
Scaling Energy Efficiency Finance

Low hanging – *heavy to lift* – fruit



The Pew Center on Global Climate Change
Conference on Corporate Energy Efficiency

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Energy Diet

Existing buildings throughout New York will need to upgrade aging systems to keep pace with new construction and meet future emissions standards.

The EE Opportunity: New York City Apartment Building Paybacks from 3 weeks to 11 years (15 for solar)

Roof

Install solar panels with state incentives and federal tax credit.
Cost: \$19,000
Annual savings: \$1,250
Payback: 15 years

Halls and Stairs

Switch to fluorescent bulbs.
Cost: \$1,120
Annual savings: \$24,233
Payback: 3 weeks
Install motion sensors (assumes fluorescent bulbs).
Cost: \$11,000
Annual savings: \$5,500
Payback: 2 years

Apartments

Install thermostatic radiator valves.
Cost: \$3,000
Annual savings: \$1,000
Payback: 3 years

Basement

Replace an old boiler with the most efficient gas unit rather than the cheapest oil unit.
Cost difference: \$50,000
Annual savings: \$6,500
Payback: 8 years
Upgrade existing boiler system and install computerized controls.
Cost: \$15,000
Annual savings: \$6,000
Payback: 2 1/2 years

Exterior

Buy new triple-glazed windows instead of new double-glazed windows.
Cost difference: \$40,000
Annual savings: \$3,700
Payback: 11 years
Seal windows, exterior doors and cracks.
Cost: \$20,000
Annual savings: \$4,200
Payback: 5 years


Source: Optimal Energy Inc.

- **Triple Glazed Windows**
Cost difference: \$40,000
Annual savings: \$3,700
Payback: 11 years
- **Gas Boiler**
Cost difference: \$50,000
Annual savings: \$6,500
Payback: 8 years
- **Fluorescent Bulbs**
Cost difference: \$1,120
Annual savings: \$24,233
Payback: 3 weeks

New York Times, The Cost of Saving Energy, July 15, 2007

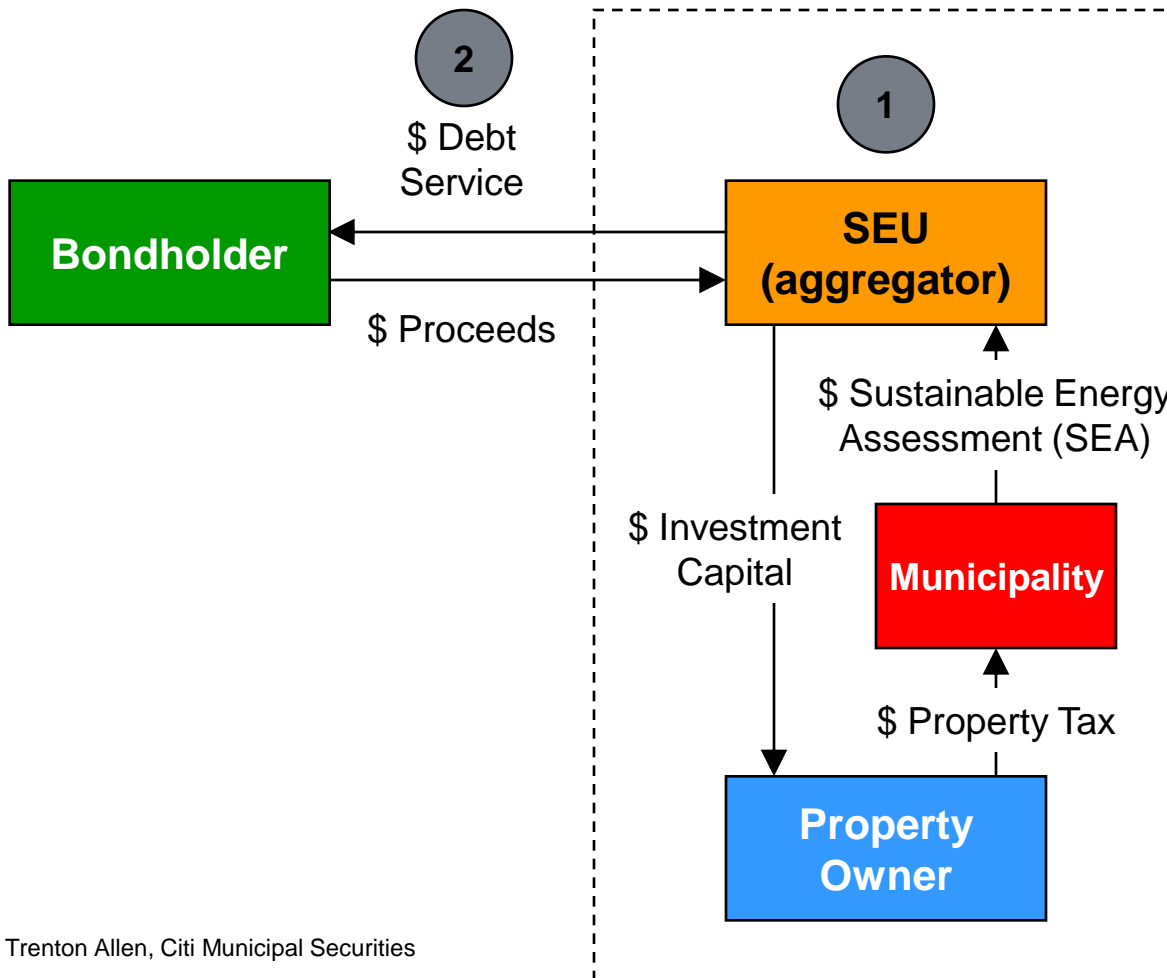
Barriers and Solutions

No single solution; no silver bullet

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- **Upfront capital**
 - **Misaligned incentives**
 - **Tenor length**
 - **Fragmented market/asset size**
 - **Transaction costs**
 - **Recourse**
 - **Standards/Assurance**
 - **Demand/Pipeline**
- **Aggregation Entities (e.g. Delaware Sustainable Energy Utility)**
 - **Property Assessed Clean Energy (PACE)**
 - **Utility on-bill**
 - **Managed Energy Services Agreement (MESA)**
 - **EE Power Purchase Agreement (PPA)**

Property Assessment Clean Energy (“PACE”) Bonds

Provide a strong mechanism for prepayment of investments



- 1 SEU, Municipality, and Property Owner enter into a tri-party agreement whereby:
 1. SEU provides capital for sustainable energy investments
 2. Property Owner agrees to make qualified sustainable energy investments and repay investment through SEA
 3. Municipality records an SEA against property and agrees to collect and deliver SEA to the SEU annually
- 2 SEU issues bonds secured by revenues from SEA

PACE Innovators

Babylon, New York – Carting carbon



- Expanded the standard definition of solid waste to include energy waste given carbon component
- Garbage collection and completed EE retrofits billed as benefit assessment
- If a benefit assessment is not paid in timely fashion, it is attached to the biannual property tax

Dorian Dale, Babylon, New York

Scale #1: Building a Secondary Market; No Primary Yet...

Standardization and aggregation across tax districts / utilities

- **Common underwriting standards**
 - > **Loan to property value (10/1)**
 - > **Absolute cap on value**
 - > **No acceleration (pay only delinquent taxes)**
 - > **Efficiency on par with other utility bill elements**
 - > **Cost savings as visible as property lien/utility bill data**
- **PACE liens provide security but also prime mortgage holders (in a foreclosure liens are paid ahead of the mortgage)**
- **Citi Energy Efficiency Working Group has embarked on an internal process to understand these issues and attempt to reconcile them**

Scale #2: Driving Demand; the Pipeline

Facilitate property owner knowledge and decision-making

EFFICIENCY2.0

Efficiency2.0 combines sophisticated energy end use algorithms with community-based social media software to provide:

- Online Customer Engagement
- Verified Energy Reductions
- AMI Software Solutions
- Custom Data Analytics

- Assuming voluntary, not mandatory programs
- If the \$ are there, will they come?
- Marketing costs are significant
- Proposition for property owner needs to be clear and compelling
- A number of groups working to solve this – for both residential and large-scale institutions

Scale #3: Ease of Implementation

Holes in the roof – 1 + years to approve; 10 minutes to drill...



- **Equipment and installation standards – new norms (e.g. water vapor from emissions can't be ducted into standard chimney)**
- **Streamlined approval processes**
- **One stop shop for all services**

Universal Issue (*across geographies; users; devices*)

Cook stoves: 15-20% global GHG emissions

- Significant efficiency opportunities (20-50+%)
- Cost and/or time savings (and potential social benefits)
- Reduced local emissions (and associated health benefits)
- Reduced GHG emissions
- Reduced pressure on forestry
- Microfinance, CDM, remittances and other mechanisms piloted



New York Times, By Degrees, April 15, 2009