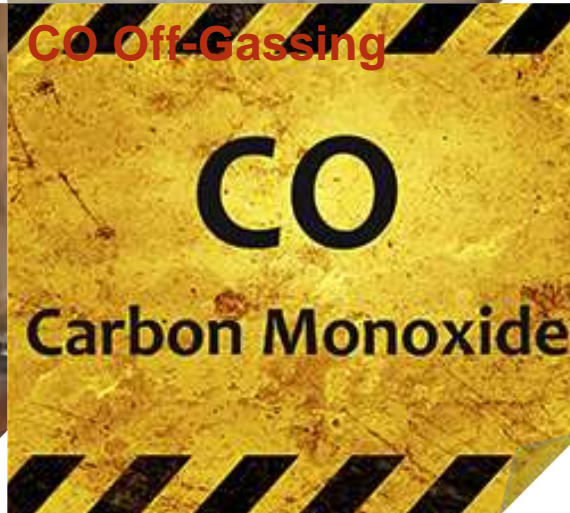
**Asbestos**



**Lead Paint**



**CO Off-Gassing**



**Radon**





# Low Income Households Suffer High Energy Cost Burden



Percent of Households with  
High Household Energy Burden



**Connecticut's Energy Affordability Gap is strikingly high – forcing vulnerable residents to make tough decisions around basic needs:**

- Trading off paying utility bills with food, medicine, rent/mortgage, clothing, school supplies

**More than half our low income residents have a “high” energy burden**

- Majority are well over the target of 6% of income spent on energy

**Potential to save \$500+ per unit a year**

**Public/affordable multifamily housing 8x higher energy intensity than market rate**

# **LMI Portfolio and Strategies – Under Way**



# Goal of Our LMI Work



At the organization level, we've adopted a new 4<sup>th</sup> goal:

- To support affordable and healthy buildings in low-to moderate income and distressed communities by reducing the energy burden and addressing health and safety issues in their homes, businesses, and institutions.

For the residential sector our operating principles are to:

- Reduce the clean energy affordability gap for low to moderate income residents, bringing their energy burden as a percent of household income in line with national targets for household energy spend and on par with what more affluent households spend in the state.
- Ensure low to moderate income communities aren't left behind and have access to the same clean energy future that higher income communities do.

# Residential Rooftop Solar PV Potential

An aerial photograph of a residential neighborhood with a color-coded heatmap overlay on the rooftops. The colors range from purple (low potential) to red and orange (high potential), indicating areas with high solar potential. The houses are arranged in a curved street pattern, and the surrounding area is green with trees.

At least 5 GW potential or  
\$16.5 billion of investment  
reaching 660,000 homes.

3% penetration, 20,000 homes,  
and growing rapidly.

# Residential Solar PV in CT

## Deployment by Area Median Income



| Census Tract Income Level (AMI) | # of Census Tracts | Tract Households | # of Projects | Installed Capacity (kW) | Projects per 1,000 Households | Watts/ Tract Households |
|---------------------------------|--------------------|------------------|---------------|-------------------------|-------------------------------|-------------------------|
| Less than 60%                   | 166                | 224,393          | 1,015         | 6,115                   | 4.5                           | 27.3                    |
| 60-80%                          | 118                | 216,437          | 1,976         | 13,390                  | 9.1                           | 61.9                    |
| 80-100%                         | 137                | 231,014          | 3,312         | 23,754                  | 14.3                          | 102.8                   |
| 100-120%                        | 160                | 278,174          | 5,552         | 41,907                  | 20.0                          | 150.7                   |
| More than 120%                  | 246                | 406,185          | 8,279         | 65,766                  | 20.4                          | 161.9                   |
| <b>Total</b>                    | <b>827</b>         | <b>1,356,203</b> | <b>20,452</b> | <b>153,500</b>          | <b>15.1</b>                   | <b>113.2</b>            |

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 4.5 times, 2.2 times and 1.4 times respectively

10

3

2

### REFERENCES

Note: Projects include both Connecticut Clean Energy Fund and Connecticut Green Bank. Totals are greater than individual lines due to some projects falling in unclassified census tracts. Data as of Residential Solar Investment Program (RSIP) Market Watch Report of July 15, 2016.

# Residential 1-4 Owner Occupied Low Income Portfolio



- Residential Solar Investment Program
- Low-to-Moderate Income Performance Based Incentive for Third Party Owners
- More than double Step 9 incentive
- Income screen of 100% AMI or lower

- \$27 MM Solar for All campaign
- Solar Lease and Energy Efficiency Energy Services Agreement
- HES or HES-IE leveraged
- Alternative underwrite
- Community partnerships

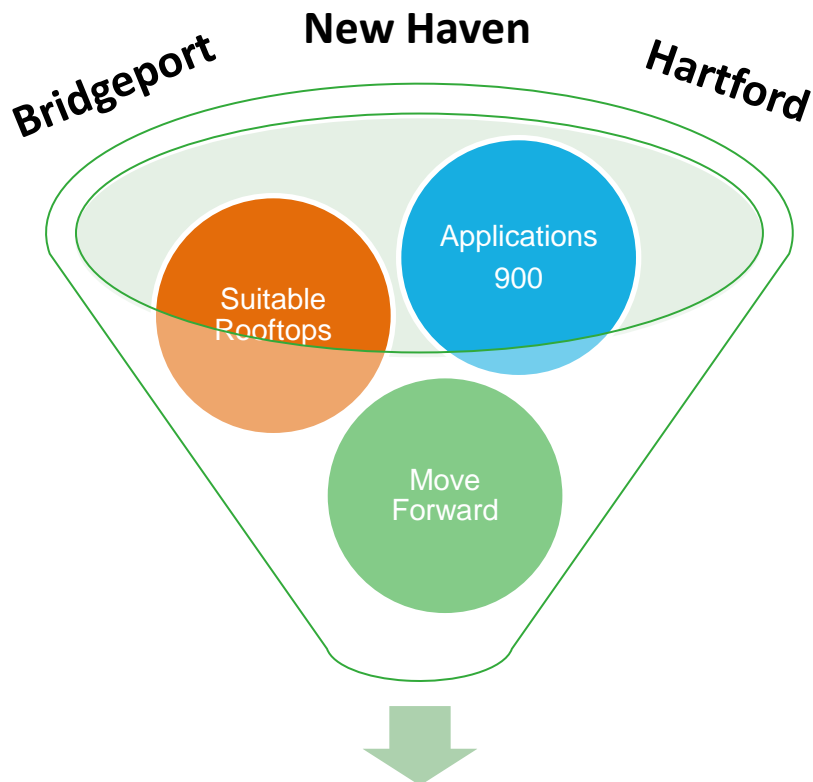
- Low interest
- Unsecured loan
- 40+ measures
- 580+ FICO (through CDFI)
- 25% of loan for health and safety upgrades





# PosiGen

## Solar for All Campaign



**Installations** 225  
**In Process** 130



- **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 Portfolio

What we do



**We help multifamily housing building owners:**



Save money  
on energy



Increase  
property value



Improve  
occupancy rates



Improve comfort  
and safety

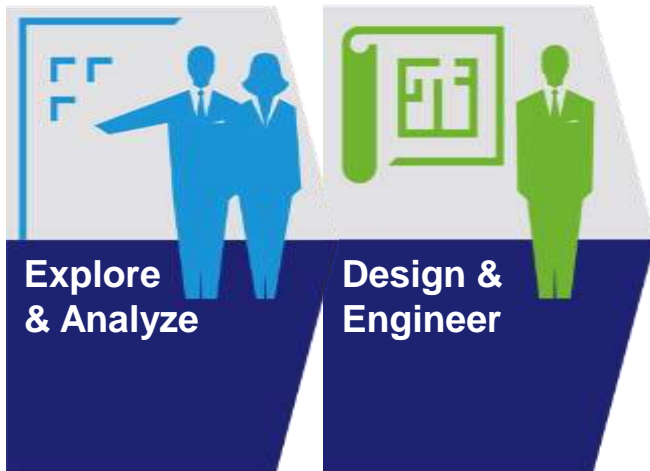


# Multifamily Energy Upgrades

## Resources throughout the Process



### Pre-Development Financing



### Project Development Financing



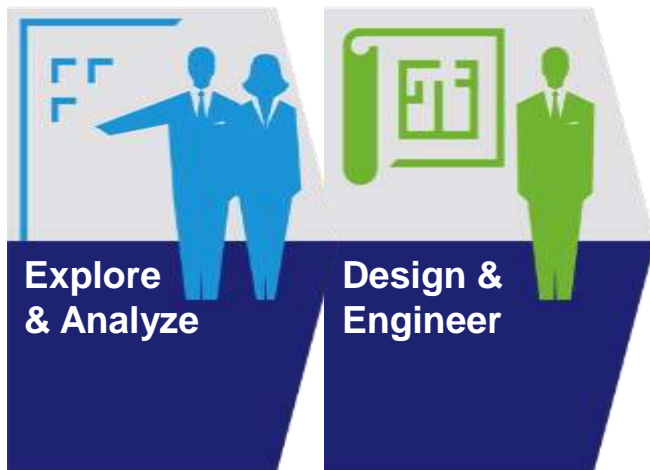


# Pre-Development Resources

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



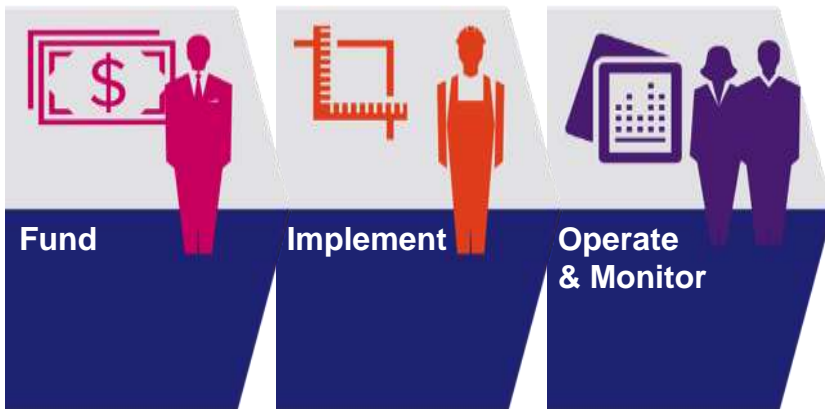
## Announcing...Benchmark CT

Brought to you by CHFA, Green Bank and WegoWise

# Energy Upgrade Financing



## Project Development Financing



### LIME

*Affordable  
Low Income  
Multifamily Energy*



### C-PACE

*Market-rate  
Commercial Property  
Assessed Clean Energy*



### SOLAR

*Solar projects only  
Commercial solar lease*



## Coming Soon...Gap Financing

2+% rate, 12-15 year terms, layer with other funding, use for health & safety measures or to bring good projects across finish line

# Lessons Learned

# Don't Go It Alone!



We work with state and federal agencies to align policies, programs, standards:



We work with utilities and CT Energy Efficiency Fund to align incentives for energy upgrades:



We pilot strategies to provide technical assistance and drive demand for affordable multifamily upgrades:



We work with a range of partners to provide low-cost financing solutions for key low income market segments with appropriate credit policies:



# Parting Thoughts



- Need to have a long horizon, analyze your market, sequence strategies, and invest for long term
- Don't assume low-to-moderate income residents don't want solar!
- Don't assume just because uptake in LMI markets is low that the product is wrong (though it might be...)
  - Need targeted outreach/marketing and contractors serving these markets
- LMI residents are not correlated with bad credit!
  - But... they are much more likely to assume their credit is bad, and therefore not even apply for financing
  - Alternative underwriting strategies can be a big help
- Consumer protections and education are a must
  - Especially with LMI, and even more especially with LMI seniors
- Don't underestimate the power of solar to transform communities and spark a wave of pride and revitalization
  - What does that mean for siting of community solar?





Thank you!

Questions?

**Bert Hunter**  
**EVP & Chief Investment Officer**  
**Connecticut Green Bank**

**T 860-257-2174 | M 203-918-0013 | F 860-563-4877**

845 Brook Street, Rocky Hill, CT 06067  
300 Main Street, Suite 400, Stamford, CT 06901

[bert.hunter@ctgreenbank.com](mailto:bert.hunter@ctgreenbank.com)

**ctgreenbank.com**