RetrofitNY: Supporting the Creation of Scalable Retrofit Solutions in NY

- Adapting the Energiesprong model to NYS
- Industry-designed, cost-effective, standardized solutions
- Drive industrialization and reduce costs
A New Model That Enables Scale

All electric, net zero energy buildings at <50% of the cost of initial pilots

Precedent set by Netherlands:
- 4,500 retrofits completed
- 5,000 new construction projects completed
Photo: courtesy of Factory Zero
RetrofitNY Interventions

Upcoming Offerings

- HVAC Challenge PON
- Solution Provider Business Model PON
- Building Envelope Solution System PON
- Pilot Project (Round 2) RFP
EUI Targets for 1-3 Story Buildings
## Performance Goals

### Mechanical Systems

Table 1: Recommended Performance Targets

<table>
<thead>
<tr>
<th>Metric</th>
<th>Performance Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating/cooling demand</td>
<td>12 kBtu/ft^2·yr</td>
</tr>
<tr>
<td>Dehumidification</td>
<td>0.012 lbs/lb</td>
</tr>
<tr>
<td>Energy recovery ventilations rates</td>
<td>20 CFM/bath and 25 CFM/kitchen exhaust with corresponding supply (min 15cfm/person)</td>
</tr>
<tr>
<td>Domestic hot water supply</td>
<td>Per EERE DHW Event Generator¹</td>
</tr>
<tr>
<td>Overall building EUI (1-2 story)</td>
<td>27 kBtu/ft^2·yr</td>
</tr>
<tr>
<td>Overall building EUI (3 story)</td>
<td>21 kBtu/ft^2·yr</td>
</tr>
</tbody>
</table>
## Performance Goals

*Envelope Treatment*

### Table 1 Proposed Façade Efficiencies by Climate Zone

<table>
<thead>
<tr>
<th></th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panelized envelope R value</td>
<td>R-30</td>
<td>R-35</td>
<td>R-45</td>
</tr>
<tr>
<td>Fenestration U values</td>
<td>U-0.16</td>
<td>U-0.16</td>
<td>U-0.16</td>
</tr>
<tr>
<td>Roof system R value</td>
<td>R-50</td>
<td>R-60</td>
<td>R-75</td>
</tr>
</tbody>
</table>
# Demand Assumptions

## Building Requirements

Table 1 EUI & Heating/Cooling Demand Results by Climate Zone

<table>
<thead>
<tr>
<th></th>
<th>Zone 4</th>
<th>Zone 5</th>
<th>Zone 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating Degree Days [65°F]</td>
<td>5400</td>
<td>5400&lt; HDD 65°F ≤ 7200</td>
<td>7200&lt; HDD 65°F ≤ 9000</td>
</tr>
<tr>
<td>Heating + Cooling Demand [kBtu/ft²·yr]</td>
<td>12</td>
<td>11 – 13</td>
<td>11 - 14</td>
</tr>
<tr>
<td>Heating + Cooling EUI [kBtu/ft²·yr]</td>
<td>4</td>
<td>4 - 6</td>
<td>5 - 7</td>
</tr>
<tr>
<td>Site EUI (1-2 story) [kBtu/ft²·yr]</td>
<td>26</td>
<td>26 - 29</td>
<td>27.5 – 31.5</td>
</tr>
<tr>
<td>Site EUI (3 story) [kBtu/ft²·yr]</td>
<td>19</td>
<td>19-21</td>
<td>20 - 23</td>
</tr>
</tbody>
</table>
Target Pricing

Based on 37 BAU rehab budgets 2017-2019

Findings:
• 45% of budget went to NZE retrofit areas
  • 22% on envelope treatment
  • 23% on mechanical systems

Target price:
• Panelized envelope: $13,800 per dwelling unit
• Mechanical pod: $11,300 per dwelling unit
Questions

Component Manufacturers & Suppliers

- Annual volume to reach target pricing?
- Startup costs?
- Ramp up time?
- Integrate products to achieve turnkey NZE retrofit?
Questions

Solution Providers

- Annual volume to reach target pricing?
- Startup costs?
- Ramp up time?
- Integrate product to achieve turnkey NZE retrofit?
- Optimal point of entry?
  - Builders and general contractors?
  - SFR energy auditors and efficiency providers?
  - Component providers with installer networks?
- Pathway to performance guarantee?
Contact Information

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