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Green ICT Strategies / COMP635
Assignment 2 – BMO Carbon footprint reduction through ICT

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Contents

- Introduction..... 3
- Background..... 3
- Plan for this paper 4
- Detail 4
 - Procurement..... 4
 - Energy consumption..... 5
 - Data centres 5
 - Office premises..... 5
 - Transport 6
 - Resource consumption..... 6
 - Waste management 6
- Analysis..... 6
- Conclusion 7
- References..... 8

Introduction

The world's population has come to accept the need to address sustainability concerns. Unchecked, the drain on the planet will continue to fuel climate change and inevitably exhaust non-renewable resources.

BMO has undertaken several projects to enhance sustainability. Overall program scope is enterprise wide, with application in energy consumption, resource consumption, procurement and waste reduction. ICT features prominently and can be exploited for further initiatives. Opportunities exist in all operational areas. ICT will support efforts passively, by enabling information systems, and actively, by empowering control systems.

Background

Analysis of energy consumption and emissions sources identifies remedial opportunities. The overall picture divides into three tiers: home, work and transport.

Electricity consumption in home and office accounts for 20% of Australia's¹ total emissions. Orphaned energy used to power unattended devices and appliances is estimated at 15% of residential and commercial energy consumption. The value of wasted standby energy in Australia approximates A\$1 billion per annum. [1]

Road transport accounts for 14% of Australia's greenhouse gas (GHG) emissions. Of that, 2.6% is attributable to the 43.5 billion annual commuter kilometres. Aviation accounts for more than 5% of Australia's emissions. [1]

ICT management allocates 25% of their budget to data centre (DC) operations. These budgets grow at an average annual rate of 6%, markedly outpaced by DC facility costs' 20% annual growth [2]. Unchecked, by 2020, DC cost will match total IT budget.

Financial services organizations attribute most of their operational expense to facilities. Overall, 90% of BMO's carbon footprint derives from premises operations [3].

BMO has undertaken several initiatives to address its carbon footprint. Renewable energy purchased from Bullfrog Power comprises a growing share of the enterprise power requirement [4]. The BMObility initiative enables teleworking while shrinking office space requirements. New premises

¹ Australian and Canadian demographics match up reasonably well. The two sparsely populated nations have similar population sizes. Readily available Australian data is presumed to approximate Canadian realities.

construction and retrofits pursue LEED² certification where feasible [6]. Procurement policy requires environmental consideration. The organization established a Sustainability Council, its membership consisting of senior leaders from across the company [7]. BMO participates in the Carbon Disclosure Project³ (CDP) and is a signatory to the Equator Principles⁴.

Plan for this paper

This paper describes strategies for reducing BMO's carbon footprint, with an emphasis on Information and Communications Technology (ICT) applications. It references work already done and offers suggestions for future work, charting a path toward ongoing sustainability efforts.

This paper also raises philosophical questions. What carbon responsibilities does an organization have? If we consider the organization as intermediate in a supply chain that reaches primary industry downstream and upstream clients, should we not also consider the reach of the organization into its employees' homes? While direct responsibility is beyond the pale, perhaps advocacy for employees' sustainable lifestyle choices is within the organization's purview.

Detail

Various opportunities exist for sustainability gains across different vectors. Product and energy waste reduction opportunities are available. Business Process Improvement (BPI) initiatives can be used to reshape the bank's operations and colour them green.

Procurement

BMO has in place procurement policies that include environmental impact assessment of potential suppliers [12]. BMO's Clear Blue Skies program outlines the organizational commitment [7].

All phases of the procurement process can be supported through various ICT initiatives such as periodic data capture, monitoring and reporting. ICT enables BMO's commitments to keeping stakeholders informed and ongoing partner and supplier relationship management. Internal database and/or intranet will advise on policy matters, legislative changes, identify preferred suppliers, etc.

Re-engineering the procurement process can produce an intelligent automated purchasing system that will guide staff to greener choices – for example, promoting EPEAT/EnergyStar certified equipment.

² From Canada Green Building Council [5]: "Leadership in Energy and Environmental Design (LEED) is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings."

³ The Carbon Disclosure Project compiles and reports on voluntarily submitted GHG emissions-related data from major corporations worldwide.

⁴ From The Equator Principles [9]: "The Equator Principles is a credit risk management framework for determining, assessing and managing environmental and social risk in project finance transactions."

Energy consumption

BMO's ECO⁵ strategy [18] monitors energy consumption across all operations.

ICT project planning requires estimates of both build and operational costs. Chargeback to business areas for power consumption is not explicit. Updated business processes can lead to improved operating environment monitoring, which in turn can feed a system that will outline consumption and charges to business areas.

BMO's motion sensor-based Presence-Based Power, controlling lighting, air conditioning, and more, has the potential to reduce orphaned energy by 50% [1].

Data centres

BMO established procedures for data centre (DC) governance in accordance with ANSI/TIA-942⁵ Tier IV. That standard incorporates some environmental consideration, but primarily supports robustness. As such, until TIA-942 is updated or complemented to place greater emphasis on sustainability, it remains something of an enemy to energy conservation. BMO's mandate specifically addresses the need for balance⁶ between consumption and redundancy. It may be that Tier IV certification is neither desirable nor affordable when the evaluation includes sustainability.

DC load targets should be established, and real-time monitoring systems put in place to report on performance. Modeling tools can assess current infrastructure's fit for present and predicted business. Resilience capacity can be matched to forecasted need [19].

Given northern climates in Toronto and Chicago, evaluate potential of free cooling using fresh winter air. Control systems would integrate internal and external cooling.

Server consolidation and dematerialization efforts are ongoing. Evolving product capabilities will enable further efficiency improvements.

Office premises

BMO has already undertaken projects to upgrade facilities' infrastructure elements such as HVAC and lighting. These projects can enable Building Automation Systems (BAS) which can optimize lighting and temperature costs.

BMO's BMObility enables teleworking in a small area. Savings are realized through shrinking floor space requirements. The organization should increase the scope of this effort, evolving policy to take better advantage of this opportunity. Teleworking could reduce office space demands by 15%.

⁵ TIA-942 is an international standard for data centre telecommunications infrastructure. Architectural, electrical, mechanical and telecommunications aspects of data centres are evaluated. Tier IV is the most robust designation within TIA-942. While TIA-942 predominantly supports data centre robustness, addressing fault tolerances and maintainability, the specification includes environmental concerns. For example, it delineates architectures that encourage airflow and reduce cooling requirements. However, Tier IV specifications date to 1994 and should be reviewed for energy efficiencies.

⁶ Internal document reference.

Transport

BMO has converted 69% of the worldwide automotive fleet to hybrid vehicles. This program should continue.

BMO uses state-of-the-art video conferencing equipment in customer-facing business [14]. Revise business processes to mandate videoconferencing or teleconferencing where possible for inter-site meetings.

Reducing employee reliance on automobiles will mitigate the transport impact. BMO encourages employee use of public transit in Toronto and Chicago through discounted transit passes. Further efforts are possible. Car-sharing and carpooling programs can be supported with online systems for identifying travel partners and reservations. Create networked satellite offices close to employee residences to reduce travel.

Resource consumption

BMO has a goal of 25% paper consumption reduction by 2015, to be realized through several means [10]. Employees are urged to use digital documents and duplex printing. Customers are invited to use eStatements. Shareholders are encouraged to accept electronic reports.

Awareness could be supported by a policy that requires the “Think before you print” exhortation in all staff email signatures.

Waste management

Amend practices to consider total cost of ownership (TCO) for all products with waste reduction as the goal. Include product take-back consideration in procurement decisions. Tracking systems can maintain inventories, identifying opportunities for equipment repurposing.

Hard drive crushers destroy equipment with residual value. Alternative safe data policies exist elsewhere, including encryption over a device’s lifetime [15].

Analysis

BMO’s commitment to sustainability is multifaceted and requires phasing in various elements over a protracted period. Key elements are in place. Board level accountability is served with periodic reporting⁷.

ICT’s contribution to sustainability projects comes in two main flavours. Most initiatives can be supported by passive information systems that monitor, track and report. Active control systems that affect building environmental factors (BAS, DC environment, presence-based power, e.g.) also support green initiatives. In both cases, significant impacts on lowering BMO’s carbon footprint are realized, with more on the horizon.

⁷ Periodic reporting elements are typically intended for internal use only. As such, only general reference can be made.

BMO's sustainability projects support compliance with legislation and business partner requirements, and contribution to stakeholder value. This latter element typically refers to the organizational bottom line.

BMO has already undertaken significant effort, with more underway. However, dissemination is lacking, and staff are largely unaware of the bank's efforts. This shortcoming limits the employees' support, undermining the various initiatives. A second, potentially greater, opportunity is also lost. By advocating lifestyle change and support for sustainability, the program's reach can extend beyond the bank's walls and into the lives and homes of staff.

One simple tool for keeping sustainability in the corporate consciousness is Blackle⁸ [28]. Although LCD monitors have drastically reduced Blackle's relevance, it can still serve as a reminder to conserve. Similarly, intranet and internet pages can carry similarly implicit messages or even explicit green reminders.

Subsidiary Harris Bank's Green Thread Program directs cafeteria operations to increase local food sourcing, reduce waste in various ways, and rely on Fair Trade products. BMO has yet to bring this program to Canadian operations.

While paper consumption reduction targets are set, BMO makes no mention of post-consumer product.

BMO complies with certain external standards. Automated data collection and reporting tools can support verification efforts.

Conclusion

BMO has made great steps in enhancing sustainability. But the culture has not percolated through the staff. Unless and until green concerns are set in policy, this disconnect will lead to environmentally poorer decision making that may conflict with the corporate image and reality BMO strives for. The reality is that BMO has complied with legislation, taken transformative steps with policy, procedure and products only so far as was necessary.

The ongoing balancing effort (between economy and green; e.g. waste disposal) will certainly fall short until sustainability is recognized as an established corporate value.

BMO does not consider their communities and the public at large as stakeholders. This position leaves advances untapped. A greater sphere of green operations would enhance the bank's closely protected reputation. This would also align with corporate high ethical standards. BMO is missing the opportunity to establish itself as the industry's green leader.

In a very real sense, BMO has done as little as possible. Staff are uninformed and uninvolved. No unnecessary financially unprofitable effort is undertaken.

One change is necessary – BMO has to make it known, externally and internally, that they are serious about sustainability.

⁸ Blackle presents Google search and result pages with black backgrounds.

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