Hosting a Carbon Neutral Event in Thunder Bay, Ontario

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Many individuals, organisations and governments have acknowledged that rapid climate change is a critical issue in the 21st Century. Efforts are being made to reduce greenhouse gas emissions at the global and local levels. Public event organizers are trying to reduce carbon emissions by hosting "carbon neutral" events and conferences.

Most aspects of any public gathering have some climate impact. Buildings require electricity, heat and cooling, food and beverages have a carbon cost in their production and transport, paper that this is printed on required fossil fuels and so on.

The organizers of "Carbon Change: Solving it Together", decided to make the event "carbon neutral". A conference about climate change should avoid the irony of contributing to the problem. Sessions took place on September 22, 2007 at Lakehead University's Student Centre in Thunder Bay. The event was sold out, with 235 people participating.

Direct Carbon Emission Reductions

The first stage of holding a carbon neutral event is reducing carbon use**.**

This was achieved in a number or ways. Transportation emissions were reduced by encouraging people to walk, cycle, bus or car-pool. A significant reduction in admission fees was offered if attendees chose a no-carbon or low-carbon method of arriving to the conference. Transportation emissions were further reduced by utilising primarily local foods. By reducing the use of paper and plastic, especially disposable products, were minimized.

Through these efforts, emissions were reduced but not eliminated. Emissions were still produced from heating, air-conditioning and lighting, printing and paper costs, ground transportation, accommodations and air travel.

Calculating Carbon Emissions

This brings us to the second stage of holding a carbon-neutral conference: Calculation of the amount of CO_2 emissions and taking responsibility for these emissions. Typically this is done by purchasing 'carbon offsets'. Investment in a project that absorbs or reduces carbon emissions reduces future carbon production, hence making an event carbon neutral. Examples of projects include planting trees or investing in renewable energy.

To calculate these emissions, conference statistics were compiled in terms of number of people attending, means of transportation, energy and electricity use at the Student Centre, paper use, food transport, and speaker transportation and accommodations. The total emissions for the 1-day conference were 0.96 tonnes of carbon (Table 1). Site energy (electricity and natural gas) accounted for 11 per cent of carbon production. Local transportation was 35 per cent and long-distance travel for three out-of-town speakers was responsible for 47 per cent of the total emissions. Speaker accommodation, paper and local food transport made up the remaining 7 per cent.

Calculation of carbon emissions in a conference is not a precise procedure. Some conference numbers were estimated when precise statistics were not available and there are also estimates built into the various carbon calculators. For example an average automobile is used to calculate carbon emissions per km per vehicle. We believe our calculation is a high estimate of the amount of carbon produced as we selected higher carbon scenarios in some instances. We included the carbon cost of operating the Outpost space even though many of these costs would have been incurred even if the conference had not taken place. Another consideration is the carbon cost of airplane flights; many conversions result in about the same amount per individual per km as for an

automobile. However, there is evidence that airplane fuel exhaust released into the upper atmosphere has a more potent greenhouse gas effect (with current estimates at double the effect).

That being said, we feel that it remains an important exercise. One obtains a sense of the carbon impacts of conferences and other human activities and how to offset these emissions. Also of interest is the potential amount of carbon produced had efforts not been made to reduce emission directly. Most people attending the conference did take advantage of the low-carbon transportation discount on conference fee. If 50 more cars had been used (much less carpooling, walking or travel by bus) and the food came from approximately 2000 km away (food not local) the carbon emissions are estimated to be 1.5 tonnes, an increase of 50%!

Carbon Offsets

There are several ways to offset carbon use. Tree planting is often utilised. Information is available through Tree Canada (www.treecanada.ca/calculator/index.htm). It would take approximately 7 trees growing for 80 years to offset our conference emissions. Another approach is to encourage the use of renewable energy.

Environment North chose this method and is making a modest investment in a local renewable energy project (details follow). Kilograms of carbon were converted into kilowatt-hours, using the equation 1kWh=0.43kg CO_2. This conversion formula is based on an estimate of the electricity production mix in Northwestern Ontario. In our case, 1.11 tonnes of carbon can be offset with 2581 kWh of energy. Purchasing carbon credits from a carbon-free power producer such as Bullfrog Power (http://www.bullfrogpower.com/) would support low-impact water and wind power sources. This would cost approximately $350.00.

Environment North would prefer to invest this in a local renewable energy project. Plans are underway to construct a “solar forest” consisting of trees with several solar photovoltaic panels. One panel would produce about 350 kwh per year. Thus the carbon from the conference would be offset it about eight years. The cost of purchasing one panel is about $1500.00. EN would be investing in a local renewable energy project which would be highly visible and thus contribute to public awareness of renewable energy and the panel would produce clean renewable energy for at least 30 years.

Conclusions

Overall the conference “Carbon-change: Solving it Together” was a success and can be used as either as a model for reducing carbon emissions at events and gatherings, or to encourage taking responsibility for our environmental impacts in terms of greenhouse gas emissions. It was apparent that transportation (by planes and automobiles) made the largest carbon contribution. Local organizations and businesses can refer to the attached template (Table 1) to help calculate carbon emissions related to conferences and events, and can find further information about climate change, unit conversions, carbon offsets and carbon emissions by referring to the websites listed in References or at the end of the Table 1.

References

http://www.davidsuzuki.org/Climate_Change/What_You_Can_Do/carbon_neutral.asp
www.treecanada.ca/calculator/index.htm

Table 1: Calculation of Carbon Emissions

	Carbon Emissions (kg)	Per Unit	Number of Units	Emissions Produced (kg)	Offsets (kWh)
Transportation					
Walking	0	km	92	0	
Car (gas)	0.19	km	1753	331.1	770.1
Bus (urban)	0.15	km	50	7.3	17.0
				338.4	**787.1**
Energy					
Electricity	0.12	kWh	545.6	65.5	152.3
Cooling (electricity)	0.12	kWh	250.0	30.0	69.8
Natural Gas	1.89	metres^3	5.31	10.0	23.4
			800.9	**105.5**	**245.4**
Paper					
card stock	2.6	kg	0.5	1.3	3.0
recycled 8.5"x11"	1.63	kg	3	4.9	11.4
	(250 sheets/kg)			**6.19**	**14.4**
SPEAKERS					
Accommodations					
Hotel	15.30	room/night	3	45.9	106.7
Flights	0.30	km	830	250.0	581.4
Car (gas)	0.19	km	1050	198.3	461.3
				494.2	**1149.4**
Food					
Transport	0.19	km	100	18.9	43.9
Preparation (in Energy)					
TOTAL				**963**	**2240**

Sources for Carbon Emission Conversion Factors

Transportation	www.treecanada.ca
Electricity	email communication with OPG, Thunder Bay Generating Station
Other Energy	www.planetair.ca
Paper	www.paperculator.org
Accommodation	www.sustainabletravelinternational.org