**Zeroing In:** ***Making Your Buildings Net-Zero Energy***

Requirement:

Build all new buildings as zero-energy buildings or Living Buildings

Why Do It:

According to the U.S. Energy Information Administration, in 2018, the energy consumed to power our homes and commercial buildings totaled more than 40,000 trillion Btus, or about 40% of the U.S. total. Lighting, heating and cooling our buildings contributes significantly to our greenhouse gas emissions.

Additionally, greenhouses and conservatories have a comparatively high energy demand. While retrofitting some historic conservatories may present challenges related to historic preservation or other reasons, pronounced efficiencies can be realized in new construction.

How It Works:

Since 2012, Phipps has added three new spaces to our campus, each representing a unique use and construction type: new, modular and adaptive reuse. Through thoughtful design, passive strategies, cutting edge materials and on-site solar panels, each generates more energy than it uses.

The Living Building Challenge is the world's most rigorous proven performance standard for buildings. It asks you to imagine a building designed and constructed to function as elegantly and efficiently as a flower: a building informed by its bioregion's characteristics, that generates all of its own energy with renewable resources, captures and treats all of its water, and that operates efficiently and for maximum beauty.

The framework is organized into seven performance areas called Petals, each of which is further divided into imperatives, which address specific issues through detailed requirements. To be certified, a project must achieve all of the imperatives and demonstrate this performance over twelve consecutive months. One imperative of the energy petal requires that all projects supply 105% of their energy needs through on-site renewable energy on a net-annual basis, without the use of combustion.

Why It Works:

We have the know-how, materials and technology to build net-zero; all we lack is the will. When Phipps Center for Sustainable Landscapes was certified as a Living Building in 2015, it was the just the seventh project to achieve that status. At of the time of this writing, there are 23 and there more than 500 projects registered.

Net-zero buildings will never have another electric or gas bill. But more importantly, they will not be adding greenhouse gas emissions and contributing to climate change. The progressive leadership of the public garden community in areas like this can direct us toward a regenerative world in which we respect other forms of life, share the earth's resources and live in harmony with nature. It is an opportunity in which botanical gardens are uniquely qualified to make lasting positive impacts in our communities.

Obstacles:

While thoughtful design that utilizes the natural capital afforded us by things like the sun and the wind doesn't cost more than poor design that does not consider these, a typical kneejerk response to these types of projects is "we can't afford it." In the developed and rapidly developing parts of the world, that answer isn't good enough anymore. If we cannot build a building or operate a program that contributes to making the world a better place we need to seriously consider whether we should build or do it at all. It comes down to acting on our values. If climate change and all the human and environmental issues tied to is truly important to, than everything we do concerning needs to be seen as a high priority.

Messaging:

*We can build beautiful, net zero buildings that operate as elegantly and efficiently as a flower right now. And we can't afford not to.*

PHIPPS

**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.