Wisconsin Sustainable Business Council Conference

Greenhouse Gas Emissions Assessment

Conducted by Madison Environmental Group, Inc.

December 8, 2008

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Conference Greenhouse Gas Emissions Assessment

Purpose

There is an increasing recognition of the environmental impact of large conferences and meetings, including the resulting greenhouse gas emissions.

Performing a greenhouse gas emissions assessment provides a quantitative evaluation of the impact that the conference has on global climate change and identifies opportunities for reducing the impact of future conferences.

Scope

This assessment includes only the emissions that result from the following categories and is limited to the time period of the conference.

- Facility Energy Use
- Conference Participant Travel
- Waste (to be estimated after conference)

Conference GHG emissions from other categories such as hotel accommodations, water use, pre- and post-conference related events, product life-cycle, and food were not included and are assumed to be negligible.

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Methodology Principles

WRI/WBCSD Greenhouse Gas Protocol

This assessment utilizes the basic principles outlined by the Greenhouse Gas Protocol developed by the World Resources Institute and the World Business Council for Sustainable Development.

The Protocol is "the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions."

Where available data does not meet the strict requirements outlined by *The Protocol*, emissions were estimated using the approaches outlined on the following slides.

WORLD RESOURCES INSTITUTE

World Business Council for Sustainable Development

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Approach

Two-step Approach

Pre-conference Assessment

- Emissions were estimated prior to the conference based on information available at the time.
- Performing a pre-conference assessment allows conference participants to obtain a rough, yet reasonable, estimate of the conference's impact.

Post-conference Assessment

- A post-conference assessment will be conducted once additional available data has been collected. *(Watch for a post-conference survey to provide transportation data essential to a more accurate GHGE estimate.)*
- Performing a post-conference assessment provides conference organizers with a meaningful evaluation and provides a platform for future action.

Approach Specifics

Emissions from each category were estimated using various approaches and specific assumptions outlined on the following slides.

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Estimating Emissions from Energy

Approach

Electricity

- December 2007 peak-time electricity use at the EPIC Systems facility was used as a proxy for electricity usage during the conference.
- This value was then calculated on a per area, per hour basis.
- Information regarding the conference area and the usage time of that were the used to calculate the relative emissions.

Heating

Unlike electricity use, heating of the facility does not fall under the principles of "additionality" – i.e. the rooms in the facility would be heated irrespective of the conference.

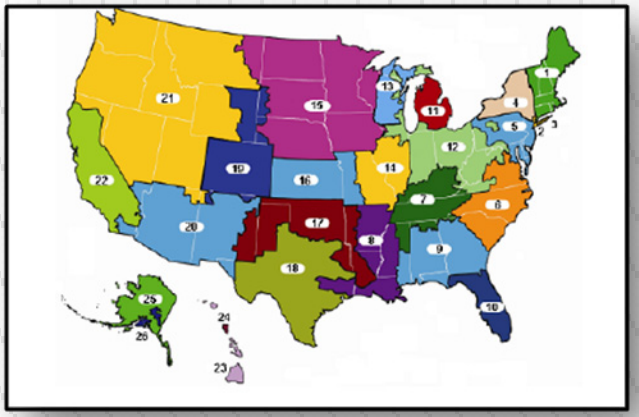
Heating is thus **not** included in the assessment.

Assumptions

Electricity

- Rooms utilized during conference use electricity at the same rate as the average electricity intensity of the entire facility.
- Electricity usage in December 2007 is equivalent to that of the time of the Conference.
- Emissions factors assumed to equal that of the eGRID MRO East Sub-region.

eGRID Sub-regions, 2004



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Estimating Emissions from Transportation

Pre-Conference Estimate

Post-conference estimate will be based on survey information provided by participants.

Approach & Assumptions

Distance Traveled

- The round-trip distance from addresses noted on conference registration to EPIC Systems was estimated via Google™ Maps
- EPIC Systems employees traveled zero additional miles

Vehicle & Fuel Type

- Mid-size gasoline passenger sedan, model year 2000

Fuel Efficiency

- Dependent on average vehicle velocity as illustrated on the graph to the right

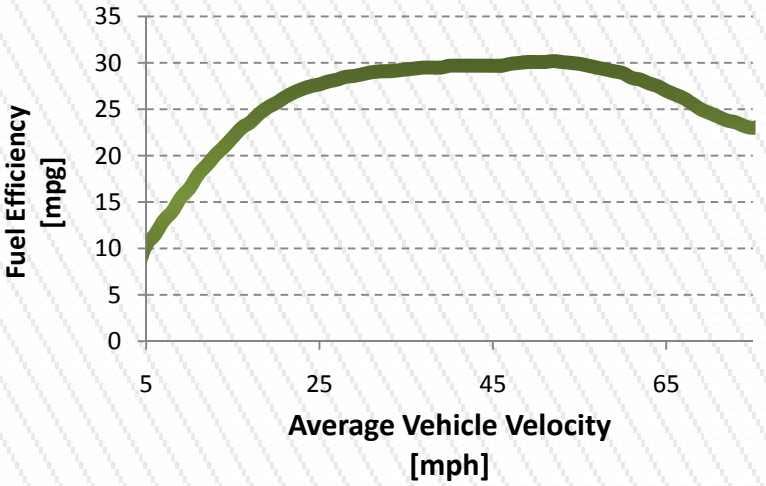
Average Vehicle Velocity

- Calculated from the distance and time estimate obtained via Google™ Maps

Greenhouse Gas Emissions

- CO_2 emissions based on quantity of fuel used (estimated via fuel efficiency and total distance traveled) and emission factor for gasoline
- CH_4 and N_2O emissions based on distance traveled and emission factor for vehicle type

Fuel Efficiency vs. Velocity[1]



[1]West, B.H., R.N. McGill, J.W. Hodgson, S.S. Sluder, and D.E. Smith, *Development and Verification of Light-Duty Modal Emissions and Fuel Consumption Values for Traffic Models*, Oak Ridge National Laboratory, Oak Ridge, Tennessee, March 1999.

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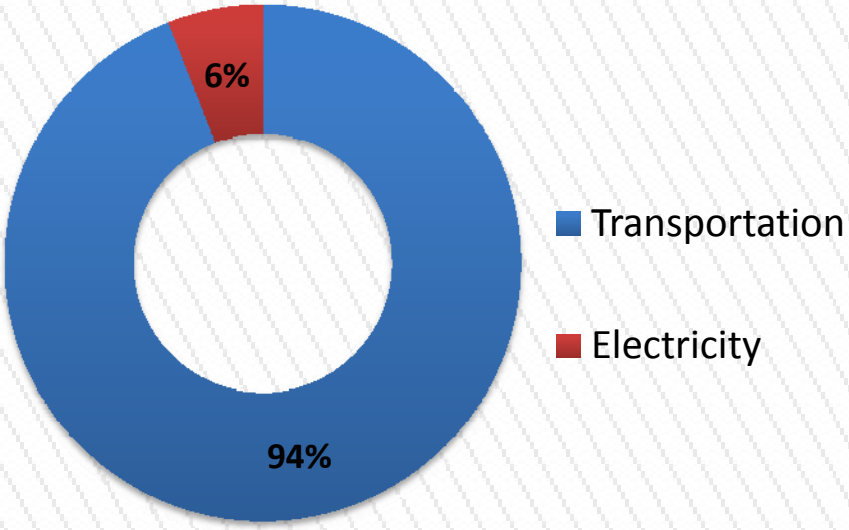
Pre-Conference Greenhouse Gas Emissions Estimate

Initial Estimate of Conference Greenhouse Gas Emissions:

9,228 lbs CO_2-e[†]



Emissions equivalent to:

- Emissions from energy use of average American house for 6 months
- Emissions sequestered in a year by one acre of pine forest

[†]Carbon dioxide equivalent

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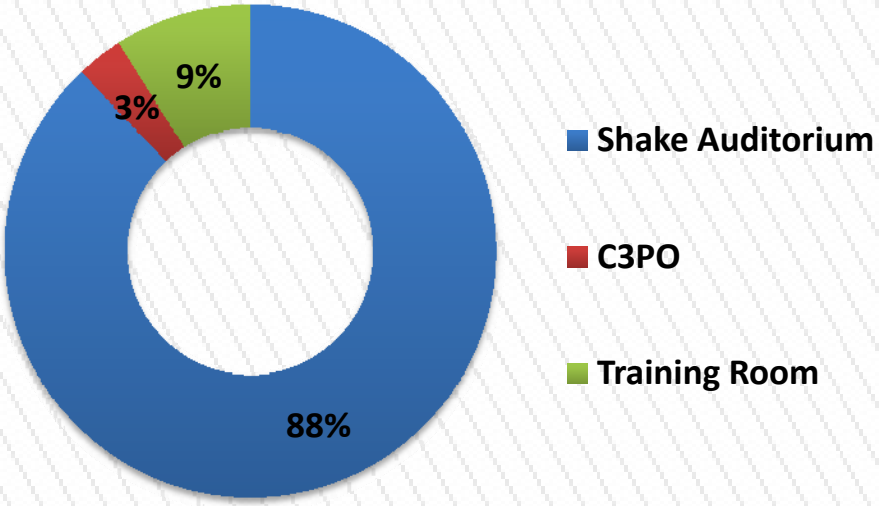
Emissions from Electricity

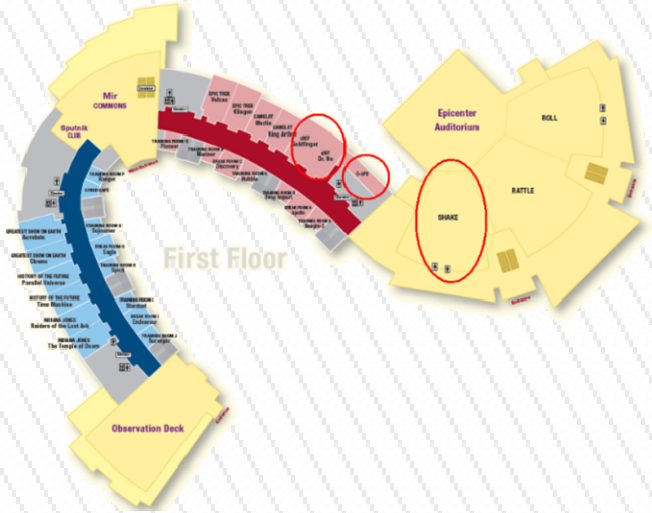
Pre-Conference Estimate

Estimated Electricity Greenhouse Gas Emissions:
542 lbs CO_2-e

Break-down of Emissions by Room



Rooms Utilized for the Conference



Room	Shake Auditorium	C3PO	Training Room
Area [ft²]	14,840	2,304	4,560
Time Used [hours]	9	2	3
Electricity Intensity (kWh per ft² per hr]	0.00196	0.00196	0.00196
Est. Electricity Use [kWh]	261.19	9.01	26.75

Total Electricity Use [kWh] **297**

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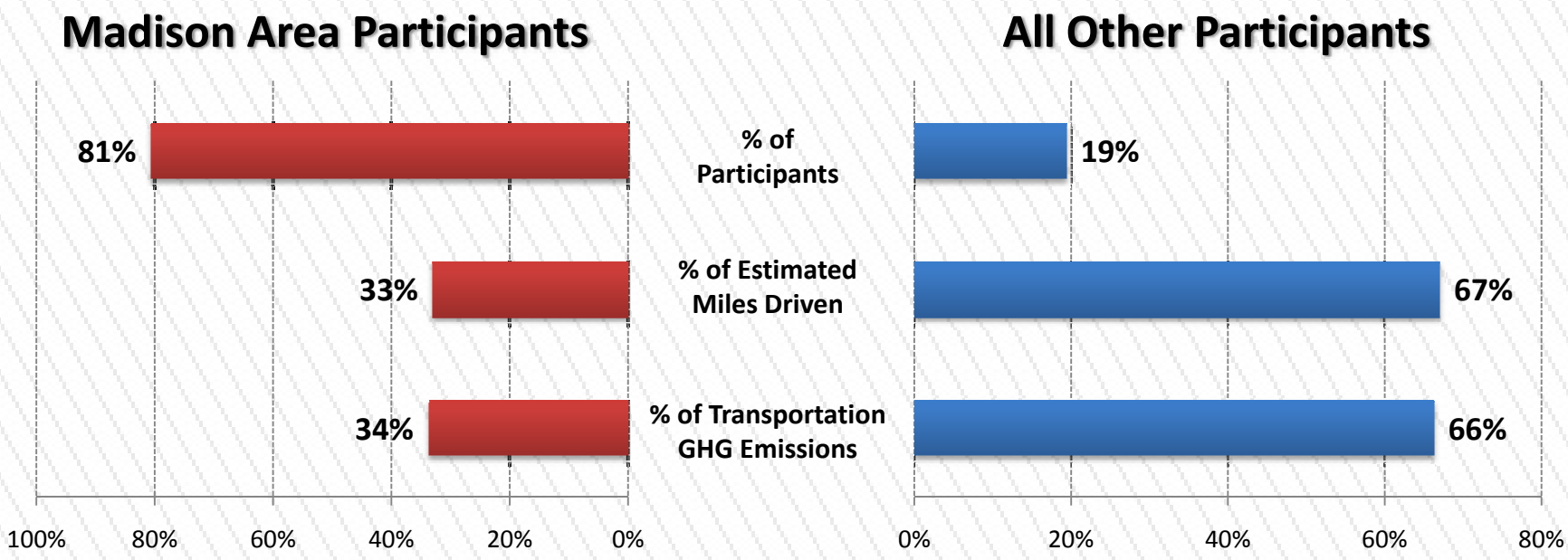
Emissions from Transportation

Pre-Conference Estimate

Estimated Transportation Greenhouse Gas Emissions:
8,686 lbs CO_2-e



All previously stated assumptions, including 100% solo-driving, apply for these calculations.

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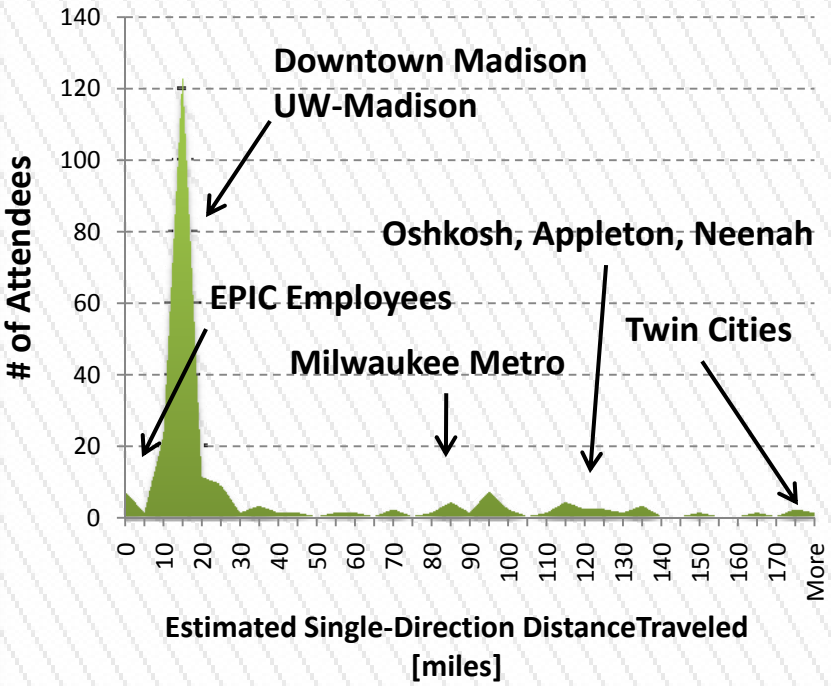
Profile of Participant Distance Traveled

Participants' Assumed Origination Location

Location of Conference

Assumed origination of participants

Assumed Participant Travel



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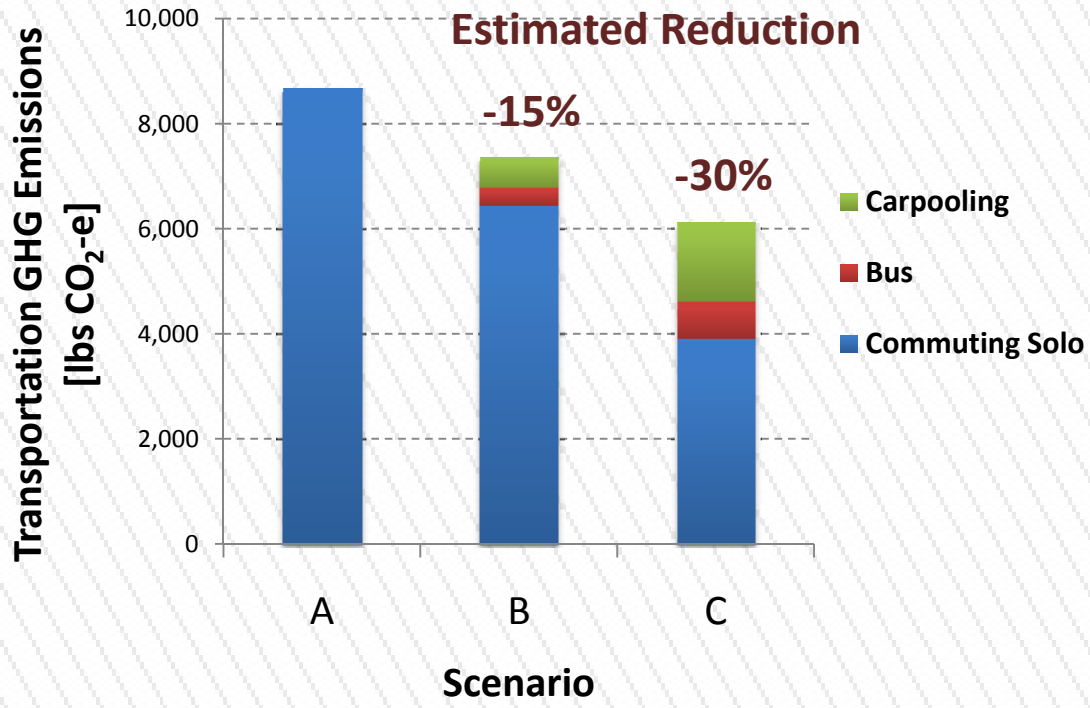
Potential for Transportation Emission Reductions

Transportation Emissions for Three Scenarios



Scenarios

A	Worst case	• All participants drive solo to conference
B	Feasible	• 20% of Madison area participants ride bus • 20% of non-Madison area participants carpool • All others drive solo
C	Optimistic Goal	• 40% of Madison area participants ride bus, 10% carpool • All applicable non-Madison area participants carpool • All others drive solo

Specific assumptions were made regarding bus & carpool travel and emissions.

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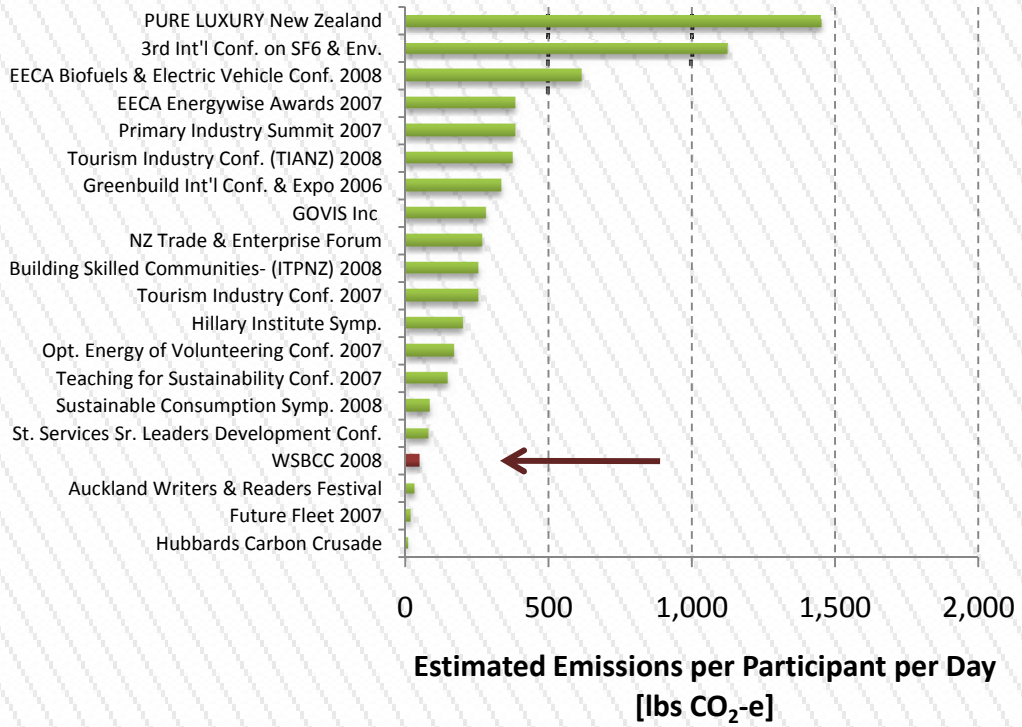
2008 WSBCC Emissions Significantly Lower Than Comparable Conferences

Conference Emissions Intensity Comparison



Main Reasons for Low Emissions

Travel & Accommodations
- No airline travel
- Average distance traveled is shorter
- No overnight hotel stays

Facility Energy Use
- Low energy use lamps (Fluorescent, LED)
- Occupancy sensors and daylight responsive lighting control
- Increased building efficiency via higher R-value and higher performance windows & glazing

Waste
- Minimal paper use
- No water bottles
- Limited one-time use items

Food
- Locally sourced
- Organically grown

Difficulties in direct comparisons:
It is likely that each conference assessment utilized different calculation methodologies and captured varying emissions categories.

Sources: carboNZero, USGBC , EPA

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An Action-Oriented, Results-Focused Sustainability Consulting Firm

Madison Environmental Group, Inc. is an interdisciplinary, team-based research and consulting firm.

- Assist clients in creating economic advantage and reducing environmental impact.
- Develop and implement recommendations
- Celebrating 10 years of environmental innovation

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Solutions For Your Organization

Strategic Sustainability Planning

Set a course for environmental, social, and economic sustainability

- Engage key stakeholders
- Learn about your organization and its needs
- Set goals
- Analyze needs and set goals
- Develop sustainable workplace recommendations

Ecological Footprint Analysis

Gain an understanding of your current impact

- Calculate your "carbon footprint" by assessing greenhouse gas emissions
- Analyze waste and recycling practices
- Determine water usage and practices

Eco-Solutions

Develop and implement programs to meet your goals

- Carbon reduction strategies
- LEED® and other green building consulting and management
  - Deconstruction and construction waste recycling
  - Green materials research
- Water conservation
- Waste management
- Transportation and parking management
- Employee education programs

Green Communications

Proactively address stakeholder expectations for transparency

- Communications and outreach planning
- Employee education programs
- Sustainability reporting
- Community relations
- E-mail communications and newsletters

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Our Clients

Architecture, Construction, and Real Estate Development firms

Arboretum Cohousing
Boldt Company
Capitol Bassett, LLC
Cashton Area Development Corporation
Century Condos, LLC
CG Schmidt
Epstein Uhen Architects, Inc.
Fiore Companies
Fred Miller Construction
Great Dane Development Corporation
Ideal Builders
J. Michael Real Estate
J.H. Findorff & Son
Joseph Freed and Associates
Klobucar Construction
Madison Development Corp
McGrath & Associates
Miller Construction Company
Stevens Construction
Stone House Development
The Alexander Company
Wieser Brothers General Contractor, Inc

Corporations

American Family Insurance
Carlson Company
Community Car
Culvers
Fairmount Minerals
RenewAire
RETEC Group
S.C. Johnson

Educational Institutions

Beloit College
Decorah Community School District
Madison Metropolitan School District
University of Wisconsin
Wisconsin Institute of Discovery

Energy-related Organizations & Utilities

Alliant Energy
Madison Gas & Electric
Midwest Renewable Energy Association
Wisconsin Department of Administration Division of Energy

Governmental Agencies, NGOs, and Not-for Profit Organizations

City of Madison
City of Monona
City of Racine
Clean Wisconsin
Dane County Clean Air Coalition
Driftless Area Land Conservancy
National Recycling Coalition
Nature Conservancy
Overture Center for the Arts
Root Pike Watershed Initiative Network
WasteCap Wisconsin
Wisconsin Department of Natural Resources

Other Organizations and Institutions

First United Methodist Church
Home Savings Bank
Oconomowoc Memorial Hospital
Organic Valley

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Special Thank You To

Tod Sloan, EPIC Systems

Tom Eggert, DNR, UW-Madison

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Visit
www.MadisonEnvironmental.com
to view the final post-conference GHG emissions report