

2004 Case Study ~ Prepared by Meeting Strategies Worldwide



Introduction

In 2004 the U. S. Green Building Council's (USGBC) *Greenbuild International Conference & Expo* experienced an explosion of interest. 8100 professionals in the environmentally responsible building and construction sector registered for the event in Portland, Oregon, including architects, engineers, facility managers, developers, contractors, builders, interior designers, government representatives and manufacturers. This is almost 3000 more participants than in 2003, nearly 4000 more than in 2002 and represents an estimated \$8.51 million in revenue to the host city. In addition, exhibitor booths increased from 220 in 2002 and 400 in 2003 to 496 in 2004.

Following a commitment made in 2002 the USGBC not only evaluated the success of *Greenbuild* based on delegate and exhibitor numbers and economic spin-offs, but also our ability to raise the bar in terms of environmentally responsible meeting performance. Motivated and inspired by previous success in addressing the environmental impact of *Greenbuild* and by initiatives such as the IMEX Environmentally Responsible Meetings Award, the USGBC seeks to identify the environmental costs and benefits of *Greenbuild* in an effort to continually improve and expand our efforts to minimize negative environmental impacts and leave positive legacies in host communities.

Some highlights of how USGBC's efforts in 2004 have expanded since *Greenbuild 2003*:

- Waste audit and sort partnership with Portland State University to improve solid waste management at host hotels and the convention center.
- Delegate shuttles were powered by biodiesel.
- Implementation of food composting.

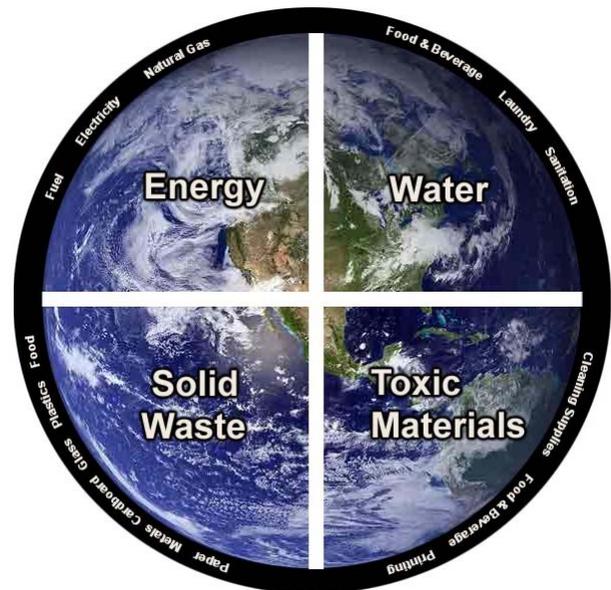


Minimizing Environmental Impacts

What is the environmental impact of Greenbuild?

With increasing participation in *Greenbuild* comes increasing impact on the environment. To ensure our policies and practices are actually helping to reduce the environmental impact of *Greenbuild*, environmental management efforts first involve identifying the impacts associated with the conference and expo. USGBC's efforts have focused on the following consumption and waste streams specifically, which are described and quantified in more detail throughout this study: energy, water, solid waste and toxic materials.

By clearly understanding consumption patterns associated with and waste generated from *Greenbuild* we are better able to reduce the environmental impact of the event.



How is environmental impact being reduced?

USGBC's overall approach to minimizing the environmental impact of *Greenbuild* focuses on¹:

1. Reducing consumption, pollution and waste at the source;
2. Reusing materials where possible;

¹ Supported by the National Pollution Prevention Policy of the United States Environmental Protection Agency, 2004. [Hhttp://www.epa.gov/opptintr/p2home/p2policy/definitions.htm](http://www.epa.gov/opptintr/p2home/p2policy/definitions.htm)H.

3. Recycling materials that are consumed so they are not wasted; and
4. Disposing of unavoidable waste in an environmentally safe manner.

Minimizing environmental impacts at *Greenbuild 2004* included **pre-conference measures**, such as making our environmental requirements explicit by integrating requested practices into supplier contracts, in addition to inviting delegates to participate in greening efforts. The success of pre-conference activities is **evaluated by verifying if requests were followed and to what extent during the conference and expo**. Pre-conference and verification measures to minimize environmental impacts are described in more detail below.

The environmental outcomes of *Greenbuild 2004* can be compared and contrasted with achievements in 2003 and 2002. *Greenbuild 2003* presented particular advantages, being hosted in the Gold LEED Certified David L. Lawrence Convention Center in Pittsburgh (LEED - Leadership in Energy & Environmental Design - is the USGBC's voluntary, consensus-based national standard for developing high-performance, sustainable buildings). Although not Gold standard, the new portion of the Oregon Convention Center is LEED EB (for existing buildings) certified for environmental building features and did introduce numerous operational policies and practices to support the environmental requirements of *Greenbuild 2004*.

Energy efficiency

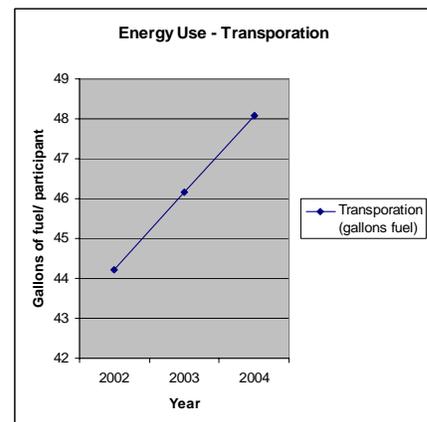
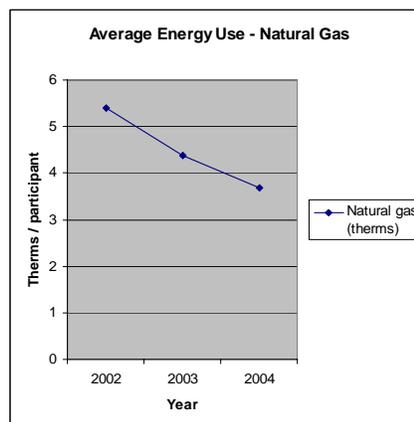
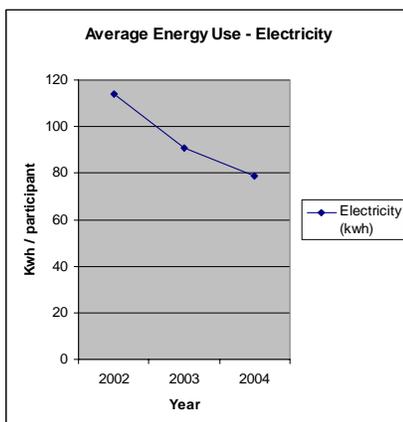
Environmental impact

Total estimated energy use associated with *Greenbuild* is summarized in the following table (data supplied by Leonardo Academy):

Greenbuild Energy Use	2002	2003	2004
Electricity (kilowatt hours)	478,052	476,000	617,145
Natural Gas (therms)	22,605	23,000	28,760
Transportation (gallons of fuel)	185,217	242,000	376,357

Although total energy used during *Greenbuild* increased in 2004, average per registrant use of electricity and natural gas has decreased steadily since 2002. Energy use per delegate for transportation has increased each year.

Greenbuild Energy Use Per Registrant	2002	2003	2004
Electricity (kilowatt hours)	114.12	90.82	78.85
Natural Gas (therms)	5.4	4.39	3.67
Transportation (gallons of fuel)	44.22	46.17	48.08



Pre-conference measures

The following actions were taken to promote energy efficiency prior to the conference:

- Convention center was asked to reduce the lights, power and HVAC in the exhibit hall during move in and out.
- Hotels were selected within walking distance of the convention center or public transportation to minimize additional transportation needs. In addition, the hotels were asked to implement the following:
 - the towel and sheets reuse program;

- not replace amenities unless consumed; and
- shut off HVAC when guests are not in their room.

Verification

Both the convention center and host hotels complied with the environmental practices requested. In addition:

- Post event reports received from conference hotels implementing the sheet and towel reuse program indicate participation in the program by *Greenbuild* delegates varied from 20% - 90% on a given night. On average 56% of delegates in these hotels used the programs on a daily basis. Reports can be provided on request.
- Shuttle buses used to transport delegates during the conference were powered by bio-diesel. Shuttles consumed 1500 gal bio-diesel and 400 gallons regular diesel.
- Stetson Convention Services used EnergyStar lighting at the registration counter, which uses 30% less energy.

Air & water quality

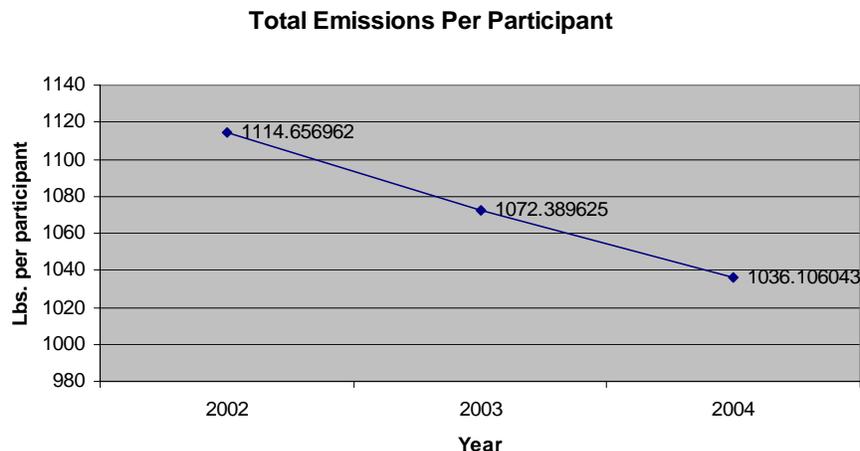
Environmental impact

Although it is difficult to quantify, the water quality impact from *Greenbuild* includes waste water flows from bathroom, kitchen and laundry facilities at accommodation, meal and meeting venues. Waste water includes suspended solids which interfere with respiration by aquatic life, as well as toxic substances from pesticides and cleaners, which are linked to reproductive disorders and cancer in animals and humans.

To address air quality issues USGBC provided an emission offset program facilitated by the Leonardo Academy *Cleaner and Greener Event Certification* program where 95% of the funds collected are used for offset and retired emissions, 5% for administration. The Leonardo Academy has reported the following estimated emissions for *Greenbuild* since 2002:

Pollutant Type (lbs.)	2002	2003	2004
Carbon dioxide (CO2)	4,660,414	5,606,214	8,096,566
Sulfur dioxide (SO2)	1750	4,922	941
Nitrogen Oxide (NOx)	6144	8,007	10,149
Particulates (PM10)	990	1,251	1,946
Mercury (Hg)	0.0121	0.02346	0.00166

Although quantities of each pollutant type have fluctuated, total emissions per registrant have declined since 2002:



Pre-conference measures

Organizers undertook the following actions prior to the conference to address air and water quality issues:

- Delegates were invited to participate in the *Cleaner and Greener* program by making a donation of emission reductions or dollars to offset the emissions produced by the conference through the *Greenbuild* website.
- Exhibitors were asked to use displays that incorporated indoor air quality principles outlined in LEED.
- The convention center and host hotels were requested to use environmentally friendly cleaners.
- Caterers were requested to use local and organic produce where feasible.

Verification

In addition to pre-conference measures water and air quality issues were addressed in the following ways:

- Water was conserved as outlined in the water conservation section.
- 50.7% of food served was acquired locally; 7.4% of food served was organically grown. A complete report and comparison to previous years is available on request.
- Stetson Convention Services:
 - used of natural gas fork lifts and hand carts;
 - made biodegradable shipping and packing materials available to exhibitors; and
 - estimated 75% of show required equipment's final assembly was manufactured locally using local labor.

Emissions offset at the *Greenbuild 2004 International Conference & Expo* are summarized in the following table (as donations continue to be gathered, a complete and up to date report is available on request):

Pollutant Type	Emissions Caused by Event Energy Use (lbs.)	Emission Reduction Offsets by Donor and Amount (lbs.)							Total Emissions Offset (lbs.)	Expected Emissions Offset
		Invista	3 Phases PacifiCorp	Renewable Choice Energy	Leonardo Academy	Johnson Controls	Philips Lighting	Individual Donations		
Carbon Dioxide (CO ₂)	8,096,566	10,704,000	294,000	696,058		100,000	200,000	30,856	12,024,914	148%
Sulfur Dioxide (SO ₂)	941		528		1,000				1,528	162%
Nitrogen Oxide (NO _x)	10,149		511	2,450		5,300		109	8,378	83%
Particulates (PM ₁₀)	1,946		38	89		750		4	881	45%
Mercury (Hg)	0.00166		0.00588	0.01695		0.00166	0.00166	0.00075	0.02689	1620%

Water conservation

Environmental Impact

Whether it is through drinking water, taking showers, doing laundry or washing dishes, the presence of *Greenbuild* delegates draws on host community water resources. The US Environmental Protection Agency estimates the average conference participant uses 846 gallons of water². Assuming these average consumption rates *Greenbuild 2004* delegates used an estimated 6,852,600 gallons of water.

Pre-conference measures

To promote water conservation *Greenbuild 2004* organizers undertook the following actions prior to the conference:

- Convention center was asked to:
 - serve drinking water from large containers rather than individual bottles; and
 - sweep, not spray parking lots, sidewalks and driveways.
- Caterer was requested to use water saving strategies like not pre-filling drinking glasses at meal functions or providing a saucer under the coffee cups.
- Host hotels were requested:
 - to provide a towel and sheet reuse program; and
 - if their facilities made use of low flow showers and toilets.

Verification

The convention center, caterer and host hotels complied with the environmental practices requested above.

- Not pre-filling water glasses at sit down luncheons saved approximately 500 gallons of drinking water.
- Rather than providing individual bottled water the convention center used water stations and compostable cups.
- As indicated in the energy efficiency section above, an average of 56% of delegates staying at host hotels used the towel and sheet reuse programs on a daily basis.

² United States Environmental Protection Agency (2000). *A Method for Quantifying Environmental Indicators of Select Leisure Activities in the United States*. EPA-231-T-00-01.

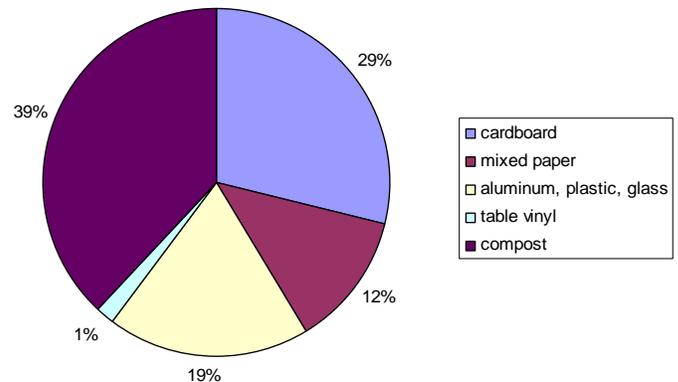
- The caterer, Aramark, uses a water and energy conserving dish washer.

Waste minimization

Environmental impact

Greenbuild 2004 produced 41,400 lbs of solid waste. Of this, 21,360 lbs. were sent to landfills, while 20,040 lbs. were diverted to recycling facilities. Materials recycled as percentages of total weight of recycled materials are illustrated by the pie graph.

Materials Recycled - 2004



Pre-conference measures

The following waste minimization actions were undertaken by *Greenbuild 2004* organizers prior to the conference:

- Convention center, caterer and hotels were asked to have reduction, recycling, and reuse programs in place that:
 - reduce waste;
 - recycle glass, aluminum, plastic, paper, and cardboard;
 - reuse materials where possible and appropriate; and
 - donate left over food.
- Exhibitors were requested to:
 - minimize packaging; the amount of collateral material distributed; and
 - participate in recycling cardboard and freight materials
 - used electronic exhibitor kits.
- Decorator company was asked to provide:
 - donation area for giveaways and building supplies; and
 - instructions for exhibitors to assist with recycling efforts.

Verification

The convention center, caterer, exhibitors, decorator and hotels followed requested practices. In addition:

- Caterers reduced source waste by using china and linen service, serving condiments in bulk and avoiding the use of garnishes. China and linen service is estimated to have avoided the use of 87,500 disposable plates, 122,500 napkins, 52,500 disposable cups, and 52,500 cans or bottles³. Compostable cups were used at water stations in the meeting hall.
- USGBC reused signage and carpet from *Greenbuild 2003*.
- USGBC Green Meeting Consultants, Meeting Strategies Worldwide, partnered with Portland State University's (PSU) Community Environmental Services Department to conduct waste audits at the convention center and all host hotels. This innovative program engaged the hotels and convention center in a free pre-event audit of solid waste practices that evaluated business practices and provided technical assistance in the areas of recycling, waste prevention and buy recycled efforts. Waste audit reports are available upon request.
- In addition to a waste audit pre-event the convention center also participated in a waste sort in partnership with PSU which identified and tracked solid waste produced post-event. A complete report is available on request.
- 48% of solid waste produced at the Oregon Convention Center was recycled, including 150 lbs. of mixed paper that has been recycled into 1200 square feet of ceiling tile; 52% of solid waste was sent to landfills. A complete solid waste management report from the convention center is available on request.
- 3.82 tons of compost was collected by the Oregon Convention Center, representing 23.9% of food served. This is the first time food composting has been undertaken by the convention center. This was also the first time *Greenbuild* offered front of house composting (i.e. at recycling stations in public areas of the convention center).
- The Doubletree Hotel, Embassy Suites and Red Lion hotels confirmed placing a letter in all guest suites during the conference encouraging them to participate in a newly started in-suite recycling program. The Red Lion reported 100% participation in in-suite recycling by *Greenbuild* delegates while the Embassy Suites estimates 80%

³ Based on 5 days and 3500 delegates attending continental breakfast, two breaks, lunch and a daily evening reception.

of guests participated in the program. The Doubletree Hotel reports a 90% reclamation of recyclable cardboard, paper, plastic and glass.

- Stetson Convention Services made carpet that meets LEED requirements of 40% post-consumer recycled content by weight available to exhibitors.

Environmental purchasing

Environmental impact

In organizing a conference and expo that hosts over 8,000 attendees, USGBC has an exceptional opportunity to reduce environmental impact and enhance market opportunities for environmentally responsible products and services through the purchasing decisions we make. Their purchasing decisions impact the environment in a variety of ways and consider both:

1. Nature of inputs into the production and distribution of the product or service, such as:
 - Amount energy required.
 - Nature of the resources used (i.e. are they renewable? organic? local? recycled? fair trade?).
2. Efficiency of the outputs from these processes, such as:
 - Waste produced throughout the lifecycle of the product or service (i.e. packaging, energy efficiency, disposal).
 - Lifecycle of the product or service.

USGBC also realizes we are able to influence the purchasing practices of our suppliers to promote more environmentally responsible decisions.

Pre-conference measures

Greenbuild 2004 organizers practiced and promoted environmental purchasing prior to the conference and expo:

- In 2001 Portland adopted LEED and funded the Green Building Initiative. Since then Portland has expanded its commitment to LEED by having more LEED-certified buildings per-capita than any other city. This is one of the primary reasons Portland was selected as the host of *Greenbuild 2004*.
- Convention center and hotels were asked to provide:
 - Bathroom supplies: minimum 20% recycled products for hand towels and toilet paper.
 - Environmentally responsible cleaning products: for carpets, floors, kitchens and bathrooms; minimum 50% of products used to be environmentally responsible.
- Caterer was requested to provide locally grown and organic foods wherever possible and affordable (minimum 15% of meals).
- Decorator company was asked to use:
 - recyclable carpet;
 - reusable signage; earth friendly cleaning products; and
 - offered "green" exhibit booth option for exhibitors.

Verification

The convention center, caterer, decorator and hotels followed requested practices. In addition:

- *Greenbuild 2004* conference organizers used:
 - name badges printed on recycled paper and recycled name badge holders;
 - conference bags or giveaways made of recycled materials; and
 - programs printed on 100% recycled post consumer paper with soy based ink.
- The Doubletree, headquarters hotel for *Greenbuild 2004*, introduced environmental purchasing practices that include preference for 100% recycled content paper, fully compostable disposable service ware and avoidance of Styrofoam products..
- 50.7% of food served was acquired locally; 7.4% of food served was organically grown. A complete report and comparison to previous years is available on request.
- Stetson Convention Services purchased:
 - exhibitor binders made from 35% post-consumer recovered fiber and recycled paper;

- Cloroplast boards for 50% of information signage, which is 100% recyclable; and reusable Sintra signage for aisle and show signage;
- either water or soy based sign inks (water base graphics may be removed so signage can be reused);
- aisle carpet that is fully recyclable;
- BioBag trash can liners, made of 100% biodegradable and compostable materials; and
- reusable Woodstalk shelving for magazine bins and computer kiosks. Woodstalk is an engineered fiberboard made from annually renewable wheat straw fiber that does not contain any wood species and is manufactured using no formaldehyde-containing compounds.



Economic Indicators

Conference and expo organizers have collected the following data outlining costs avoided as a result of environmental practices associated with *GreenBuild 2004*:

- The 5th Ave. Suites estimates \$220.00 in savings as a result of guest participation in their linen and towel reuse program during the conference, which reduced total laundry load by 1,100 lbs.
- The convention center avoided disposal costs by diverting 48% of their waste stream from landfills through donation, reuse, recycling and composting programs.

In addition to costs avoided *Greenbuild 2004* received exceptional and valuable coverage in national, regional and local media. A sample of press articles can be provided upon request.



Commitment to Change

The USGBC has committed to continually improve the environmental performance of *Greenbuild*. Organizers worked to actively engage participants in environmental practices, including encouraging attendees to:

- use public transportation and walk;
- pass along newspapers to someone else or make sure it's recycled;
- carry a reusable drink container;
- recycle materials in appropriate bins;
- avoid take out; and
- turn off hotel room heat/air and television when leaving rooms.

Invitations to participate were communicated to delegates and exhibitors through the *Greenbuild* web site and registration programs.

Organizers were explicit in requesting hotels, decorators, caterers and the convention center follow environmental practices as specified above. In doing so *Greenbuild 2004* helped to catalyze more permanent and lasting change in support of environmental responsibility beyond the context of the conference:

- Doubletree, the conference headquarters hotel developed and implemented an *Earth Care* rooms initiative in response to *Greenbuild 2004* and institutionalized a Green Team to explore innovative ways for the hotel to become more 'green' friendly on an ongoing basis.
- As a result of guest participation in environmental programs and feedback received the Embassy Suites is in the process of formalizing some of the new programs started for *Greenbuild 2004*. This includes participation in the "Fork It Over" food donation program, using more bulk products and providing in-suite recycling.
- Positive feedback from host hotels regarding the PSU waste audit project has helped to catalyze opportunities for audits to be held at other Portland hotels.
- Aramark is exploring opportunities to provide compostable disposables at the convention center on an ongoing basis, as well as options to serve responsible seafood.
- Stetson Convention Services prepared a *Greening the Greenbuild 2004* report, which outlines the environmental components of their exhibition service. The report is available on request.



Commitment to Community

The USGBC selected Zenger Urban Agricultural Park as the *2004 Greenbuild Legacy Project*. The *Legacy Project* supported a local Portland non-profit organization implementing green building practices and using the LEED Green Building Rating System. The Park is a 16-acre urban farm and wetland in southeast Portland that provides opportunities for area students to learn about environmental stewardship in a hands-on way. The farm also provides fresh organic produce to local families and provides business development opportunities for immigrant families.

The convention center also donated left over office and school supplies to Roosevelt High School and additionally provided 3450 lbs. of left over food to Blanche House, a local community service organization.



Commitment to Conservation

TUSGBC's integrated approach to improving the environmental performance of *Greenbuild* over the last three years has demonstrated an ongoing and holistic commitment to environmental conservation. This report has outlined our specific efforts to identify the environmental, economic and community impacts of our actions and how we are working to promote enhanced environmental responsibility in our own practices and influence the activities of our *Greenbuild* partners, including delegates and suppliers. With the assistance of Meeting Strategies Worldwide we have continued to raise the standard for environmental responsibility at *Greenbuild* in 2004 in a manner that considers the broad ecological footprint of our activities and continues to identify new, creative and innovative ways to meet the challenge of reducing this footprint.



Lessons Learned

In meeting the challenge of continuing to improve the environmental performance of *Greenbuild* USGBC has learned several important lessons that we will take forward into 2005:

- *Greenbuild 2004* was successful in expanding some measures to verify if requested environmental practices were honored by suppliers and to what extent. We were particularly successful in analyzing and capturing information on the convention center and hotel waste streams through the waste sorts and audits provided by PSU. Our challenge for 2005 will be continuing to expand our verification and tracking measures to include:
 - Confirmation of the presence of low flow toilets and showerheads at host hotels.
 - Verification of use of environmentally sensitive cleaners and bathroom supplies by hotel and convention center staff.
- Although USGBC has successfully tracked a number of environmental impact indicators over the past three years, such as energy use, we need to continue to track other impact-related data, such as the volume of waste sent to landfills, to ensure we are able to measure the ecological footprint of *Greenbuild*, and the extent to which it is being reduced.
- USGBC has been successful in providing improved opportunities for attendees to reduce, reuse and recycle materials and continues to be vigilant in ensuring suppliers appropriately manage collected materials. There continues to be an ongoing need to educate delegates to take advantage of these services and sort recyclable, compostable and waste materials appropriately.
- Although conference hotels are required to confirm implementation of environmental requests and report on participation rates, this information is not provided to organizers in a consistent manner. In 2005 Meeting Strategies Worldwide intends to develop a standardized template for hotel reporting to ensure useful and valuable data is captured and recorded consistently.
- USGBC has succeeded in curbing electricity and natural gas consumption on a per participant basis at *Greenbuild* since 2002. It is recommended that in 2005 we continue to direct our efforts at activities that contribute to this trend, but also focus on actions that will help to reduce the amount of energy consumed through transportation, which has increased slightly on a per delegate basis each year.