



David L. Lawrence Convention Center

Size: 1,486,000 sq ft

Location: Downtown Pittsburgh, PA

Owner: Sports and Exhibition Authority (SEA)
[<http://www.pittsburghcc.com/html/index.htm>]

LEED™ Rating: LEED 2.0-2.1 Gold Certified

Costs: \$196 per square foot

Completion Date: September 2003

Building Overview

The design for the world's first certified green convention center resulted from an international competition conducted by the Southwestern Pennsylvania Convention Center Design Commission. Encompassing nearly 1.5 million square feet and costing \$385 million, green is seamlessly integrated into the building design and belongs to the building as intrinsically as its world-class aesthetics and engineering. As an owner occupied civic building, a payback period of less than 10 years was used as a guideline for the Center. Current projections indicate that the building is within this guideline. The Green Building Alliance (GBA), The Sports & Exhibition Authority (SEA) and others will evaluate the actual building performance over the coming years.

Sustainable Sites

- Downtown location with quick access to hotels and other conveniences for visitors. Because it reuses a downtown site, the building is accessible by transportation alternatives to automobiles and is served by existing infrastructure. Incorporating public spaces and art into the design contributes to the continual rejuvenation of Greater Pittsburgh's urban core.
- Adjacent to public transportation: The building is located within 200 ft. of a bus station, within 400 ft. of a train station, and within 50 ft. of two public bus lines.
- Showers and racks for bicyclists: Bicycle slots are provided for over one-third of regular building occupants.
- Highly reflective material to reduce heat islands.
- Exterior lighting was minimized.
- The Convention Center is located on a former brownfield site. Redevelopment of the site involved removing 6 underground storage fuel storage tanks and a buried asbestos pipe, as well as cleaning soil affected by a gasoline leak on an adjacent site.
- Over 16% of building occupants will be provided with carpool or vanpool preferred parking.
- At least 50% of parking spaces are underground or covered by structured parking to minimize land used for parking and to reduce urban heat island effect.

Water Efficiency

- Gray water system recycles water for use in toilets and urinals. The water is conditioned by an aerobic digestion and submicron filtration system. The effluent is totally colorless and odorless. With final ultraviolet light treatment, the effluent has been treated for everything but viruses. The system recycles 50 percent of

the Center's water and saves an estimated 6.4 million gallons annually. The water reclamation system will reduce potable water use by over 75 percent.

- Indigenous landscaping uses no potable water for irrigation.
- The Convention Center taps Pittsburgh's "fourth river," the aquifer that runs beneath Downtown, providing makeup water for the Center's refrigeration system cooling towers, reducing the demand for water from the city water system.
- Pulsed-power treatment of the cooling tower water to eliminate bacteria without chemicals further reduces the demand for city water and saves an estimated 1.8 million gallons of water annually.
- Water saving features saves enough water to supply 132 Pittsburgh households for a year.

Energy & Atmosphere

- Extensive computer modeling resulted in energy savings 35.6% when compared to an ASHRAE/IESNA 90.1-1999 base model.
- Exterior lighting is designed to reduce night time light pollution, lessening environmental disruption for urban wildlife and migrating birds.
- Use of light sensors and controls.
- Daylighting features include clerestory windows where the walls and roof meet and long, 6-foot-wide ribbon skylights which cover 10 percent of the roof area. Exhibition halls can be lit entirely through skylights and windows. Daylighting design provides natural light for 75% of the Convention Center's exhibition space, saving 9.5 million kWh of energy a year.
- Combining the use of natural ventilation with extensive daylighting requires about 35% less energy compared to a conventionally designed building--3.8 million kWh of energy and over half a million dollars annually. This savings is equal to the electricity consumed by 1,900 Pittsburgh households.

Indoor Environmental Quality

- The use of low- or no-VOC content for adhesives, sealants, interior paints, and coatings ensures Center visitors a comfortable, healthy experience.
- Daylighting and views are maximized in public areas.
- Ongoing CO₂ monitoring system provides a healthier space.
- Permanent entryway systems are in place to capture dirt, particulates, etc. at all high volume entryways.
- At least 50 percent of regular occupants in non-perimeter areas have individual controls for airflow, temperature, and lighting.
- To create natural cross ventilation, the Convention Center takes advantage of the chimney effect created by the sweeping roof and of convection currents from Allegheny River flowing next to the building.
- Specially designed janitors' closets include exhaust fans to maintain safe air quality for workers and guests.

Materials & Resources

- Recycling program recycles corrugated cardboard, paper, glass, and plastic.
- The materials used to construct the building have recycled content and were mostly manufactured within a 500-mile radius of Pittsburgh.
- In demolishing the old convention center, 98% of the waste was recycled by crushing it into fill for this and other sites, converting would-be-debris into a useful material. In total, over 60,000 tons of construction, demolition, and land-clearing waste (92.46%) were diverted to uses other than landfill.
- The demolition company was able to sell clean fill for \$4.75-\$5.25/ton, while some of the fill was used on-site.
- The suspended roof provides a column free space for the exhibit halls that would require about 40% more steel if it were conventionally constructed with trusses.
- The post-consumer recycled content in the steel, aluminum and drywall amounts to a minimum of 12.8% of the total building materials.

Team

- ▶ Rafael Vinoly Architects <http://www.rvapc.com/flashindex.html>
 - ▶ Burt Hill Koser Rittleman Associates
 - ▶ Turner Construction
 - ▶ PJ Dick
 - ▶ ATS
 - ▶ AMEC
 - ▶ Dewhurst Macfarlane and Partners
 - ▶ Sports & Exhibition Authority (SEA) <http://www.pittsburghcc.com/html/index.htm>
 - ▶ Green Building Alliance <http://www.gbapgh.org/DLLCC.asp>
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- ▶ Lighthouse Electric <http://www.lighthouseelectric.com/index3.html>

Green funders of this project:

- The Heinz Endowments
- Pennsylvania Department of Environmental Protection
- Citizen Power [<http://www.citizenpower.com/>]

Learn more about GBA's educational outreach for the David L. Lawrence Convention Center at <http://www.gbapgh.org/DLLCC.asp>

See http://www.gbapgh.org/DLLCC_Video_Page.asp for a 12 minute video on the building.

