

# Integrated Solutions Showcase: Building Glazings

The Navy Yard | Building 101  
Philadelphia, PA  
11/27/12 | 8:00am – 11:30am

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## Integrated Solutions Showcase Overview

- The EEB Hub Showcases examine how new lighting, HVAC, windows, façade, building control systems, and other technologies can be integrated into whole building solutions to significantly reduce building energy use.
- The showcases also explore Advanced Energy Retrofit (AER) projects, ROI and payback of energy efficient products and technologies, and other regional market engagement issues.
- These showcases are targeted to building owners, occupants, design and construction professionals, and suppliers.

**High-performance Glazing Basics:** What makes a window high-performance? What are the latest architectural glass products? A representative of Performance Glazings at PPG Industries (Pittsburgh, PA), spoke about high-performance glass technologies.

- High-performance glass improves energy use in buildings by managing the sun's energy to allow more daylighting, and saves money by reducing HVAC capital and annual costs.
- Developers may find it easier to raise funds for building capital costs than for operating costs (e.g. utility bills), so they may find it worthwhile to invest in high-performance windows upfront to save money down the line.
- The U.S. and European markets are very different, because of the prevalence of A/C in the U.S. There are also different measurement standards that must be accounted for.

**Building 669 at the Navy Yard:** Glazing decisions in an Integrated Design project  
A representative from the EEB Hub discussed the Building 669 Test Bed project at the Navy Yard, which is a retrofit project that will install a new roof and reconfigure the second floor to accommodate a five-fold increase in occupancy.

- The incremental improvement since the 1970s, in terms of energy-efficiency, of Whole Building Systems is lower than individual systems of Lighting, Cooling and Glazing. This indicates that technology improvements have progressed more rapidly than an integrative design perspective.
- Whole Building Systems improvement requires integrative design and beginning the collaboration process as early as possible, while changes can be made easily and inexpensively. This also creates a more balanced workplan and timeline.
- Building 669 at the Navy Yard is a retrofit project and window replacement is critical, as the glazing upgrade will make a large impact on the building's energy load.

**Building Glazing Panel Discussion:** Glazing and design experts participated in a panel discussion and Q&A session about energy efficiency window technologies. Panelists included representatives from PPG, the Architectural Glass Institute, Renovate Windows (Berkowitz Glass), and the EEB Hub.

Renovate discussed their retrofit project at 400 Market Street in Philadelphia, PA as a model of energy-efficient renovation. The 12-story, 200,000 sq.-ft. building is being used as a DOE model to measure the energy savings potential of low-emission retrofitting glazing systems.

Renovate's window retrofitting system converts older single-pane windows into highly-efficient triple-glazed windows without incurring costly "rip out and replace" projects. The retrofit project at 400 Market Street is expected to save over 25% in total annual energy costs and gain LEED Silver certification.

- **Question: Does the EEB Hub have a daylighting measurement lab?**
  - A: No, but the Hub is working with Purdue to do advanced daylighting studies. The Hub would like to create a daylighting test lab in the future.
- **Question: What can buildings do, besides retrofit projects, to reduce energy use?**
  - An engineer from the EEB Hub talked about "trigger points" – key aspects of a building's operation that can be studied and improved.
    - For example, using data to identify and reduce "energy hogs" can lead to savings without costly retrofitting.
  - Although energy modeling for new buildings is very accurate, energy modeling for retrofit projects is not as accurate.
- **Question: What are some cutting edge technologies in high-performance glass?**
  - PPG's representative acknowledged that glass can turn into a commodity product and that companies must stay a step ahead. She discussed PPG's "Smart Window" technology, including windows that tint automatically (like sunglasses) and sensor windows that sense light and energy use and feed that information in a building's control system.
- **Question: What issues are there regarding installation of high-performance glass?**
  - PPG and Berkowitz representatives discussed that they will not sell high-performance glass directly to an installer. There is training involved, and PPG, being primarily a B2B company, manages a Certified Fabricator Program and has rigorous standards for contractors.
  - Installation of high-performance glass is the biggest expense and early collaboration between building owners and glass companies can help manage those costs effectively.