Paper

Paper Life-Cycle Analysis (LCA) Comparisons: We use Environmental Defense Fund's online Paper Calculator 2.0 (http://www.edf.org/papercalculator/). This calculator is based on the analysis of the Paper Task Force, a three-year research project convened by Environmental Defense and involving Duke University, Johnson & Johnson, McDonald's, Prudential Insurance, and Time Inc. The task force examined environmental impacts through the full lifecycle of paper, along with economic and functional issues across major paper grades. Its findings were extensively peer-reviewed by scientists, academics, environmental experts, and government and industry representatives. More information about the calculator can be found on the EDF website. The full Paper Task Force Report online contains supporting technical papers and recent updates to the lifecycle environmental data.

Using the Calculator:

For the **Baseline Paper**, use **Uncoated Freesheet** with 0% recycled content (this is the standard, normal printer paper; if the group is printing posters or some other materials, change the options accordingly to reflect their baseline paper). For **Quantity**, input how much paper the group would have used without GEC consultation in tons (the average printer paper weighs .01 lbs per sheet).

Click **Add a 2nd Paper**. For your second paper (the sustainable alternative), enter in the **Paper Grade**, **Quantity**, and **Percent Recycled Content**. Then click **Calculate**. While all the numbers given to you on the "Lifecycle Environmental Impact" results page are useful, we are especially interested in the following categories: Wood Use, Net Energy, Greenhouse Gases, Wastewater, and Solid Waste. The numbers will tell you the use of each of these categories by the two papers and will compare the recycled paper with the original paper to give you the amount of each category saved.

Waste

For post-event waste assessment, weigh the recycling and compost bins and sum their totals separately (you should have a sum for the pounds of compost as well as a sum for the pounds of recycling). **Input these values into the "Waste" sheet in the "GEC Post-Event Metrics Calculations" Excel document.** The spreadsheet will calculate estimates for CO2 diversion and energy savings for you.

Foodservice Event Materials

Once again, we highly encourage buying standard event materials (plates, bowls, cups, utensils) through Green Store (greenstore.stanford.edu). Green Store stocks compostable products with similar life-cycle impacts as those stocked by World Centric, another company that offers compostable foodservice products. We use their life cycle assessment data to calculate carbon dioxide, energy, and water usage by sustainable products, in comparison to conventional products. We can assess the impact of the following common event products that are purchased through Green Store or World Centric:

- Compostable:
  - Utensils – spoons, forks, knives (PLA)
  - Cups (PLA)
  - Plates – small and large (wheat straw)
  - Bowls (wheat straw)

Example (How This Works):
Event A used approximately 500 compostable cups (PLA), 350 compostable (wheat straw) plates, and 600 compostable forks and knives (also PLA). Each cup weighs 1.2 ounces=.075 lb. Each plate weighs 1.6 ounces= .1 lb. The forks and knives weigh approximately .8 ounces=.05 lb. Therefore, the total PLA used was 500*.075 + 600*.05 = 67.5 lbs. The total wheat straw used was 300*.1 = 30 lbs. **To calculate the environmental impact of using more sustainable resources, multiply the amount of product used by its environmental impact per pound of material used for both the sustainable and conventional materials; then compare the results.** Below is World Centric data for the environmental impacts of some sustainable versus non-sustainable choices:

Environmental Impact Per Pound of Material Used

Material	Energy (kWh)	Emission (lb CO2 equivalent)	Water (gallons)
Ingeo PLA	5.37	1.3	8.29
GPPS (General Purpose Polystyrene)	11	2.71	16.93
Wheat Straw	0.66	0.69	13.33
Bleach Coated Paperboard	5.49	1.48	9.86

Take these environmental impact values and multiply them by the amount of each product used. For example, the total energy impact of Event A's use of PLA is: 67.5 lbs * 5.37 kWh/lbs = 362.475 kWh. Do these calculations for both the sustainable and conventional materials and compare the results. In the case of Event A, there was a savings of:

- 524 kWh energy
- 119 lbs CO_2 emissions
- 479 gallons of water

Input values into the "Foodservice Event Materials" sheet in the "GEC Post-Event Metrics Calculations" Excel document, which will do the calculations for you.