FACT SHEET
THE BOSARGE FAMILY EDUCATION CENTER
AT COASTAL MAINE BOTANICAL GARDENS

Coastal Maine Botanical Gardens' Bosarge Family Education Center is located adjacent to the Gardens' existing Visitor Center and houses both administrative office space and flexible and adaptable classroom space that can be used for various events and gatherings. From the beginning, the client set out strict environmental guidelines: to achieve Leadership in Energy and Environmental Design (LEED) Platinum certification, and to minimize energy usage and to be a net-zero-energy building, producing as much energy as it consumes on an annual basis. The building is not only meant to house the Gardens' programs, but will also be a teaching tool for visitors. It will clearly communicate that conserving resources and energy results in a variety of benefits.

PAYBACK

- The average cost of building a LEED building is 1-2% more than traditional construction, and 4-9% on average more for LEED Platinum, the highest level of LEED certification.

- The cost savings of improved efficiency should pay for the additional construction costs of this LEED Platinum building in an estimated 14 years.

- The solar system that heats and powers this building – after accounting for incentives and tax rebates – will have a payback period of 10 years.

ENERGY USE

- The super-efficient building envelope, designed by Maclay Architects and Andy Shapiro of Energy Balance, provides a 50% reduction in building energy usage from code, and results in a modeled energy intensity of 19 kbtu/sf-yr. On average, LEED Platinum construction achieves a 30% reduction in building energy usage.

- A 45 kW PV array is installed to provide 100% of the energy required to run the building

- A variable volume refrigerant heat pump system is used for heating and cooling. This air-to-air heat pump extracts heat from the outside air and pumps that heat into the building in the winter, while it rejects heat to the outdoors in the summer.

- Ventilation is provided by energy recovery ventilators, which recover about 70% of the heat from exhaust air and deliver it back into the fresh incoming air stream.

- Premium efficiency lighting and daylighting strategies provide an estimated 60% reduction in energy use for lighting.

- Meters are provided to measure and verify energy usage by indoor lighting, outdoor lighting, mechanical systems, and plumbing systems.

- Fore Solutions introduced an educational monitoring system, the Lucid Design Group Building Dashboard®, to the project, which provides energy and water use data in real time and offers visitors to the building and the Gardens' web site a

virtual tour of the building's green features.

WATER USE

- Water reduction strategies in the building include rainwater collection, low-flow plumbing fixtures, and solar-heated hot water.

- Water-saving technologies and water re-use contribute to a 75% reduction in building water usage when compared to a typical building.

GREEN CONSTRUCTION PROCESS

- Bensonwood's off-site fabrication of panelized construction assemblies, and its commitment to sustainably harvested and manufactured wood products, ensured the exacting standards required for achieving the Net-Zero and LEED Platinum targets.

- By incorporating Bensonwood's pre-engineered, extreme green wall systems and other panelized assemblies, the Education Center was able to achieve high performance levels for its custom design at an attainable price point.

- Bensonwood's Open-Built™ construction methodologies disentangled the structural and mechanical systems, assuring that the Education Center can adapt to changing technology and the future needs of its occupants—a flexibility critical to achieving true sustainability.

- When combined, Bensonwood's unique systems meant that the high performance Bosarge Education Center could be fabricated efficiently in a controlled environment, during harsh winter conditions, and rapidly raised on site with minimal disruption to the ecology of the site.

- During the on-site construction of the building, 90% of waste was recycled.

UNIQUE DESIGN FEATURES

- The building design process was a collaborative process consisting of multiple day-long design charrettes with design team members and a team of the Gardens' staff and members.

- The building design, by Scott Simons and Maclay Architects, centers on strong connections to the surrounding outdoor gardens and classrooms through transparency, view and multiple direct points of access.

- The Main Hall was designed to be as flexible as possible. The space can quickly be partitioned into three different classroom or lecture configurations. The lecture space is supported by the kitchen, audio-visual systems and chair and table storage.

- Natural finishes were used wherever possible, including clear wood finishes, mill-finish aluminum, and polished concrete.

- The use of wood in the building provides for its character, with 85% of the wood certified as sustainably harvested wood from the Forest Stewardship Council.

The Bosarge Family Education Center project is the result of a collaborative process involving the following building professionals:

***Owner's Sustainability Representative and LEED Consultant**
Fore Solutions, Portland, ME, www.fore-solutions.com

***Architectural Design**
Maclay Architects, Waitsfield, VT, www.maclayarchitects.com
Scott Simons Architects, Portland, ME, www.simonsarchitects.com

***Mechanical and Electrical Engineering Systems Design**
Allied Engineering, Portland, ME, www.allied-eng.com

***Fabricator and On-Site Builder of High Performance Shell**
Bensonwood, Walpole, NH, www.bensonwood.com

***Construction Manager**
HP Cummings, Winthrop, ME

***Landscape Architect**
Herb Schaal, AECOM, Inc., Fort Collins, CO

***Civil Engineer**
Knickerbocker Group, Boothbay, ME

***Structural Engineer**
Becker Structural Engineers, Inc., Portland, ME

***Energy Consultant**
Energy Balance, Inc., Burlington, VT

***Specifications**
Lowell Specifications, Inc., Freeport, ME

***Lighting Designer**
J&M Lighting Design, Inc., Kennebunkport, ME

***Acoustical Consultant**
ACENTECH, Cambridge, MA

***Commissioning Engineer**
Investment Engineering, Yarmouth, ME

**For more information about the facts listed, please contact these firms.*