

# Environmental Metrics

Account	End Destination of Book	Total Books ReUsed or Recycled	Books (lbs)	Trees	Water (g)	Green-house Gases (lbs)	Landfill Space (cu yd)	Electricity (kwh)
University of Regina: Student Union		252	344	3	1,666	530		820
	Recycled	224	306	3	1,301	470		727
	Reused	28	38		365	60		93

## EXPLANATION OF DATA VALUES

**REUSED BOOKS** – This category is made up of the sum of books sold and donated. The reuse of these books is considered waste prevention. Reducing the volume of waste we create results in limiting the environmental impact of disposal or recycling<sup>1</sup>.

**RECYCLED BOOKS** – Books we deem unsalable and not appropriate for donation to our participating literacy partners. Recycling books is termed waste reduction<sup>1</sup>. Our recyclers report that the efficiency of recycling a book yields 97% of that book as usable fiber.

**POUNDS OF BOOKS** – The average weight of the outbound books that Better World Books has processed is 1.37 pounds. This average weight is multiplied by the number of books categorized as ReUsed. Recycled books are multiplied by the efficiency rating of generating recycled fiber (see Usable Fiber below).

**TREES** – The number of typical trees assumes a mix of hardwoods and softwoods 6-8inches in diameter and 40feet tall. The number of trees saved per ton of 100% recycled fiber produced is twenty four<sup>2</sup>.

**WATER (g)** - There are 8,750 gallons of water saved per ton of paper produced when comparing 100% forest fiber sources to 100% postconsumer fiber<sup>2</sup>.

**METHANE & GREENHOUSE GASES (lbs)** – Landfilling produces .725 pounds of methane per book<sup>3</sup>. One way of measuring the impact of greenhouse gases is by assigning them a Global Warming Potential (GWP). The concept of a global warming potential (GWP) was developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The definition of a GWP for a particular greenhouse gas is the ratio of heat trapped by one unit mass of the greenhouse gas to that of one unit mass of CO<sub>2</sub> over a specified time period\*. Methane has a GWP of 25 which makes this particular emission a greater cause for concern than CO<sub>2</sub>. The total greenhouses gases, including Methane saved in production of one ton of paper from 100% postconsumer fiber versus 100% forest fiber sources is 2108 pounds<sup>2</sup>

**LANDFILL SPACE (cu yd)** – 1 ton of books takes up 3.3 cubic yards of space in a landfill<sup>2</sup>. The total pounds divided by 2000 equals total tons. Tonnage multiplied by 3.3 cubic yards and multiplied again by the 97% efficiency rating of postconsumer content paper yields the total cubic yards of space conserved.

**Kwhs** – There are 4893 Kilowatt Hours of electricity saved per ton of paper produced when comparing 100% forest fiber sources to 100% postconsumer fiber<sup>2</sup>. The conversion factor utilized was 1 Btu = 0.00029307108333 kilowatt hour.

**Tons of Usable Fiber** – Our recyclers report that 97% of the books that we send are turned into usable fiber. This 3% of refuse is used in calculation of any pertinent metrics. The total pounds of Recycled books divided by 2000 yield the total tonnage of usable fiber.

1. Environmental Protection Agency. Pollution Prevention Act of 1990. Retrieved October 27, 2008 from <http://www.ofee.gov>.

2. Environmental impact estimates were made using the Environmental Defense Fund Paper Calculator. For more information visit <http://www.papercalculator.org>

3. Borealis Centre for Trade Environment and Trade Research. Findings from the U.S. Book Industry: Environmental Trends and Climate Impacts. Retrieved July 10, 2008, from [http://www.greenpressinitiative.org/documents/trends\\_summary.pdf](http://www.greenpressinitiative.org/documents/trends_summary.pdf).

\*Environmental Protection Agency. High Global Warming Potential (GWP) Gases. [Online] Retrieved October 28, 2007 from <http://www.epa.gov/highgwp/scientific.html>"

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