Bristol Commons and Lenox Green: Passive House Inspired Affordable Housing

Redevelopment of the Fairfax Gardens Public Housing Site

Fairfax Gardens, built in 1951, was an isolated, 150-unit barracks-style public housing development in the middle of a low-density, single-family neighborhood in Taunton, MA. Due to limited operational resources over the years, the development’s infrastructure, utilities, and many building components were in poor condition and in need of complete replacement. The buildings were neither energy efficient nor accessible, the units were cramped and much smaller than current space standards dictate, and mold, pests, and deteriorated finishes were problems throughout. The distressed conditions at Fairfax Gardens not only negatively impacted residents’ health and quality of life, it also brought down the property values of nearby homes.

The award of the HOPE VI grant allowed for the complete demolition and reconstruction of the Fairfax Gardens property (formally renamed Lenox Green post construction), as well as the development of a vacant, transit-oriented parcel in downtown Taunton (Bristol Commons).

Achieving high levels of energy efficiency was a priority of the project from the start, and a team of professionals skilled at high performance housing design and construction was assembled to achieve that goal. Passive design philosophies, such as super insulation and airtight construction of the building envelope and very high efficiency mechanical and ventilation systems, were employed to achieve buildings that would consume approximately 1/10th of the heating energy of conventional construction. Simplicity of operations and maintenance, affordability, constructability at scale, dependability, and low utility expenses were balanced with the goal of deep energy use reductions.

Location: Taunton, MA • Units: 160 Total (98 townhomes, 8 duplexes, and 54 apartment units) • Total Development Cost: $73 million • Construction Completed: Spring 2014

Affordability: 0-60% AMI rental units • Developed by Trinity Financial in conjunction with the Taunton Housing Authority • Managed by Trinity Financial
Funding Sources

- $22 Million HOPE VI Revitalization Grant from the US Department of Housing and Urban Development (HUD)
- LIHTC Funding from the Massachusetts Department of Housing and Community Development
- Other public funding sources and private equity

PERFORMANCE RESULTS

As a condition of the HOPE VI redevelopment grant, the sites were also designed and built to meet the requirements of the Enterprise Green Communities standard, which comprehensively addresses sustainability throughout the development with a focus that extends beyond energy efficiency into water conservation, environmental impacts, resident health, and sustainable materials, and efficient operation and maintenance.

New Ecology, Inc. has been tracking and benchmarking the performance of this development for the past four years to understand the energy impact of the revitalization. The results below affirm the potential for passive approaches to achieve deep reductions in energy use in affordable housing.

AIR INFILTRATION RESULTS

<table>
<thead>
<tr>
<th>Passive Metric</th>
<th>Air Infiltration (ACH50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Energy Code: IECC 2015</td>
<td>3</td>
</tr>
<tr>
<td>Bristol Commons &amp; Lenox Green</td>
<td>Best = 0.52, Average = 0.84</td>
</tr>
</tbody>
</table>

\(^1\text{ACH50} = \text{air changes per hour at 50 pascals.}\)
\(^2\text{This metric is chosen by the Passive House Institute of the United States for the PHIUS+ rating system.}\)
\(^3\text{IECC = International Energy Conservation Code}\)