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Green ICT Strategies / COMP635
Assignment 1 - Carbon footprint at BMO

February 17, 2013

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Introduction

BMO incorporates sustainability planning in the company's Guiding Principle [1]. Company policy holds that BMO strive to achieve a leadership role in environmental sustainability [12]. Board level accountability is held by BMO's Sustainability Council. Environmental concerns are measured into business decisions, with dedicated funding, organizational philosophy, and strategic considerations. Upstream and downstream supply chain decision models incorporate emissions considerations. Hundreds of projects aimed at reducing emissions are under consideration, in progress or already complete.

As a financial services organization, BMO is not a major producer of emissions. Buildings, either owned or leased, contribute 90% of the organization's carbon footprint [1]. Travel comprises most of the remainder.

Although BMO has international operations, Canada and the US represent over 99% of all organizational emissions and physical real estate.

Sustainability is a multi-faceted problem that BMO is committed to addressing. BMO recognizes the importance of finding efficiencies. This has direct economic benefit to the organization's operational bottom line in terms of direct costs and public perception. Proper accreditation is necessary to work with other organizations with green supply chain considerations.

BMO has more than 47 thousand employees occupying over 19 million square feet of office space around the world. The reporting year covered in this paper is 2011, which saw the major acquisition of US-based Marshall and Ilsley Bank (M&I).

Carbon disclosure is a nascent process. As it evolves, reporting is changing. Prior to 2010, coverage was Canada only.

BMO achieved carbon neutrality in 2010 [3]. This is achieved through significant purchases of green energy in Canada and the US, and carbon offsets.

While undertaking green initiatives to reduce its own carbon footprint, BMO also enables third parties' green plans through product and service initiatives and in funding renewable energy projects.

Background

Radiative forcing refers to the amount of solar energy retained by the earth [7]. Greenhouse gases (GHGs) absorb heat, preventing the release of energy. A heated atmosphere leads to climate change.

Anthropogenic causes are the most likely factors in driving up GHG concentrations. Although several gases have radiative properties, through volume and longevity, carbon dioxide (CO₂) is the most important GHG [8]. Ice cores reveal that CO₂ levels are growing faster and reaching greater concentrations than previously observed [8].

Anthropogenic CO₂ production is largely attributable to the burning of fossil fuels and deforestation [8].

Sustainability requires that current existence allows for future existence, and involves social, economic and environmental practice. A generally accepted process for ensuring sustainability is constraining the carbon footprint. An entity's "carbon footprint" is generally accepted to refer to the entirety of greenhouse gas emissions that are attributable to that entity [2].

Strategies for carbon footprint reduction are multi-faceted. Reducing or eliminating reliance on power generated through the emission of CO₂ is one vector. Sustainable development that neither contributes to deforestation nor makes unnecessary use of fossil fuels or cement, which are leading factors in anthropogenic GHG production [8], should be practiced.

Planned achievements for this paper

After outlining the necessity of adopting a sustainable operational approach to doing business in the 21st century, this paper will outline the major factors that contribute to BMO's carbon footprint. This information will be categorized in an effort to make clear indications of problem areas, progress vectors and opportunities for further exploitation. Current results will be examined in comparison with previous year's results. The differences will be examined for indications of progress or problem.

It should be clear that this information has an economic underpinning. Green projects have an immediate economic benefit in that they reduce power costs. Several ancillary benefits include improved reputation, which will contribute to opportunities to do business with other green organizations. This paper will outline current status, including status on initiatives in progress and perhaps identify other areas that need attention.

Detail

BMO successfully maintained carbon neutrality in 2011 [1].

BMO's reported emissions from worldwide operations in 2011 [13] totalled 201,946 tonnes carbon dioxide equivalent (CO₂e). Purchased electricity comprised 71.8% of the total, while fuel combustion contributed another 20%. Waste to Landfill emissions represent BMO's major owned facilities.

Use type	Emissions (tCO ₂ e)	Percent	Totals (tCO ₂ e)	
Electricity*	145,092	71.8%	145,092	71.8%
Natural gas*	36,897	18.3%		
Other fuels*	3,838	1.9%	40,735	20.2%
Hydrofluorocarbons (HFCs)	220	0.1%		
Waste to landfill	649	0.3%		
Fleet fuel	1,666	0.8%		
Ground travel	5,916	2.9%		
Air travel	7,668	3.8%		
			16,119	8.0%
			201,946	100.0%

Table 1 - Emissions by source

Operations in Canada and USA account for almost the entirety of BMO's emissions, with 0.4% of the total attributable to other international operations. US operations created more emissions than Canadian. Acquisition of significant US holdings in the form of Marshall and Ilsley (M&I Bank) took effect in mid-2011. This increased occupied real estate by 5 million square feet, to a total of over 19 million square feet worldwide [14]. Staffing increased 25% to 47 thousand. Scope 1+2+3 enterprise emission totals increased significantly. At time of acquisition, M&I Bank green initiatives lagged behind BMO's. Preliminary abatement measures for M&I operations are underway, with further plans going forward.

Scope 3 emissions, in which BMO includes operations of leased premises, amount to more than Scope 1+2 together.

	Scope 1 (tCO₂e)	Scope 2 (tCO₂e)	Scope 3 (tCO₂e)	Total by region	Percent by region
Canada	12,929	20,812	56,576	90,317	44.7%
United States	8,222	44,791	57,829	110,842	54.9%
International	-	-	787	787	0.4%
Total by scope	21,151	65,603	115,192	201,946	
Percent by scope	10.5%	32.5%	57.0%		100.0%

Table 2 - Emissions by scope

The M&I Bank acquisition nullified progress made in emissions reductions. To address the changed circumstances, emissions reduction goals were restated. The adjusted target is a 5 year / 10% reduction after restating and normalizing the 2011 baseline [1].

BMO undertook significant purchases of green energy in Canada (23.8 million kWh) and USA (91.4 million kWh). Significant carbon credit offsets were purchased in support of several projects in Canada and abroad.

BMO purchases Renewable Energy Certificates (RECs) to cover North American consumption. Contractual agreements with the providers mandate that the certificates be retired and not sold or transferred by the providers.

RECs	kWh	Country	Provider
23,813	23,812,740	Canada	Bullfrog Power
91,400	91,400,000	USA	NextEra Energy Power Marketing

Table 3 - Purchased RECs

BMO also purchased ISO 14064-2 verified carbon credits totalling 130,728 tCO₂e in 2011.

Of BMO's total operational budget for 2011, the expenditure on energy is between 0% and 5%.

Carbon Disclosure Project reporting includes standard intensity measures (the first two in table 4) and invites the participant to suggest meaningful measures of their own. BMO considers building emissions per square meter of occupied real estate and transportation emissions per FTE to be representative.

Scope 1+2 data is between 90-100% as verified against the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) ISO 14064-3.

Analysis

Constraints in measurement of energy consumption exist. Some facilities are not fully metered. Leased premises offer prorated estimates. These data gaps create a margin of error believed to be between 2% and 5% of reported values.

Combined Scope 1 and Scope 2 emissions increased over the previous reporting year. Results by activity show varying results (see table 5). Emissions attributable to the 2011 M&I bank acquisition dominate the

results. Overall total emissions lack relevance unless the data can be normalized. BMO's suggested intensity measures (see table 4) might offer a more reasonable picture of year-to-year progress.

Intensity measure	Value
Gross combined Scope 1 and 2 emissions tCO ₂ e per total revenue	0.0000063241
Gross combined Scope 1 and 2 emissions tCO ₂ e per full time equivalent (FTE) employee	1.8388
Scope 1+2+3 real estate based emissions tCO ₂ e per square meter of real estate occupied	0.1014
Scope 1+3 transportation for business purposes (air/ground) tCO ₂ e per FTE employee	0.3232

Table 4 - Intensity measures

Activity	Example	Attribution (%)
Emissions reduction activities	HVAC retrofits	(3.76)
Change in output	Facilities closed in 2011	(0.17)
Other: Data Corrections	Improved data capture	4.41
Other: Change in Emissions Factors	Reference data changes	4.47
Other: Weather	Catchall	13.90
Acquisitions	M&I Bank	81.14

Table 5 - Attribution of Scope 1+2 year-to-year change

Future acquisitions may continue to obscure emissions reductions.

Activity	Example	Attribution (%)
Emissions reduction activities	Teleconferencing repl. travel	(4.82)
Emissions reduction activities	Building improvements (lighting, HVAC)	(2.52)
Change in output	Leaseholds vacated in 2011	4.58
Other: Weather	Catchall	5.01
Other: Data Corrections	Process improvements	7.95
Acquisitions	M&I adds 1.5M sq feet leased	41.52
Other: Change in Emissions Factors	Reference data changes	48.28

Table 6 - Attribution of Scope 3 year-to-year change

BMO supports green initiatives in several ways. Dedicated budgets finance energy efficiency initiatives and purchase offsets. Environmental factors are included in evaluation of projects, opportunities, and ROI. This is achieved in part by specifying and accounting for an internal price for carbon. Employees volunteer to serve as Environmental Ambassadors to champion sustainability within the organization’s workforce, which should also serve to mitigate the effect of the Khazzoom-Brookes postulate [4].

Project type	Description	Estimated annual CO2e savings	Payback period
Energy efficiency: building services	Mechanical infrastructure (HVAC, variable speed drives, higher efficiency motors, etc.)	221 t	> 3 years
Energy efficiency: building services	Building monitoring / automation systems. Pilot project in 10 retail branches completed 2011. All new branches and major renovations will follow.	93 t	> 3 years
Energy efficiency: building services	Lighting retrofits, including daylight harvesting, in US facilities. A 10% reduction, or 2.4 million kWh, in power demand is expected annually.	798 t	1-3 years
Energy efficiency: building services	Lighting in Canadian retail branches.	197 t	1-3 years
Transportation – fleet	Switching from gas-powered vehicles to hybrids. 69% converted after 2011.	91 t	> 3 years
Transportation – use	Travel reductions through videoconferencing / teleconferencing	1106 t	< 1 year

Table 7 - Green initiatives underway at BMO

Conclusions and recommendations

BMO’s Sustainability Council has a comprehensive program in place and underway. Although growth through acquisition is planned, past purchases were immediately followed up with extending the BMO emissions reduction plans to the new offices. The broad scope of internal green initiatives suggests that few opportunities will go overlooked.

Despite a clear intent to achieve and maintain a leadership position in the environmental aspects of its industry, the bank will continue to see inconsistent returns, where successful remediation efforts do not show in the bottom line, in conjunction with acquisitions. The current practice, demonstrated with the M&I purchase, will continue to positively evolve the bank’s green profile.

Although the transformation to carbon neutrality is a worthy accomplishment, costs for power represent less than 5% of total expenses. BMO will not recognize game-changing results on power efficiencies alone. Further product and service development will soon be the primary vector for achieving financial gain.

Future ISO 14067 [16] accreditation, when it becomes available, would add transparency. However, the bank already earns recognition for its leadership role in its voluntary participation in the Carbon Disclosure Project.

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