

WISCONSIN SUSTAINABLE BUSINESS COUNCIL

# CONFERENCE SUSTAINABILITY REPORT

2016



Completed by:

**THE COMPASS GROUP**

For:



## INTRODUCTION

The Wisconsin Sustainable Business Council (WSBC) hosted their 9th annual Wisconsin Sustainable Business Council meeting on December 8, 2016 at Empire Screen Printing in Onalaska, Wisconsin. Each year, the WSBC has been calculating, tracking, and offsetting conference emissions. This foot-printing activity allows the WSBC to evaluate the environmental success of the conference and identify opportunities for reducing the footprint of future conferences.

## SCOPE

This assessment includes the greenhouse gas (GHG) emissions expressed in CO2 equivalents from building energy use, attendee transportation, and food for the day of the actual conference. Other sustainability metrics are also discussed, but not included in the greenhouse gas calculations. These metrics include building water use, waste, and goods and materials.

## EMISSIONS CALCULATIONS AND RESULTS

The WSBC and the staff at Empire Screen Printing provided the raw data used for this report. All emissions and sustainability calculations are based on 253 conference attendees, which includes speakers and all volunteer/staff members. This is the number of participants provided by the WSBC. The assumption was made that all 253 registrants attended the conference and that there were no additional registrants to this number.

### BUILDING ENERGY USE

This year's conference utilized 13,355 square feet of the Empire Screen Printing building, which is about 9% of the overall building.

Electricity use for the lighting and cooling was calculated by the Empire Screen Printing engineering staff for this portion of the building for the hours of 7:00 AM to 5:00 PM. These hours were used to capture energy use for facility set up and tear down. During this time period, this space utilized 86 kWh of electricity for cooling and 153.9 kWh of electricity for lighting, yielding a total of 239.9 kWh of electricity overall.

### Calculations:

- The electricity calculations are based on the lighting electricity demand and cooling electricity demand of only the section of the building that the conference was held in during the time of the conference. Building staff at Empire Screen Printing provided this information.
- Cooling load was assessed instead of heating load, since the building occupants produced enough heat for the building to require cooling instead of heating by building systems.
- The CO<sub>2</sub>e emissions resulting from electricity consumption were calculated using EPA eGRID region information. The EPA eGRID for Onalaska, Wisconsin is MRO East.<sup>1</sup>

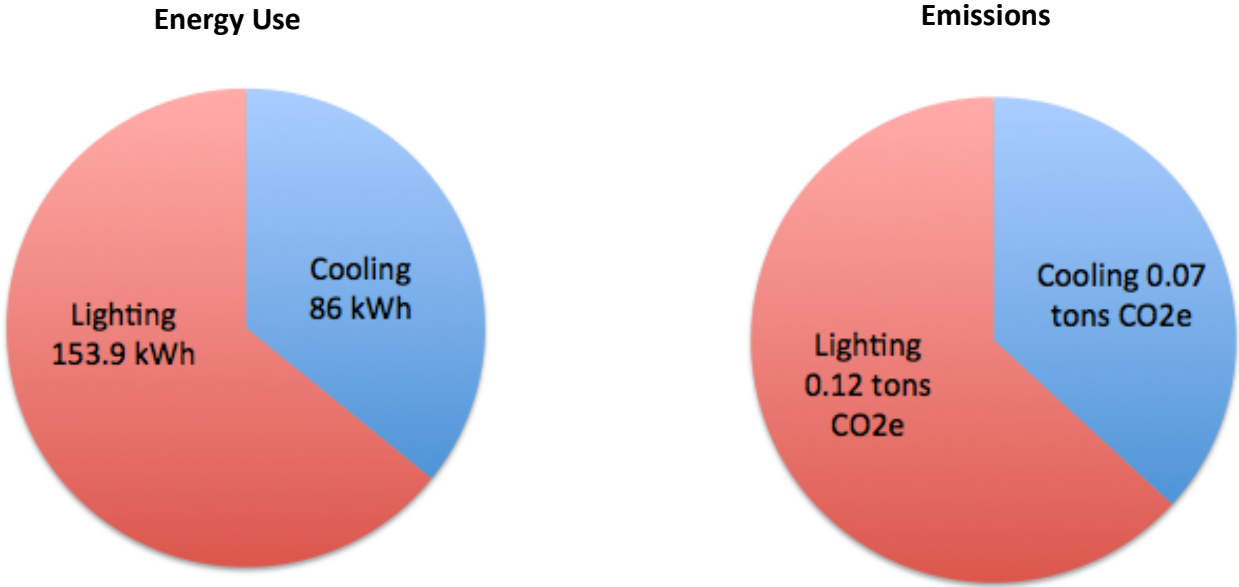
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<sup>1</sup> [http://www.epa.gov/sites/production/files/styles/large/public/2015-10/egrid2012\\_egrid\\_subregions.jpg](http://www.epa.gov/sites/production/files/styles/large/public/2015-10/egrid2012_egrid_subregions.jpg)

**Results:**

The 86 kWh of electricity for cooling contributed to 0.07 tons (136.8 pounds) of CO<sub>2</sub>e, and the 153.9 kWh of electricity for lighting contributed to 0.12 tons (244.2 pounds) of CO<sub>2</sub>e. This breakdown can be seen below in Chart 1.

**Chart 1: Total Conference Energy Consumption and Emissions**



The overall building energy use emissions for the areas utilized by the conference equated to **0.19 tons (381 pounds) of CO<sub>2</sub>e**. This represents 1.5 pounds of CO<sub>2</sub>e per person.

**TRANSPORTATION**

The transportation survey was administered online during the conference registration process. The survey asked about participants mode of transportation, the fuel efficiency of their car (if traveling by car), the zip code they would be traveling from, and if they were planning on carpooling or interested in taking the coach bus from Madison or Lacrosse. The following modes of transportation were included by the calculations: airplane, car, bus (coach bus and school bus), and walk/bike.

**Assumptions:**

- For attendees who lived within the same zip code as the conference in Onalaska (54650), the assumption was made that they traveled an average of 3.5 miles, since the distance from the center of Onalaska (Main Street) to the Empire Screen Printing building is 3.5 miles.
- Attendees who said that they were planning on carpooling, a carpool of 3 people was assumed, based on average carpooling numbers from the 2015 conference.

- For attendees who did not specify the fuel efficiency of their car, it was assumed that they drove cars with fuel efficiencies of 30.3 MPG, based off of the US Department of Transportation’s 2005 fuel efficiency survey for passenger cars.<sup>2</sup>
- Attendees who did not leave a response regarding carpooling, or who said “Don’t Know/Not Applicable” were assumed to be single occupant riders.
- Based on a headcount, the number of attendees who traveled via coach bus to the conference was 26 people. These attendees were included in the transportation calculations as taking the bus to and from the conference.

**Approach:**

- The distances used for the calculations were derived using zip codes. These were calculated using a zip code distance calculator.
- The average per passenger fuel economy values for buses and airplanes were found on the US Department of Energy’s website.<sup>3</sup> And the median number of MPG/car provided in the initial transportation survey was used to calculate the fuel efficiency for each car.
- The amount of CO<sub>2</sub> emitted per gallon of gasoline was calculated using the Greenhouse Gas Protocol developed by the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD).<sup>4</sup>

**Results:** Overall, 1 attendee traveled by airplane, 193 attendees traveled by car, 32 attendees traveled by school bus, 26 attendees traveled by coach bus, and 1 attendee walked or biked. Of the 193 attendees who traveled by car, 99 chose to carpool to the conference with other conference attendees. 62% of conference attendees used alternative transportation methods, which reduced the number of attendees traveling by single occupant vehicle. The transportation breakdown can be seen on the following page in Chart 2.

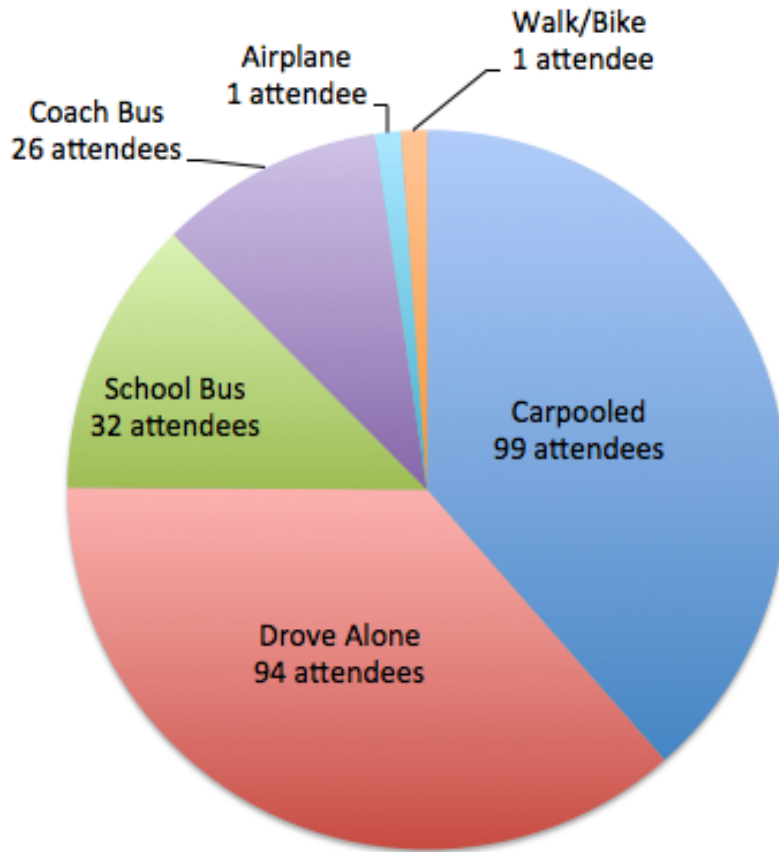
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<sup>2</sup>[http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national\\_transportation\\_statistics/html/table\\_04\\_23.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_04_23.html)

<sup>3</sup> <http://www.afdc.energy.gov/data/>

<sup>4</sup> <http://www.ghgprotocol.org>

**Chart 2: Conference Attendee Transportation Selection**



In total, conference transportation emissions equated to **14 tons (28,000 pounds) of CO<sub>2</sub>e**. This represents approximately 111 pounds of CO<sub>2</sub>e per person.

If all 253 attendees had driven alone, the transportation emissions would have been 19 tons (38,000 pounds) of CO<sub>2</sub>e.<sup>5</sup> Thus the commuting decisions saved 5 tons (10,000 pounds) of CO<sub>2</sub>e.

**FOOD**

Breakfast and lunch were provided for all conference attendees. Both meals were vegetarian. According to Shrink That Footprint,<sup>6</sup> the average vegetarian meal emits about 3.11 pounds of CO<sub>2</sub>e per person, which is 1.46 pounds less than an average meat meal emitting about 4.57 pounds of CO<sub>2</sub>e per person.

<sup>5</sup> Calculation based on the average distance attendees traveled to the conference (92 miles) and the average fuel efficiency of single-occupant cars at the conference (28 MPG).

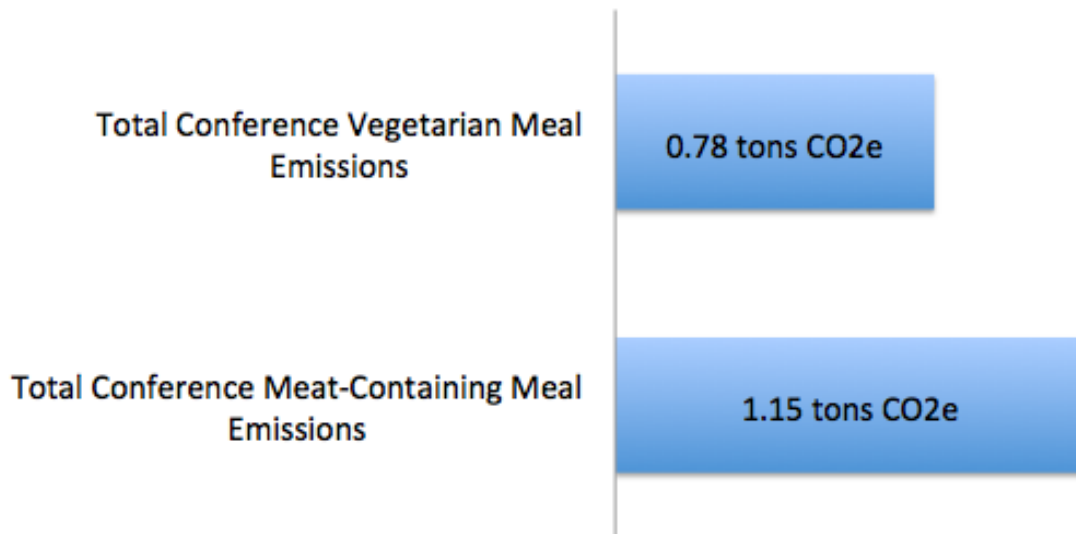
<sup>6</sup> <http://shrinkthatfootprint.com/food-carbon-footprint-diet>

**Assumptions:**

- As the food was prepared based on the total number of attendees, it was assumed that both meals contained the same amount of food and that all attendees consumed the same amount of food.
- It was assumed that the values regarding CO<sub>2</sub>e emissions from Shrink That Footprint were accurate.

**Results:** At this year’s conference, there were 253 attendees, which means that a total of 0.78 tons (1,560 pounds) of CO<sub>2</sub>e were emitted for the two vegetarian meals at the conference. Serving vegetarian meals, instead of meat-containing meals, reduced the emissions by 0.37 tons (740 pounds) of CO<sub>2</sub>e. This is illustrated below in Chart 3.

**Chart 3: Meat-Containing Meals vs. Vegetarian Meals**

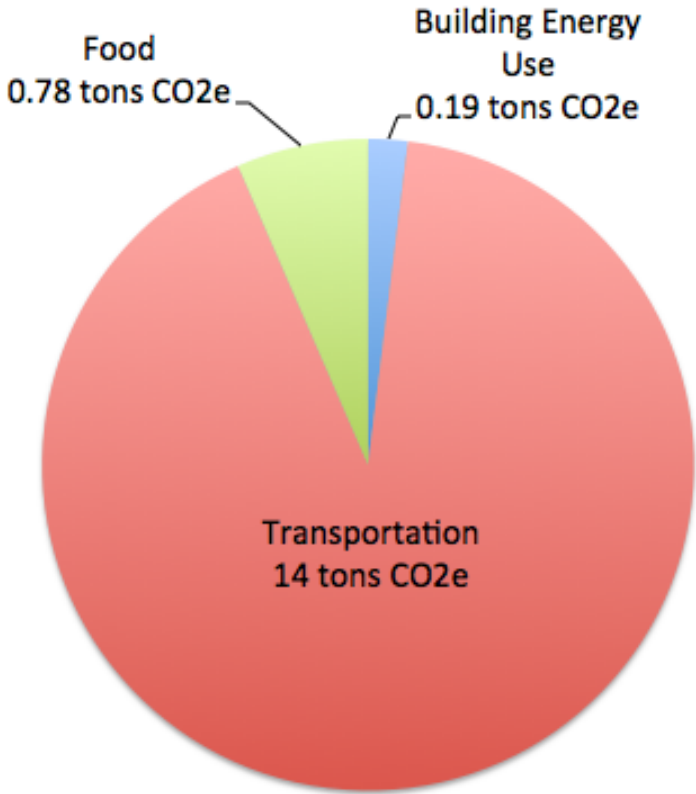


The **0.78 Tons (1,560 pounds) of CO<sub>2</sub>e** overall emissions from the two vegetarian meals served at the conference equates to 6.17 pounds of CO<sub>2</sub>e per person.

**OVERALL CONFERENCE EMISSIONS RESULTS**

The emissions from this year’s conference were primarily from transportation, representing 94% of the total emissions (14 tons of CO<sub>2</sub>e). The meals at the conference made up roughly 5% of the emissions (0.78 tons of CO<sub>2</sub>e) and the building energy use utilized by the conference made up about 1% of the emissions (0.19 tons of CO<sub>2</sub>e). The breakdown of this year’s conference emissions by category can be seen on the following page in Chart 4.

Chart 4: Conference Emissions by Category



The total emissions from this year’s conference equated to **14.97 tons (29,940 pounds) of CO2e**. This represents **0.06 tons (118 pounds) of CO2e** per person. This is 0.009 pounds of CO2e per person per square foot of conference space.

**ADDITIONAL SUSTAINABILITY MEASURES**

**BUILDING WATER CONSUMPTION**

The Empire Screen Printing building is supplied with well water. Using the U.S. Green Building Council’s Water Use Reduction Calculator,<sup>7</sup> the daily water consumption of the bathroom water fixtures for the conference were assessed based on the number of conference attendees.

**Calculations:**

Empire Screen Printing staff provided a count of bathroom fixtures that were accessible to occupants during the conference, as well as the flush and flow rates for each applicable fixture.

<sup>7</sup> <http://www.usgbc.org/resources/2009-water-use-reduction-calculator>

**Assumptions:**

- It was assumed that each occupant used the restroom three times during the conference, where male occupants had two urinal flushes and one water closet flush and female occupants had three water closet flushes.
- Drinking fountains have been excluded from these calculations, as the amount of water consumed and the duration of consumption by each attendee could not be accurately determined.
- It was assumed that the amount of water consumed via beverages was negligible compared to water consumed by flush fixtures in the building. Therefore, beverage water from ice water and coffee has been excluded from these calculations.

**Results:**

By assessing bathroom water fixtures, it was determined that attendees used **1,580.75 gallons of water** during the conference. This represents approximately 6.25 gallons of water per person.

Heating water via electricity produces 0.26 pounds of CO<sub>2</sub>e per gallon of water, not including the electricity used to collect, treat, and deliver the water.<sup>8</sup> This information has not been included in the emissions calculations. However, it can be noted that approximately **0.20 tons (411 pounds) of CO<sub>2</sub>e** were produced from heating water for the conference.

**WASTE**

The Empire Screen Printing staff conducted a waste audit on the day of the conference to assess the waste stream.

**Results:**

The amount of waste generated by the conference was 315.4 pounds. The waste stream breaks down as follows:

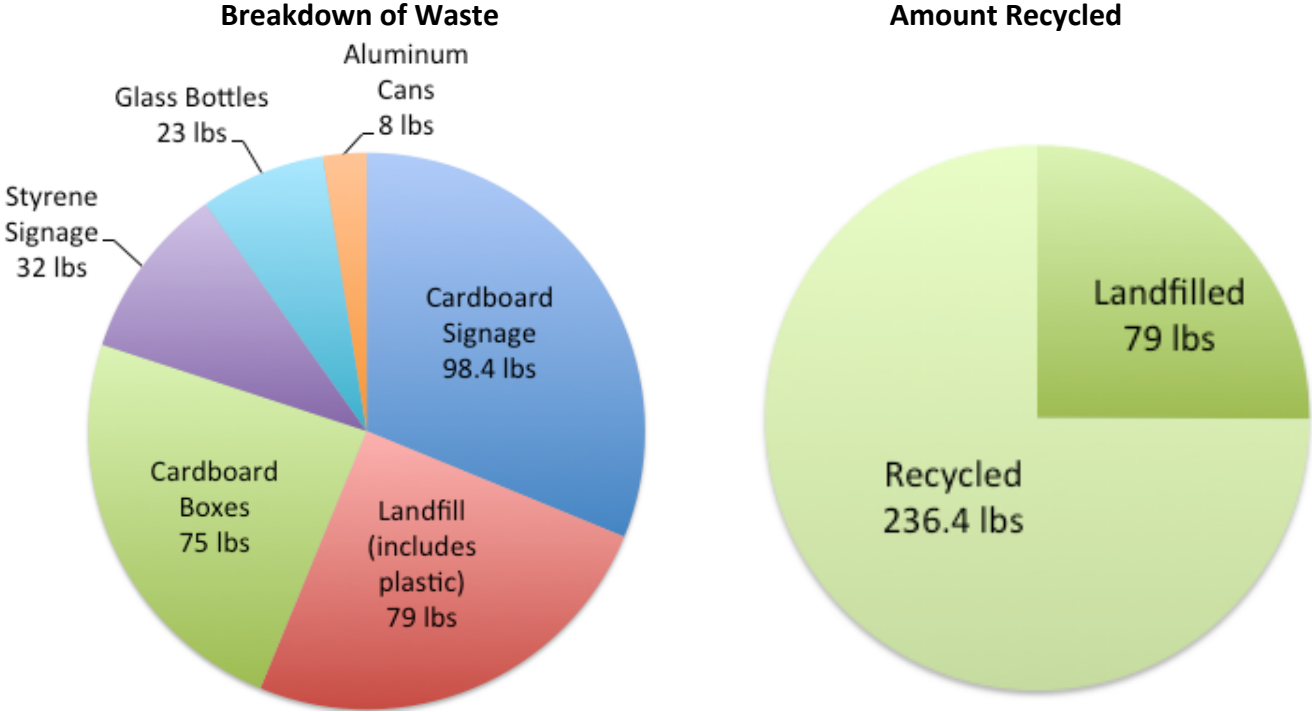
- Landfill waste stream (including plastic cups and food waste) made up 79 pounds (25%)
- Recyclable styrene signage made up 32 pounds (10%)
- Recyclable cardboard signage made up 98.4 pounds (31%)
- Recyclable cardboard boxes made up 75 pounds (24%)
- Recyclable aluminum cans made up 8 pounds (2.5%)
- Recyclable glass bottles made up 23 pounds (7.5%)

An impressive 75% of waste was recycled at the conference. The breakdown of this year's conference emissions by category can be seen on the following page in Chart 5, where green categories represent recycled waste and red categories represent landfilled waste.

<sup>8</sup> <http://www.co2list.org/files/carbon.htm>

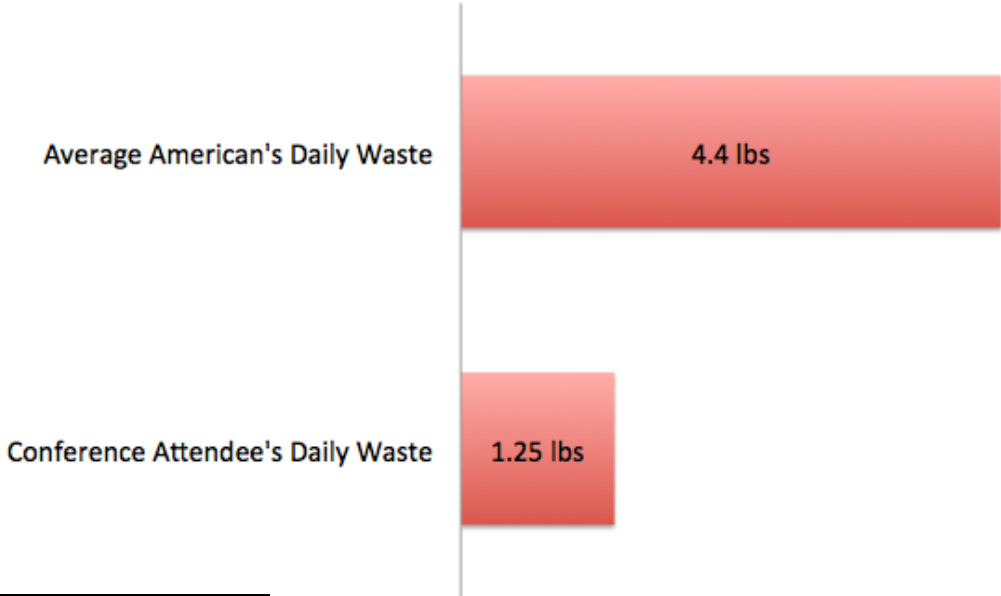


Chart 5: Conference Waste Audit



Overall, the conference generated **315.4 pounds of waste**. This equates to 1.25 pounds of waste per person. This is 72% less than the amount of waste generated by the average American, which is 4.4 pounds of waste per day.<sup>9</sup> This is illustrated below in Chart 6.

Chart 6: Average Conference Attendee's Waste vs. Average American's Waste



<sup>9</sup> <http://www3.epa.gov/epawaste/nonhaz/municipal/>

Although not included in the emissions calculations for the conference, it can be noted that landfilling one pound of food waste emits 0.78 pounds of CO<sub>2</sub>e, whereas composting one pound of food waste only emits 0.10 pounds of CO<sub>2</sub>e.<sup>10</sup>

### **GOODS AND MATERIALS**

For this year's conference, the following items were purchased for conference attendees: books, aluminum Kleen Kanteen water bottles, mugs, and organic cotton bags.

#### **Notes:**

- Each conference attendee received a copy of the book, *Outliers*.
- The Kleen Kanteen water bottles were purchased from Chico, California.
- The mugs were purchased from Sunset Hills Stoneware in Appleton, Wisconsin.
- The organic cotton bags were shipped from Florida.

#### **Results:**

Most of the items given away at this year's conference are reusable. Chemicals have also been minimized with this year's conference goods, as the Kleen Kanteen water bottles are BPA-free and the organic cotton bags are pesticide-free. Additionally, the mugs purchased from Sunset Hills Stoneware are produced locally. Overall, it is clear that goods given away at this conference were purchased with sustainability in mind, which is unique from conventional conferences.

### **CONFERENCE CARBON OFFSETS**

The WSBC is planning on offsetting at least 100% of the CO<sub>2</sub> emissions from this year's conference. In previous years, the WSBC has offset over 1,000% of conference emissions, and it is predicted that this year will be no different.

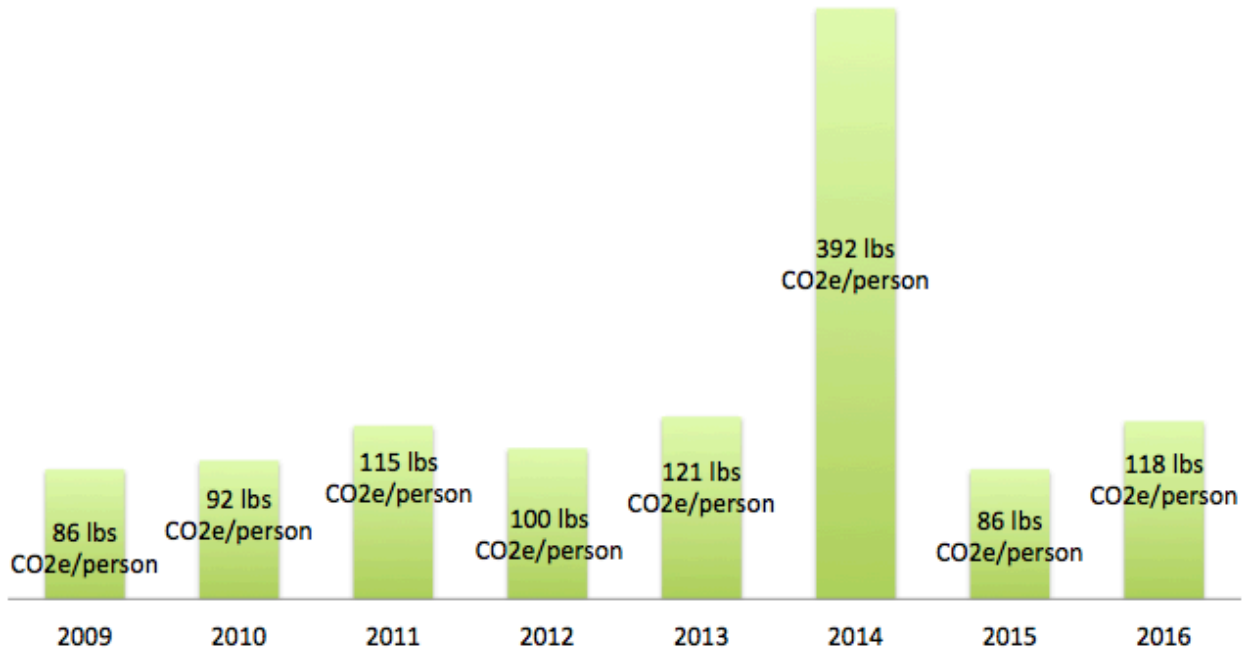
By purchasing carbon offsets, the WSBC is showing their commitment to lowering the overall carbon footprint of the conference.

### **COMPARISON TO PAST CONFERENCE EMISSIONS**

The emissions from this year's conference were very similar to the years of 2011-2013. In past years, the emission assessment did not include food emissions in the calculations, which could have slightly skewed the comparison between conference emissions. It is worth noting that conference location has a significant impact on the total emissions for the conference. For example, a building that primarily uses electricity from natural gas will have a much lower carbon footprint than a building with electricity sourced from coal. Additionally, a conference location that is closer to the majority of conference attendees will see lower carbon emissions. A comparison of conference emissions over the years can be seen on the following page in Chart 8.

<sup>10</sup> <https://kb.wisc.edu/dairynutrient/375fsc/page.php?id=48783>

**Chart 8: Annual Conference Emissions**



**CONFERENCE EVENT OBJECTIVES**

The conference sustainability objectives outlined in the WSBC Event Policy from 2013 are as follows:

- Reduce greenhouse gas emissions
- Reduce solid waste created
- Reduce attendee use of bottled water

This year, greenhouse gas emissions were reduced and offset, solid waste was reduced via recycling, and attendee bottled water use was reduced by providing each attendee with a reusable aluminum water bottle.

**GENERAL RECOMMENDATIONS**

- Discuss the results of the previous year’s emissions report at next year’s conference.
  - A sample slide summarizing this year’s conference emissions and sustainability metrics will be provided to the WSBC.
- Include a section in the survey that asks how many people will be in their carpool. Even if this number is just an estimate, this will provide greater accuracy.
- Record the number of attendees who get on the bus at each pick-up/drop-off location.
- Continue to purchase carbon offsets and to provide conference attendees with vegetarian meals and reusable/compostable items.
- Only purchase compostable plates, cups, and silverware if the building that the conference is held at is able to compost waste. This year, compostable products were purchased and the waste didn’t end up being composted.

- Ensure that there is plastic recycling on site. This year, plastic cups were not recycled.
- If possible, look for a conference location that is closer to the majority of conference attendees.
  - The top three locations where attendees traveled from this year are: Madison area (65 attendees), Lacrosse area (38 attendees), Platteville area (32 attendees)
- The current 2013 Event Policy indicates performance metric goals of “less than the average conference,” and it is not clear how these goals are being measured. It is recommended that the WSBC update the 2013 Event Policy to include more realistic performance metrics for how the success of each objective goal is measured.
- Have attendees record the number of people in their carpool, if possible.

### **ACKNOWLEDGEMENTS**

We would like to thank the Wisconsin Sustainable Business Council for asking us to conduct this report, as well as the staff at Empire Screen Printing for helping us collect information for this report. It was a pleasure to work with both organizations.