



**Greenbuild International Conference and Expo '03  
Pittsburgh, Pennsylvania  
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*Case Study: Raising the Bar for Greening a Conference*

Amy Spatarisano, CMP  
Meeting Strategies Worldwide, Inc

US Green Building Council (USGBC) held its second annual conference, now called Greenbuild International Conference and Expo, in Pittsburgh, Pennsylvania, November 12-14, 2003 with pre-conference meetings and post conference tours. Total Registered: 5241; Number of Exhibitor Booths: 403; Number of Countries Represented: 21. The International Conference is the pre-eminent showcase for leading edge green technologies in the building sector. The US Green Building Council is the foremost coalition of leaders from across the building industry working to promote environmentally responsible building.

Because the conference was being held in a facility that was built environmentally responsible the opportunities to "green" the conference seemed beyond the scope of current practices. In building on the success of last year's greening efforts Meeting Strategies worked with the USGBC staff, conference steering committee, local host committee and all conference vendors to determine feasible environmental strategies for the conference. In the collaborate efforts of the group was a commitment to incorporate the economic, environmental and social aspects of sustainability. By working together this conference was not only planned environmentally responsibly but was also held in an environmentally responsible setting. The outcome from this partnership was the creation of a phenomenal event.

The success of this International Conference can be measured in many ways, whether through analyzing the environmental impacts or through calculating the economics of the conference. By using an auditing system to measure these impacts, Meeting Strategies Worldwide was able to show through the audited results the environmental and economic successes of the Greenbuild International Conference and Expo. This case study illustrates the impacts of the environmental and economic strategies implemented in the areas of air quality, energy efficiency, water conservation, waste management and environmental purchasing. In addition the economic indicators, commitment to change and conservation are discussed as part of the study.

**Minimizing Environmental Impacts:**

US Green Building Council selected Pittsburgh as the site for the Greenbuild International Conference and Expo because the new David L. Lawrence Convention Center was built to LEED standards. (LEED - Leadership in Energy & Environmental Design- is the Council's green building rating system and the national standard for high-performance green buildings). In fact, the building is the first Convention Center in the world to receive a gold LEED certification.

The design for the world's first certified green David L. Lawrence 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, environmental features are 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, Sports & Exhibition Authority and others will evaluate the actual building performance over the coming years.

US Green Building Council's commitment to sustainability goes beyond just the structure of buildings. Their commitment encompasses creating an environmentally responsible conference that involved the community on a broad scale. Educating and encouraging Pittsburgh's convention community to embrace sustainable practices as a long term strategy was important in supporting the Council's commitment to sustainability. Working through the greening process with committee members, staff and vendors created an awareness of possibilities and the desire to improve. Ultimately, the overall success of the conference inspired and heightened USGBC's commitment to take their practices to the next level. Additionally, the conference altered the Pittsburgh convention community by providing an opportunity for them to learn and appreciate the environmental impact of conferences.

**Air quality:**

USGBC used AirExpert and the Leonardo Academy to measure components of the air quality of the exhibit hall and transportation used. The results were as follows:

AirExpert monitored the ventilation system measuring the carbon dioxide within the exhibit hall for the duration of the conference. Their conclusion was the building has an excellent ventilation system. The only time the CO2 levels were high was during exhibit move in attributed to the forklifts and other equipment used. Their recommendation was to use alternative fueled equipment. A detailed report is available upon request.

USGBC also contracted with the Leonardo Academy Cleaner and Greener Event Certification program to offset conference emissions.

- Event Attendance = 5,256, local (1,314), regional (736), national (2,891) and international (315)
- Total Event Meeting Floor Space = 100,000 avg. square feet per day
- Total Electricity Consumption = 476,000 kWh
- Total Natural Gas Use = 23,000 therms
- Total Air Passenger Miles = 7,043,000 miles, (215,000 gallons kerosene)
- Total Vehicle Miles = 578,000 VMTs, (27,000 gallons gasoline)

**Estimated Emissions Caused by Energy Use and Emissions Offsets for the Greenbuild 2003 International Conference & Expo**

<i>Pollutant Type</i>	<b>Emissions Caused by Event Energy Use (lbs.)</b>	<b>Total Emissions Offset (lbs.)</b>	<b>Number of Times Emissions Offset</b>
Carbon Dioxide (CO2)	5,606,214	10,858,722	1.9
Sulfur Dioxide (SO2)	4,922	4,922	1.0
Nitrogen Oxide (NOx)	8,007	8,015	1.0
Particulates (PM10)	1,251	773	0.6
Mercury (Hg)	0.02346	0.04425	1.9

## **The air quality related components of the Convention Center include:**

- The architect's specs for this building called for low- or no-VOC content, ensuring Center visitors a comfortable, healthy experience - low-emitting materials include adhesives, sealants, interior paints, and coatings
- Ongoing CO2 monitoring
- 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
- Extensive computer modeling resulted in energy savings 35.6% when compared to an ASHRAE/IESNA 90.1-1999 base model

## **Energy efficiency:**

The way in which certain components of the conference were conducted offered the opportunity to be more energy efficiency. For the conference programming the following energy reduction strategies were implemented:

- The lights, power and HVAC were reduced during move in and move out times in the exhibit hall
- Conference hotels offered the towel and sheets reuse program to guests, and shut off HVAC when guests were not in their room
  - The Westin recently installed a key system called the Entergizer where guests put their hotel key inside the door to activate the lights and electrical, the estimated payback period is 18 months. They saved 50,000 kWh in October.

## **The Convention Center incorporated the following to increase energy efficiency:**

- Exterior lighting is designed to reduce night time light pollution. This means less environmental disruption for urban wildlife and migrating birds
- Green power is being considered
- Highly reflective material to reduce heat islands
- Exterior lighting was minimized
- Light sensors and controls will reduce energy consumption
- Day lighting 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. Day lighting design provides natural light for 75% of the Convention Center's exhibition space and saves 9.5 million kWh of energy a year.
- Use of natural ventilation in a building this size, combined with extensive day lighting is projected to use about 35% less energy compared to a conventionally designed building. This is equal to the electricity consumed by 1,900 Pittsburgh households. The cost savings are projected to be 3.8 million kWh of energy, or over half a million dollars annually.

## **Water conservation:**

Water conservation strategies were implemented for both drinkable water and water used for bathrooms and cleaning. Drinkable water was conserved by offering large containers of drinking water rather than individual bottles which also minimized waste. Also, catering staff did not pre-fill drinking glasses saving 1045 gallons of consumable water.

For bathroom and cleaning water the towel and sheet reuse program in the hotels reduced water usage.

The Convention Center has the following water efficient features (these features save enough water to supply 132 Pittsburgh households for a year):

- Gray water system recycles water for use in toilets and urinals, also minimizing waste of dishwater. 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. An estimated 1.8 million gallons of water is saved annually by this design.

## **Waste minimization:**

Many areas of the conference in both the planning and execution phase were considered in developing strategies to minimize waste. The purchasing and serving of food and beverages, exhibit hall practices, program design and communications are some of the key areas where waste was minimized.

### **Food and Beverage purchases and service:**

- Condiments were served in bulk containers
- Juice and ice tea were served from large containers
- Garnishes on the plates were eliminated
- Cloth napkins were used instead of paper
- No individual water bottles were served at meals
- Dessert served as the centerpiece eliminating potential waste of cut flowers
- China was used instead of disposable service ware, 2614 pounds of plastic was not used

### **Exhibit Hall / Conference Program practices:**

- Exhibitors were asked to minimize giveaways and promotional material
- Fabric drape was used for the general session staging eliminating the use of vinyl drape material

### **Hotel practices:**

- Each hotel has a recycling program for cardboard and paper
- The Hilton additionally recycles glass, cans, plastics, printer cartridges, linens, hangers and pallets. Each guest room has a recycling container for glass, cans and plastics
- Electronic checkout options were available

### **Overall materials recycled by the Convention Center as a result of the conference:**

- 4,580 lbs of cardboard
- 640 lbs of co-mingled cans/plastic
- 360 lbs of paper
- 1680 lbs of magazines
- 540 lbs of glass
- All pallets were recycled

### **The Convention Center implemented the following in the building process to reduce waste:**

- 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. (mrc2) 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 increase their revenues by selling clean fill for \$4.75-\$5.25/ton and some of the fill was used on-site
- The post-consumer recycled content in the steel, aluminum and drywall amounts to a minimum of 12.8% of the total building materials
- 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
- 376 pounds of left over food was donated

### **Communications:**

- Attendee list and speaker bios were available online at the cyber cafe instead of printed
- Speaker presentations were on CD
- Conference promotions were electronic
- Name badge layout was redesigned to minimize paper waste

### **Environmental purchases:**

Names badges printed on recycled paper and badge holders were recycled. Additionally, Conferon, the registration company, has converted all of their clients badge stock to recycled materials as a result of Greenbuild. Conference bags were made of recycled materials, pre-conference materials and final programs were printed on 100% post consumer paper with soy based ink, local and organic products were used as much as possible and available, 5474 lbs of organics were used. Cornstarch trash liners were used in the registration area and exhibit hall booths.

Exhibits were offered a “green” booth alternative from the decorator. The carpet used in the exhibit hall as aisle carpet and in the general session hall was Shaw Carpet donated Solution Q which is made of 40% recycled materials and is recyclable – will be reused. 41% of exhibitors out of 300 used the recycled carpet in their booths, 35% used green padding. Signage will also be reused.

All the conference hotels use environmentally responsible cleaning products, renovation materials, in room recycled tissue, toilet paper (two of the hotels use recycled laundry bags). Two of the hotels offer doubled sided copy discounts to encourage the reduction of paper. And the Convention Center used locally manufactured materials and certified wood in its construction.

## **Economic Indicators:**

Serving water in large refillable containers instead of supplying individual bottled water saved the organization money and minimized packaging waste. Dessert was used as the center piece for the closing night gala saving money on otherwise expensive centerpieces. Offering the opportunity for exhibitors to donate product at the end of show saved them shipping costs and benefited the community. The hotels realized significant savings by instituting the hotel policies mentioned above by reduced water, energy and labor costs. The catering company also benefited by costs savings in serving condiments and juice in bulk, not pre-filling water glasses and eliminating the use of garnishes, saucers under the cups, buying local, seasonal products.

## **Commitment to Change:**

USGBC enhanced their commitment to sustainability by contracting with a variety of vendors to ensure a greater depth of environmental stewardship was implemented. Their green consulting firm, Meeting Strategies Worldwide, worked with the committee, staff and vendors assessing what's possible and feasible, made recommendations, monitored implementation and produced a final audit. The green strategies were communicated to the attendees on the conference website, exhibit floor and in the final program.

The three conference hotels agreed to implement the attached green hotel policies. The Hilton had just received the Green Seal Certification for green hotels. The David L. Lawrence Convention Center management committed to making the green components of the meeting happen without additional charges to USGBC. The center has incorporated most of the policies implemented at the conference as the way they do business and is interested in continuing to improve their environmental commitment. The catering company, Levy Brothers, has changed their purchasing choices using more local products and recommends clients make responsible seafood choices. Levy has also committed to developing a "sustainable menu" option that possibly will be offered at a discounted price since they save money serving in bulk, buying local and serving seasonal options.

The decorator/exhibit company, Stetson, altered the way they do business permanently by incorporating the following environmentally responsible practices: Energy Star Saver for the registration counters, online exhibitor kits (if kits are produced they use 35% post consumer recovered fiber for the binders, recycled paper and soy-based inks with printed materials), magazine bins and computer kiosks are built with WoodStalk and engineered fiberboard made from annually renewable wheat straw fiber – does not contain any wood species and does not use formaldehyde containing compounds, 50% of the sign boards are made from Cloroplast a 100% recyclable board.

As Rebecca L. Flora, AICP and Melissa Crawford, MS note in the *Greening Greater Pittsburgh: The Transformation of a Region*, "The concept of sustainable development is emerging front and center in Pittsburgh... Pittsburgh is successfully making the transition from an industrial-based to knowledge-based economy. Fortunately, early leaders and visionaries saw the need to make environmental improvements in conjunction with economic stimulators and public-private investment to create the city of the future." In the spirit of sustainable development, tours were offered for both onsite at the conference of the convention center and post conference reflecting the variety of innovation and design of green buildings in the Pittsburgh region. The onsite tours showcased the mechanical, design and green aspects of the convention center. While the off-sight tours presented a diverse range of buildings including LEED certified ones.

## **Commitment to Conservation:**

One of USGBC's goals was to have a positive impact on the community. Exhibitor donated the following supplies to local organization, Construction Junction 4 bundles of insulation, 100 linear ft of padding, 200 linear ft of carpet and 100 sq ft of rooftop garden for building supplies and 3 boxes of giveaways to Pittsburgh Community Storehouse. The David L. Lawrence Convention Center implemented a responsible waste management system to maximize the recycling of materials the results listed under waste minimization. They trained ALL convention staff on the recycling program and created a "Recycling Team" that meets monthly.

The conference had a local host subcommittee devoted to the greening efforts. The committee created a "I got caught green handed" campaign during the conference to enroll, engage and encourage environmentally responsible behavior. A staffed area was setup inside the exhibit hall to educate attendees on the greening efforts. Any time one of the "green inspectors" caught someone doing something environmentally responsible the attendee was given a sticker saying "I got caught green handed" and were eligible for a prize drawing. The host committee also arranged a variety of outdoor activities including a 5k run and kayaking.

To enhance their commitment to sustainability US Green Building Council has implemented a legacy project to be a part of every conference. Pittsburgh's legacy project was designing and building a straw bale playhouse for The Pittsburgh Project, a local non-profit organization serving the community and the educational needs of its children. Not only is the straw bale playhouse a lasting contribution of the conference to the city, but it will also help to teach the children about greener materials and the benefits of green building.

In addition to their commitment of sustainability, US Green Building Council's staff was bussed to Pittsburgh to minimize travel emissions.

Some of the additional attributes and features of the Convention Center site:

- Downtown location – hotels used were within walking distance of the Convention Center
- Showers and racks for bicyclists: Bicycle slots are provided for over one-third of regular building occupants.
- 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 200ft of a bus station and within 400ft of a train station. Additionally, two public bus lines are located within 50ft of the Center.
- The Convention Center is located on a former Brownfield site. Redevelopment of the site involved removing six 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.

## **Conclusion:**

In collaboration with USGBC staff, steering committee and all the players the Greenbuild International Conference and Expo exceeded their previous conference in successfully raising the bar for conducting an environmentally responsible conference. USGBC recognizes some of the data provided is calculated using general guidelines and strives to use the best available sources. The data collected serves as important benchmarking information to continue to build on the success of the conference's greening strategies. By USGBC taking a leadership role in environmentally responsible conference practices, their successes illustrate the possibilities and benefits of green meetings to the meeting/convention industry.