



Renovation Reductions: *Making Existing Buildings More Energy Efficient*

Requirement:

Ensure all building renovations reduce energy use by 25%.

Why Do It:

According to the International Living Future Institute, buildings currently consume more energy than any other final use. The greening of buildings will be imperative in addressing climate change. It has also been said that the greenest building is the one that is already built. When accounting for embodied carbon, reusing a building rather than demolishing and building new produced greater environmental savings.

A 2011 [study](#) by the Preservation Green Lab of the National Trust for Historic Preservation found that “building reuse almost always yields fewer environmental impacts than new construction when comparing buildings of similar size and functionality.”

The inherent reduced impact paired with careful material selection and efficiency strategies compound the benefits of using existing buildings.

How It Works:

In May 2019, Phipps unveiled the [Exhibit Staging Center \(ESC\)](#). Formerly a public works building, the ESC showcases the latest advancements in green building technology on an existing site, transforming a dilapidated space on a former brownfield into an environment dedicated to the physical well-being of its occupants and visitors, the ecology of its site, and the habitat of native species of plants and animals.

Originally constructed as a flat, block warehouse with no windows, Phipps has adapted this former City of Pittsburgh public works structure into a net-zero energy building that enhances the health and wellness of staff members who use the space. The ESC proves that the greenest buildings can be ones that already exist. With the right priorities, even the most unhealthy spaces can become ones that are good for the people who inhabit them and beneficial to the environment.

The building is powered by a PV array located on the roof and adjacent areas. It utilizes geothermal system with radiant floor heating and cooling. Additional features include new insulation and triple pane glass windows.

The building is expected to be net-positive energy and will generate more electricity than it uses each year for power, heating and cooling.

Why It Works:

Renovations, when done appropriately, provide environmental benefits. Assuming the right materials are chosen, they can save carbon even without added energy efficiencies. With added efficiencies, those environmental benefits increase. But they can provide cultural and historical value, as well. Existing buildings may serve as a touchstone for guests, or contribute to the “sense of place.”

Obstacles:

Renovations, like new construction, may require a significant financial investment. Capital campaigns for funding renovations or retrofits may be a more challenging pitch to donors and sponsors compared to a brand new building. But given the environmental, financial and cultural benefits that building re-use can afford, a solid case can be made against the bulldozer.

Messaging:

The greenest building may be the one that’s already built.



For Immediate Release: Fri., May 17

Phipps Conservatory Opens Exhibit Staging Center, Setting a New Standard in Green Buildings
Big Green Block Party debuted three of the greenest buildings in the world on a single site in Pittsburgh.

Pittsburgh, PA – [Phipps Conservatory and Botanical Gardens](#) continues to lead in sustainable building design and construction with the unveiling of the Exhibit Staging Center (ESC). Formerly an old public works building, the ESC showcases the latest advancements in green building technology on an existing site, transforming a dilapidated space on a former brownfield into a safe, healthy environment for people, plants and animals.

Thurs., May 16 marked the opening of the ESC, as over 500 attendees were among the first to tour the state-of-the-art facility at the Big Green Block Party event. Steven Massaro and son Joseph Massaro, Jeff Davis, Karl Steinmetz, Cathy Fitzgerald, Majestic Lane, Walter Burlack, Ryan Martin, Erica Cochran, and Phipps President and CEO Richard Piacentini participated in the ESC’s ribbon cutting ceremony during the honorary event, celebrating all that sustainable Pittsburgh has to offer.

Phipps committed to adaptive re-use of the ESC’s space with the goal of achieving three of the world’s most rigorous building standard certifications: International Living Future Institute’s Living Building Challenge, LEED® Platinum and WELL Platinum. Upon successful completion of Living Building Challenge’s one-year performance period, Phipps will have three Living and Petal Certified Buildings on its site.

“We are excited to introduce our newest green building to the world,” stated Richard Piacentini, president and CEO of Phipps Conservatory and Botanical Gardens. “The Exhibit Staging Center demonstrates that the greenest, healthiest buildings can be ones that already exist, transforming an old cinderblock building into one of groundbreaking sustainability. The building will not have a heating, cooling, electricity or sewer bill and, most importantly, will improve the health and well-being of our maintenance staff who work in and guests who visit here. Phipps is dedicated to showing that sustainable practices are good for people and the planet, and the Exhibit Staging Center is another way we are demonstrating this commitment.”

“Phipps Conservatory has been a world leader in creating Living Buildings, now with their third project undertaking the Living Building Challenge. These projects are a demonstration for Pittsburgh and beyond that it is possible to create a Living Future for all,” stated Amanda Sturgeon, CEO of the International Living Future Institute.

The Exhibit Staging Center introduces a first-of-its-kind nexus of green buildings at Phipps, featuring three different types of construction — new (Center for Sustainable Landscapes), modular (Nature Lab) and existing (ESC) buildings — serving as a real world model, inspiration and idea source for guests from around the world.

Maintenance staff and grounds crew, a group whose well-being is often overlooked, will be the primary occupants of the ESC, which is designed to ensure that the health and well-being of all staff members is a top priority. To enhance the guest experience, the ESC will be open to visitors for a unique behind-the-scenes look at the Conservatory’s past and future flower shows. Guests can enter a vestibule to see future display props being constructed and an adjacent window will provide views of historic topiaries and props from past show displays. With additional features including a yoga studio and fitness center, Phipps’ ESC will set the standard for healthy existing buildings, debuting as one of the greenest structures of its kind.

ESC Sustainable Highlights:

- The ESC’s project site, a remediated brownfield, has been restored as a safe environment for people, plants and animals.
- The facility is designed to generate all of the energy it uses each year and capture and manage all stormwater that falls onsite.
- With geothermal wells buried into the ground, the building is able to efficiently heat and cool the facility by harnessing the natural energy from the earth’s consistent 55-degree internal temperature.
- The roof of the ESC is home to photovoltaic solar panels, which capture the sun’s energy to convert to electricity.

- The DC Difference: Direct current (DC) electricity is the form of electricity collected by solar panels and stored by their batteries, but most American buildings use alternating current (AC). In conventional settings, a device called a solar inverter is converts the DC electricity from solar panels into AC, wasting 10 – 15% of solar energy in the process of converting to AC and then back to DC again to power LED light bulbs. The ESC breaks this wasteful convention by using direct DC from the solar panels and batteries to all of the lights in the building. That means the entire lighting system for this building could run on a single 20-amp circuit.
- The lagoon adjacent to the ESC is used to store rainwater and replicate the natural treatment processes of marshes and wetlands on site.
- Chemical-free sanitary water is recycled and treated through a constructed wetland that uses natural plants and microbes, as well as sand filters and UV lights.
- A green roof over the ESC's vestibule helps manage stormwater.
- Biophilic design elements and art celebrating the bonds between humans and nature add to the healthy impacts of the building on occupants and guests.
- The ESC's vegetative green screen wall further enhances the building's biophilic connection.
- The use of Declare label products, along with the avoidance of Living Building Red List materials, means the building is free from many of the toxic chemicals typically found in building materials.

ESC project partners working with Phipps: FortyEighty Architecture, Common Ground, Iams Consulting, LLC, Studio Phipps, Massaro Corporation, Shepley Bulfinch, Karl Steinmetz Designs, Building Performance Architecture, CJL Engineering and 7group.