Multifamily Energy Efficiency Retrofit Financing and Savings

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HR&A Advisors
HR&A is an industry-leading real estate, economic development and energy efficiency consulting firm. Strategic advisory services for complex mixed-use, neighborhood, downtown, campus, and regional development projects across North America and abroad for 30+ years.
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Economic Development

Catalyzing Energy Efficiency
The HR&A Energy Practice

Clients

- City government
- State agencies
- Utilities
- Private building owners
- Non-profits
The HR&A Energy Practice

Clients

• City government
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Services

• Program Design & Administration
• Capital Planning
• Public Policy
• Market Analysis
• Strategic Advisory
HR&A’s Energy Experience
Deutsche Bank/Living Cities Initiative 2011

challenges

A paucity of data concerning the efficacy of energy retrofits

Lack of interaction between the worlds of building science & finance
Deutsche Bank/Living Cities Initiative 2011

**challenges**

A paucity of data concerning the efficacy of energy retrofits

Lack of interaction between the worlds of building science & finance

**response**

Build a set of reliable data to:

1. Change *underwriters’ practices* to incorporate energy efficiency

2. Advance & improve the effectiveness of *public policy & programs*
Deutsche Bank/Living Cities Initiative: Central Findings

1. Building retrofits save energy.

Portfolio-wide savings

fuel: Saved 19%

electric: Saved 10%
Deutsche Bank/Living Cities Initiative: Central Findings

1. Building retrofits **save energy**.

2. **Fuel measures save more** than electric measures

**average savings per unit**

**fuel:** Saved $240

**electric:** Saved $70
Deutsche Bank/Living Cities Initiative: Central Findings

1. Building retrofits save energy.

2. Fuel measures save more than electric measures

3. Actual savings are strongly correlated with pre-retrofit fuel usage
Higher pre-retrofit EUI indicates greater savings potential

Savings = 0.51*(Pre-retrofit EUI) – 30.66
Deutsche Bank/Living Cities Initiative: Central Findings

1. Building retrofits save energy.

2. Fuel measures save more than electric measures.

3. Actual savings are strongly correlated with pre-retrofit fuel usage.

4. Strategically capping projections can vastly improve a portfolio’s realization rate.
Auditors usually project 25% – 50% savings…

67% of projects
but most fuel measures save 10% – 40%.
Strategically capping fuel savings projections can improve the portfolio-wide realization rate.

Portfolio-wide: 61% ± 14%

Realization Rate = 100%
Capping fuel savings projections *improves* the portfolio-wide realization rate from **61% to 117%**.

Realization Rate = 100%

Portfolio-wide: **117% ± 21%**
## Loan performance

### 30-year amortization

<table>
<thead>
<tr>
<th></th>
<th>Audit projection, unadjusted</th>
<th>“Capping” methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt supported by actual savings</td>
<td>$19,116,000</td>
<td>$19,116,000</td>
</tr>
<tr>
<td>Debt estimated per projection</td>
<td>$31,339,000</td>
<td>$15,713,000</td>
</tr>
<tr>
<td>Difference</td>
<td>$(12,223,000)</td>
<td>$3,403,000</td>
</tr>
</tbody>
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### Realization rate

- Audit projection: 61%
- “Capping” methodology: 117%
## Overcoming Barriers in the Multifamily Sector

### Loans where cash needed to service > savings

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<th>Audit projection, unadjusted</th>
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<tr>
<td><strong>Loans where cash needed to service &gt; savings</strong></td>
<td>71%</td>
</tr>
<tr>
<td><strong>Annual repayment shortfall (portfolio)</strong></td>
<td>$(1,103,000)</td>
</tr>
<tr>
<td><strong>Median annual shortfall (per unit)</strong></td>
<td>$(153)</td>
</tr>
</tbody>
</table>
Retrofit cost

loan supports full fuel retrofit costs in 50% of projects
Other Leading Efforts

- FHA-Fannie Mae Green Refi Plus:

- HUD Multifamily Energy Innovation Fund:

- Bank of America EE CDFI Program: