The Connecticut Green Bank
Market Transformation and Financing for Clean Energy and Energy Efficiency
Stamford, CT

May 6, 2015
Energy Challenge in Connecticut

**High Cost**
CT has **THE** highest cost for electricity in the "lower 48"

**Old, Energy Inefficient Building Stock**
CT has some of the oldest and most energy inefficient building stock

**Need for "Cleaner / Cheaper" Energy Sources**
Programs that will diversify our energy mix into renewable/clean power

**"More Reliable" Grid**
5 major storms in 2 years with widespread outages
Connecticut Green Bank: Mission and Goals

Attract and deploy capital to finance the clean energy goals for Connecticut

Develop and implement strategies that bring down the cost of clean energy in order to make it more accessible and affordable to consumers

Reduce reliance on grants, rebates and other subsidies and move towards innovative low-cost financing of clean energy deployment
Connecticut Green Bank: Financial Tools

- Grants
- Loans
- Equity
- Subordinated Debt
- Loan Loss Reserves
- Leases, PPAs, and ESAs
- Bonding
- On Bill Repayment
- Commercial Property Assessed Clean Energy
- Energy Savings Performance Contracts
- Third Party Insurance
- Special Capital Reserve Fund
- Interest Rate Buy Down

Connecticut Green Bank
Case Study: Comprehensive Energy Efficiency

Location: 855 Main Street, Bridgeport, CT
Building Type: Large Office (>50,000 SF)
Building Size: 112,000 Square Feet
Total Project Cost: $2,462,000
Utility Incentives: $469,317
C-PACE Financing: $1,992,683
Term: 20 Years
Annual Interest Rate: 5.5%
Annual C-PACE Assessment: $166,563
Annual Energy Cost Savings: $241,900
Lifetime Energy Cost Savings: $6,047,504
Annual Energy Savings: 6,650,053 kBTU

Video
Resources and Financing Solutions for Multifamily Owners
Multifamily Housing Programs

**CPACE**
An Energize CT Program
bhendricks@urbaningenuity.com

**URBAN INGENUITY**
clean energy solutions

**MULTIFAMILY CREDIT ENHANCEMENT FUND**
CONNECTICUT GREEN BANK
Kim.Stevenson@ctgreenbank.com

**CHIF LIME LOAN**
Cal Vinal – Cvinal@chif.org

**SOLAR FINANCING FOR NON-PROFITS**
CONNECTICUT GREEN BANK
Benjamin.Healey@ctgreenbank.com
Multifamily Housing Programs

ENERGY PERFORMANCE BENCHMARKING

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multifamily@eversource.com
Case Study: Multifamily - 13.7 kW solar PV system

Location: 11 Depot Road, Willington
Building Type: Multifamily Housing
Building Size: 10,432 Square Feet
Total Project Cost: $53,622
Incentives: 30% Federal Investment Tax Credit & Zero Emission Renewable Energy Credits (ZREC)
C-PACE Financing: $53,622
Term: 20 Years
Annual Interest Rate: 6%
Annual C-PACE Assessment: $4,671
Annual Energy Cost Savings: $4,953
Lifetime Energy Cost Savings: $99,076
Annual Energy Savings: 55 MMBtu
Case Study: Multifamily – Boiler Replacement

Location: 125 Granfield Ave, Bridgeport
Building Type: Multifamily Housing
Building Size: 10,200 Square Feet
Total Project Cost: $32,274
Incentives: $2,800 UI incentive
C-PACE Financing: $30,358
Term: 12 Years
Annual Interest Rate: 5.2%
Annual C-PACE Assessment: $3,446
Annual Energy Cost Savings: $3,877
Lifetime Energy Cost Savings: $74,223
Annual Energy Savings: 272 MMBtu
Case Study:
Multifamily – Fuel Conversion

- Plaza on the Green, Waterbury
- 157 units Sr. affordable housing, master metered
- $1.7MM energy upgrade (electric to gas)
- $170,000 annual energy savings (projected)
- Additional capital needs for masonry
- CPACE loan with CHFA subordinating
Case Study: 875 kW Hydropower

Cargill Falls

Location: 58 Pomfret Street, Putnam CT

Building Type: Apartments, Mixed Use, Partially Restricted Affordable

Number of Units: 82

Total Project Cost: $2,625,000

Ownership: Private

Financing: C-PACE $2,350,000
Federal Grant $275,000

Term: 15 Years

Annual Interest Rate: 5.5%

Annual Energy Cost Savings: $286,000

Lifetime Energy Cost Savings: $4,300,000

Annual Energy Savings: 875 kW
Assessing Your Property: Benchmarking & Underwriting

Sarah Allen, WegoWise
Paul Keyes, New Ecology
Bracken Hendricks, Urban Ingenuity
**Benchmarking:** *New Neighborhoods Inc.*  
**Viewing a Portfolio in WegoWise**

### All Developments

<table>
<thead>
<tr>
<th>Name</th>
<th>Full-Year Sum</th>
<th>Detailed data per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Atlantic</td>
<td>109K</td>
<td></td>
</tr>
<tr>
<td>Martin Luther King, Jr. ...</td>
<td>96.1K</td>
<td></td>
</tr>
<tr>
<td>Stillwater Heights Apar...</td>
<td>95.3K*</td>
<td></td>
</tr>
<tr>
<td>Belltown Manor</td>
<td>73.9K</td>
<td></td>
</tr>
<tr>
<td>Friendship House</td>
<td>60.5K*</td>
<td></td>
</tr>
<tr>
<td>Marshall Commons</td>
<td>36.6K*</td>
<td></td>
</tr>
<tr>
<td>Fair St Apartments</td>
<td>30K*</td>
<td></td>
</tr>
<tr>
<td>Samuels Court</td>
<td>17.5K*</td>
<td></td>
</tr>
</tbody>
</table>

*Incomplete total due to missing meters*  
*Incomplete total due to missing data*
Case Study: Martin Luther King Apartments

40 Stillwater Ave, Stamford

- Built in 2006
- 89 Units / 110,00 Square Feet
- Gas Heat and Hot Water

Within the NNI Portfolio:

- Highest electrical consumption,
- 2nd highest total energy consumption
- 3rd highest natural gas consumption
Case Study: Martin Luther King Jr. Apartments

**Water**
Entire building usage in Gallons / bedroom
- Better than median
- 1% less than the median building
- 27% more than efficient buildings

**Electric**
Entire building usage in kWh / 1k sqft
- Inefficient
- 28% more than the median building
- 84% more than efficient buildings

**Gas**
Entire building usage in Btu / sqft
- Worse than median
- 25% more than the median building
- 63% more than efficient buildings

**CO₂**
lbs. CO₂ / sqft
- Worse than median
- 16% more than the median building
- 47% more than efficient buildings

**Cost**
Amount spent in $ this year
- Water: $15,994.42, 12%
- Electric: $91,662.78, 69%
- Gas: $25,026.06, 19%
Case Study:  
Martin Luther King Apartments

<table>
<thead>
<tr>
<th>Potential Energy Saving Measures</th>
</tr>
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<tbody>
<tr>
<td>Solar PV</td>
</tr>
<tr>
<td>Lighting upgrade – indoor and outdoor</td>
</tr>
<tr>
<td>Heating and hot water upgrade (pumps, motors, boilers)</td>
</tr>
<tr>
<td>Window AC units</td>
</tr>
<tr>
<td>Controls (lighting, ventilation)</td>
</tr>
<tr>
<td>Optimization of energy management system</td>
</tr>
<tr>
<td>Operational controls</td>
</tr>
</tbody>
</table>
### Sizing your retrofit project

<table>
<thead>
<tr>
<th>ECMS</th>
<th>Cap. Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>$30,000</td>
</tr>
<tr>
<td>Water conservation</td>
<td>$20,000</td>
</tr>
<tr>
<td>HVAC improvements</td>
<td>$250,000</td>
</tr>
<tr>
<td>Roof &amp; solar PV</td>
<td>$450,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$750,000</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Annual Savings</th>
<th>Value</th>
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<tbody>
<tr>
<td>Electricity</td>
<td>$18,000</td>
</tr>
<tr>
<td>Water</td>
<td>$500</td>
</tr>
<tr>
<td>Gas</td>
<td>$2,000</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>$25,000</td>
</tr>
<tr>
<td>Solar generation</td>
<td>$20,000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>$65,500</strong></td>
</tr>
<tr>
<td>Annual ZREC Income</td>
<td>$15,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$80,500</strong></td>
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**C-PACE Eligibility**

- Desired term: 15 years (@ 5.5%)
- PACE Eligibility: Up to $808,000
- Annual payments = Approx. $80,500
LIHTC Project: Multi-measure EE + Solar

Customer: For-profit affordable multi-family housing (LIHTC)

Challenge: Cut energy bills without adding debt

Project: 37 kW roof-mounted system; EE lighting and controls

Structure: System purchase

<table>
<thead>
<tr>
<th>System Size (kW)</th>
<th>37</th>
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<tbody>
<tr>
<td>Est. Year 1 Production (kWh)</td>
<td>44,391</td>
</tr>
<tr>
<td>Est. Year 1 Savings EE (kWh)</td>
<td>233,189</td>
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<tr>
<td>Current Electricity Tariff</td>
<td>$0.09/kWh</td>
</tr>
<tr>
<td>PACE Financing Rate</td>
<td>6.00%</td>
</tr>
<tr>
<td>PACE Term</td>
<td>20</td>
</tr>
<tr>
<td>Cost of Solar System + ECMs</td>
<td>$340,000</td>
</tr>
</tbody>
</table>

**PACE Benefit**

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>20 Yrs.</th>
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</thead>
<tbody>
<tr>
<td>Electricity savings</td>
<td>$25,983</td>
<td>$637,200</td>
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<tr>
<td>SREC Revenue</td>
<td>$22,195</td>
<td>$117,735</td>
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<tr>
<td>ITC</td>
<td>$58,500</td>
<td>$58,500</td>
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<tr>
<td>Depreciation</td>
<td>$9,945</td>
<td>$49,725</td>
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<tr>
<td><strong>Total Savings</strong></td>
<td><strong>$115,623</strong></td>
<td><strong>$863,160</strong></td>
</tr>
<tr>
<td>PACE Payments</td>
<td>-$30,000</td>
<td>-$600,000</td>
</tr>
<tr>
<td><strong>Net Cash Flow</strong></td>
<td><strong>$85,623</strong></td>
<td><strong>$263,160</strong></td>
</tr>
</tbody>
</table>

- Improved NOI for tax credit investor
- New source of capital to address property needs and improve building performance

Note: Project financials have been simplified for illustrative purposes.
C-PACE for Multi-Family Housing

Ideal Multi Family Projects:

- “Cash flow sensitive” owners & property managers – long term financing
- Debt constrained property – benefit from 100% financing
- Deferred maintenance – Great for large capital replacement projects
- Market Rate Rental Housing – Deep retrofits or Single measures
- Affordable Housing Preservation – Gap financing for deep “Gut Rehabs”

Worth Considering:

- Coops – Positive SIR means lower monthly assessments
- New construction – Possible with modeled energy baselines
- State financed affordable housing – Can be an interesting gap financing tool
- Federally insured loans – FHA Announced Pilot in California (Not FNMA)
- Condominiums – Unlikely: Needs tax ID, asset value, and no covenants
- Single Family – Appropriate for CHIF LIME Loan or other financing
Moving Forward...

Starting your energy upgrade:

1. Enter Data in Benchmarking Platform
2. Conduct Opportunity Assessment or Energy Audit
3. C-PACE application [www.c-pace.com/application](http://www.c-pace.com/application)
4. Financial Prescreen & Project Definition

Application Data:

- Basic Property Information & Energy Bills
- Current Mortgage: Lender, Terms, Principal Outstanding, etc.
- Property Value: Appraisal / Assessment
- Current on property taxes, clear title, no encumbrances and no liens