



# Project Pawprint

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## Homecoming Life Cycle Assessment

### Methodology Overview

The methodology for the 2012 and 2013 Homecoming assessments evolved over the course of two years, but followed the same structure for both events. Both assessments included approximately twenty-three alumni events related to Homecoming, as well as pre-game tailgating events and the Homecoming football game. The same five categories—travel, accommodation, food, energy, and materials and waste—were examined both years. The project used Simapro technology to assess the life cycle assessment of the event, and developed recommendations to mitigate the impact of the event.

### Simapro Life Cycle Assessment Software

Simapro Life Cycle Assessment software was used to analyze the data. This software features the EcoInvent Database, which includes information regarding environmental impact for thousands of items and services. The information in the database shows standardized data taken from studies on life cycle assessment impacts for various goods and services. For this study, the model TRACI 2 (Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts) was used to analyze the data. TRACI II was selected because it gives one of the broadest perspectives of environmental impact.

### Travel

In order to assess the impact of attendees traveling to Homecoming Events, distances traveled by attendees and the means of travel were estimated. The distances attendees traveled were determined by acquiring the billing zip code of every attendee who purchased a ticket to the game from the University of Arizona Ticketing Office. These zip codes were then entered into Zip Code Download's *Distance Wizard* software, which determined the distance between each zip code and the zip code for the University of Arizona. The Euclidean distance between the two zip codes was assumed to be the distance that attendee traveled.

### Accommodation

The impact of accommodation was modeled using a combination of information from surveys and estimated hotel impact data, which was produced by the EPA, as well as energy data from one local hotel. The same survey used to determine means of transportation also inquired about type of accommodations, which was used to estimate how many attendees were staying in hotels. In 2013, a student researcher also contacted hotels in Tucson and inquired about how many rooms in the hotel were occupied by people that were in Tucson for Homecoming events,

which allowed for the findings from the survey to be verified. The per-person impact from accommodations was estimated using average per-person electricity and heat information for the Tucson area. This impact was included in overall accommodation calculations.

### **Food**

Data regarding the quantity and types of food consumed was collected from two sources. Student researchers recorded the types and quantities of food present at events and tailgating, and catering services provided information regarding the food served at each event. For the majority of food items, the environmental impact was determined for each ingredient and summed to develop the environmental impact of each food item. Recipes provided by catering services and prominent online recipe websites, such as Food Network, were used to determine the quantities of each ingredient in the unit. For food items not found in the database, a model of the impact of the food item was created by pulling quantitative information regarding carbon footprint, water use, and any other environmental impact information from journal articles.

### **Energy Use**

The energy impact of Homecoming games was assessed in terms of energy use at auxiliary events and the stadium during the game. The energy use of the events was determined in a bottom-up manner by assessing the impact of all of the electronics and lights in the room that require energy. Prior to each event, the project team visited each room and documented the number and types of light bulbs present. The wattage of each light bulb was determined using information provided by Facilities Management. Student observers also documented the electronics used at each event, such as projectors, computers, speakers, and microphones. The wattage of each of these electronics was identified using labels on the product or online estimates. To determine the energy use for the stadium, Facilities Management provided metered electricity data. Information regarding the energy grid for Tucson was used to create a model in Simapro that was used to assess the impact of energy.

### **Materials and Waste**

Data was collected through a combination of student researchers documenting the quantities and types of materials distributed at events and tailgating, as well as event organizers and catering services providing information regarding the materials they were distributing. In order to determine the impact of items distributed at Homecoming, the project team assessed the materials used to create each item and estimated the weight of each of the materials. Internet searches were used to determine the types of materials used to produce each item, as well as to estimate the approximate weight of the items. SimaPro was then used to determine the impact of each of the materials used.

In addition to materials, the environmental impacts of disposing of waste from tailgating and the Homecoming Game were also estimated. Facilities Management provided data regarding the overall weight of trash and recycling generated. In 2013, the project team also conducted a waste audit of 800 pounds of trash and recycling generated both during tailgating and after the game. Student and staff volunteers sorted the waste by material types: glass, aluminum, paper and cardboard, plastic, and “trash” materials that cannot be recycled. This was used to determine the proportionate makeup of the waste generated from Homecoming.