Greening Brownfields 2008:

Practices and Lessons Learned

Prepared by the U.S. Environmental Protection Agency Region 5

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Executive Summary

Hosting an environmentally sustainable conference was an important goal for the 12th National Brownfields Conference held May 5–7, 2008, at Cobo Center in Detroit, Michigan. The *Greening the Conference Team* planned and carried out a comprehensive program to reduce and recycle waste, use eco-friendly materials, educate exhibitors, participants and staff, compensate for the greenhouse gas emissions associated with the conference, promote environmentally-friendly travel, and support the venue and area hotels with more sustainable practices.

The goal of this report is twofold. First, it is intended to help future Brownfields conference planners and others identify opportunities and overcome challenges associated with a conference the size and scope of the national Brownfields conference. In addition, it provides a baseline against which to measure future green meeting and convention efforts.

Through waste reduction, recycling and the purchase of carbon offsets, the U.S. Environmental Protection Agency and its conference co-host, ICMA, reduced conference-related greenhouse gas emissions by 56 metric tons of carbon equivalent, equivalent to the annual greenhouse gas emissions of 38 cars. Recycling was successful, with a diversion rate of 68%. The *Greening the Conference Team* carried out numerous other activities, the results of which are reported qualitatively. These include:

- Electronic registration;
- Tip sheets and other educational efforts to help exhibitors, presenters, reception hosts and conference staff reduce and recycle waste and conserve energy;
- Hybrid vehicles for mobile workshops and eco-friendly transportation options; and
- Meetings with the conference venue and hotels to them institutionalize environmental sustainability.

Conference greening efforts revealed a number of important conclusions:

1. Working towards an environmentally sustainable conference can help an organization accomplish objectives beyond those associated with the conference's theme. The Brownfields 2008 opportunity provided measurable results toward EPA's municipal solid waste and climate change goals. Network news coverage of greening efforts helped convey a positive message of the Agency "practicing what it preaches." Finally, the conference provided EPA staff valuable lessons learned that can be incorporated into its green venues, recycling and other environmental initiatives.

2. Avoiding waste through source reduction can provide a high level of environmental benefit with relatively little effort. For example, eliminating the printed attendee list this year saved more than six tons of paper, and reduced greenhouse gas emissions over the 2006 conference by 8 metric ton carbon equivalents, comparable to the annual greenhouse gas emissions from 5 cars.

3. Greening a conference the size of the National Brownfields Conference with over 6000 participants, 300 exhibits, 130 sessions, eight mobile workshops and numerous networking opportunities requires a dedicated staffing effort. A half- to full-time person for a 9 month to 1 year period is needed to coordinate the greening efforts described in this report. More staff may

be required if contract support is not available or the venue does not have an established recycling program.

4. Planning for environmental sustainability should take place in conjunction with overall conference planning efforts. Early planning helps ensure that greening is integrated into all aspects of the conference and is included in promotional material and contracts with sponsors, exhibitor, subcontractors, venues and hotels.

Introduction

The National Brownfields Conference is a biennial conference focused on the cleanup and redevelopment of abandoned, underutilized and potentially contaminated properties. This year's conference, held at the Cobo Center in Detroit May 5 - 7, 2008, was attended by more than 6,000 people who participated in 130 sessions, 300 exhibits, eight "mobile workshops" and numerous networking opportunities.

A desire to act on behalf of the environment lies at the heart of most Brownfields projects. The same goal motivated Brownfields 2008 planners, who worked hard to make this year's conference as green as possible. Goals to help minimize the conference's environmental footprint included: reducing and recycling waste, using environmentally friendly materials, implementing an educational program, purchasing carbon offsets and working with the venue and area hotels. This report documents these efforts and provides a set of lessons learned for future conferences.

Summary

The practices put in place by the U.S. Environmental Protection Agency and its conference co-host, ICMA, resulted in: 1) an estimated 6 tons of paper *not* generated by eliminating one conference handout; 2) more than 5,800 pounds of clean, marketable recyclables collected; and 3) the offset of nearly 200 tons of carbon dioxide, or CO_2. Combined, these efforts reduced greenhouse gas emissions by 56 metric tons of carbon equivalent, MTCE,[1] which is equivalent to the annual greenhouse gas emissions from 38 passenger vehicles. See Appendix A for a more thorough discussion of these calculations. Numerous additional unquantified environmental benefits resulted from the following practices:

- Establishing a *Greening the Conference* team to coordinate all greening activities.
- Reducing paper waste through electronic registration and conference promotion and through the elimination of mailing list duplicates.
- Using recycled paper and soy-based ink for printed materials.
- Distributing electronic "tip sheets" to exhibitors, presenters and reception hosts with ideas for waste reduction, energy conservation and other environmental strategies.

[1] MTCE and $MTCO_2E$ are units of measurement that express the heat-trapping effects of various greenhouse gas emissions in carbon and carbon dioxide equivalent, respectively. An international protocol has established carbon dioxide (CO_2) as the reference gas.
Source: U.S. EPA, *User's Guide for WARM: Calculating Greenhouse Gas Emissions with the WAste Reduction Model,* <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ActionsWasteWARMUsersGuide.html> (2004).

- Purchasing carbon offsets to counterbalance nearly 200 tons of CO_2 emissions associated with conference activities.
- Using hybrid vehicles to and from the mobile workshop sites.
- Developing and implementing a comprehensive recycling program in the conference center (see Appendix B for the complete recycling report).
- Educating participants, exhibitors, speakers and staff through signage, newsletter articles, public address announcements, dedicated on-site personnel to educate about recycling, staff briefings and "talking points" for EPA media spokespersons.
- Providing information to hotels about ways to decrease their environmental footprint and how to join Michigan's Green Lodging program.
- Hosting a green exhibitor recognition program.
- Offering carpooling and rideshare options.
- Retaining 200 pounds of foam board signage for later reuse.
- Greening the EPA exhibits and regional open houses through waste reduction and recycling.

Greening Goals

Brownfields 2008 provided numerous opportunities to lessen the conference's environmental footprint. EPA and ICMA had the following goals:

1. Reduce waste associated with conference promotion, registration, exhibits and other activities.
2. Use environmentally friendly materials whenever possible.
3. Offset the greenhouse gases resulting from the conference's energy use in the convention center, hotels, and travel to and from home.
4. Help the convention center and designated conference hotels in conceiving effective sustainability practices.
5. Educate participants, exhibitors and conference support staff on specific greening practices so they might incorporate sustainable activities into their own future meetings and conferences.
6. Promote environmentally friendly transportation alternatives to and from the airport, around town and to mobile workshops.
7. Recycle waste generated in the registration area, educational and plenary sessions, exhibit hall, offices, networking sessions and kitchen.

Greening the Conference Team

Achieving an environmentally friendly conference required greening efforts to permeate all aspects of the planning and operations. To address this objective, a dedicated *Greening the Conference* team was led by EPA Region 5 in Chicago. Although the team coordinated greening efforts, many others (meeting planners, registration agents, caterers, corporate sponsors, janitors, exhibitors, the participants themselves) played significant roles in ensuring greening efforts were a success. Members of the *Greening the Conference* team included:

- EPA, Region 5, including three staff members whose sole conference responsibilities involved the greening work;
- EPA Headquarters;
- ICMA, conference co-host;
- SRA International, conference planning consultant for EPA;
- The Bridge Group, consultant for ICMA in charge of the exhibit hall and sponsors;
- Michigan Department of Environmental Quality, Green Lodging Michigan program.

To support the Cobo Center recycling efforts, EPA assembled an additional team. Representatives are listed in Appendix A of the "Recycling at Brownfields 2008: Practices and Lessons Learned" document in Appendix B of this report.

Event Scope and Structure

The conference took place primarily in the Cobo Center, a large conference venue in downtown Detroit. Within the center, two adjacent exhibit halls hosted 300 exhibitor booths, a large registration area, classroom, poster session and concession area. The exhibit hall was the site of two conference-wide evening receptions. First, second and third floor concourses housed numerous classrooms, 10 EPA regional receptions, several privately-sponsored receptions, the Brownfields Transaction Forum, media room and multiple private offices for conference planning staff and sponsors.

Conference-related private receptions were held in local hotels; any greening activities at these receptions were the responsibility of the hosts for these events.

Practices and Lessons Learned

The Brownfields conference planning team was successful in implementing a number of green practices. What follows is a summary of each of the practices organized by the goals listed above. Additional activities for improving the "greenness" were revealed during the planning process and later during the conference itself. These practices and lessons learned are described below for future planners to consider. Brownfields 2008 built on the successes and lessons learned from the 2006 conference held in Boston. See Appendix C for the summary of greening practices at Brownfields 2006. It is hoped that the Brownfields 2010 team will build on previous enhancements to further reduce the conference's environmental footprint.

Goal 1: Reduce waste associated with conference promotion, registration, exhibits and other activities.

Practices

The *Greening the Conference* team recognized that reducing potential waste at the outset of the conference would be one of the most feasible and effective achievements. Reducing incoming waste would potentially save both natural resources and energy and have a significant effect on the amount of material needing disposal or recycling at the end of the conference. Waste minimization practices included:

- Eliminating paper registration.
- Providing conference materials online via e-mail "blasts" and the conference Web site, www.Brownfields2008.org.
- Reducing mailing list duplications.
- Eliminating the conference attendee list. In the in the past, this list was provided to all participants in hard copy. This year, the document was available only on the conference Web site, resulting in a savings of approximately six tons of paper and more than eight metric ton carbon equivalents. See Appendix A for an evaluation of these and other greenhouse gas emissions associated with the conference.
- Distributing "tip sheets" describing waste reduction strategies for exhibits, educational and plenary sessions and networking receptions (see Appendix D).

In addition, as one of the conference hosts, EPA Region 5 ensured its exhibit booth and afternoon open house were as green as possible. At the exhibit booth, handouts were limited to bookmarks listing the regional Brownfields Web site. If people wanted more information, EPA staff directed them to a Web page or invited them to write in a guest journal for follow-up. Pine sapling souvenirs for planting were given out instead of less environmentally friendly giveaways. When it appeared there would be saplings left over, EPA staff offered them to local organizations for tree-planting projects. Other EPA exhibitors made similar efforts. At the Regional Administrator's open house, planning staff selected appetizers that did not require flatware and opted for the bulk dispensing of beverages and condiments whenever possible. Giveaways included reusable grocery totes made of recycled material. Signage advertising the green features of the Region 5 booth and open house were displayed to increase guests' awareness of these environmental efforts (see Appendix E).

Lessons Learned and Recommendations – Waste minimization

Among the most noteworthy lessons learned was the recognition that planning for waste minimization must take place when initial decisions are being made about conference promotion and sponsorship. Both potentially involve a lot of waste from paper mailings, programs and directories to souvenirs and other items with sponsor names and advertisements. Because the *Greening the Conference* team did not become involved until five months before the conference in early 2008, the group had little ability to affect decisions made early on about conference promotion, branding and exhibiting. Many of the suggestions offered below stem directly from the realization of lost opportunities.

For a team that gets involved early, waste minimization may be the area of greatest influence on conference greening efforts. Although planners have little opportunity to affect a city's transportation system or a venue's energy and water conservation features, their decisions can greatly influence the volume of materials produced or generated that will later need to be disposed. Consider the following recommendations for minimizing conference waste:

Conference Documents

- Learn from the conference planners what documents are typically produced for conference promotion and registration bags and identify paperless alternatives. Replacing the 14-page exhibitor guide with a large poster-mounted sign(s), electronic "directory of exhibits" at the entrance to each exhibit aisle, or "desk copy only" copies could save an

estimated 84,000 pieces of paper, or 0.51 tons. Elimination of this one small guide amounts to a savings of 1 MTCE. See Appendix A for this conversion and modeling results. Continue the paper-saving practice of posting the exhibitor map on the Web site.

Workers prepare to stuff more than 5000 registration bags with conference materials, newsletters and sponsor information

Sponsorship and Branding

- Corporate and other sponsors are critical to the high caliber of the Brownfields conference. However, acknowledging sponsors without producing excessive waste requires creative solutions as less paper means less space in conference materials for sponsor advertisements. The carbon offsets for energy-related greenhouse gas emissions was an effective way to engage sponsors in the greening effort. Explore additional ways to create branding opportunities that enhance environmental goals such as the sponsorship of a contest with certificates or prices for the greenest exhibit or reusable water bottles to be included with each registration tote bag. Eliminate branding opportunities that take away from greening goals, such as bottled water. Future greening teams may wish to review the 2008 sponsor and branding opportunities as background which can be found on the Brownfields 2008 Web site.[2]
- Let potential sponsors know the greening goals and incorporate language into sponsorship contracts. For example, for those sponsors who wish to include booklets or newsletters in the registration bags, require or encourage them to use recycled paper, limit the amount of material, or provide material on a reusable flash drive. Ask them to make arrangements to collect excess material at the end of the conference so that it can be reused. This year, over a dozen boxes of excess material, most of which was sponsor-related and generic enough to be used in other trade shows, remained after all the registration bags were stuffed. (They were recycled.)

Contracts

- Similarly, requests for proposals/cooperative agreements for conference co-hosts and exhibitors and other contracts should incorporate green specifications such as the amount of recycled content of printed or other items (e.g., name badge lanyards, tote bags, etc.), preference for electronic communication, use of EnergyStar office equipment to be used on-site, etc.

Waste Produced by Exhibitors, Speakers, Food Service and Others

- Continue to promote waste minimization strategies to exhibitors, reception hosts, speakers and others through electronic distribution of "tip sheets" (see Goal 5 below for more information).

[2] Brownfields 2008, *Sponsorship Opportunities for Brownfields 2008*, <http://www.brownfields2008.org/documentupload/Brownfields%202008%20sponsorship%20opportunities.pdf> (August 2008).

- For events that involve food or beverages, require or encourage reception hosts to use only reusable tableware. Much of the waste generated at the event was a result of the two conference-wide networking receptions and miscellaneous private receptions held at Cobo Center. Although the center's food service contractor used biodegradable dishes, there is no commercial composter in the Detroit area so food and tableware was instead sent to the Greater Detroit Resource Recovery Authority waste-to-energy plant for incineration.

Reusable glassware would have made this water station more environmentally friendly

- Identify eco-friendly ways to provide water to exhibitors, speakers, conference support staff and attendees. At Cobo, water refilling stations, which are inherently a green feature, were scattered throughout the conference center, but cups were not recyclable and were tossed out with the garbage. Waste could have been minimized if glass cups were made available or attendees used their own water bottles, perhaps ones provided by a sponsor at registration.

<u>Reuse</u>

- Explore ways that conference items such as flexible canvas or vinyl banners can be reused at future conferences. "Recycling Center" banners and other signs printed without date- or conference-specific information could be reused at other events.
- Other items such as plastic name badges and lanyards could be collected and reused in the future.

Producing banners without conference- or date-specific information encourages reuse

Goal 2: Use environmentally friendly materials whenever possible

The conference planning team has a great deal of influence on the content of materials produced. While some more environmentally friendly materials, such as paper with recycled content, are readily available, others require additional research and perhaps additional cost.

Practices

The 2008 conference used paper with recycled content and soy-based inks for conference mailers. Registration tote bags were made of a biodegradable material. The *Greening the Conference* team faced a challenge in trying to find an eco-friendly banner fabric or poster board for the dozens of informational and directional signs. The banners and poster board materials eventually

EPA collected two hundred pounds of foam core signage for reuse

purchased were not able to be recycled. EPA Region 5 reduced the conference's environmental impact somewhat by collecting approximately 200 pounds of foam core signs for reuse.

Lessons Learned and Recommendations – Environmentally preferable purchasing
Suggestions for future conferences include:

- Sourcing signage and flexible banners that are made from recycled content and can be recycled if reuse is not an option.
- Determining the feasibility of purchasing locally grown food and other locally produced products for receptions.
- As noted above, ensuring all contracts and cooperative agreements contain requirements specifying green criteria.

Goal 3: Offset the greenhouse gases resulting from the conference's energy use in the convention center, hotels, and travel to and from home.

Practices

For the first time in its 13-year history, the Brownfields conference purchased carbon offsets in an effort to make the conference "carbon neutral." The offsets, purchased by several companies and a state agency, counterbalanced the enormous amount of energy consumed by the Cobo Center and hotel room blocks, travel for conference support staff, vehicles used during mobile workshops in metro Detroit and from the disposal of waste generated at the conference. The offsets were purchased from NativeEnergy, which invests in new renewable energy programs that will displace fossil-based energy. The specific program funded by Brownfields 2008 was the Hillcrest Saylor Family Farm Methane Project.[3] The methane project helps reduce global warming and pollution by reducing the amount of fossil fuels farms use for heating and cooling and by preventing emissions from methane gas emitted from waste storage lagoons. Nearly 200 tons of CO_2 were offset. The NativeEnergy Brownfields Conference Web site also provided a link for attendees to calculate their own carbon footprint from travel to and from the conference and purchase carbon offsets. Unfortunately, no one took advantage of this opportunity.

Lessons Learned and Recommendations – Offsetting greenhouse gas emissions

Based on conversations with attendees, the carbon offsets were a positive and highly visible feature that heightened participants' awareness of the greening efforts while helping the environment at the same time. The reasons attendees did not purchase offsets to cover their own travel may be a factor of cost, lack of support by employers or unclear reimbursement policies, the intangible nature of carbon offsets, or simply the extra steps needed to calculate the emissions and purchase the offsets. By the next Brownfields conference in 2010, it is expected that the use of carbon offsets will be much higher and will become a more standard part of business practice. Suggestions to increase carbon offset purchase by conference attendees include:

- Simplifying the purchase procedures with an optional "buy it now" choice directly tied to online registration and payment.

[3] Native Energy, *Carbon Offsets for Brownfields 2008 from NativeEnergy,* <http://www.nativeenergy.com/brownfields> (August 2008).

- Calculating an average carbon footprint to eliminate the need for each traveler to plug in their own miles traveled, mode of travel, etc.
- Devising an incentive or challenge similar to the 2008 Democratic National Convention's "Green Delegate Challenge" which offers recognition of and a prize for the delegations with the highest percentage of members offsetting their carbon emissions.
- Working with the carbon offset provider to develop a tailored marketing approach.

Alternatively, conference planners should explore including the cost of attendees' carbon offsets in the registration fees, or offer their purchase as a sponsor opportunity, as was done with conference-related offsets.

Finally, with the heightened interest in carbon offsets, it is important to note that EPA does not have criteria for evaluating providers of carbon offsets. Conference planners should always research companies carefully to ensure they are purchasing a quality product: Are projects certified according to industry standards and verified by third-parties? Is the provider's portfolio audited? Will the carbon reductions occur right away versus sometime in the distant future?

Goal 4: Help the convention center and designated conference hotels in conceiving effective environmental sustainability practices.

Practices

The *Greening the Conference* team met with managers (e.g., food service, janitorial, events) from Cobo Center and the designated conference hotels to better understand, document and perhaps enhance environmental practices related to energy and water conservation, environmentally preferable purchasing, etc. These meetings revealed that Cobo had incorporated a number of eco-friendly practices – green cleaning products, low energy lighting, etc. – and had an interest in expanding the recycling program, which to date had been limited to the collection of aluminum and plastic beverage containers in the offices and concourses. With interest in green conferences growing, Cobo had a heightened interest in piloting a recycling program inside the exhibit hall. EPA devised a detailed plan (Appendix B) for a comprehensive recycling program during the Brownfields conference and assisted Cobo Center staff in identifying the quantity and types of recycling bins to obtain.

When securing hotels for block rooms, conference planners asked the hotels for a list of greening practices. The Michigan Department of Environmental Quality's *Greening the Conference* team member then met with each of the hotels about their practices and encouraged them to join the Green Lodging Michigan program.[4] Several hotels expressed interest in the program. Environmental practices were posted on the greening tab of the Brownfields 2008 Web page.

Lessons Learned and Recommendations – Conference venue and hotels

Enhancing green practices associated with the conference venue itself is perhaps the most daunting goal to achieve. Making changes to conserve energy or water, better manage waste or purchase safer cleaning products takes a fair amount of planning over periods of time beyond the planning horizon of most conferences and trade shows. Therefore the team limited its work with

[4]Michigan Department of Environmental Quality, *Green Lodging Michigan: Recognizing Michigan's Hospitality Industry,* <http://www.michigan.gov/dleg/0,1607,7-154-25676_25677_37026---,00.html> (August 2008).

the venue to the pilot recycling program. Future conference planners setting up a recycling program where one has never existed should be prepared for extensive planning and coordination to provide meaningful assistance to the many in-house and off-site contractors including food service and catering, security, janitorial, maintenance, waste and client-procured services. At Brownfields 2008, the team had to work not only with conference center staff who maintained certain recycling bins, but also with the food service provider who managed the kitchen and oversaw a different set of recycling bins for beverage containers outside of exhibit hall concession area. It was necessary to work with the janitorial contractor as well, who collected from the conference center bins but not the food service's bins. Suggestions for conference planners include:

- Being aware that the best way to ensure the hosting venue will be sufficiently green for the conference is to select one that already meets the criteria established by the conference team. Although many conference centers are eager to enhance their green image for marketing or other reasons, significantly enhancing a venue's energy, water and waste programs in time for the conference after the venue is secured is difficult unless the venue is highly motivated and has the available budget and infrastructure.
- Meeting with venue personnel early in the process (ideally as soon as the contract with the venue is signed) to learn about current environmental practices, the venue's interest in enhancing activities and operational practices.
- Providing meaningful assistance to the venue requires an in depth understanding of the roles and responsibilities of venue-employed staff, vendors that operate from inside and off-site contractors.
- Developing a written plan and communicating regularly with venue managers and contractors to ensure buy-in and a clear understanding of responsibilities. The recycling report in Appendix B is an example of such a plan for recycling activities and includes the pre-conference plan, meeting agenda and list of recycling team members.
- Posting conference hotels' existing greening practices heightens awareness of the conference's green goals and encourages attendees to participate in hotel programs such as linen water and chemical conservation. More information about hotel greening can be found on the Brownfields website.[5]
- Encouraging hotels to advertise their greening practices, or provide hotels practicing greening activities with a sign to display for the duration of the conference.
- Selecting hotels based on criteria which balance an individual hotel's current green practices, location, physical condition and the availability of government rate rooms. The Brownfields conference should be used by the EPA region and host city to further enhance and develop sustainable greening practices of hotels in the conference hotel block.

[5] Brownfields 2008, *Brownfields 2008 Conference – Detroit Hotels,* <http://www.brownfields2008.org/documentupload/Hotel%20Greening%20v2%203%2017%2008.pdf> (August 2008).

Goal 5: Educate participants, exhibitors and staff on specific greening practices so that they might incorporate sustainable activities into their own future meetings and conferences.

Practices

Much of the *Greening the Conference* team's time was devoted to education. First, the team knew attendee and exhibitor participation would be critical to achieving waste minimization and recycling goals. And, it wanted to showcase efforts in such a way that participants would learn techniques they could apply back home at their own meetings and conferences. Specific practices included:

- Electronic "tip sheets" of waste minimization strategies and other greening suggestions. Directed toward exhibitors, speakers and reception hosts, these tip sheets were posted on the Web site[6] and distributed electronically in regular e-mail blasts. See Appendix D for the tip sheets.
- A "Green Exhibitor" recognition program to acknowledge those exhibitors who made efforts to reduce their exhibit's footprint through waste minimization, energy conservation, packaging and mail, eco-friendly giveaways, etc. Exhibitors were asked to e-mail their efforts to EPA prior to the conference and framed certificates were handed out at exhibitor setup so they could be displayed during the conference. The recognition program was well-received, with a number of exhibitors seeking out EPA to point out the green aspects of their booth.

"Green Exhibitor" certificate

- Signage highlighting the conference's eco-friendly conference features (see Appendix F).

Signs helped educate attendees about the conference's green features

- An article entitled "Green Corner" in each of the daily Brownfields Bulletin newsletters (now posted on the Brownfields 2008 home page).
- A set of talking points left in the media room to be used by conference spokespersons (see Appendix G).
- A piece in the EPA Regional Administrator's newsletter interview highlighting the connection between Brownfields and conference greening.[7]
- The mention of greening efforts in both the EPA Administrator and acting Regional Administrator's speeches.

[6] Brownfields 2008, *Brownfields 2008 Greening Activities*, <http://www.brownfields2008.org/en/Page.Greening.aspx> (August 2008).

[7] Brownfields 2008, *Brownfields Bulletin,* <http://www.brownfields2008.org/documentupload/08-193%20BF%20Bulletin%20MON.pdf> (August 2008).

- Talking points on recycling procedures to be read by conference staff at the start of every session.
- Announcements read over the public address system to remind exhibitors and participants of the recycling centers on each side of the exhibit hall.
- Briefings with the contract support staff to explain the recycling and other procedures for the conference offices and registration area, as well as to better prepare them to be ambassadors of the greening efforts.
- Design of easily recognizable "Ask Me" t-shirts to be worn by EPA recycling team members. Beginning Sunday, when exhibitors set up their booth, through tear down on Wednesday, team members talked with each exhibitor explaining recycling procedures. Most exhibits had multiple personnel staffing the booth so team members visited each exhibit periodically throughout the week. They also walked concourses checking in with the offices and classrooms regarding recycling, pulled out contamination (e.g., plastic bottles out of garbage cans) and fielded numerous questions from attendees about recycling and greening in general. (See Appendix H.)

Lessons learned and recommendations – Education
Educational activities were well worth the time and effort. Below is a listing of what worked and what didn't, as well as ideas for activities the team did not have time to carry out:

Tip Sheets

- Tip sheets for exhibitors, speakers and reception hosts were helpful in educating people. Be sure information is available early to give exhibitors time to research and procure environmentally friendly alternatives to banners, giveaways, packing materials, etc. Reception hosts need advanced notice because, in most conference centers, it is more expensive to use reusable tableware than to purchase disposable items, and budgets may need to be adjusted.

Green Exhibitor Recognition

- Exhibitors that participated in the recognition program were proud to display their framed certificate and point out their booths' green features. In discussions with exhibitors, however, the greening team learned that many exhibitors did not know about the program. This could be that e-mail announcements may not have been passed along by the official company contact to the staff designing the exhibit.
- The *Greening the Conference* team wanted to recognize green exhibitors with a green leaf or similar icon in the exhibitor directory, but began too late to meet print deadlines.
- A contest for the greenest exhibit would have been an original way to engage exhibitors in the greening efforts. Unfortunately, the team became involved in the planning process too late to design and implement a contest.
- The conference greening team may want to consider having criteria to judge green exhibits. This was not done in 2008 due to time constraints. Any exhibitor who sent an e-mail to EPA documenting their intended green practices received a certificate of recognition. If criteria or checklist were used, EPA or other conference planners should be prepared to evaluate the practices prior to the conference and visit the booths during the conference to ensure the practices were incorporated. In addition, they need to be aware of potential constraints posed by the federal Paperwork Reduction Act which

prohibits the collection of certain information (even electronic information). EPA planning staff was unable to collect green exhibitor information via a checklist or survey, though perhaps this information could have been collected as part of the registration process overseen by its conference co-host. EPA conference planners are advised to contact their regional council to discuss options.

Planning

- Written educational information and opportunities (i.e., tip sheets, recognition programs and contests, etc.) must be distributed with original promotional pieces and exhibitor registration information months before the conference starts. Close coordination with contractors responsible for the exhibit hall is a must.
- As with other greening efforts, it is critical to have an in-depth understanding of the conference schedule, the rooms where activities are taking place and who is charge of coordinating the activity. The 2008 *Greening the Conference* team was not aware of the transaction forum until the day it occurred, and missed opportunities to educate exhibitors on waste minimization strategies and recycling.

On-site Personnel

- Providing recycling staff with identifiable t-shirts was useful because, as they circulated in the exhibit hall and hallways, the staff were a visible and credible source of information about all greening activities, particularly recycling. To expand on the idea, equip all greening team members with t-shirts and be sure they are well-briefed on all aspects of the green initiatives.

Recycling staff with "Ask Me" t-shirts

Media Relations

- Greening is a hot topic in newspapers, trade magazines, blogs, TV and radio. Be sure to prepare a one-pager highlighting the green initiatives as a reference for conference spokespersons. See Appendix G for an example. Be ready with potential photo opportunities such as a particularly green exhibit, the recycling center or green building feature such as energy efficient lighting. Fox TV in Detroit aired a positive story about the conference's green features. Planning ahead made this possible.

Goal 6: Promote environmentally friendly transportation alternatives to and from the airport, around town and to mobile workshops.

Practices

Conference planners promoted use of public transportation and shared rides where available. Unfortunately, public transportation does not exist between the airport and the Cobo Center. An elevated train called the Detroit People Mover has a station stop within the Cobo Center and circulates the downtown area. Directional signs were posted and people were observed taking the people mover at dinnertime. A Brownfields group was established on the carpooling Web site, GoLoco.com, to connect those traveling by car, but it does not appear many took advantage of this option.

Lessons learned and recommendations – Transportation
Access to good public transportation should be one consideration when selecting a city for a conference. Even when available, attendees are often hesitant to use it due to the lack of familiarity, luggage challenges and perceived or real safety concerns. Conference planners might consider the following for future conferences:

- Provide incentives to those who take an environmentally friendly transportation to and from the conference. For example, offer a discount on registration, free consultation with a Brownfields expert or VIP parking to those driving a hybrid vehicle, participating in a carpool or arriving by public transportation (bus, train).
- Continue to offer carbon offsets for purchase by those traveling to the conference.
- Continue to offer GoLoco.com or other carpooling site. As people become more familiar with such programs, they may feel more comfortable with carpooling, especially if gas prices remain high.
- Clearly advertise and promote all of the above alternative transportation options.

Goal 7: Recycle waste generated in the registration area, educational and plenary sessions, exhibit hall, offices, networking sessions and kitchen.
Practices
Recycling was one the most visible and practicable ways of enhancing the Brownfields 2008 conference. Three months prior to the conference, the *Greening the Conference* team requested assistance from the Region 5 solid waste program. They pulled together a team of people from Cobo Center, their on-site and outside contractors (food service, janitorial), a local waste hauler, representatives from the City of Detroit's environmental department and a local nonprofit recycling organization. EPA mapped out a plan describing event locations and schedules, materials to be collected, recycling procedures and logistics and a staffing and volunteer plan. The recycling efforts were extremely successful, with over 5,800 pounds of material recovered for recycling and reuse. Approximately two metric tons of carbon equivalents were saved which is equivalent to the amount of CO_2 generated by the electricity use of one home for one year. The recycling pre-show plan and final report are in Appendix B.

Lessons learned and recommendations – Recycling

- Having a dedicated staff member to plan recycling activities was critical in achieving the successes seen at Brownfields 2008. Additional staff or volunteers are necessary at the conference to staff recycling center areas, to relocate recycling bins and to educate attendees and exhibitors on recycling procedures over multiple shifts. Exhibit set-up and breakdown would benefit from extra volunteers.
- Finding volunteers involves both early outreach and incentives. Conference planners should consider reaching out to local schools, universities and environmental groups to solicit volunteer interest months before the conference. Planners for Brownfields 2010 might consider a link on the conference web site for those interested in volunteering. At Brownfields 2008, volunteers were offered meal vouchers (provided by the conference's food vendor), and "Ask Me" t-shirts. Similar incentives should be offered for future conferences, as well as thank you notes or certificates of appreciate at the end of the conference. Volunteers should sign up for specific time slots and specific activities. It's

important to have a local sponsor (environmental organization, school, etc.) for volunteers, as EPA can not legally serve in this capacity. See Appendix B for additional volunteer information.

Flexible signage is helpful when Toters are used for multiple purposes.

- Recycling signage is also critical. If signs are not already on the recycling bins, develop pre-made signs that can be taped to bins and Toters, consistent with recycler requirements. The Brownfields 2008 recycling team found they needed to carry around paper, markers and pens and change signage on Toters within the exhibit hall as disposal needs changed (e.g., during the reception, signage was added on the plastics Toter that said "no cups;" at the registration area, signs were added on the paper bins that stated "no yellow name badge strips").
- It is important to have an in-depth understanding of all event-sponsored activities such as receptions, poster sessions, plenary and breakout sessions. Knowing beginning and ending times, locations and the types of waste generated (e.g., food, paper, coffee cups, etc.) ensures that appropriate bins and volunteers can be scheduled and dispatched.
- Instituting recycling where none previously existed requires that venue staff (particularly those working the floor) do their work differently. Buy-in and training by employees at all levels and shifts (specifically: front line staff, managers, dock supervisors, union stewards, security, outside volunteers) before the conference begins is important, as most of these individuals can not be distracted from their duties once the conference begins.
- When working in venues employing unionized personnel, it is critical to include union stewards in the planning process to identify and work through issues that may interfere with agreements between the union and the conference center. At Brownfields 2008, teamsters were utilized by the co-host's exhibit hall contractors to assemble and disassemble exhibitor booths (drapes, dividers, carpeting, electricity) and the poster session area. EPA recycling staff were at times perceived to be interfering, taking away union work or changing the flow of activities.
- Creative solutions for the recycling or reuse of some materials such as flexible banners and foam core signage need additional exploration. Research after the conference revealed companies that will turn banners into tote bags.[8] Perhaps banners from one conference could be turned into tote bags for the next.

Conclusion

Overall, greening activities at Brownfields 2008 were successful. Recycling rates were high (68%) and conference support staff and attendees were eager to support the many efforts. The biggest challenge to the *Greening the Conference* team was designing practices that could be incorporated after a number of the conference decisions had been made. By becoming involved

[8] Banner Creations, Inc., <http://www.bannercreations.com/ecophab.html> (August 2008).
Alchemy Goods, <http://www.alchemygoods.com/billboard.html> (August 2008).

from the start, the team would have had additional opportunities to work with the planners on creative eco-friendly alternatives to many of the conference promotional materials or sponsorship branding opportunities. The team would have also had education materials ready for exhibitors, sponsors, presenters, or reception hosts in time for the first release of conference promotional information.

Coordinating with the large number of organizations needed to put on a conference of this magnitude was also a challenge. To be comprehensive, the green goals needed to reach every aspect of the conference planning and execution from promotion, registration, exhibitor and sponsor recruitment, exhibit construction and teardown, food service planning, janitorial and waste hauling, transportation to and around town, venue and hotel operations and maintenance, and more. A team coordinated by one or two individuals serving as liaisons with the general conference team along with a set of green goals and good plan can make this happen.

Appendices

WARM Greenhouse Gas Equivalencies Evaluation Results

EPA staff used the EPA's Waste Reduction Model[1] to calculate the total metric tons of carbon equivalent (MTCE) saved through the recycling efforts implemented during the conference. "WARM was developed to assist solid waste managers in determining the greenhouse gas impacts of their waste management practices. The model compares greenhouse gas and energy impacts of landfilling, recycling, incineration, composting, and source reduction."[2] The following chart shows the weights of seven different types of material collected for recycling or reuse during the three day conference. The chart also indicates the corresponding category used in WARM with the conversion of pounds (collected day-of) to short tons (input to model).

Material	Recycled During Conference (lbs)	Short tons	WARM category
Paper	3350	1.675	Paper (primarily from offices)
Shrink wrap	170	0.085	LDPE
Plastic bottles	230	0.12	PET
Cardboard	960	0.48	Cardboard
Steel cans and metal banding	60	0.03	Mixed metals
Aluminum cans	70	0.035	Aluminum cans
Glass	790	0.395	Mixed glass
Sign boards*	150	0.075	N/A
Give-a-ways*	50	0.025	N/A
Total:	***5830***		

Table 1. Recycled materials
** Signs and give-a-ways were collected for reuse*

Using the above inputs to the model, the total change in greenhouse gas emissions for the Brownfields 2008 conference was -2 MTCE. The negative value indicates an emission reduction. Therefore, two metric tons of carbon equivalent were saved by recycling rather than combusting over 5600 pounds of recyclable material at the Detroit area waste-to-energy incinerator. This information is summarized in the table below. See Attachment A of this document for the complete Greenhouse Gas (GHG) Emissions Analysis – Summary Report and GHG Emission Factors from WARM.

	Metric Tons of Carbon Equivalent (MTCE)
With combustion practices	0
With recycling efforts	-2
Total MTCE savings:	***2***

Table 2. Summary of WARM Results

For an accurate comparison to future Brownfields conferences, it is important to note that WARM did not capture those materials that were taken back to Region 5 offices for reuse such

[1] U.S. EPA, *WAste Reduction Model (WARM)*, http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html (August 2008).
[2] U.S. EPA, *Waste Home – Tools*, http://www.epa.gov/climatechange/wycd/waste/tools.html (August 2008).

as over 100 nametags, 150 pounds of foam sign board, and 50 pounds of give-a-ways. Furthermore, efforts taken to reduce waste before the beginning of the conference were successful and the total amount of recycling may have increased (and be reflected in greater MTCE savings) if more material had entered Cobo from the onset. If, for subsequent conferences, increased efforts are taken to reduce waste before the conference, these additional efforts should be quantified in some way so comparisons can be made and improvements documented. The number of attendees is another factor to consider when comparing the Brownfields 2008 Conference with future Brownfields conferences.

In addition to the above recycling figures, the 2008 Brownfields conference avoided over six tons of paper by eliminating the attendee list normally distributed to all attendees. This waste reduction activity saved over 12,000 pounds of paper. With the assumption in WARM that this paper would have been recycled at the Brownfields 2006 meeting in Boston, Brownfields 2008 in Detroit saved over eight MTCE by source reducing this paper. This value may be a bit high because not all six tons of participant lists would have been recycled – some would have been taken home by participants or never thrown out.

Furthermore, the Brownfields conference purchased carbon offsets in an effort to make the conference "carbon neutral." The offsets were purchased by several companies and a state agency from NativeEnergy which invests in new renewable energy programs that will displace fossil-based energy. Using the EPA's online information regarding carbon dioxide equivalents,[3] the 189 tons of CO_2 that were offset is equivalent to 46.75 MTCE using the following conversion:

$$MTCE = \left(\begin{array}{c} Metric\ tons \\ of\ a\ gas \end{array}\right)\left(\begin{array}{c} Gas\ global \\ warming\ potential \end{array}\right)\left(\frac{12}{44}\right) =$$

$$= \left(\frac{189\ short\ tons\ CO_2}{} \cdot \frac{0.907\ metric\ tons}{1\ short\ ton}\right)\left(1\ GWP_{CO_2}\right)\left(\frac{12}{44}\right) = 46.75\ MTCE$$

Therefore, with recycling, source reduction, and Carbon offset efforts, the Brownfields Conference **saved over 56 MTCE**.

The MTCE calculated with WARM and determined through the NativeEnergy carbon offset efforts were then used as an input to the EPA's Greenhouse Gas Calculator[4] in order to express quantities of greenhouse gases in terms of easy to understand metrics such as number of cars, gallons of gasoline, acres of forest, etc. The following is a summary of the equivalency results. The original Web based results can be found in Attachment A.

[3] U.S. EPA, *Emission Facts: Metrics for Expressing Greenhouse Gas Emissions: Carbon Equivalents and Carbon Dioxide Equivalents,* << http://www.epa.gov/otaq/climate/420f05002.htm#global>> (August 2008).
[4] U.S. EPA, *Greenhouse Gas Equivalencies Calculator*, <<http://www.epa.gov/cleanenergy/energy-resources/calculator.html>> (August 2008).

56.75 MTCE is equivalent to one of the following:

Annual greenhouse gas emissions from **38.1** passenger vehicles.
CO_2 emissions from **23,619** gallons of gasoline consumed.
CO_2 emissions from **484** barrels of oil consumed.
CO_2 emissions from **2.8** tanker trucks' worth of gasoline.
CO_2 emissions from the *electricity use* of **27.6** homes for one year.
CO_2 emissions from the *energy use* of **18.4** homes for one year.
Carbon sequestered by **5,335** tree seedlings grown for 10 years.
Carbon sequestered annually by **47.3** acres of pine or fir forests.
Carbon sequestered annually by **1.5** acres of forest preserved from deforestation.
CO_2 emissions from **8,670** propane cylinders used for home barbeques.
Greenhouse gas emissions avoided by recycling **71.8** tons of waste instead of sending it to the landfill.

The recommendation to replace the 14-page exhibitor guide with a large poster-mounted sign(s), electronic "directory of exhibits" at the entrance to each exhibit aisle, or "desk copy only" copies could save an estimated 84,000 pieces of paper, or 0.51 tons. The following equation was used to estimate the amount of paper saved:

$$(6000\ attendees)\left(\frac{2.7\ oz\ exhibitor\ guide}{}\cdot\frac{0.625\ lbs}{1\ oz}\cdot\frac{1\ ton}{2000\ lbs}\right)=0.51\ tons$$

Elimination of this one small guide amounts to a **savings of 1 MTCE**. Attachment B contains the actual WARM and GHG Equivalency Calculator results.

Attachment A:

- Greenhouse Gas (GHG) Emissions Analysis – Summary Report for recycling figures
- GHG Emission Factors
- Greenhouse Gas Equivalencies Calculator Web based results for total MTCE

Attachment B:

- Greenhouse Gas (GHG) Emissions Analysis – Summary Report for elimination of exhibitor guide
- Greenhouse Gas Equivalencies Calculator Web based results for suggested source reduction practice

GHG Emissions Analysis -- Summary Report

(Version 8, 8/06)

Analysis of GHG Emissions from Waste Management

GHG Emissions from Baseline Waste Management (MTCE): 0

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCE
Aluminum Cans	0	0	0.04	N/A	0
Glass	0	0	0.40	N/A	0
LDPE	0	0	0.09	N/A	0
PET	0	0	0.12	N/A	0
Corrugated Boxes	0	0	0.48	N/A	0
Mixed Paper (primarily from offices)	0	0	1.68	N/A	0
Mixed Metals	0	0	0.03	N/A	0

GHG Emissions from Alternative Waste Management Scenario (MTCE): -2

Material	Tons Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCE
Aluminum Cans	0	0.04	0	0	N/A	0
Glass	0	0.40	0	0	N/A	0
LDPE	0	0.09	0	0	N/A	0
PET	0	0.12	0	0	N/A	0
Corrugated Boxes	0	0.48	0	0	N/A	0
Mixed Paper (primarily from offices)	N/A	1.68	0	0	N/A	-2
Mixed Metals	N/A	0.03	0	0	N/A	0

Total Change in GHG Emissions: -2 MTCE

Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.

a) For an explanation of the methodology used to develop emission factors, see EPA report: Greenhouse Gas Emissions from Management of Selected Materials in Municipal Solid Waste (EPA530-R-98-013) -- available on the Internet at http://www.epa.gov/epaoswer/non-hw/muncpl/ghg/greengas.pdf (1.1 Mb PDF file). Please note that some of the emission factors used to generate these results do not match those presented in the report due to recent additions and/or revisions. A 3rd edition of the report will be available in early Fall of 2006, which will include the latest emission factors.

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

c) Total emissions estimates provided by this model may not sum due to independent rounding.

Back to WARM | View Emission Factors

(Version 8, 8/06)

The emission factors presented in this table reflect national average landfill gas recovery practices and transportat distances.

Greenhouse Gas Emission Factors (MTCE per short ton)

Material	Source Reduction	Recycling	Landfilling, National Average	Landfilling, No Recovery	Landfilling, Flaring	Landfilling, Energy Recovery	Combustion	Compost
Aluminum Cans	-2.24	-3.7	0.01	0.01	0.01	0.01	0.02	N/A
Steel Cans	-0.87	-0.49	0.01	0.01	0.01	0.01	-0.42	N/A
Copper Wire	-2	-1.34	0.01	0.01	0.01	0.01	0.01	N/A
Glass	-0.16	-0.08	0.01	0.01	0.01	0.01	0.01	N/A
HDPE	-0.49	-0.38	0.01	0.01	0.01	0.01	0.25	N/A
LDPE	-0.62	-0.46	0.01	0.01	0.01	0.01	0.25	N/A
PET	-0.57	-0.42	0.01	0.01	0.01	0.01	0.3	N/A
Corrugated Box	-1.52	-0.85	0.11	0.4	-0.06	-0.13	-0.18	N/A
Magazines	-2.36	-0.84	-0.08	0.04	-0.15	-0.18	-0.13	N/A
Newspaper	-1.33	-0.76	-0.24	-0.13	-0.29	-0.32	-0.2	N/A
Office Paper	-2.18	-0.78	0.53	1.05	0.24	0.11	-0.17	N/A
Phonebook	-1.72	-0.72	-0.24	-0.13	-0.29	-0.32	-0.2	N/A
Textbook	-2.5	-0.85	0.53	1.05	0.24	0.11	-0.17	N/A
Dimensional Lumber	-0.55	-0.67	-0.13	0.02	-0.22	-0.26	-0.21	N/A
Fiberboard	-0.6	-0.67	-0.13	0.02	-0.22	-0.26	-0.21	N/A
Food Waste	N/A	N/A	0.2	0.39	0.09	0.04	-0.05	-0.05
Yard Waste	N/A	N/A	-0.06	-0.01	-0.19	-0.21	-0.06	-0.05
Grass	N/A	N/A	0	0.06	-0.04	-0.06	-0.06	-0.05
Leaves	N/A	N/A	-0.05	-0.08	-0.27	-0.3	-0.06	-0.05
Branches	N/A	N/A	-0.13	0.02	-0.22	-0.26	-0.06	-0.05
Mixed Paper Board	N/A	-0.96	0.09	0.38	-0.06	-0.13	-0.18	N/A
Mixed Paper - Residential	N/A	-0.96	0.07	0.34	-0.08	-0.15	-0.18	N/A
Mixed Paper - Office	N/A	-0.93	0.13	0.4	-0.03	-0.1	-0.16	N/A
Mixed Metals	N/A	-1.43	0.01	0.01	0.01	0.01	-0.29	N/A
Mixed Plastics	N/A	-0.41	0.01	0.01	0.01	0.01	0.27	N/A

Mixed Recyclables	N/A	-0.79	0.04	0.26	-0.08	-0.14	-0.17	N/A
Mixed Organics	N/A	N/A	0.06	0.17	-0.06	-0.1	-0.05	-0.05
MixedMSW	N/A	N/A	0.12	0.43	0.04	-0.02	-0.03	N/A
Carpets	-1.09	-1.96	0.01	0.01	0.01	0.01	0.11	N/A
PCs	-15.13	-0.62	0.01	0.01	0.01	0.01	-0.05	N/A
ClayBricks	-0.08	N/A	0.01	0.01	0.01	0.01	N/A	N/A
Aggregate	N/A	0	0.01	0.01	0.01	0.01	N/A	N/A
FlyAsh	N/A	-0.24	0.01	0.01	0.01	0.01	N/A	N/A
Tires	-1.09	-0.5	0.01	0.01	0.01	0.01	0.05	N/A

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http://www.epa.gov/cleanenergy/energy-resources/calculator.html
Last updated on Monday, February 11th, 2008.

Clean Energy

Greenhouse Gas Equivalencies Calculator

Did you ever wonder what reducing carbon dioxide (CO_2) emissions by 1 million metric tons means in everyday terms? The following equivalency calculator can help you understand just that.

For example, it can be difficult to visualize what a "metric ton of carbon dioxide" really is. This calculator will translate rather difficult to understand statements into more commonplace terms, such as "is equivalent to avoiding the carbon dioxide emissions of X number of cars annually."

This equivalency calculator may be useful in communicating your greenhouse gas reduction strategy, reduction targets, or other initiatives aimed at reducing GHG emissions.

Other Calculators

There are a number of other web-based calculators that can estimate greenhouse gas emission reductions for

- individuals and households
- waste, and
- transportation.

For basic information and details on greenhouse gas emissions, visit the Emissions section of EPA's climate change site.

Enter Your Data Below

There are two options for entering data into this calculator.

Option 1:

1. If you are starting with data in units of "gallons of gasoline consumed," "kilowatt-hours of electricity," "therms of natural gas," or "passenger vehicles per year", use this option.
2. Enter a quantity and pick the desired unit below; and
3. Click on the "Calculate Equivalent**" button to convert your value to Carbon Dioxide Equivalent.

- choose a unit - Calculate Equivalent**

? Click Here for Calculations and References

**This calculator uses an eGRID non-baseload national average emissions rate when calculating "kilowatt-hours of electricity" to "carbon dioxide equivalent".

Option 2:

If you have already estimated the quantity of avoided emissions reductions (e.g., metric tons of carbon dioxide equivalent), you can input the amount of avoided emissions and select the appropriate units for the corresponding greenhouse gas type.

Amount	Unit	Gas

	Tons	CO_2 - Carbon Dioxide
	Tons	CH_4 - Methane
	Tons	N_2O - Nitrous Oxide
	Tons	HFC-23 - Hydrofluorocarbon gases
	Tons	CF4 - Perfluorocarbon gases
	Tons	SF_6 - Sulfur Hexafluoride
56.75	Metric Tons	Carbon Equivalent

Calculate Equivalencies | Clear Fields

*If your estimated emissions of methane, nitrous oxide, or other non-CO_2 gases are already expressed in CO_2 or carbon equivalents, please enter your figures in the row for CO_2 or carbon equivalent.

The sum of the greenhouse gas emissions you entered above is 208 Metric Tons of Carbon Dioxide Equivalent.

This is equivalent to one of the following:

Equivalency Results

Click on the question mark **?** link to read the explanation of that particular calculation. Read about all calculations.

The information you entered above is equivalent to one of the following statements:

Annual greenhouse gas emissions from 38.1 passenger vehicles **?** *(click to read more about this calculation)*

CO_2 emissions from 23,619 gallons of gasoline consumed **?**

CO_2 emissions from 484 barrels of oil consumed **?**

CO_2 emissions from 2.8 tanker trucks' worth of gasoline **?**

CO_2 emissions from the *electricity* use of 27.6 homes for one year **?**

CO_2 emissions from the *energy* use of 18.4 homes for one year **?**

Carbon sequestered by 5,335 tree seedlings grown for 10 years **?**

Carbon sequestered annually by 47.3 acres of pine or fir forests ?

Carbon sequestered annually by 1.5 acres of forest preserved from deforestation ?

CO_2 emissions from 8,670 propane cylinders used for home barbeques ?

CO_2 emissions from burning 1.1 railcars' worth of coal ?

Greenhouse gas emissions avoided by recycling 71.8 tons of waste instead of sending it to the landfill ?

Annual CO_2 emissions of 0 coal fired power plants ?

GHG Emissions Analysis -- Summary Report

(Version 8, 8/06)

Analysis of GHG Emissions from Waste Management

GHG Emissions from Baseline Waste Management (MTCE): 0

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCE
Office Paper	0	0.51	0	N/A	0

GHG Emissions from Alternative Waste Management Scenario (MTCE): -1

Material	Tons Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCE
Office Paper	0.51	0	0	0	N/A	-1

Total Change in GHG Emissions: -1 MTCE

Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.

a) For an explanation of the methodology used to develop emission factors, see EPA report: Greenhouse Gas Emissions from Management of Selected Materials in Municipal Solid Waste (EPA530-R-98-013) -- available on the Internet at http://www.epa.gov/epaoswer/non-hw/muncpl/ghg/greengas.pdf (1.1 Mb PDF file). Please note that some of the emission factors used to generate these results do not match those presented in the report due to recent additions and/or revisions. A 3rd edition of the report will be available in early Fall of 2006, which will include the latest emission factors.

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

c) Total emissions estimates provided by this model may not sum due to independent rounding.

Back to WARM | View Emission Factors

http://www.epa.gov/cleanenergy/energy-resources/calculator.html
Last updated on Monday, February 11th, 2008.

Clean Energy

Greenhouse Gas Equivalencies Calculator

Did you ever wonder what reducing carbon dioxide (CO_2) emissions by 1 million metric tons means in everyday terms? The following equivalency calculator can help you understand just that.

For example, it can be difficult to visualize what a "metric ton of carbon dioxide" really is. This calculator will translate rather difficult to understand statements into more commonplace terms, such as "is equivalent to avoiding the carbon dioxide emissions of X number of cars annually."

This equivalency calculator may be useful in communicating your greenhouse gas reduction strategy, reduction targets, or other initiatives aimed at reducing GHG emissions.

Other Calculators

There are a number of other web-based calculators that can estimate greenhouse gas emission reductions for

- individuals and households
- waste, and
- transportation.

For basic information and details on greenhouse gas emissions, visit the Emissions section of EPA's climate change site.

Enter Your Data Below

There are two options for entering data into this calculator.

Option 1:

1. If you are starting with data in units of "gallons of gasoline consumed," "kilowatt-hours of electricity," "therms of natural gas," or "passenger vehicles per year", use this option.
2. Enter a quantity and pick the desired unit below; and
3. Click on the "Calculate Equivalent**" button to convert your value to Carbon Dioxide Equivalent.

- choose a unit - Calculate Equivalent**

? Click Here for Calculations and References

**This calculator uses an eGRID non-baseload national average emissions rate when calculating "kilowatt-hours of electricity" to "carbon dioxide equivalent".

Option 2:

If you have already estimated the quantity of avoided emissions reductions (e.g., metric tons of carbon dioxide equivalent), you can input the amount of avoided emissions and select the appropriate units for the corresponding greenhouse gas type.

Amount	Unit	Gas

	Tons	CO_2 - Carbon Dioxide
	Tons	CH_4 - Methane
	Tons	N_2O - Nitrous Oxide
	Tons	HFC-23 - Hydrofluorocarbon gases
	Tons	CF4 - Perfluorocarbon gases
	Tons	SF_6 - Sulfur Hexafluoride
1	Metric Tons	Carbon Equivalent

Calculate Equivalencies | Clear Fields

*If your estimated emissions of methane, nitrous oxide, or other non-CO_2 gases are already expressed in CO_2 or carbon equivalents, please enter your figures in the row for CO_2 or carbon equivalent.

The sum of the greenhouse gas emissions you entered above is 3.7 Metric Tons of Carbon Dioxide Equivalent.

This is equivalent to one of the following:

Equivalency Results

Click on the question mark **?** link to read the explanation of that particular calculation. Read about all calculations.

The information you entered above is equivalent to one of the following statements:

Annual greenhouse gas emissions from 0.67 passenger vehicles **?** *(click to read more about this calculation)*

CO_2 emissions from 416 gallons of gasoline consumed **?**

CO_2 emissions from 8.5 barrels of oil consumed **?**

CO_2 emissions from 0.05 tanker trucks' worth of gasoline **?**

CO_2 emissions from the *electricity* use of 0.49 homes for one year **?**

CO_2 emissions from the *energy* use of 0.32 homes for one year **?**

Carbon sequestered by 94 tree seedlings grown for 10 years **?**

Carbon sequestered annually by 0.83 acres of pine or fir forests ?

Carbon sequestered annually by 0.03 acres of forest preserved from deforestation ?

CO_2 emissions from 153 propane cylinders used for home barbeques ?

CO_2 emissions from burning 0.02 railcars' worth of coal ?

Greenhouse gas emissions avoided by recycling 1.3 tons of waste instead of sending it to the landfill ?

Annual CO_2 emissions of 0 coal fired power plants ?

Recycling at Brownfields 2008:

Practices and Lessons Learned

Prepared by the U.S. Environmental Protection Agency, Region 5

Table of Contents

Overview

The following is a summary of the recycling activities at Brownfields 2008. This bi-annual, international conference focuses on the industry of redeveloping properties that are or may be affected by past contamination. More than 300 exhibitors and 5000 participants attended the 130 sessions, exhibits, and networking events held at Cobo Center in Detroit, Michigan, from May 5-7, 2008.

At the previous conference held in Boston in 2006, an effort was made to increase the environmental performance of the event from various perspectives, including waste reduction and recycling. In 2008, EPA Region 5's Land and Chemicals Division was tasked to continue these "greening" efforts by developing and implementing a waste reduction and recycling strategy in cooperation with event planners. A detailed recycling plan (see Appendix A – Event Recycling Plan) was developed by a planning committee consisting of partners from the State of Michigan, City of Detroit, a local non-profit organization, and private businesses (see the Event Recycling Plan for a list of committee members).

Based on past conference experience, a priority was placed on reducing and recovering the large volumes of waste materials generated by exhibitors during move-in and move-out. Many exhibitors are environmentally-focused companies, and those that participated in the 2006 conference were already aware of waste reduction and recycling efforts. Exhibitors were notified of waste reduction ideas (such as reducing incoming material packaging and handouts) and event recycling plans before the event via the exhibitor guidebook, email "blasts," and the Website (http://www.brownfields2008.org). Although waste reduction efforts are nearly impossible to quantify, it is anticipated that a significant amount of both waste and recyclables never made it to Cobo Center as a result of this outreach. One critical waste reduction activity was the elimination of the attendee list normally distributed to all attendees, **which saved over 10,000 pounds of paper.**

Over **5800 pounds of clean, marketable recyclables were generated, collected, and recycled** during the event, as detailed in Table 1.

Material	Recycled (lbs)
Paper	3350
Shrink Wrap	170
Plastic Bottles	230
Cardboard	960
Metal	60
Aluminum Cans	70
Glass	790
Signage Board*	150
Give-a-ways*	50
Total	***5830***

Table 1. Event recycling totals broken down by commodity
** Signs and give-a-ways were collected for reuse*

Approximately **2763 pounds of waste were generated** and transported to the Greater Detroit Resource Recovery Authority waste-to-energy plant for incineration, as seen in Table 2. A detailed accounting of waste generation is in Appendix B.

Day	Waste Disposed (lbs)
May 5	783
May 6	1406
May 7	484
Total	***2763***

Table 2. Event waste generation broken down by date

As shown above, **the amount of recyclables recovered was over two times the amount of waste disposed; the whole event had an overall recycling rate of 68%.** EPA's Waste Reduction Model (WARM) was used to calculate the total metric tons of carbon equivalent (MTCE) saved through recycling efforts. The analysis showed that approximately **two MTCE were saved by recycling** rather than combusting the materials collected. Two MTCE is equivalent to the CO_2 emissions from the **consumption of 832 gallons of gasoline or the emissions generated by the electricity use of one home for one year** (detailed WARM evaluation results are in Appendix C).

It is hoped that in addition to sharing information about the recycling at Brownfields 2008, that the successes, areas for improvement, and recommendations documented in this report will serve as a roadmap for future recycling activities at Cobo Center as well as at future conferences.

I. PRE-EVENT PLANNING

The three principal contractors or grantees to EPA for overall management and implementation of the event were EPA's contractor, SRA International, the conference co-host, International City/County Management Association (ICMA), and The Bridge Group, ICMA's contractor coordinating exhibit hall activities. EPA Region 5 dedicated several staff to assist in the planning of the conference, including a conference coordinator (Laura Lodisio) and a greening coordinator (Briana Bill). Additional staff from EPA Region 5 (Shelly Heger and Paul Ruesch) was assigned the responsibility of event recycling. The following tasks were undertaken prior to the event:

1. Information on recycling at the previous conference in Boston was solicited from Cynthia Greene of EPA Region 1.

2. EPA conducted an on-site waste management/recycling assessment of Cobo Center on March 4 using a checklist (see Attachment 1) developed by Marc Mowrey of EPA Region 9.

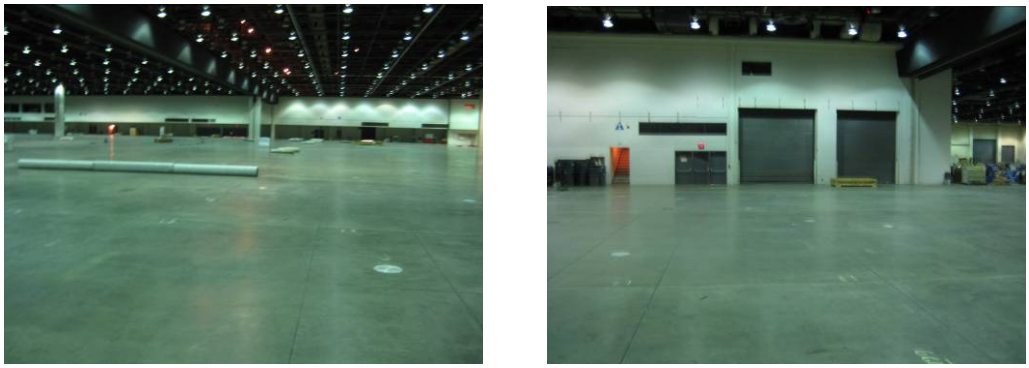


Figure 1. Exhibit hall space and exit to loading dock

3. A recycling planning committee was established consisting of key individuals from state and local government, private recyclers, and non-profit recycling organizations (see Appendix A for a detailed list of committee members). Two conference calls were held to solicit ideas, suggestions, local contacts, and resource commitments.

4. Waste reduction ideas and recycling plans were communicated to exhibitors, presenters, and reception planners (see Attachment 2 for the exhibitor tip sheet).

5. An on-site meeting was held at Cobo Center on April 3 during which a walk-through was conducted and input was solicited on the recycling plan (see Attachment 3 for a copy of the agenda). The meeting was attended by the City of Detroit Department of Environmental Affairs, Cobo Center management, Recycle Detroit, NPR Recycling, Inc., Aramark Corporation (food services), ABM Janitorial Service, SRA International, The Bridge Group, and EPA Region 5.

6. A detailed recycling work plan was drafted (see Appendix A) and circulated for comment among the planning committee and all primary participants at Cobo Center. The document included materials to be collected, recycling procedures and logistics, outreach

and education activities, and a staffing plan for the three main stages of the event: 1) event set-up/exhibitor move-in; 2) conference & exposition; and 3) exhibitor move-out/event breakdown. Materials targeted for collection are found in Table 3 below.

Event Stage	Materials Collected
Event Setup / Exhibitor Move-in	Cardboard, paper, shrink wrap, metal banding, beverage containers
Conference & Exhibition	Cardboard, paper, beverage containers
Exhibitor Move-out / Event Breakdown	Cardboard, paper (extra handouts), beverage containers, signage, extra give-a-ways

Table 3. Materials targeted for collection during the three major event stages

7. Assistance was provided to Cobo Center management to identify options and vendors for concourse recycling containers to accommodate the conference as well as future events. A local recycling contractor (NPR Recycling, Inc.) was identified to provide recycling containers and a trailer for on-site staging, transportation, and processing of collected recyclables.

8. A staffing plan was developed and volunteers were sought to support implementation of the plan. An information sheet was developed for volunteers (see Attachment 4). Specially designed, green recycling t-shirts were produced to clearly identify recycling staff to participants and exhibitors, and lunch vouchers were offered by Aramark.

9. A recycling team representative attended the pre-show meeting on May 2 to brief key members from all participating organizations and contractors on the details and logistics of the recycling plan (see Attachment 5 for the meeting agenda).

10. Supervisors, floor stewards, and individual staff of labor unions and contractors were contacted individually after the pre-show meeting to answer questions, provide instructions, and confirm understanding of recycling procedures. In addition, recycling team representatives attended pre-show briefings and trainings for event staff to provide an overview of recycling procedures.

Figure 2. Pre-show briefings were provided to host organization staff

II. SITE OPERATIONS

The following section provides a description of on-site activities during the various stages of the event. A more comprehensive report detailing the overall conference greening efforts is also available. Site operations were primarily conducted by the EPA recycling team, which consisted of four individuals as well as additional volunteers who assisted periodically throughout the event.

Figure 3. The Brownfields 2008 recycling team (left to right): Briana Bill (EPA), Amy Kochanowsky (SRA International), Paul Ruesch, and Shelly Heger (EPA)

A. Event Set-Up

Although the event was not scheduled to begin until May 5, show managers and contractors were on site beginning May 1 to set up in the Wayne and Oakland exhibit halls. Immediately following the pre-show meeting on May 2, NPR Recycling, Inc. dropped off a semi-truck trailer containing twenty 90-gallon Toter containers, 10 gaylord containers, and several pallets adjacent to the trash compactor on the loading dock.

Figure 4. NPR Recycling, Inc. semi-trailer staged adjacent to trash compactor on loading dock

Several containers for material generated by contractors such as shrink wrap, metal banding, and cardboard were distributed within the exhibit hall. Event contractors, decorators, janitorial staff, union laborers (carpenters, carpet layers, etc.), security staff, loading dock workers, and fork lift drivers were instructed on what materials were appropriate for placement into the recycling bins.

The main exhibit hall managers reinforced recycling efforts during set-up activities with onsite contractors.

Figure 5. Toters (left) were placed throughout the exhibit hall to capture metal banding and shrink wrap from furniture and incoming shipments which were staged on pallets during event set-up (right)

Event set-up continued on May 3. However, the exhibit hall was scheduled to "go dark" in the afternoon, meaning the lights were shut down and no contractors were allowed to work during that time. During this down time, approximately 30 staff assembled printed materials to be received by attendees. This work involved the staging, unpacking, and collating of printed materials and give-a-ways into yellow tote bags (made from recyclable material). Cardboard, paper, shrink wrap, and beverage containers were recovered during this activity.

Figure 6. Participant tote bag stuffing with recycling containers staged nearby

B. Exhibitor Move-In

The exhibit hall was opened to exhibitors on May 4. Upon check-in, exhibitors were reminded of recycling opportunities and procedures. Recycling staff in green t-shirts walked the exhibit hall reminding exhibitors and contractors of recycling procedures and assisted with transporting materials to designated recycling centers. The centers were set up to collect cardboard, paper, metal banding, shrink wrap, beverage containers, and garbage. Recycling staff carried box

cutters to help break down boxes and assisted exhibitors with locating appropriate bins and collection areas. Janitorial staff utilized gondolas to transport cardboard to staging areas.

Figure 7. Gondolas used for cardboard (left) and a recycling team member assisting janitorial staff (right)

C. Exhibit Hall

During the exhibition, exhibitors were provided with small cardboard waste paper baskets with plastic liners at each booth. To encourage recycling, no garbage cans were placed in the aisles of the exhibit floor. Two recycling centers were permanently established on the north and south ends of the hall and were clearly marked with large, overhead signage (see Figure 8). Toter containers were used for the collection of paper, beverage containers, and metal and gaylord containers were used for the collection of cardboard (see Figure 9).

Figure 8. Two recycling centers were set up in the exhibit hall with large hanging signs overhead

Figure 9. A gaylord container with cardboard boxes stacked inside

A smaller garbage can was placed alongside the recycle bins. Recycling containers were clearly marked to minimize contamination. For example, many attendees thought paper coffee cups were acceptable in the paper recycling bin. Additional signage was placed on bins indicating that paper cups should be placed in the garbage to avoid contamination.

Recycling staff walked the exhibit floor encouraging exhibitors and attendees to recycle. Recycling staff worked with janitors to periodically check the centers, remove contaminants, and break down boxes. Full gaylords and Toter containers were transported to the recycling trailer on an as-needed basis. Janitorial crews used gondolas to collect and transport garbage to the compactor at the loading dock. All garbage was weighed and logged prior to disposal in the compactor. The weight, time, and waste origin (if possible) were noted on a log sheet (see Attachment 6).

Figure 10. Scale for weighing trash and office area on loading dock with logs and event schedule

D. Conference Center Concourses

Recycling bins for co-mingled beverage containers and paper were placed alongside garbage cans throughout the conference center lobby and concourses. Janitorial crews used gondolas to collect and consolidate recyclables in a separate sweep and transported them to the recycling trailer. Because a separate crew and floor warden worked the concourses, separate instructions were provided by recycling staff.

Figure 11. Recycling bins utilized on concourses

E. Special Events / Receptions

Several special events and receptions took place during the event, including the opening plenary session, ten EPA regional receptions, a transaction forum, two private receptions, and two catered networking events on the exhibit floor. Prior to the conference, ideas for waste reduction such as avoiding disposables, providing pitchers of water versus bottles, and using glassware and cloth napkins were provided to reception planners.

A recycling team representative worked with the event coordinator immediately prior to the event to discuss preferences for recycling bin placement, servicing, and signage. Based on these discussions, appropriate recycling containers for bottles and cans were placed near exits, garbage cans, and/or alongside bars. At the conclusion of the events, recycling staff and Aramark janitorial personnel transported recyclables to the loading dock. Toters for paper were placed in front of the poster session area and in the transaction forum room. In addition, janitorial staff conducted a separate sweep for discarded inserts, paper, and tote bags immediately following the opening plenary session, as many attendees left unwanted materials behind on chairs and on the floor.

F. Concession Areas

Large recycling containers were placed in the concession areas within the exhibition hall to capture co-mingled bottles and cans. The containers were provided by Aramark and picked up separately by Recyclean, a local recycling contractor. These containers (pictured below) collect cans and bottles on an ongoing basis at events at Cobo Center and data on the weight of the recyclables collected was estimated.

Figure 12. Recycling boxes placed by Aramark in concession areas

G. Main Kitchen

Recycling staff met with the catering manager and head chef to determine preferences for recycling containers and procedures on May 2, because much of the food was already in preparation for the event. Normal procedures involved kitchen staff filling a large gondola with garbage and transporting it to the compactor. This procedure was modified so that a large gondola dedicated for cardboard and a Toter for metal food cans were placed just outside the main kitchen. Kitchen staff was asked to break down boxes prior to stacking them in the gondola to increase efficiency. In addition, food cans (for sauces, pickles, peppers, etc.) were rinsed prior

to placement in a Toter to reduce contamination and odors. Recycling staff coordinated with kitchen staff to transport full gondolas and Toters to the recycling trailer on an as-needed basis.

Figure 13. Cardboard boxes prior to breakdown and recycling gondola outside the kitchen

H. Registration Desk and Event Management Offices

Staff in the main registration area as well as in several temporary offices in conference center rooms generated beverage containers and paper. Recycling containers and empty boxes were placed in these areas upon request and placed in the hallway daily.

Toter containers for paper were placed in front of the registration desks to collect unwanted paper inserts from the registration tote bags. A very small amount of paper was collected in these bins, as relatively few inserts were originally placed in the tote bags. Large containers for bottles and cans were placed near the registration area and entrances to the exhibit hall.

Figure 14. Toter for unwanted paper inserts and containers for beverage containers in registration area

I. Exhibitor Move-Out and Event Breakdown

Toward the end of the exhibition, recycling staff met individually with each exhibitor to remind them of recycling procedures during move-out. In addition, staff walked the exhibit hall instructing exhibitors and contractors to leave boxes of extra hand-out materials along aisles and assisted with transporting items to recycling centers.

At the onset of exhibitor move-out, contractors concurrently broke down exhibit infrastructure. The recycling centers were dismantled immediately, as they were located along key transportation routes for forklifts. Therefore, Toter containers were deployed onto the exhibit hall floor for collection of cardboard and paper (including extra brochures). Cleaning crews moved through the exhibit hall gathering waste and recyclables using large gondolas. Although janitorial staff was encouraged to break down boxes and collect recyclables separately, many gondolas arrived at the recycling trailer mixed with trash and recyclables needed to be separated manually. When break down hours concluded, fork lift operators assisted recycling staff in transporting full gaylords and Toter containers to the recycling trailer.

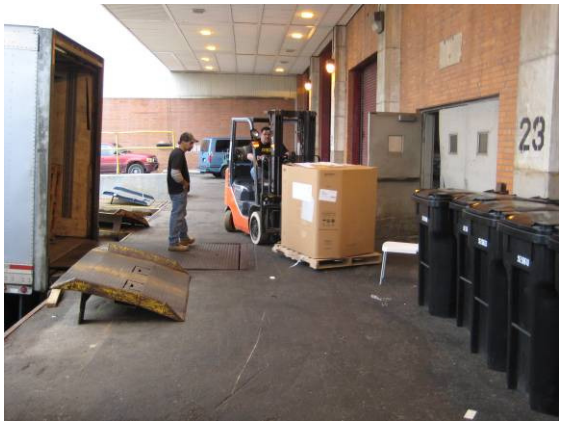


Figure 15. Event break down and loading of full gaylords onto recycling trailer

At the end of the exhibitor move-out hours, recycling staff remained in the exhibit hall to collect recyclable materials such as foam board signage, name tags, and recyclables from the registration desk. More than 150 pounds of foam board signage was transported back to the EPA Region 5 graphic design office for reuse at future events.

Figure 16. Foam board signage was removed after the event for reuse

The trailer was removed on the morning of May 8 and transported to NPR Recycling, Inc. in Romulus, Michigan. All Toters, gaylords, and loose materials were removed, weighed

individually, and processed at the facility. A detailed report with a break down of material weights was provided to EPA the following week.

Figure 17. Loaded trailer ready for removal

III. Outreach and Education Activities

The following is a summary of the outreach and education activities conducted to increase the awareness of waste reduction and recycling.

Pre-Event

- Numerous meetings and site visits were held with event planners, venue managers, and supporting contractors (catering, security, decorators, janitorial, maintenance, etc) to develop and confirm recycling plans.
- The Website, e-mails, and registration materials publicized greening activities.
- Tip Sheets were emailed to exhibitors, presenters, and reception hosts with an overview of waste reduction strategies for packaging, handouts, and booth construction (see Attachment 2 for the exhibitor tip sheet).
- Exhibitors were provided the opportunity to document green practices and receive a certificate from EPA recognizing their efforts.

Event

- Plenary speakers and conference session moderators announced the availability of recycling bins, locations of recycling centers, and materials being collected.
- Recycling staff wearing green t-shirts walked the exhibit hall and concourses to notify participants of recycling procedures and to answer recycling questions.
- Signs were posted on Toter and gaylord containers clearly indicating what materials were acceptable.
- Large overhead signage was hung from the ceiling over recycling centers to help participants locate them easily.
- General announcements were made over the PA system during exhibitor move-in, receptions, and exhibitor move-out reminding participants to recycle.
- Signs were placed at the entrance to the exhibit hall, on conference center concourses, and at recycling center entrances.

Figure 18. Concourse signage summarizing green activities at Cobo Center and recycling center signage

- Special signage was prepared recognizing all recycling planning committee members as well as the recycling provider.

Figure 19. Signage posted at recycling centers recognizing planning committee partners

- Articles appeared in the daily newsletter highlighting greening activities.
- Information on event greening was placed in press releases and provided to press during briefings. One local TV station produced a story on greening at the event and filmed activities at the recycling trailer.

IV. LESSONS LEARNED & RECOMMENDATIONS

During the event, recycling staff made notes and met periodically to discuss strategy and implementation issues. The following lessons learned and recommendations were derived from recycling staff and can be used to help plan future events.

Pre-Event Planning

- Planning should begin 3-4 months prior to the conference with a site assessment and meeting with venue management to define roles and to clarify expectations.
- Waste reduction and recycling information should be included in preliminary marketing information sent to exhibitors.
- The focus on waste reduction and recycling in 2006, along with promotional information and an environmentally-oriented exhibitor base, greatly contributed to the success of 2008 recycling efforts. The 2008 event results should be promoted in 2010, perhaps along with a challenge to improve.
- It is critical to acknowledge and plan for the fact that recycling efforts will require janitorial staff do their job differently. For example, janitors may be required to make separate passes along aisles for waste and recyclables. Obtaining buy-in from managers and union stewards as well as providing adequate time for staff training is essential.
- Attendance at the pre-show meeting by recycling staff was critical to ensure awareness of recycling plans. Verbal recognition of the recycling priority by the venue director during this meeting sent a powerful message to all participating parties of the importance of supporting the plan.
- A detailed understanding of all event-sponsored activities such as receptions, poster sessions, keynote or plenary sessions, office space, breakout session presentations, etc. is critical to ensure adequate planning for recycling container placement. It is important to know beginning and ending times, locations, and expected type and amount of recyclables that may be generated so that appropriate bins and volunteers can be scheduled and dispatched.
- In person follow-up with as many staff, supervisors, and managers involved in working the event (i.e., floor stewards, kitchen staff, trade workers, dock supervisors, janitors, security, etc.) before the event actually starts is critical. Once the event begins, most of these individuals cannot be distracted from their jobs. Also, it was necessary to brief each shift manager, as many times there is little communication between shifts, and the venue may change over as many as three times over a 24-hour period.
- Exhibit halls and receptions generate many different kinds of plastic and plastic-like materials such as shrink wrap, visqueen, vinyl table covers, tape, plastic string and banding, stirrers, cups, bottles, give-a-ways and their packaging, carpet tape and backing, peel off tape from nametags, bubble wrap, packing peanuts, protective plastic sheeting, and other packaging. It is important to determine which of these materials are acceptable by the recycling contractor before the event.
- Greening is a hot topic and good material for local news stories. Be prepared with press releases, a media packet or fact sheet, a spokesperson, and possible photo shoot opportunities to showcase recycling efforts.
- EPA attempted to utilize college student volunteers in the recycling effort. A schedule and short training module (see Attachment 4) was prepared, and lunch vouchers arranged

through Aramark. Recycle Detroit agreed to sponsor the volunteers, as EPA cannot accept such services. Unfortunately, as the conference approached, the students were not available because the school term had ended.

- Although Cobo Center had performed limited recycling at previous events, the center was not equipped to undertake recycling at the level requested by event planners. For this reason, additional assistance was necessary to prepare the venue and to train staff and contractors. In addition, recycling bins were procured by Cobo Center to support concourse recycling. Ten recycling stations (Midpoint International – Recycled Recyclers, Pedestal Series) and forty Rubbermaid recycling containers with lids (23 gallon Slim Jim containers) were purchased before the event (see Figure 11) and functioned well.

Site Operations

1) Event Set-up and Exhibitor Move-in

- Certain wastes being generated during this phase were not wanted by the recycler (i.e., carpet tape backing, bubble wrap, visqueen to protect carpet and Plexiglass panels, non-metallic banding, and carpet cuttings). A significant quantity of this material was generated during exhibit hall set-up and was not recovered. Several phone calls to the recycler were required to clarify what materials were recoverable and marketable.

Figure 20. Carpet cuttings, tape backing, empty tape rolls and visqueen placed over carpet to protect it from fork lifts during set up was not recycled

- Cardboard tubing was too big and unwieldy for gaylords or pallets, making it a challenge to manage and stage in the recycling trailer. Making plans to accommodate large items may be necessary. In the case of the tubing, rolls that were not reused were broken in half and stacked at the front of the trailer.

Figure 21. Carpet rolls stacked at the head of the recycling trailer behind gaylord containers

- All recycling staff should carry two-way radios, gloves, eye protection, and box cutters to assist exhibitors with recycling.
- Specially designed t-shirts with a recycling logo and the words "ASK ME" worked well to highlight people who could help answer recycling questions.
- Recycling and janitorial staff should only remove recyclable materials (i.e., cardboard, shrink wrap, pallets, etc) with the expressed approval of the exhibitor or installer. In many cases, the exhibitor reused the material for re-shipping or left shrink wrapped pallets in place as this provides an extra measure of security for unattended equipment or furniture. In addition, exhibit workers may reuse carpet rolls, visqueen, pallets, or shrink wrap over the course of the show.
- Metal banding should be handled with extreme care (staff used gloves and eye protection to avoid injury), folded, and placed into Toter containers along with scrap metal and food cans.

2) Conference and Exposition

- Toters placed outside the registration desk area did not collect as much paper as expected. This could be because attendees were either not discarding tote bag inserts or separating unwanted materials off site. A number of tote bags and paper inserts were collected from chairs and the floor of the opening plenary session, so one can conclude that some separation took place there.
- Limited amounts of recyclable containers and paper were collected from bins on concourses, event planning offices, and the media room. Because of this, janitorial staff was advised to empty the contents of these containers and consolidate recyclables into larger bags rather than pulling individual bags to conserve liners.
- Since the Toter containers were too large and loud to roll by open classrooms, concourse recycling bins were pulled from hallways into individual reception and special event areas. Additional recycling bins should be set aside and staged to accommodate these events and deployed on an as-needed basis.
- Because Michigan is a deposit law state (carbonated beverage containers have a redeemable 10 cent deposit), special consideration was given to the collection of deposit containers (soda cans and beer bottles) and non-deposit containers (wine, juice and water bottles). The large containers deployed by Aramark were designed to prevent breakage and removal of containers deposited therein, as the deposit can only be collected if the container is not broken.
- Separate ABM janitorial crews were assigned to the concourses and the exhibit hall. In addition, up to three different shifts rotated in and out daily. It was necessary to make all six shift managers and floor wardens aware of recycling procedures. Aramark, which controlled all receptions, concession stands, and kitchen operations, conducted its own clean up operations apart from ABM. Therefore, Aramark janitorial staff was made aware of recycling procedures separately from ABM staff.
- Although recycling bins were clearly marked, many participants ignored signs taped to Toters and instead physically looked into the bins to see what materials were inside prior to choosing where to deposit their item. For this reason, Toter containers were left partially full so people could see what went in them.

- Many exhibitors alternated or rotated new staff between set-up, exhibition, and break-down. Therefore, recycling staff continuously circulated reminding exhibitors of recycling procedures.
- A separate gondola for cardboard was placed outside the kitchen and kitchen staff was asked to break down boxes there as opposed to at the loading dock. This reduced the number of trips made to the loading dock and made off-loading of the cardboard from the gondolas into the trailer easier.
- The head chef in the kitchen was made aware of the recycling procedures and asked to instruct other chefs and food preparers to rinse cans. An additional volunteer should be assigned to the kitchen area to assist with recycling so it does not conflict with normal kitchen operations.
- Food waste was generated in large amounts both before the event began during advance preparation as well as disposal immediately following receptions. The event generating the most food waste was the opening night reception, which hosted several large fresh fruit, vegetable, and cheese buffets. All unconsumed material was discarded and represented over 200 pounds of waste. Had the menu been known beforehand, it is possible that leftover platters could have been donated.

Figure 22. Cheese, fruit and vegetable buffet waste from the opening reception

- Catering staff moved very quickly to clean up reception areas after events. This made recovery and recycling of beverage containers left on both special reception tables and exhibitor tables difficult, as few participants used the recycling centers. Temporary wait staff was brought in for these events and need to be instructed on recycling quickly.
- A detailed schedule of all receptions along with anticipated menus should be obtained prior to the event so that adequate planning to minimize waste and maximize recycling at these events can be conducted.
- It was important for attendees to see recycling staff and volunteers maintaining recycling centers and removing contamination from bins. Several comments were made by attendees about the high level of attention paid to recycling. Active participation by staff encouraged active participation by attendees.
- Recycling reminders over the PA system in the exhibit hall were well received, though not many people could hear them over the noise in the exhibit hall.

- It is important to have clearly marked garbage cans near recycling bins, but it is critical that participants see the recycling bins first.
- Signage secured directly on the recycling bins is essential to prevent contamination. If contaminants such as coffee cups, stirrers, lids, or flatware begin to accumulate in bins, they serve as a magnet for additional undesirable materials. Recycling staff needs to be armed and ready with paper, tape and markers to quickly change signage as bins and Toters are relocated to different events and potential contaminants change.
- Several environmentally friendly products were deployed at special events, receptions, and in concession areas. One area of confusion for participants was as to whether these materials, such as biodegradable forks/knives/spoons, molded pulp paper food trays, or small plastic water cups were recyclable. Because composting facilities were not locally available, this material was not collected and became contamination in recycling containers.

Figure 23. Biodegradable or compostable flatware, plates, trays and cups were used extensively during receptions and concessions

- Limited contamination in recycling bins was encountered from give-a-ways such as cubicle clips, pens, and magnets. Volunteers staged at recycling centers would have helped prevent contamination by these materials.
- Black cardboard waste baskets given to each exhibitor were recyclable, but waste could have been further reduced by providing reusable cans.
- Exhibitors recognized for greening efforts were very proud and appreciative, with many prominently displaying their certificates. Nonetheless, some exhibitors claimed they were unaware of the program as exhibit staffers were often not the staff receiving the pre-show promotional material. It is recommended that additional efforts be made to promote future recognition programs.
- On some days, janitorial staff was sent home early due to small quantities of waste being generated, which caused additional work for recycling staff.
- Dedicated volunteers should be assigned to the compactor or waste container to log waste generation data (e.g., number of bags, source, weight) and separate recyclable materials. This station should be covered during all three janitorial shifts, including late at night when sweeps are conducted.

3) Exhibitor Move-out and Event Breakdown

- Exhibit workers and fork lifts rapidly began to remove carpet, furniture, signage, partitions, and curtains immediately upon closure of the exhibit hall. As a result, the

recycling centers were dismantled immediately and were not able to be utilized during move-out. Most recyclable material was collected along with garbage by janitorial staff moving through the exhibit hall with gondolas or separated out of the trash on the loading dock. Contamination could have been reduced by dedicating gondolas for recyclables only.

- Paperboard booth placards with the exhibitor name and booth number should not be removed for recycling until all boxes and materials have been removed from the hall. These are needed by contractors to locate and identify materials for shipping back to the exhibitor.
- One exhibitor returned several hours after exhibit hall closure to retrieve several boxes of handout materials which had already been picked up by recycling staff. Fortunately, because the materials were left boxed and stacked on skids in the recycling trailer, these items were able to be retrieved and returned.
- Some poster session and transaction forum participants returned hours after their events to collect materials. Unfortunately, many posters, business cards, push pins, handouts, and storage boxes had been removed and left on the floor by workers breaking down the event. A clear understanding of deadline retrieval times is needed so that posters and other materials are not accidentally recycled or disposed.

Figure 24. Boxes of undistributed brochures and promotional materials in the recycling trailer

- A market for vinyl table covering material should be identified, as significant volume was generated and disposed.

Figure 25. Vinyl table covering deemed un-recyclable by the recycling contractor and not recovered

- More extensive badge collection receptacles should be placed at exits to both the exhibit hall and convention center. Just over 100 badges and lanyards were recovered from over 5000 participants.
- If possible, waste reduction impacts (i.e., not printing an attendee list, which saved thousands of pages of paper) should be estimated. In addition, reuse of materials such as foam board signage and give-a-ways were not able to be captured in the WARM analysis.

For Additional Information

This report was prepared by EPA Region 5. For additional information or questions, contact Briana Bill (bill.briana@epa.gov), Shelly Heger (heger.michelle@epa.gov), or Paul Ruesch (ruesch.paul@epa.gov).

V. APPENDICES

Appendix	Description
A	Event Recycling Plan
B	Waste and Recyclables Generation Charts
C	Greenhouse Gas Savings Calculations

VI. ATTACHMENTS

Attachment	Description
1	Waste/recycling Assessment Checklist
2	Exhibitor Tip Sheet
3	Recycling Planning Meeting Agenda
4	Volunteer Information Sheet
5	Pre-Show Meeting Agenda and Fact Sheet
6	Waste Log Sheet

Appendix A

Event Recycling Plan

BROWNFIELDS 2008
COBO CENTER - DETROIT, MI
RECYCLING PLAN

Overview

The following is a recycling plan for the National Brownfields Conference to be held at Cobo Center from May 4-7, 2008. Over 300 exhibitors and 5000 participants are expected at the event. The plan was developed at a meeting held on April 3rd in Detroit in cooperation with the City of Detroit Department of Environmental Affairs, Cobo Center management, Recycle Detroit, NPR Recycling, Inc., Aramark Corporation, ABM Janitorial Service, SRA International, the Bridge Group and EPA Region 5. A complete list of the recycling planning committee is found in *Attachment A*.

The recycling activities at the conference will focus on the three main stages of event:

Event Stage	Dates / Times
Exhibitor Move-in	May 4, 8:00am - 5:00pm May 5, 7:30am - 9:30am
Conference & Exhibition (including plenary, session, special event)	May 5, 10:15am – 7:30pm May 6, 8:00am – 7:00pm May 7, 8:30am – 12:00pm
Exhibitor Move-out	May 7, 11:00am – 6:00pm

Recycling activities will be coordinated and overseen by EPA Region 5 in coordination with ABM Janitorial Service and NPR Recycling, Inc. This document includes the following components for each stage:

A. Materials to be collected
B. Recycling procedures & logistics
C. Outreach / education activities
D. Staffing plan

At the conclusion of the conference, a summary report will be developed by EPA (in coordination with the recycling planning committee) which will include a summary of recycling program implementation, the amount of recyclables recovered, and an overall recycling rate for the event. The report will also highlight successes, identify areas for improvement, and make recommendations for future National Brownfields Conferences.

Though exhibitors have been notified of waste reduction strategies and asked to minimize incoming material packaging, it is anticipated that a significant quantity of clean, marketable material will be generated, collected and recycled. The recycling strategy and protocols documented during the event may serve as a roadmap for future recycling activities at Cobo Center in coordination with their contractors Aramark and ABM Janitorial Services.

I. EXHIBITOR MOVE-IN

A. Materials Collected

The following materials will be specifically targeted for collection during set up of exhibits in the Wayne and Oakland exhibit halls:

Material	Source
Cardboard	Exhibit, promotional materials packaging
Paper	Packaging and shipping
Metal	Pallet and container box shipments
Plastic shrink wrap	Pallet and shipments
Aluminum and plastic containers	Crews

B. Recycling Procedures

A semi trailer will be staged on the loading dock on Level 1 outside Wayne Hall immediately adjacent to the City of Detroit trash compactor truck currently parked next to the trash compactor (see Figure 1). The trailer will be delivered on Friday, May 2nd and will require special permission from Cobo Center to remain there until the Wednesday, May 7th. A parking pass will be required for this trailer.

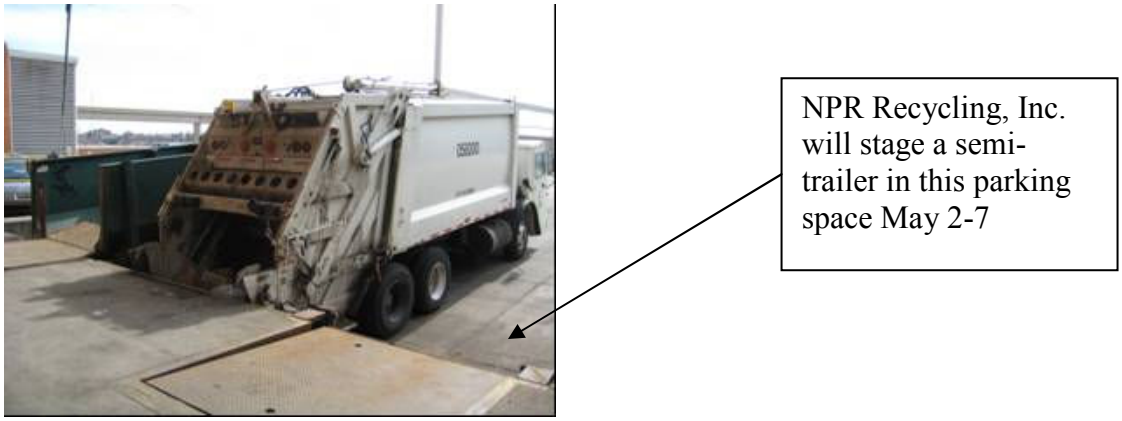


Figure 1. Staging location for recycling trailer during event

The preliminary semi-trailer will contain 10 wooden shipping pallets, 10 Gaylord container boxes, and 20 clean Toter containers with wheels. An order will be sent to NPR the week of April 28th to confirm needed quantities of supplies and logistics for trailer drop-off and staging. In the event that the trailer is filled or additional pallets/containers are needed during the event, EPA will contact NPR Recycling directly to arrange for removal/replacement.

The Toter containers will be deployed onto the exhibit hall for collection of metal banding, plastic wrapping and paper during set up. Set up crews will be encouraged to break down cardboard boxes, transport it to designated collection areas, and stack it neatly within Gaylord boxes mounted on shipping pallets staged alongside the NORTH and SOUTH walls of the Wayne and Oakland Hall. Depending on availability, ABM staff will utilize gondolas to assist with transport of cardboard to staging areas.

In addition, exhibitors and contractors will be encouraged to coil metal banding and compact plastic wrapping into the Toter containers which will be staged throughout the exhibit areas. ABM, EPA and Recycle Detroit volunteers will assist exhibitors and contractors with staging, collection and transport of full bins to the NORTH and SOUTH walls of Wayne and Oakland Halls. After set-up hours conclude, EPA staff will coordinate with ABM crews to transport the full Gaylords and Toter containers to the recycling trailer staged on the loading dock. This will ensure that there is no conflict with any incoming shipments or materials during move-in hours.

At the end of day, empty Toter containers will be transported to the Recycling Centers which will be located midway along the NORTH and SOUTH walls of the exhibit hall for collections during the exhibition the next day (see Section II. Conference & Exhibition). All garbage generated at the event will be weighed on an ongoing basis at the compactors with a hanging scale and logged prior to placement in the compactor or garbage truck to facilitate calculation of a recycling rate for the overall event.

C. Outreach / Education Plan

Upon check-in, all exhibitors will receive a notice reminding them of the recycling opportunities and procedures in their Move-In Bulletin. In addition, volunteers wearing green t-shirts with the recycling logo will walk around the exhibit hall reminding exhibitors and contractors to follow recycling procedures and assist with transporting materials to designated recycling areas. Volunteers will have box cutters to assist with breaking down cardboard boxes. Signage will be posted both on Toter or Gaylord containers clearly marking what materials are to be placed in them as well as along the NORTH and SOUTH walls of the exhibit halls to identify staging areas for cardboard.

D. Staffing Plan

SUNDAY, MAY 4th, 8:00AM – 5:00PM

Organization	Staff
EPA	P. Ruesch, B. Bill
ABM Janitorial	D. Gutierrez, Hall Supv, Dock Supv + 2
Recycle Detroit	S. Kubik + 2
Volunteers	8

MONDAY, MAY 5th, 8:00AM – 9:30AM

Organization	Staff
EPA	P. Ruesch, B. Bill
ABM Janitorial	D. Gutierrez, Hall Supv, Dock Supv

Recycle Detroit will provide volunteers representing various local student and environmental organizations to staff the event according to the Volunteer Staffing Plan (see *Attachment D*). Volunteers will receive training, a safety briefing, and will be assigned to a specific area of the exhibit hall. Activities will include explaining recycling procedures, assisting exhibitors and visitors with locating appropriate bins and collection areas, and notifying EPA staff with any issues or problems as they arise.

II. CONFERENCE & EXHIBITION

A. Materials Collected

Exhibit Hall
The following materials will be specifically targeted for collection inside the Wayne and Oakland Halls during the exhibition:

Material	Source
Cardboard	Promotional materials packaging
Paper	Attendees, exhibitors
Aluminum and plastic containers	Consumption

Conference Center Concourses
The following materials will be specifically targeted for collection on the Level 1-3 concourses during the sessions:

Material	Source
Paper	Attendees
Aluminum and plastic containers	Attendee consumption

B. Recycling Procedures

Exhibit Hall
Two Recycling Centers will have been set up the day before midway along the NORTH and SOUTH walls of the exhibit hall for collections during the exhibition. See *Attachment B* for the configuration of the Recycling Centers. Toter containers will be utilized for collection of paper, aluminum cans and plastic bottles. A Gaylord container or large gondola will be staged in each Recycling Center to stack cardboard boxes. In addition, 2 garbage cans will be placed alongside the recycle bins to minimize contamination in the recycling stream.

EPA and volunteers will encourage exhibitors and participants to participate in the recycling effort and transport materials to the Centers. After exhibit hours conclude, or as containers become full, EPA staff will coordinate with ABM crews to transport full Gaylords and Toter containers to the recycling trailer staged on the loading dock and replenish the Recycling Centers with empty bins.

Recycling containers for commingled bottles/cans and paper will be placed throughout the exhibit hall alongside or nearby garbage cans by Cobo Center. ABM crews will utilize gondolas or Toters to collect and consolidate paper and commingled bottles/cans and transport them to the recycling trailer on the loading dock. All garbage generated during the event will be weighed and logged prior to disposal.

Conference Center Concourses
Recycling containers for commingled bottles/cans and paper will be placed throughout the conference center concourses alongside or nearby garbage cans by Cobo Center. ABM crews will utilize gondolas or Toters to collect and consolidate paper and commingled bottles/cans and transport them to the recycling trailer on the loading dock.

Special Events / Receptions
Large recycling containers for commingled bottles/cans will be placed outside the room exits, nearby garbage cans and/or alongside cash bars by volunteers for Aramark. At the conclusion of the events, Aramark and volunteers will transport commingled bottles/cans to the loading dock.

Concession Areas
Large recycling containers (see Figure 2) will be prominently placed in the concession areas within the exhibition hall and outside the opening session(s) to capture co-mingled bottles and cans from participants. These containers are owned by Aramark and will be picked up separately at the conclusion of the event by Recy-clean, a contractor to Aramark.

Figure 2. Aramark recycling collection containers

C. Outreach / Education Plan
During the conference, both plenary speakers and conference session moderators will be prompted to announce the availability of recycling bins, the locations of the Recycling Centers in the exhibit hall, and the materials being collected.

In addition, volunteers wearing green t-shirts with the recycling logo will be walking around the exhibit hall and outside plenary sessions to notify attendees of recycling procedures and assist with locating bins. Signage will be posted both on Toter containers clearly marking what materials are to be placed in them within the Recycling Centers and signs will also be located within the exhibition hall floor and hanging from the ceiling (see *Attachment C* for signage locations in exhibit hall) to help attendees locate Recycling Centers.

D. Staffing Plan

MONDAY, MAY 5th, 10:15AM – 7:30PM
TUESDAY, MAY 6th, 8:00AM – 7:30PM
WEDNESDAY, MAY 7th, 8:30AM – 12:00PM

Organization	Staff
EPA	P. Ruesch, B. Bill, M. Heger
ABM Janitorial	D. Gutierrez, Hall Clean Supv, Dock Supv
Recycle Detroit	S. Kubik + 4
Volunteers	6

III. EXHIBITOR MOVE-OUT

A. Materials Collected

The following materials will be specifically targeted for collection during break down of exhibits in the Wayne and Oakland exhibit halls:

Material	Source
Cardboard	Exhibit, promotional materials packaging
Paper	Extra brochures, promo materials
Wood	Pallets, dimensional lumber from crates
Aluminum and plastic containers	Crew consumption

B. Recycling Procedures

The semi trailer will remain staged on the loading dock on Level 1 outside Wayne Hall immediately adjacent to the City of Detroit trash compactor. The trailer will be removed the afternoon of Wednesday, May 7th upon request to NPR Recycling, Inc. by EPA.

Toter containers will be deployed onto the exhibit hall for collection of cardboard and paper during breakdown. Set up crews will be encouraged to break down cardboard boxes, transport it to designated collection areas, and stack it neatly within Gaylord boxes mounted on shipping pallets staged alongside the NORTH and SOUTH walls of the Wayne and Oakland Hall. Depending on availability, volunteers or ABM staff will utilize gondolas to assist with transport of cardboard to staging areas.

ABM, EPA, and volunteers will assist exhibitors and contractors with staging, collection and transport of full bins to the NORTH and SOUTH walls of Wayne and Oakland Halls. After break down hours conclude, EPA staff will coordinate with ABM crews to transport the full Gaylords and Toter containers to the recycling trailer staged on the loading dock. This will ensure that there is no conflict with any outgoing shipments or materials during move-out hours.

Full Toter containers will be transported from the Recycling Centers in the exhibit hall to the recycling trailer. All garbage generated during the event will be weighed and logged prior to disposal.

C. Outreach / Education Plan

During the exhibition, EPA staff and/or volunteers will have met individually with each exhibitor and provided them with a notice reminding them of recycling opportunities and procedures. In addition, volunteers wearing green t-shirts ill be walking around the exhibit hall reminding exhibitors and contractors to follow recycling procedures and assist with transporting materials to the designated recycling areas. Signage will be posted both on Toter and Gaylord containers clearly marking what materials are to be placed in them as well as along the NORTH and SOUTH walls of the exhibit halls to identify staging areas for cardboard.

D. Staffing Plan

WEDNESDAY, MAY 7th, 11:00AM – 6:00PM

Organization	Staff
EPA	P. Ruesch, B. Bill, M. Heger
ABM Janitorial	D. Gutierrez, Hall Clean Supv, Dock Supv

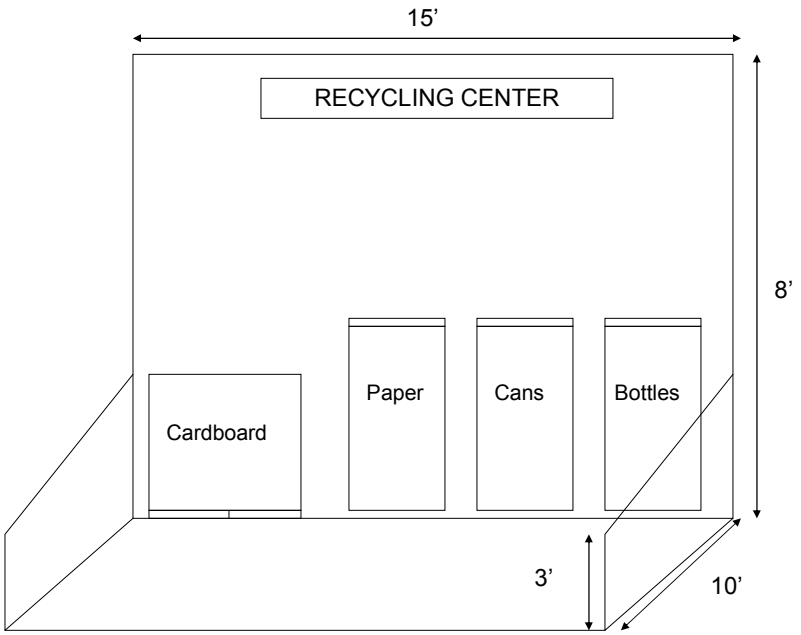
IV. ATTACHMENTS

Attachment	Description
A	Recycling Planning Committee Roster
B	Recycling Center Layout & Configuration
C	Wayne and Oakland Hall Signage Inventory & Locations
D	Volunteer Staffing Plan

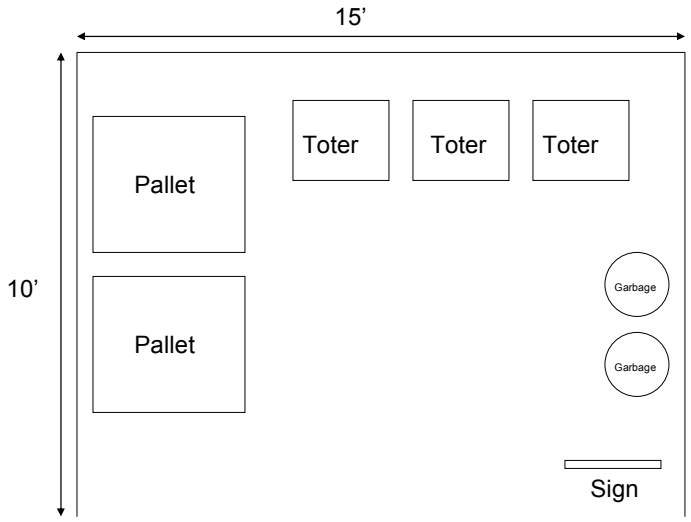
Recycling Planning Committee
Cobo Center - Brownfields 2008

Name	Organization	Phone	Email
Debra Gutierrez	ABM Janitorial Service	313/718-0137	debra.gutierrez@abm.com
Andrew VanDeweghe	Aramark Corp.	313/567-9111	vandeweghe-andrew@aramark.com
Rick Albers	Aramark Corp.	313/567-8208	
Luke Durocher	Bridge Group	703/425-1186	luke@tbgevents.com
Denise Vaughn	COBO Center	313/877-8262	vaughnd@detroitmi.gov
Rajiv Chopra	COBO Center	313/877-8201	choprar@detroitmi.gov
Willa Williams	Detroit DOE	313/471-5119	WILLIAMSW@detroitmi.gov
William Hischke	Detroit DOE	313/471-5100	hischke@detroitmi.gov
Paul Ruesch	EPA Region 5	312/886-7898	ruesch.paul@epa.gov
Briana Bill	EPA Region 5	312/353-6646	bill.briana@epa.gov
Patrick Durham	NPR Recycling	734/721-0197	pat@nprrecycling.com
Joe Demaree	NPR Recycling	734/721-0197	joe@nprrecycling.com
Sarah Kubik	Recycle Detroit	313/770-1571	sarah@recycledetroit.com
Kelly Hamilton	SRA International	703/284-6177	kelly_hamilton@sra.com

Recycling Center – Front View



Recycling Center – Plan View



Signage Inventory
Cobo Center - Brownfields 2008

Type	Number	Location
A	1	Hanging - Oakland
A	1	Hanging - Wayne
B	2	Aisle/Easel - Oakland
C	2	Aisle/Easel - Oakland
B	2	Aisle/Easel - Wayne
C	2	Aisle/Easel - Wayne
D	2	Recycling Center Backdrop
E	2	Recycling Center Entry/Easel
F	2	Recycling Center
G	2	Recycling Center
Total	***18***	

Volunteer Staffing Plan
Cobo Center - Brownfields 2008

Contact	Org	Phone	Email	SHIFT							
				1	2	3	4	5	6	7	8
Paul Ruesch	EPA			x	x	x	x	x	x	x	x
Briana Bill	EPA			x	x	x	x	x	x	x	x
Michelle Heger	EPA			x	x	x	x	x	x	x	x
Maria Zingas	Michigan DEQ	586/753-3872	zingasm@michigan.gov			x				x	
Sarah Kubik	Recycle Detroit	313/770-1571	sarah@recycledetroit.com								
Julia Koslow	Univ. of Michigan	202-277-0895	jkoslow@umich.edu					x			
			Total:	3	3	4	3	4	3	4	3

Shift	Date	Start	End
1	Sunday	8:00am	12:00pm
2	Sunday	1:00pm	6:00pm
3	Monday	8:00am	12:00pm
4	Monday	12:00pm	7:30pm
5	Tuesday	8:00am	12:00pm
6	Tuesday	12:00pm	7:30pm
7	Wednesday	8:30am	12:00pm
8	Wednesday	12:00pm	4:00pm

Appendix B

Waste Generation & Recycling Figures

Waste Generation
Brownfields 2008

Date	Time	Bags	Weight (lbs)	Notes
DAY 1				
5-May	10:30	7	75.5	
5-May	11:00	4	26.5	
5-May	12:45	2	8	
5-May	12:50	12	111	
5-May	14:00	14	119.5	6 bags, 30.5lbs from concourse crew
5-May	14:20	2	14	kitchen
5-May	14:45	12	120.5	2 bags, 13 lbs Wayne concession
5-May	15:15	4	18.5	
5-May	15:40	5	17	
5-May	16:00	19	117.5	8bags, 58 lbs Transaction forum
5-May	17:45	1	17	reception floor
5-May	18:25	1	21.5	reception floor
5-May	19:10	16	116.5	reception cleanup
		Total:	***783 lbs***	
DAY 2				
6-May	8:30	6	39	
6-May	9:00	5	42	
6-May	9:30	6	51	
6-May	10:30	12	79	
6-May	11:00	5	96.5	
6-May	11:40	2	11	
6-May	13:00	4	20.5	2 bags, 10lbs Baskin Robbins, Wayne concession
6-May	13:20	13	397.5	3 gondolas, 5 bags, 307lbs kitchen
6-May	13:50	8	52	Wayne concession
6-May	14:15	6	52.5	Field trip box lunches
6-May	14:20	18	128	
6-May	15:00	15	119.5	
6-May	15:30	3	40.5	
6-May	15:40	4	34	
6-May	16:10	11	105	
6-May	19:45	3	188	2 gondolas reception veg/cheese buffets
		Total:	***1456 lbs***	
DAY 3				
7-May	800	11	85	
7-May	830	31	238	midnight shift cleanup
7-May	930	3	19	
7-May	1020	11	89	
7-May	1130	1	9	
7-May	1300	8	84	
				524 lbs
	Total:	***285***	***2763***	***1.38 short tons***

Daily Recycling Generation - UBCs
Brownfields 2008

Date	Weight (lbs)	Notes
DAY 1		
5-May	70	beer bottles
5-May	90	wine/juice bottles
5-May	15	aluminum cans
	175 lbs	
DAY 2		
6-May	140	beer bottles
6-May	140	wine/juice bottles
6-May	24	cans
	304 lbs	
DAY 3		
7-May	100	beer bottles
7-May	100	wine/juice bottles
7-May	11	cans
	211 lbs	
Total:	***690***	

Recycling Figures
Brownfields 2008

Material	Recycled (lbs)	Bags/Boxes	Toters	Pallets	Gaylords	Notes
Paper	3350		6	1	1	
Shrink Wrap	170		4		3	
Plastic Bottles	230		2		1	
Cardboard	960		5	2	5	
Metal	60		1			banding, food cans
Aluminum Cans	70	5				
Glass	790	30	2			
Signage Board	150			1		reuse
Give-a-ways	50	2				reuse
Total:	***5830***	***37***	***20***	***4***	***10***	***2.915 short tons***

Appendix C

WARM Greenhouse Gas Equivalencies Evaluation Results

WARM Greenhouse Gas Equivalencies Evaluation Results

EPA staff used the EPA's Waste Reduction Model[1] to calculate the total metric tons of carbon equivalent (MTCE) saved through the recycling efforts implemented during the conference. "WARM was developed to assist solid waste managers in determining the greenhouse gas impacts of their waste management practices. The model compares greenhouse gas and energy impacts of landfilling, recycling, incineration, composting, and source reduction."[2] The following chart shows the weights of seven different types of material collected for recycling or reuse during the three day conference. The chart also indicates the corresponding category used in WARM with the conversion of pounds (collected day-of) to short tons (input to model).

Material	Recycled During Conference (lbs)	Short tons	WARM category
Paper	3350	1.675	Paper (primarily from offices)
Shrink wrap	170	0.085	LDPE
Plastic bottles	230	0.12	PET
Cardboard	960	0.48	Cardboard
Steel cans and metal banding	60	0.03	Mixed metals
Aluminum cans	70	0.035	Aluminum cans
Glass	790	0.395	Mixed glass
Sign boards*	150	0.075	N/A
Give-a-ways*	50	0.025	N/A
Total:	***5830***		

Table 1. Recycled materials
** Signs and give-a-ways were collected for reuse*

Using the above inputs to the model, the total change in greenhouse gas emissions for the Brownfields 2008 conference was -2 MTCE. The negative value indicates an emission reduction. Therefore, two metric tons of carbon equivalent were saved by recycling rather than combusting over 5600 pounds of recyclable material at the Detroit area waste-to-energy incinerator. This information is summarized in the table below. See Attachment A of this document for the complete Greenhouse Gas (GHG) Emissions Analysis – Summary Report and GHG Emission Factors from WARM.

	Metric Tons of Carbon Equivalent (MTCE)
With combustion practices	0
With recycling efforts	-2
Total MTCE savings:	***2***

Table 2. Summary of WARM Results

For an accurate comparison to future Brownfields conferences, it is important to note that WARM did not capture those materials that were taken back to Region 5 offices for reuse such

[1] U.S. EPA, *WAste Reduction Model (WARM),* http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html (August 2008).
[2] U.S. EPA, *Waste Home – Tools*, http://www.epa.gov/climatechange/wycd/waste/tools.html (August 2008).

as over 100 nametags, 150 pounds of foam sign board, and 50 pounds of give-a-ways. Furthermore, efforts taken to reduce waste before the beginning of the conference were not quantified and the total amount of recycling may have increased (and be reflected in greater MTCE savings) if more material had entered Cobo from the onset. If, for subsequent conferences, increased efforts are taken to reduce waste before the conference, these additional efforts should be quantified in some way so comparisons can be made and improvements documented. The number of attendees is another factor to consider when comparing the Brownfields 2008 Conference with future Brownfields conferences.

The MTCE calculated with WARM was then used as an input to the EPA's Greenhouse Gas Calculator[3] in order to express quantities of greenhouse gases in terms of easy to understand metrics such as number of cars, gallons of gasoline, acres of forest, etc. The following is a summary of the equivalency results. The original Web based results can be found in Attachment A.

Two Metric Tons of Carbon Equivalent is equivalent to one of the following:

- Annual greenhouse gas emissions from **1.3** passenger vehicles.
- CO_2 emissions from **832** gallons of gasoline consumed.
- CO_2 emissions from **17.1** barrels of oil consumed.
- CO_2 emissions from **0.1** tanker trucks' worth of gasoline.
- CO_2 emissions from the *electricity use* of **0.97** homes for one year.
- CO_2 emissions from the *energy use* of **0.65** homes for one year.
- Carbon sequestered by **188** tree seedlings grown for 10 years.
- Carbon sequestered annually by **1.7** acres of pine or fir forests.
- Carbon sequestered annually by **0.05** acres of forest preserved from deforestation.
- CO_2 emissions from **306** propane cylinders used for home barbeques.
- Greenhouse gas emissions avoided by recycling **2.5** tons of waste instead of sending it to the landfill.

In addition to the above recycling figures, the 2008 Brownfields conference avoided over five tons of paper by eliminating the attendee list normally distributed to all attendees. This waste reduction activity saved over 10,000 pounds of paper. With the assumption in WARM that this paper would have been recycled at the Brownfields 2006 meeting in Boston, Brownfields 2008 in Detroit saved over seven MTCE by source reducing this paper. This value may be a bit high because not all five tons of participant lists would have been recycled – some would have been taken home by participants or never thrown out.

Attachment A:

- Greenhouse Gas (GHG) Emissions Analysis – Summary Report
- GHG Emission Factors
- Greenhouse Gas Equivalencies Calculator Web based results

[3] U.S. EPA, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/cleanenergy/energy-resources/calculator.html (August 2008).

GHG Emissions Analysis -- Summary Report

(Version 8, 8/06)

Analysis of GHG Emissions from Waste Management

GHG Emissions from Baseline Waste Management (MTCE): 0

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCE
Aluminum Cans	0	0	0.04	N/A	0
Glass	0	0	0.40	N/A	0
LDPE	0	0	0.09	N/A	0
PET	0	0	0.12	N/A	0
Corrugated Boxes	0	0	0.48	N/A	0
Mixed Paper (primarily from offices)	0	0	1.68	N/A	0
Mixed Metals	0	0	0.03	N/A	0

GHG Emissions from Alternative Waste Management Scenario (MTCE): -2

Material	Tons Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total MTCE
Aluminum Cans	0	0.04	0	0	N/A	0
Glass	0	0.40	0	0	N/A	0
LDPE	0	0.09	0	0	N/A	0
PET	0	0.12	0	0	N/A	0
Corrugated Boxes	0	0.48	0	0	N/A	0
Mixed Paper (primarily from offices)	N/A	1.68	0	0	N/A	-2
Mixed Metals	N/A	0.03	0	0	N/A	0

Total Change in GHG Emissions: -2 MTCE

Note: A negative value indicates an emission reduction; a positive value indicates an emission increase.

a) For an explanation of the methodology used to develop emission factors, see EPA report: Greenhouse Gas Emissions from Management of Selected Materials in Municipal Solid Waste (EPA530-R-98-013) -- available on the Internet at http://www.epa.gov/epaoswer/non-hw/muncpl/ghg/greengas.pdf (1.1 Mb PDF file). Please note that some of the emission factors used to generate these results do not match those presented in the report due to recent additions and/or revisions. A 3rd edition of the report will be available in early Fall of 2006, which will include the latest emission factors.

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

c) Total emissions estimates provided by this model may not sum due to independent rounding.

Back to WARM | View Emission Factors

Greening Report - Appendix B

(Version 8, 8/06)

The emission factors presented in this table reflect national average landfill gas recovery practices and transportat distances.

Greenhouse Gas Emission Factors (MTCE per short ton)

Material	Source Reduction	Recycling	Landfilling, National Average	Landfilling, No Recovery	Landfilling, Flaring	Landfilling, Energy Recovery	Combustion	Compost
Aluminum Cans	-2.24	-3.7	0.01	0.01	0.01	0.01	0.02	N/A
Steel Cans	-0.87	-0.49	0.01	0.01	0.01	0.01	-0.42	N/A
Copper Wire	-2	-1.34	0.01	0.01	0.01	0.01	0.01	N/A
Glass	-0.16	-0.08	0.01	0.01	0.01	0.01	0.01	N/A
HDPE	-0.49	-0.38	0.01	0.01	0.01	0.01	0.25	N/A
LDPE	-0.62	-0.46	0.01	0.01	0.01	0.01	0.25	N/A
PET	-0.57	-0.42	0.01	0.01	0.01	0.01	0.3	N/A
Corrugated Box	-1.52	-0.85	0.11	0.4	-0.06	-0.13	-0.18	N/A
Magazines	-2.36	-0.84	-0.08	0.04	-0.15	-0.18	-0.13	N/A
Newspaper	-1.33	-0.76	-0.24	-0.13	-0.29	-0.32	-0.2	N/A
Office Paper	-2.18	-0.78	0.53	1.05	0.24	0.11	-0.17	N/A
Phonebook	-1.72	-0.72	-0.24	-0.13	-0.29	-0.32	-0.2	N/A
Textbook	-2.5	-0.85	0.53	1.05	0.24	0.11	-0.17	N/A
Dimensional Lumber	-0.55	-0.67	-0.13	0.02	-0.22	-0.26	-0.21	N/A
Fiberboard	-0.6	-0.67	-0.13	0.02	-0.22	-0.26	-0.21	N/A
Food Waste	N/A	N/A	0.2	0.39	0.09	0.04	-0.05	-0.05
Yard Waste	N/A	N/A	-0.06	-0.01	-0.19	-0.21	-0.06	-0.05
Grass	N/A	N/A	0	0.06	-0.04	-0.06	-0.06	-0.05
Leaves	N/A	N/A	-0.05	-0.08	-0.27	-0.3	-0.06	-0.05
Branches	N/A	N/A	-0.13	0.02	-0.22	-0.26	-0.06	-0.05
Mixed Paper Board	N/A	-0.96	0.09	0.38	-0.06	-0.13	-0.18	N/A
Mixed Paper - Residential	N/A	-0.96	0.07	0.34	-0.08	-0.15	-0.18	N/A
Mixed Paper - Office	N/A	-0.93	0.13	0.4	-0.03	-0.1	-0.16	N/A
Mixed Metals	N/A	-1.43	0.01	0.01	0.01	0.01	-0.29	N/A
Mixed Plastics	N/A	-0.41	0.01	0.01	0.01	0.01	0.27	N/A

Mixed Recyclables	N/A	-0.79	0.04	0.26	-0.08	-0.14	-0.17	N/A
Mixed Organics	N/A	N/A	0.06	0.17	-0.06	-0.1	-0.05	-0.05
MixedMSW	N/A	N/A	0.12	0.43	0.04	-0.02	-0.03	N/A
Carpets	-1.09	-1.96	0.01	0.01	0.01	0.01	0.11	N/A
PCs	-15.13	-0.62	0.01	0.01	0.01	0.01	-0.05	N/A
ClayBricks	-0.08	N/A	0.01	0.01	0.01	0.01	N/A	N/A
Aggregate	N/A	0	0.01	0.01	0.01	0.01	N/A	N/A
FlyAsh	N/A	-0.24	0.01	0.01	0.01	0.01	N/A	N/A
Tires	-1.09	-0.5	0.01	0.01	0.01	0.01	0.05	N/A

Back to WARM

http://www.epa.gov/cleanenergy/energy-resources/calculator.html
Last updated on Monday, February 11th, 2008.

Clean Energy

Greenhouse Gas Equivalencies Calculator

Did you ever wonder what reducing carbon dioxide (CO_2) emissions by 1 million metric tons means in everyday terms? The following equivalency calculator can help you understand just that.

For example, it can be difficult to visualize what a "metric ton of carbon dioxide" really is. This calculator will translate rather difficult to understand statements into more commonplace terms, such as "is equivalent to avoiding the carbon dioxide emissions of X number of cars annually."

This equivalency calculator may be useful in communicating your greenhouse gas reduction strategy, reduction targets, or other initiatives aimed at reducing GHG emissions.

Other Calculators

There are a number of other web-based calculators that can estimate greenhouse gas emission reductions for

- individuals and households
- waste, and
- transportation.

For basic information and details on greenhouse gas emissions, visit the Emissions section of EPA's climate change site.

Enter Your Data Below

There are two options for entering data into this calculator.

Option 1:

1. If you are starting with data in units of "gallons of gasoline consumed," "kilowatt-hours of electricity," "therms of natural gas," or "passenger vehicles per year", use this option.
2. Enter a quantity and pick the desired unit below; and
3. Click on the "Calculate Equivalent**" button to convert your value to Carbon Dioxide Equivalent.

- choose a unit - Calculate Equivalent**

? Click Here for Calculations and References

**This calculator uses an eGRID non-baseload national average emissions rate when calculating "kilowatt-hours of electricity" to "carbon dioxide equivalent".

Option 2:

If you have already estimated the quantity of avoided emissions reductions (e.g., metric tons of carbon dioxide equivalent), you can input the amount of avoided emissions and select the appropriate units for the corresponding greenhouse gas type.

Amount	Unit	Gas

	Tons	CO_2 - Carbon Dioxide
	Tons	CH_4 - Methane
	Tons	N_2O - Nitrous Oxide
	Tons	HFC-23 - Hydrofluorocarbon gases
	Tons	CF4 - Perfluorocarbon gases
	Tons	SF_6 - Sulfur Hexafluoride
2	Metric Tons	Carbon Equivalent

Calculate Equivalencies | Clear Fields

*If your estimated emissions of methane, nitrous oxide, or other non-CO_2 gases are already expressed in CO_2 or carbon equivalents, please enter your figures in the row for CO_2 or carbon equivalent.

The sum of the greenhouse gas emissions you entered above is 7.3 Metric Tons of Carbon Dioxide Equivalent.

This is equivalent to one of the following:

Equivalency Results

Click on the question mark **?** link to read the explanation of that particular calculation. Read about all calculations.

The information you entered above is equivalent to one of the following statements:

Annual greenhouse gas emissions from 1.3 passenger vehicles **?** *(click to read more about this calculation)*

CO_2 emissions from 832 gallons of gasoline consumed **?**

CO_2 emissions from 17.1 barrels of oil consumed **?**

CO_2 emissions from 0.1 tanker trucks' worth of gasoline **?**

CO_2 emissions from the *electricity* use of 0.97 homes for one year **?**

CO_2 emissions from the *energy* use of 0.65 homes for one year **?**

Carbon sequestered by 188 tree seedlings grown for 10 years **?**

Carbon sequestered annually by 1.7 acres of pine or fir forests ?

Carbon sequestered annually by 0.05 acres of forest preserved from deforestation ?

CO_2 emissions from 306 propane cylinders used for home barbeques ?

CO_2 emissions from burning 0.04 railcars' worth of coal ?

Greenhouse gas emissions avoided by recycling 2.5 tons of waste instead of sending it to the landfill ?

Annual CO_2 emissions of 0 coal fired power plants ?

Attachment 1

Waste & Recycling Assessment Checklist

Waste & Recycling Assessment Checklist
Cobo Center – Brownfields 2008

Facility
- What are the functional areas and locations?
- Where will the event be taking place within the overall facility?
- Obtain a floor plan if possible

Personnel
- Who at COBO management oversees waste management & recycling? Contact & phone?
- Other staff / contractors / vendors involved in waste management / recycling? Contacts & phone?
- Who is the food vendor? Contact and phone?
- Who is the primary drayage contractor? Contact and phone?
- Who are the subcontractors involved in maintenance/clean up? Contacts and phone?

Waste Generation and Flow
- Where are waste receptacles located and what types are used?
- How is waste collected and handled?
- Is there a staging area? Compactor?
- Who is the waste hauler? Is there a contact and if so, how is it set up?
- Where does the waste go?

Recycling Materials and Flow
- What materials are collected for recycling?
- Do you recycle toner cartridges, ink jet cartridges, batteries, diskettes, CDs, video/audio tapes, computers, phone books, fluorescent tubes, etc?
- How are materials collected (e.g., streams separated, co-mingled, etc.), what types of receptacles are used and where are they located?
- What storage is available for staging? Is there a compactor for recyclables?
- Who is the recycling hauler for the facility?
- Where do the recycled materials go after being picked up? Is there any further sorting?
- Are you aware of any food disposal / composting operations in the area?

Metrics
- Does the facility track the weight of waste being removed? If so, how do you arrive at these numbers (e.g., on-site scale, weekly/monthly weight reports from hauler)?
- Does the facility track the weight of recycled material being removed? If so, how do you arrive at these numbers (e.g., on-site scale, weekly/monthly weight reports from hauler)?

Attachment 2

Greening Tip Sheet – Exhibitors

Greening Tip Sheet - Exhibitors

Our goal at the Brownfields 2008 Conference, to be held in Detroit on May 5-7, 2008, is expand on the excellent efforts to "green" the event in Boston in 2006. We have incorporated lessons learned from the previous event and need your help to make sure that this year's conference is even greener!!

With that in mind, as you are designing your booth, please keep in mind the following:

PAPER

- **Use paperless technology** where possible, posting information at your booth rather than in handouts. Ask attendees for their email addresses so you can provide more information electronically later.
- Cut down on handout size by formatting to **minimize the amount of paper used** or provide web address cards for further information.
- **Use recycled paper with post-consumer content** (preferably 50% or higher) and print using vegetable-based inks. Clearly identify the recycled content levels.
- Where possible, **produce materials that can be reused** at other events (leave off dates or slogans).
- Minimize use of notebooks and binding materials that cannot be easily recycled.
- **Use two sided printing** on all of your information and marketing materials.
- Use water-based adhesive mailing labels.
- Use uncoated stock that can be recycled, and limit the use of fluorescent paper or glossy paper to specialized applications (e.g. high quality photography).

ENERGY

- **Use energy efficient light fixtures and office equipment**. See Energy Star www.energystar.gov .
- When not in use, turn **off electronics and unplug equipment** that draws power even when not turned on. If you are using computer equipment, set it to power down during a pause in use.

PRODUCTS

- **Use reusable shipping crates** and materials for supplies.
- Create display booths that can be reused at other events.
- **Bring only what you need.** We are expecting between 5-6,000 participants.
- Purchase reusable environmentally preferable products. For suggestions, see (http://yosemite1.epa.gov/oppt/eppstand2.nsf).
- Choose supplies that have the **least amount of disposable packaging**.
- **Purchase recycled content or consumable give aways** with little or no packaging.

RECYCLING AND REUSE

- Make provisions to take **back reusable or give-away items** that you cannot take with you. Make arrangements to donate at a local recycling providers:

  http://artsandscraps.org
  http://recycledetroit.com
  http://michiganrecycles.org/
  http://recycleannarbor.org/

- Recycle all items possible by consulting Michigan's Recycled Materials Directory: http://www.michigan.gov/deq/0,1607,7-135-3585_4130-12387--,00.html
- Michigan is a bottle-bill state, most cans and bottles have a 10 cent deposit.
- **Recycling containers will be available in the Exhibit Hall**.
- Remember to **recycle your name badge** as you exit the Exhibit Hall.

DON'T FORGET TO ADVERTISE YOUR GREEN EFFORTS TO VISITORS!!

Please share your greening ideas or suggestions! Please send all suggestions to: Briana Bill, EPA Region 5's Green Venues Coordinator at bill.briana@epa.gov or 312/353-6646.

With your help, things will be looking green at…

Attachment 3

Recycling Planning Meeting Agenda

Planning / Coordinating Meeting
Recycling Plan - Cobo Hall
Brownfields 2008

Date: Thursday, April 3, 2008
Location: Cobo Hall
Purpose: Discuss and finalize plans and strategies for recycling during exhibition, conference and food service activity during the event.

Proposed Agenda:

1:00 **Conference and Exhibition Recycling Plan**
Exhibitor Set-up
Conference & Exhibition
Exhibitor Break-down

Invited Attendees:
Gregory Cox, ABM
Denise Vaughn, Corporate Services
Willa Williams, Detroit Environmental Affairs
Melinda Uerling, Recycle Ann Arbor
Sarah Kubick, Recycle Detroit
Paul Ruesch, Shelly Heger, Briana Bill, EPA Region 5
Patrick Durham, Nelson Paper Recycling

3:00 **Food Services Recycling Plan**
Breaks
Meals
Special events, receptions

Invited Attendees:
Andrew VanDeweghe, Aramark
Paul Ruesch, Shelly Heger, Briana Bill, EPA Region 5

Attachment 4

Volunteer Information Sheet

Welcome!
Thank you for volunteering for the
Brownfields 2008 Conference!

CHECK -IN

When you arrive at Cobo Hall, enter through the main entrance and go to the Brownfields 2008 registration table outside Wayne Hall. Ask for your green "Ask Me" recycling shirt, name badge and meal voucher. Registration staff will instruct you as to where to meet up with EPA and/or Recycle Detroit for a short training and assignment.

If you have not already registered, please do so online at www.brownfields2008.org, or onsite.

ACTIVITIES

Your key responsibilities are educational and direct assistance in the **Wayne and Oakland exhibit halls:**

1. Help to educate the exhibitors during set-up about what materials can be recycled:

Material	Source
Cardboard	Exhibit, promotional materials packaging
Paper	Packaging, extra brochures, shipping
Metal	Strapping
Plastic shrink wrap	Pallet and shipments
Wood	Pallets, container boxes
Aluminum and plastic containers	Participants

2. Direct people to recycling areas where bins are located
3. Assist with transport of recyclable materials containers or collecting areas

SAFETY

1. Be mindful of heavy equipment moving through the aisles (i.e. fork lifts, trucks, etc.)
2. Stay off loading docks
3. Please be respectful of conference exhibitors, attendees, and Cobo maintenance staffs if you have any questions, do not hesitate to ask! Your primary points of contact are as follows:

Name	Cell Phone
Sarah Kubik	313-770-1571
Briana Bill	708-829-1925
Shelly Heger	314-541-4865
Paul Ruesch	312-617-7212

CHECK-OUT

If you need to leave your shift early, be sure to let someone know so we can cover your area. At the end of your shift, please sign out at the registration desk so we can be sure everyone is accounted for.

Thanks again for your help!

Attachment 5

Pre-Show Meeting Agenda & Fact Sheet

2008 EPA BROWNFIELDS CONFERENCE
PRE-SHOW MEETING
FRIDAY, MAY 2, 2008

AGENDA

INTRODUCTIONS

WELCOME — **Tom Tuskey, Director – COBO Center**

GENERAL EVENT OVERVIEW – Kelly Hamilton, SRA International (Conference)
Tad McGalliard, ICMA (Exhibits)
Molly Wenner, CSC (Registration)

OTHER EVENTS

- **COBO ARENA**
- **JOE LOUIS ARENA** **(See Attached Sheet)**
- **COBO CENTER**

FLOOR PLANS

- **FIRE MARSHAL APPROVED**

EXHIBITS – WAYNE & OAKLAND HALLS
Over 300 Exhibitors participating!

SHOW CONTRACTOR – HARGROVE INC.
- **Floor Marking (Thursday, 5/1)**
- **Move - In (Thursday, 5/1 – Sunday, 5/4)**
- **Exhibits Open (Monday, 5/5 - Wednesday, 5/7)**
- **Move -Out (Wednesday, 5/7 & Thursday, 5/8)**

CONFERENCE CONTRACTOR – PARAMOUNT CONVENTION SERVICES

ELECTRICAL – MOTOR CITY ELECTRICAL

AUDIO-VISUAL – PSAV

SECURITY

- **Cobo Center**
- **Gallagher Security**
- **Detroit Police Department**

HART MEDICAL

AT&T EXHIBITOR SERVICES

COBO CENTER INTERNET SERVICES

PARKING/TRANSPORTATION

- **Municipal Parking Department**
- **Detroit People Mover**

CLEANING – ABM JANITORIAL CLEANING SERVICES

- **Exhibit Hall**
- **Meeting Rooms**
- **Recycling Plans**

CATERING – ARAMARK

- **Deliveries**
- **Concessions**
- **Receptions**
- **Coat Check/Luggage Setup**

COBO HOSPITALITY & BUSINESS CENTER

MISCELLANEOUS

- **Show Lighting**
- **Other Concerns**

ADJOURNMENT

THANK YOU FOR YOUR TIME AND COOPERATION.

LET'S WORK TOGETHER FOR A SUCCESSFUL EVENT!

Attachment 6

Waste Log Sheet

Waste Log Sheet

DATE:

BAG	TIME	WEIGHT

Greening the Brownfields 2006 Conference at the Boston Convention and Exhibition Center (BCEC)

The following is a list of what we were able to do:

- Changed language in the Conference registration announcement to encourage electronic registration.
- Provided information on public transit and resources (MBTA) and hybrid taxis for the website on travel.
- Organizer used a merge/purge system to reduce or eliminate duplicate mailings.
- Used recycled content, chlorine free paper for flyers, programs and daily newspapers.
- Met with and conducted walk throughs of the BCEC facility to ensure that recycling would happen at the Conference. EPA staff visited every exhibitor asking them to recycle at the end of the show, giving background on the BCEC and informing them about the America Recycles Day (which was on 11/15/06) pledge. Recycling containers for paper and bottles and cans were in every session room, the hallways and the Exhibit Hall. In addition, when the Exhibit Hall closed, recycling of old corrugated cardboard (OCC) was provided and the cleaning staff positively sorted it out of the trash bins when it was mistakenly placed there by the exhibitors. Over 3 tons were recycled at the Conference or 1.1 lbs/person recycled or composted.
- Provided Energy Star training to area hotels.
- Worked with GSA staff at the Moakley Courthouse to ensure that Sebastian's Catering would recycle bottles and cans at the Moakley Courthouse during the Community Reception.
- Worked with Green Boston Tourism to help them in training hotels and to ask the hotels to advertise their greening efforts to their guests.
- Provided greening efforts text for the Final Conference program and the Daily newspaper. Four posters on the greening efforts at the Conference were placed around the Conference and moved on a daily basis to be in the highest traffic areas.
- Added anti-idling language to the Request for Proposals (RFP) for the mobile workshop tour buses and to the contract for the chosen bus company.
- Provided greening tips to presenters and exhibitors (*See Attachment # 26*). Presenter tips were posted outside of the Kinkos copy center and at the speaker ready room. We worked with Kinkos to ensure that 100% recycled content paper was available for copying needed at the conference.
- Developed 7 "green" educational sessions for the Conference:
  Green building on Brownfields training,
  Green buildings and affordable housing,
  Green building and colleges and universities,
  Construction and demolition debris,
  Energy Star,
  Solar, wind and waste, and
  Artist for Humanity Walking Tour.
- Arlene O'Donnell, Acting Commissioner of Massachusetts DEP, presented a Waste Wise Award to James Rooney, Executive Director of the Massachusetts Convention Center Authority and Mike Tracey, Executive Chef at the BCEC with Susan Bodine,

AA for OSWER for their efforts in food waste composting and recycling. Chris Beling provided the script for the event and Bill White provided information on their energy reductions efforts and green house gas emissions equivalents.

Improvements:

- **Have a carbon offset program for attendees**
- **Solicit hotels to find the greenest ones to contract with for the Conference blocks**
- **Put recycling in the contract with the facility**
- **No open top containers for recycling**
- **More recycling bins on the exhibit floor and a map of where they are located**
- **Serve local foods on biodegradable tableware**
- **Consider doing a green competition for exhibitors**

Exhibitors - Let's Green Brownfields 2008!

Brownfields 2008 Conference needs your help to make this year's conference the greenest ever! We invite you to participate in the new Green Exhibitor Recognition Program to showcase your efforts in reducing the environmental footprint of the conference.

As a starting point, we encourage you to incorporate these tips into your design, and look forward to any innovative ideas you have to make your exhibit environmentally friendly.

PAPER

- **Go paperless!** Post information at your booth and leave out an email sign-up sheet or Web page so attendees can get an electronic copy later. Keep a small supply on hand for people who ask for a handout.
- Cut down on handout size by formatting to **minimize the amount of paper used** or provide web address cards for further information.
- **Use recycled paper with post-consumer content** (preferably 50% or higher) and print using vegetable-based inks. Clearly identify the recycled content levels.
- Where possible, **produce materials that can be reused** at other events (leave off dates, conference name, and other "one time only" information).
- Minimize use of notebooks and binding materials that cannot be easily recycled.
- **Use two-sided printing** on all of your information and marketing materials.
- Use water-based adhesive mailing labels or closures.
- Use uncoated stock that can be recycled, and limit the use of fluorescent paper or glossy paper to specialized applications (e.g. high quality photography).

ENERGY

- **Use energy efficient light fixtures and office equipment**. See Energy Star www.energystar.gov
- When not in use, turn **off electronics and unplug equipment** that draws power even when not turned on. If you are using computer equipment, set it to power down during a pause in use.

PRODUCTS

- **Use reusable shipping crates** and materials for supplies.
- Create display booths that can be reused at other events.
- **Bring only what you need.** We are expecting between 5-6,000 participants.

- Purchase reusable environmentally preferable products. For suggestions, see (http://yosemite1.epa.gov/oppt/eppstand2.nsf).
- Choose supplies that have the **least amount of disposable packaging**.
- **Purchase recycled content or consumable giveaways** with little or no packaging.

RECYCLING AND REUSE

- Make provisions to take **back reusable or give-away items** that you cannot take with you.
- Michigan is a bottle-bill state, most cans and bottles have a 10 cent deposit.
- **Recycling containers will be available in the Exhibit Hall**.
- Remember to **recycle your name badge** as you exit the Exhibit Hall.

DON'T FORGET TO ADVERTISE YOUR GREEN EFFORTS TO VISITORS!

If you've got a great tip not mentioned here, please share it with Briana Bill, EPA Region 5's Green Venues Coordinator at bill.briana@epa.gov or 312-353-6646.

With your help, things will be looking green at…
Brownfields 2008

Presenters - Let's Green Brownfields 2008!

Our goal at the Brownfields 2008 Conference, to be held in Detroit on May 5-7, 2008, is to make it the greenest Brownfields conference yet and to track lessons learned so that each succeeding conference can be even greener.

With that in mind, we would like you to consider the following tips.

Because all presentations will be posted on the Brownfields 2008 web site, we discourage handouts. However, if you decide to provide them, please consider the following:

- Format your handout to minimize the amount of paper you will use
- Choose the 6 slides per page option for PowerPoint printouts
- Use recycled content paper with the highest recycled content possible (preferably 50% or better) and process chlorine free. Mark the environmental attributes of the paper on the handout.
- If more than one sheet is needed, print it double-sided.
- If you need additional copies while at the Cobo Center, ask for recycled content paper at the business center.

If attendees request copies of your presentations:

- Collect their business cards and transmit it to them electronically.
- Also, let them know that all presentations will be posted on the Brownfields 2008 web site.

Please note:
The Cobo Center will have recycling bins throughout the facility for recycling beverage containers and paper. Additionally, recycling bins for name badges will be at the registration area and in the exhibit hall. Thank you for your efforts.

Let us know if you have other ways in which you will be "greening" your booth or suggestions that we should share with others or consider implementing for Brownfields 2010. Please send all suggestions to: Briana Bill, Green Venues Coordinator, at bill.briana@epa.gov or call at 312-353-6646.

Reception Hosts - Let's Green Brownfields 2008!

Brownfields 2008 encourages you to help conference greening efforts by considering the following environmentally-friendly options when placing orders with your caterer.*

- China service (plates and mugs), silverware and/or cloth napkins instead of disposable cups, plates, eating utensils and/or paper napkins.
- Ordering cold beverages such as fruit juice, lemonade, punch, spring water and iced tea by the gallon(s) as opposed to individual units.
- Finger foods or appetizers as opposed to buffet or plated meals to reduce amount of necessary plates and utensils.
- Request bulk containers for condiments such as cream, sugar, sweetener, mustard and mayonnaise.

Also, consider asking your caterer the following:

- Is disposable serviceware made from environmentally-friendly materials?
- Will recycling bins be provided for beverage and packaging containers (cardboard, plastic jugs, steel cans, wine bottles, etc.) used in the kitchen or bar area? (Note: for hosted events at Cobo Center, recycling will be available.)
- Is food locally purchased, is it organic and will unused food be donated?

Finally, help green your reception area by limiting written promotional materials and handouts, using recycled content whenever possible in brochures and giveaways, and even encouraging guests to bring their own mug!

* Keep in mind that some offerings may include an additional charge.

EPA Region 5 is Going Green!

Going Green with **No paper handouts.**

Going Green with **Eco-friendly grocery tote give-aways.**

Going Green with **No silverware to throw out.**

Going Green with **Bulk beverage containers.**

Going Green with **No individual packaging for food.**

brownfields 2008

Appendix E

EPA Region 5 is Going Green!

No paper handouts.

Going Green

Reusable posters.

Going Green

Eco-friendly seedling give-aways.

brownfields 2008

Appendix E

Exhibit hall:

Our Exhibitors Are Greening Their Booths

- Reducing the number of handouts or going entirely paperless.
- Giving visitors only documents they really want.
- Giving away bookmarks with Web site URLs instead of even more documents.
- Handing out CDs loaded with info and Web links.
- Buying carbon credits for travel.
- Joining EPA's Climate Leader program.
- Staying within walking distance of the Cobo Center.
- Instructing staff to recycle booth materials.
- Using the Detroit People Mover for social outings.
- Handing out business cards and other promo items made from seeds.
- Using double-sided printing on recycled paper with vegetable-based ink.
- Reusing exhibit and shipping materials.
- Promotional materials without the 2008 conference logo so leftovers can be reused.
- Reusable, recycled and recyclable promotions such as coasters made from denim and "low-impact" candy packages.
- Interactive booth layout that invites dialogue instead of handouts.
- Unplugging lights and equipment.
- Environmentally-friendly purchasing
- Just-in-time shipping for what's needed when it's needed
- Efficient booth designs such as a carrying case that serves double duty as table.

Signage – Meter Board for Registration Area:

Do you know about these GREEN opportunities at Brownfields 2008?

- **Recycling** of conference beverage containers, cardboard, shrink wrap, banding and leftover promotions.
- **Eco-friendly tips** to exhibitors, presenters and reception hosts.
- Mobile workshops using **hybrid buses** donated by GM.
- **Paper waste** reduced due to electronic registrations, shorter conference promotional materials and booklets, and post-consumer content papers.
- **Conference sponsors** purchased **carbon offsets** to counterbalance energy used in the Cobo Center, hotel blocks, mobile workshops and waste disposal.
- **Participants** also able to buy **carbon offsets** through the conference Web site.
- **Hotels** encouraged to adopt environmentally-friendly practices and joining Green Lodging Michigan.
- **Exhibitors** participating in the **Green Exhibitor Recognition Program** to promote greening activities and recycling in the Exhibit Hall.
- **GoLoco.org** providing **shared rides** and the **Detroit People Mover** offering an eco-friendly way to get around Detroit (station is located on the 3rd level).
- **Bulk beverage and condiment dispensers** used where possible.
- Signage, the daily newsletter and the **Brownfields 2008 Web Site** (www.brownfields2008.org) further explaining how the conference is **green**.

2 signs on easels for main corridors (1st and 2nd levels):

Greening Activities at Cobo Center

- Lighting in Atrium and mezzanine corridors cycles on and off based on natural light levels. This, plus replacement of 84,000 lamps with more energy efficient lighting contributes to reduction of 23 million less kWh of energy annually.
- Cobo Center has just begun a recycling program to collect plastic, aluminum and paper in offices.
- Cobo Center encourages the use of public transportation in and around Detroit via the Detroit People Mover – the Cobo Center even has its own station located on the 3rd level.

2 signs on easels for main corridors (1st and 2nd levels):

Greening Activities for Janitorial and Cleaning Services

- Touchless faucets to save water
- Paper towels that contain post-consumer recycled material
- Metered towel dispensers to save paper
- Eco-friendly cleaning products

Greening the Conference

The Greening the Conference subcommittee activities included:

- Providing significant technical assistance and facilitating development of fledging **recycling program** for cardboard, shrink wrap, metal bindings, beverage containers.
    - Partners: Cobo Center, Aramark (food), ABM (janitorial), City of Detroit, Nelson Paper Recycling, and NGO Recycle Detroit, local students

- Encouraging **exhibitors, presenters and reception/open house hosts** to do the green thing
    - Green Exhibitor Recognition Program – certificates, signage
    - Tip sheets with lots of environmentally-friendly ideas

- Using **hybrid buses** donated by GM for the mobile workshops

- Offering travelers opportunities to purchase **carbon offsets** (through NativeEnergy) and purchasing offsets to balance energy consumed by Cobo Center, hotel block rooms, mobile workshops and waste disposal

- **Reducing paper waste** with electronic registrations, shorter conference promotional materials and booklets, and use of soy-based inks and post-consumer content papers

- Encouraging **hotels** to adopt environmentally-friendly practices and join Green Lodging Michigan

- Promoting **shared rides** to the conference through the GoLoco.org Web site and around Detroit via the Detroit People Mover

- Arranging for bulk **beverage and condiment dispensers** and reusable dish and silverware

- Providing **educational information** through signage, the daily newsletter, visible recycling opportunities, Web page and email blasts

Region 5's Exhibit and Open House green practices include:

- Use of bookmarks and environmentally-friendly giveaways to promote EPA Web sites
- Reduced numbers of handouts
- Signup sheets so EPA can follow up electronically with exhibit visitors
- Bulk beverage dispensers and reusable dishware at the RA's open house
- Useful giveaways: a grocery tote and seedlings

FRONT

BACK