

**Creating a Culturally Relevant Environmental  
Management System for a Métis Workplace**

By

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A Thesis  
Submitted to the Faculty of Graduate Studies  
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A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of  
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Lindsay M. Thompson @ 2009

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## ABSTRACT

Creating an Environmental Management System (EMS) at the Manitoba Métis Federation's (MMF) Home Office provides an excellent opportunity to incorporate the unique Métis environmental worldview into its operations. The MMF is the self-government representative of the Manitoba Métis Community and their Home Office is located at 150 Henry Avenue in Winnipeg, Manitoba.

This research was carried out as participatory action research involving the MMF and its employees to design an EMS for their Home Office. An environmental survey and a focus group were conducted to help determine the unique elements of a Métis approach. The MMF's action plan and EMS were developed qualitatively from discussions with employees and management considering cultural relevance and their understanding of what was feasible in the organization.

It was evident from the participatory research that employees and management of the Home Office strongly feel that the MMF has a responsibility to address its environmental impacts and are willing to participate in the design of their EMS.

Contrasting the quantitatively rated environmental aspects with the results from the participatory research demonstrated the difference between what is quantitatively rated as feasible for the organization with what is preferred by the MMF employees. Replacing the heating system and windows were rated as moderate for feasibility but were tied as the most significant aspects participants would like addressed at the MMF Home Office. To accommodate for the differing priorities, an EMS should strive to meld both the feasibility rating and employee priorities into the plan. Certain actions, including replacing the heating system, and windows may be too expensive for the first

## Abstract

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year of the EMS but may become more feasible as the organization implements other actions to reduce their operating costs.

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**Table of Contents**

<b><u>ABSTRACT</u></b>	<b><u>I</u></b>
<b><u>ACKNOWLEDGEMENTS</u></b>	<b><u>III</u></b>
<b><u>CHAPTER 1: GENERAL INTRODUCTION</u></b>	<b><u>1</u></b>
1.1 GOALS AND OBJECTIVES	2
1.2 SIGNIFICANCE	2
1.3 PERSONAL INTEREST IN THE PROJECT	3
<b><u>CHAPTER 2: Literature Review</u></b>	<b><u>4</u></b>
2.1 MÉTIS IDENTITY	4
2.1.1 THE MÉTIS NATION	7
2.1.2 MANITOBA MÉTIS FEDERATION	8
2.2 SUSTAINABILITY	8
2.2.1 NATURAL CAPITALISM	9
2.3 REDUCING WASTE	10
2.3.1 COMPOSTING	10
2.3.2 RECYCLING	11
2.3.3 WASTE REDUCTION EDUCATION	11
2.3.4 WASTE AUDITS	11
2.3.5 A WASTE COMPARISON WITH ANOTHER COUNTRY	12
2.4 REDUCING ENERGY CONSUMPTION	13
2.4.1 ENERGY EFFICIENCY	13

## Table of Contents

---

2.4.2 ENERGY AUDIT	14
2.4.3 CANADIAN ENERGY CONSUMPTION	14
<b>2.5 REDUCING WATER USAGE</b>	<b>14</b>
2.5.1 WATER EFFICIENCY	14
2.5.2 REVIEWING WATER USAGE	15
2.5.3 COMPARISON TO OTHER COUNTRIES	15
<b>2.6 ENVIRONMENTAL MANAGEMENT</b>	<b>16</b>
2.6.1 THE ENVIRONMENTAL MANAGEMENT SYSTEM	16
<b>2.7 ENVIRONMENTAL MANAGEMENT SYSTEMS</b>	<b>18</b>
2.7.1 ECO-MANAGEMENT AND AUDIT SCHEME	18
2.7.2 ISO 14001	19
2.7.3 THE NATURAL STEP FRAMEWORK	20
<b>2.8 BENEFITS OF AN ENVIRONMENTAL MANAGEMENT SYSTEM</b>	<b>21</b>
<b>2.9 REFERENCES</b>	<b>23</b>
<b>CHAPTER 3: METHODOLOGY</b>	<b>30</b>
<b>3.1 INTRODUCTION</b>	<b>30</b>
3.1.1 DESIGNING AN ENVIRONMENTAL MANAGEMENT SYSTEM FOR THE MMF'S HOME OFFICE	30
<b>3.2 DATA COLLECTION</b>	<b>31</b>
3.2.1 SURVEY	31
3.2.2 FOCUS GROUPS	32

---

**CHAPTER 4: PARTICIPATORY RESEARCH OF AN ENVIRONMENTAL  
MANAGEMENT SYSTEM - BUILDING ON THE STRENGTHS OF THE**

**MANITOBA MÉTIS FEDERATION** **34**

**4.1 INTRODUCTION** **34**

**4.2 METHODS** **36**

**4.3 RESULTS AND DISCUSSION** **39**

**4.3.1 ENVIRONMENTAL ASPECTS** **43**

**4.4 CONCLUSION AND RECOMMENDATIONS FOR THE EMS FROM THE FINDINGS** **47**

**4.4.1 THE MAJOR DIFFERENCE BETWEEN THE MMF AND TYPICAL SMES OR GOVERNMENT  
OFFICES IS THE MÉTIS WORLDVIEW.** **47**

**4.4.2 ORGANIZATIONAL STRENGTHS AND CHALLENGES** **48**

**REFERENCES** **52**

**CHAPTER 5: MANITOBA MÉTIS FEDERATION DRAFT EMS HANDBOOK** **54**

**5.1 SCOPE DESCRIPTION** **54**

**5.2 RATIONALE FOR THE EMS** **54**

**5.3 STEPS FOR IMPLEMENTING THE EMS** **55**

**5.4 ENVIRONMENTAL POLICY FOR THE MMF** **57**

**5.4.1 PURPOSE** **57**

**5.4.2 POLICY** **57**

**5.4.3 PROCEDURE** **58**

**5.4.4 RECOMMENDATIONS** **58**

**5.5 ORGANIZATIONAL CHART** **58**

**5.6 LEGAL REQUIREMENTS** **58**

## Table of Contents

---

5.6.1 PURPOSE	58
5.6.2 PROCEDURE	59
<b>5.7 ENVIRONMENTAL ASPECTS, OBJECTIVES, TARGETS, ACTIONS AND RESPONSIBILITIES</b>	<b>59</b>
5.7.1 PURPOSE	59
5.7.2 ENERGY USE	60
5.7.3 PURCHASING	61
5.7.4 TRANSPORTATION	61
5.7.5 WASTE GENERATION	62
5.7.6 WATER USAGE	63
<b>5.8 SIGNIFICANT ASPECTS</b>	<b>67</b>
<b>5.9 ENVIRONMENTAL PROGRAMMES</b>	<b>67</b>
5.9.1 COMPOSTING	67
<b>5.10 STRUCTURE AND RESPONSIBILITY</b>	<b>68</b>
5.10.1 PURPOSE	68
5.10.2 PROCEDURE	68
5.10.3 RECOMMENDATIONS	68
<b>5.11 COMPETENCE, TRAINING AND AWARENESS</b>	<b>69</b>
5.11.1 PURPOSE	69
5.11.2 PROCEDURE	69
5.11.3 RECOMMENDATIONS	69
<b>5.12 INTERNAL COMMUNICATION</b>	<b>70</b>
5.12.1 PURPOSE	70

## Table of Contents

---

5.12.2 PROCEDURE	70
5.12.3 RECOMMENDATION	70
<b>5.13 EXTERNAL COMMUNICATION</b>	<b>70</b>
5.13.1 PURPOSE	70
5.13.2 PROCEDURE	70
5.13.3 RECOMMENDATIONS	71
<b>5.14 DOCUMENTATION</b>	<b>71</b>
5.14.1 PURPOSE	71
5.14.2 PROCEDURE	71
<b>5.15 DOCUMENT CONTROL</b>	<b>72</b>
5.15.1 PURPOSE	72
5.15.2 PROCEDURE	72
<b>5.16 DOCUMENT HEADER</b>	<b>73</b>
<b>5.17 OPERATIONAL CONTROL</b>	<b>74</b>
5.17.1 PURPOSE	74
5.17.2 POLICY	74
<b>5.18 EMERGENCY PREPAREDNESS AND RESPONSE</b>	<b>75</b>
5.18.1 PROCEDURE	75
<b>5.19 MONITORING AND MEASUREMENT</b>	<b>75</b>
5.19.1 PURPOSE	75
5.19.2 PROCEDURE	75
5.19.3 RECOMMENDATION	75
<b>5.20 COMPLIANCE WITH LEGAL AND OTHER REQUIREMENTS</b>	<b>76</b>

## Table of Contents

---

5.20.1 PURPOSE	76
5.20.2 PROCEDURE	76
<b>5.21 NONCONFORMITY, CORRECTIVE AND PREVENTATIVE ACTION</b>	<b>77</b>
5.21.1 PURPOSE	77
5.21.2 PROCEDURE	77
<b>5.22 INTERNAL AUDIT</b>	<b>79</b>
5.22.1 PURPOSE	79
5.22.2 PROCEDURE	79
5.22.3 RECOMMENDATION	79
<b>5.23 MANAGEMENT REVIEW</b>	<b>79</b>
5.23.1 PURPOSE	79
5.23.2 PROCEDURE	80
 <b><u>CHAPTER 6: VISUALIZING SUSTAINABILITY FOR THE MANITOBA MÉTIS FEDERATION: EVALUATING THE RATIONALE FOR ENVIRONMENTAL PROGRAMMES, TARGETS AND ACTIONS AS COMPONENTS OF AN ORGANIZATION'S ENVIRONMENTAL MANAGEMENT SYSTEM</u></b>	
<b>6.1 INTRODUCTION:</b>	<b>83</b>
6.1.1 MMF'S ASPECTS, ACTIONS, TARGETS AND GOALS	86
6.1.2 ENERGY USE	86
6.1.3 PURCHASING	86
6.1.4 TRANSPORTATION	87
6.1.5 WASTE GENERATION	87
6.1.6 WATER USAGE	87

## Table of Contents

---

<b>6.2 METHODS</b>	<b>91</b>
6.2.1 ENVIRONMENTAL SURVEY	91
6.2.2 FOCUS GROUP	91
6.2.3 BASELINE DATA	92
6.2.4 FEASIBILITY CALCULATOR	93
<b>6.3 RESULTS</b>	<b>95</b>
6.3.1 ENVIRONMENTAL SURVEY	95
6.3.2 FOCUS GROUP	98
6.3.3 BASELINE DATA	99
6.3.4 PAYBACK TIME, REQUIRED CAPITAL AND ENVIRONMENTAL IMPACT	101
<b>6.4 DISCUSSION</b>	<b>111</b>
6.4.1 EVALUATION FOR THE MMF'S EMS PROGRAMMES, ACTIONS AND TARGETS	111
6.4.2 EVALUATION FOR THE MMF'S EMS ACTIONS AND TARGETS	117
<b>6.5 CONCLUSION</b>	<b>120</b>
<b><u>CHAPTER 7: CONCLUSION</u></b>	<b><u>124</u></b>
<b>7.1 SUMMARY</b>	<b>124</b>
<b>7.2 FUTURE RESEARCH</b>	<b>126</b>
<b><u>APPENDIX 1: MMF HOME OFFICE ENVIRONMENTAL SURVEY</u></b>	<b><u>127</u></b>
<b>7.3 LEVEL OF INTEREST IN ENVIRONMENTAL ISSUES</b>	<b>127</b>
7.3.1 IMPORTANCE OF THE MMF ADDRESSING ITS ENVIRONMENTAL IMPACTS	128
7.3.2 COMFORTABLE IN WORK ENVIRONMENT	128
7.3.3 HEALTHY WORKPLACE	129

## Table of Contents

---

7.3.4 SAFETY	129
7.3.5 TIME SPENT OUTDOORS	129
7.3.6 EXPOSURE TO CHEMICALS	129
7.3.7 LIGHTING	129
7.3.8 DAYLIGHT	130
7.3.9 CONTROLLABLE LIGHTING	130
7.3.10 VIEW	130
7.3.11 TEMPERATURE AND AIR EXCHANGE	130
7.3.12 NOISE	132
7.3.13 WATER WASTAGE	132
7.3.14 DAILY MODE OF TRANSPORTATION	133
7.3.15 SUBSIDIZED BUS PASSES	133
7.3.16 CARPOOLING	134
7.3.17 BICYCLE STORAGE	134
7.3.18 BARRIERS TO PUBLIC TRANSPORTATION	134
7.3.19 SIGNIFICANT ENVIRONMENTAL ASPECTS	134
7.3.20 FURTHER COMMENTS	137
<b><u>APPENDIX 2: FOCUS GROUP SESSION</u></b>	<b>138</b>

**List of Tables**

TABLE 1. TYPICAL ENERGY USE FOR A MANITOBA COMMERCIAL BUILDING (MANITOBA HYDRO, 2006)..... 13

TABLE 2. WATER USAGE IN A TYPICAL OFFICE BUILDING. (ADAPTED FROM PUBLIC WORKS AND GOVERNMENT SERVICES, 2006)..... 15

TABLE 3. MMF EMS TIMELINE..... 32

TABLE 4. MMF EMS TIMELINE..... 38

TABLE 5. ENERGY USAGE AT THE MMF HOME OFFICE AT 150 HENRY AVENUE IN WINNIPEG, MANITOBA. .... 43

TABLE 6. ENVIRONMENTAL ASPECTS (N=60)..... 44

TABLE 7. ACTIONS FOR IMPLEMENTING THE EMS. .... 55

TABLE 8. MMF EMS ASPECTS, OBJECTIVES, TARGETS, ACTIVITIES AND EMPLOYEE RESPONSIBLE. .... 65

TABLE 9. SIGNIFICANT ENVIRONMENTAL ASPECTS IDENTIFIED AT THE MMF HOME OFFICE..... 67

TABLE 10. ENVIRONMENTAL RECORDS..... 72

TABLE 11. DOCUMENT CONTROL PROCEDURE. .... 74

TABLE 12. MONITORING AND MEASUREMENT..... 76

TABLE 13. NON-CONFORMITY, CORRECTIVE AND PREVENTATIVE ACTIONS..... 78

TABLE 14. MANAGEMENT REVIEW CHART. .... 81

TABLE 15. MMF EMS ASPECTS, OBJECTIVES, TARGETS, ACTIVITIES, AND EMPLOYEE RESPONSIBLE. .... 89

TABLE 16. MMF EMS TIMELINE..... 92

## Table of Contents

---

TABLE 17. OVERALL FEASIBILITY RATING. ....	94
TABLE 18. SIGNIFICANT ENVIRONMENTAL ASPECTS INDICATORS AT THE MMF HOME OFFICE. ....	97
TABLE 19. MMF HOME OFFICE ENERGY USAGE AND ESTIMATED SAVINGS. ....	100
TABLE 20. COMPOSTING YEARLY COST ESTIMATE.....	107
TABLE 21. ESTIMATED BIODEGRADABLE PRODUCTS PRICE LIST (THE WASTE REDUCTION STORE, 2007). ....	109
TABLE 22. FEASIBILITY RATING. ....	111
TABLE 23. COMPARISON OF FEASIBILITY RATING, EMPLOYEE SURVEY RESULTS AND EMS ACTION PLAN. ....	116
TABLE 24. ANNUAL ECO PASS TRANSIT COSTS PER EMPLOYEE. WINNIPEG TRANSIT..	119
TABLE 25. ANNUAL ECO PASS TRANSIT COSTS FOR SIXTY EMPLOYEES. WINNIPEG TRANSIT.....	119
TABLE 26. POTENTIAL PARKING REVENUE. ....	119

**List of Figures**

FIGURE 1. EMS PROCESS (U.S. ENVIRONMENTAL PROTECTION AGENCY, 2000). ..... 18

FIGURE 2. INTEREST IN ENVIRONMENTAL ISSUES (N=61). ..... 41

FIGURE 3. IMPORTANCE OF ADDRESSING ENVIRONMENTAL ISSUES..... 42

FIGURE 4. DAILY TRANSPORTATION TO THE MMF HOME OFFICE..... 47

FIGURE 5. DOCUMENT HEADER. .... 73

FIGURE 6. INTEREST IN ENVIRONMENTAL ISSUES (N=61). ..... 95

FIGURE 7. IMPORTANCE OF ADDRESSING ENVIRONMENTAL ISSUES (N=61)..... 96

FIGURE 8. DAILY TRANSPORTATION TO THE MMF HOME OFFICE (N=61)..... 101

FIGURE 9. LEVEL OF INTEREST IN ENVIRONMENTAL ISSUES (N=61). ..... 127

FIGURE 10. IMPORTANCE OF ADDRESSING ENVIRONMENTAL ISSUES (N=61)..... 128

FIGURE 11. COMFORT LEVEL WITH TEMPERATURE AND AIR EXCHANGE (N=60)..... 131

FIGURE 12. DAILY MODE OF TRANSPORTATION (N=60)..... 133

FIGURE 13. SIGNIFICANT ENVIRONMENTAL ASPECTS (N=57). ..... 135

## CHAPTER 1: GENERAL INTRODUCTION

Métis, as recognized by the Section 35 of the *Canadian Constitution*, are one of the three distinct Aboriginal Peoples in Canada. A Métis is defined by the Métis National Council (2002) as: “a person who self-identifies as Métis, is of historic Métis Nation Ancestry, is distinct from other Aboriginal Peoples and is accepted by the Métis Nation”. Sustainability is integral to Métis culture and knowledge (Métis National Council 2006). The Métis worldview has been shaped over centuries through their unique relationship with the environment. The Métis worldview arose from their successful participation in a mixed economy that optimized profits while sustainably using natural resources.

Creating an Environmental Management System at the Manitoba Métis Federation’s Home Office provides an excellent opportunity to incorporate the unique Métis environmental worldview into its operations. An Environmental Management System (EMS) is a component of an organization’s overall management system that commonly includes an environmental policy, environmental aspects, objectives, targets, actions, significant aspects, environmental programmes, legal requirements, training and awareness, organizational structure, communication, emergency preparedness, operational and document control, plans for addressing non-conformities, monitoring, management reviews and auditing (Morrow & Rondinelli, 2002; Rondinelli & Vastag, 2000).

The goals of an EMS are to increase environmental sustainability and profitability, which complements the Métis worldview. Similar to other small and medium sized organizations, by conducting an environmental audit of the MMF Home

Office and implementing the recommended retrofits, the MMF could receive energy, water, materials, and solid waste cost reductions (Hillary, 2003).

This thesis is divided into six chapters and two appendices. In Chapter Two, the Literature Review, the author consulted literature in the following areas: Métis identity; sustainability; reducing waste; reducing energy consumption; reducing water usage; environmental management; EMSs; and the benefits of EMSs. EMS methodologies are also discussed including waste audits and energy audits. Chapter Three describes the participatory research methodology. Chapters Four and Six are journal articles for publication. Chapter Five is an EMS Handbook that was created to assist the MMF with implementing and maintaining their EMS. Appendix One is the report that was created based on the findings from the MMF Environmental Survey. Appendix Two is the notes from the focus group session.

### **1.1 Goals and objectives**

The goal of this project is to design an EMS for the MMF. Objectives for this project include:

1. Utilizing participatory research to ensure that the EMS builds on the strengths of the MMF Home Office, considers cultural relevance, and reflects the employees' and management's understanding of what is feasible for the MMF
2. Ensuring that the project is inclusive and seeks to reflect the Métis worldview

### **1.2 Significance**

EMSs differ to reflect each individual organization or corporation therefore the MMF's EMS is expected to be distinct as the MMF represents the Métis Nation in Manitoba. This raises the following questions: can an EMS reflect a unique Indigenous

Nation with their own environmental worldview and how can an EMS build on the strengths of the MMF? Conducting a Métis specific EMS has never been explored, which represents a gap in the understanding of how EMSs vary to represent different organizations and worldviews.

### **1.3 Personal Interest in the Project**

This project is significant to the author as she is Métis, a member of the MMF and was employed as a policy analyst for two years at the MMF. While employed at the MMF, she had the opportunity to learn and experience Métis culture and work with many dedicated individuals. It was apparent from her involvement with the MMF that Métis culture and traditions unite the employees of the MMF and many Métis people are very proud of their heritage and achievements. This unity and pride prompted her to consider how the MMF could address its environmental impact at the Home Office.

The interest in implementing an EMS at the MMF arose from the author noticing the potential for an EMS resulting in reduced environmental impacts while incurring costs savings at the Home Office. The author envisions that by implementing the EMS, the MMF has the opportunity to reduce its environmental impacts and operational costs enabling the organization to spend more funding on programs that benefit Métis citizens in Manitoba.

## **CHAPTER 2: Literature Review**

This research requires that literature be consulted in the following areas: Métis identity; sustainability; reducing waste; reducing energy consumption; reducing water usage; environmental management; EMSs; and the benefits of EMSs. EMS methodologies will be discussed including waste audits and energy audits.

### **2.1 Métis Identity**

The Métis people originated from First Nation mothers and European fathers in Western Canada. Due to the slowness of European settlement and their isolation, the First Nation women and European men intermarried and formed the Métis Nation. The Métis are a distinct people with a unique: language, governance system, history, and culture (Métis National Council, 2007).

Métis were extremely knowledgeable about the province as they had great mobility, spoke several languages, and conversed with many cultures. Facilitating communication between many First Nations and settlers, they traveled far from the Manitoba settlement to the Northwest Territories, California, and the Mississippi (L. Barkwell, pers comm.). Reliant on many regions for a variety of purposes, they would travel to one region for berries and another to hunt.

Métis people have made substantial contributions to the Canadian economy, military, language, arts, governance, and politics. Economically, the Métis have contributed through their momentous participation in the fur trade and as major entrepreneurs such as Cuthbert Grant. Métis were also highly involved in transportation by creating the York boat and the Red River Cart, as well as working on the rail system (Préfontaine, Paquin, & Young, Traditional Métis Transportation, 2003). The Red River

Cart was highly versatile: it was used to transport up to one thousand pounds of Buffalo meat, for freight across the prairie, as a raft or boat for crossing water and as temporary shelter (Anderson, 2004).

Militarily, the Métis demonstrated their abilities during the Battle of Grand Coteau. In 1851, during the Battle of Grand Coteau, forty Métis successfully defended themselves from 2000 Dakotas. Their success in battle resulted in the Métis being known as the “masters of the plain” (Teillet, 2006).

Linguistically, Métis contributed by the creation of Michif, the language of the Métis. Métis language and culture originates from jackpost trading stations where Aboriginal women, French men, and their children lived together with other families. As time passed, French men would start speaking the Aboriginal language and Aboriginal women would start speaking French; with time the two languages and cultures combined to form a new language, Michif, and a new people, the Métis (Shore, 2000). The development of Michif is significant as it confirms that Métis people for a long time were bilingual and could speak French and Cree as well as that Métis culture is distinct from French and Cree culture (Crawford, 1985).

Artistically, Métis have contributed by their distinctive beadwork, dance, and music. Dance and music are vital to Métis culture, as Métis people are known to be very sociable and love to entertain. Important Métis dances include the Red River Jig, The Handkerchief Dance, the Rabbit Dance, Drops of Brandy, Quadrille, the Sash Dance, and the Square Dance (Paquin, Préfontaine, & Young, 2003; Whidden 1993). Métis songs were often created after a significant event such as the Battle of Batoche or a large

buffalo hunt (Paquin, Préfontaine, & Young, 2003). Songs were used to transmit traditional knowledge from one generation to the next (Hourie, n.d.).

Governmentally, Métis have contributed through their governance structure that has been in existence since the Buffalo Hunt as demonstrated by the strict rules regarding behavior during the hunt (Anderson, 2004). Another early example of Métis self-government is the Saskatchewan Métis Society that was officially formed in 1937 (Budd, 2007; Dorion & Préfontaine, 2003). By 1938, the Saskatchewan Métis Society represented Métis people from fourteen different branches across Saskatchewan, had a five-member committee, a president, and a constitution (Budd, 2007).

Politically, one of the Métis people's many contributions includes their role in the creation of the Manitoba Act. On December 8, 1869, the Métis in Manitoba formed a provisional government to negotiate Manitoba's entry into Canada (Teillet, 2006; Préfontaine & Dorion, *The Métis and the Spirit of Resistance*, 2003). Father Richot was the principal negotiator for the Métis. It was agreed that prior to Manitoba entering confederation that the Manitoba Act would include English and French as the official languages, protect current resident's land from settlers, and grant the Métis a homeland (Préfontaine & Dorion, *The Métis and the Spirit of Resistance*, 2003). Although Métis were successful in negotiating their involvement in the Manitoba Act, the system for distributing land and protecting current residents of Manitoba was flawed, which resulted in many Métis people losing their land and becoming marginalized (Teillet, 2006).

After the rebellion and the loss of their land, the Métis mainly dispersed to the North and West of the Manitoba settlement. Their strong connection to the land is

evident in their mixed-use economy, and their integral and long-term involvement in the fur trade, in transportation, the economy, the arts, politics and education (Brown, 1980).

Since the 1880s, the Métis have had a history of marginalization, ignored by development and government, who encroached on their traditional territory. The Métis have made significant contributions to the development of the Prairies, yet there is little contemporary literature about Métis land-use in Manitoba as existing literature focuses primarily on Métis script and land rights (Sprague, *Canada and the Métis, 1869-1885*, 1988; Sprague, *Government Lawlessness in the Administration of Manitoba Land Claims, 1870 - 1887.*, 1980; Chartrand, 1991). However, contributions of the Métis people extend far beyond these concerns, in both depth and scope.

### **2.1.1 The Métis Nation**

The Métis National Council (2002) defines a Métis as: *“a person who self-identifies as Métis, is of historic Métis Nation Ancestry, is distinct from other Aboriginal Peoples and is accepted by the Métis Nation”*. As recognized by the Section 35 of the *Canadian Constitution*, Métis are one of the three distinct Aboriginal Peoples in Canada. The Métis Nation has five provincial governing members: Métis Nation of Ontario, the Manitoba Métis Federation, Métis Nation – Saskatchewan, Métis Nation of Alberta, and Métis Nation British Columbia. Each governing member has an elected president who also is on the Board of Directors of the Métis National Council. Since 1983, the Métis National Council has been the federal and international representative of the Métis Nation (Métis National Council, 2007).

### **2.1.2 Manitoba Métis Federation**

The MMF is the self-government representative of the Manitoba Métis Community and is one of the five governing members of the Métis National Council. The MMF has a three level-governing system with locals, regional offices and a provincial board. The MMF building, built in 1958, is located at 150 Henry Avenue in Winnipeg, Manitoba. The Canadian Pacific Railway owned the building before the MMF and the building still houses the Canadian Pacific Railway Police Service. The MMF houses over 150 employees at their Home Office in Winnipeg. In addition, there are also employees in seven regional offices: Interlake Region, Northwest Region, Southeast Region, Southwest Region, The Pas Region, Thompson Region, and Winnipeg Region.

### **2.2 Sustainability**

In 1987, the World Commission on Environment and Economy released *Our Common Future*, the “Brundtland Report”. The report popularized the term “sustainable development” and the definition: “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*”. Over the past two decades, industry, government, non-government organizations, and educators have ubiquitously used the terms “sustainable development” and “sustainability” prompting many to criticize the definition of sustainable development for being ambiguous and that ambiguity leading to misuse by companies wanting to be perceived as environmentally friendly. The concept of sustainable development has also been heavily criticized by scholars, such as Sharon Beder (2006), who feel that the goals of business and environment are not compatible. Natural

capitalism, as discussed in the next section, provides principles to assist organizations to achieve sustainability that can be incorporated into their EMS.

### **2.2.1 Natural Capitalism**

According to Paul Hawken (1993), the most damaging aspect of the current economic system is not valuing environmental degradation when setting market prices. The term “capital” commonly refers to the accumulation of wealth through different assets such as investments, businesses, and properties. The terms “natural capital” refer to natural resources including renewable and non-renewable resources (Hawken, Lovins, & Lovins, 1999). According to the Rocky Mountain Institute, there are four natural capitalism principles:

1. Using resources more effectively
2. Creating products that mimic nature by not producing waste or toxicity
3. Providing services instead of selling and making products
4. Investing in human and natural resources

The first principle is achieved through technological and design changes that allow resources to be used more effectively. By using resources more effectively, it can save organizations capital, time, and operational costs (Hawken, Lovins, & Lovins, 1999). The second principle relies on changes in design to create closed-loop production systems that emulate nature by not producing waste (Hawken, Lovins, & Lovins, 1999). The third principle involves a change in the business model by providing services instead of making and selling products. By providing services, businesses retain ownership of their products and are responsible for maintaining, recycling, and remanufacturing their products (Senge, Seville, Lovins, & Lotspeich, 2000). This benefits the business and the

consumer as it results in products that are more reliable, durable, efficient, and affordable (Hawken, Lovins, & Lovins, 1999). The final principle states that business should strive to add value to the environment and society to make a positive contribution (Hawken P. , 1993). Simply reducing their impact does not equal a positive contribution. Companies now recognize that lower costs, greater savings, safer workplaces, and increased productivity are all outcomes of more efficient manufacturing methods (Hawken P. , 1993).

### **2.3 Reducing Waste**

Waste is often defined as unwanted materials (Statistics Canada, 2005). Waste can be broken down categorically by composition (such as glass, metal, organic), source (such as industrial, residential, commercial) or state (liquid, gaseous, or solid) (Statistics Canada, 2005). This section will discuss two popular disposal options for waste, discuss waste audits, and provide a waste generation comparison between Canada and other countries.

#### **2.3.1 Composting**

Composting is a biological process where organic materials are broken down by microorganisms into humus (Composting Council of Canada). The composting process creates heat that kills pathogens (Statistics Canada, 2005). Humus can be used in gardening and landscaping. Composting is beneficial as it reduces the amount of waste entering landfills and can reduce the need for fertilizers and pesticides in gardening. Compost contains plant nutrients, soil microbes, and organic fiber. According to the Composting Council of Canada, 50% of the waste stream could be composted (Composting Council of Canada).

Approximately 11% of the waste generated in an office building is compostable food waste (Public Works and Government Services Canada, 2006). In office buildings, three areas typically generate compostable food waste: individual workstations, staff lunchrooms and cafeterias or restaurants (Public Works and Government Services Canada, 2006).

### **2.3.2 Recycling**

Recycling is the process of collecting, separating, and reprocessing used materials into new products (Statistics Canada, 2005). Common recyclables include: newsprint, soda cans, pop bottles, batteries, tires, cardboard, used oil, metal, and plastic. In 2002, Canadians recycled 6.6 million tonnes of non-hazardous waste materials (Statistics Canada, 2005). The main benefits of recycling include: less extraction of primary resources and reducing the amount of waste entering the landfill.

### **2.3.3 Waste Reduction Education**

Many organizations deem their waste reduction strategies successful if they produce more recycling although solely increasing recycling does not accomplish the goal of reducing waste (Dowie, McCartney, & Tamm, 1998).

### **2.3.4 Waste Audits**

Waste audits have three goals. The first goal is to ascertain quantitative data such as waste volumes and weight. The second goal is to gain qualitative data including identification of what is in the waste stream, and where the waste is generated. The third goal is creating a comprehensive plan for reducing waste (Dowie, McCartney, & Tamm, 1998). The plan for reducing waste should include a monitoring regime for ensuring that you are reaching your targets.

There are three different methodologies for waste audits. The first approach is analyzing all materials produced by an entire organization (Dowie, McCartney, & Tamm, 1998). The second approach is conducting mini-audits on each area to analyze waste. The third approach is contrasting input versus output.

To compare input and output, it is essential that there is proper inventory of new purchases. Two strategies for comparing input versus output are measuring the average waste generated by employee or by area (Dowie, McCartney, & Tamm, 1998). One of the advantages of measuring input versus output is that it will identify whether the organization is actually producing less waste.

#### 2.3.4.1. Measuring Waste

There are two different methods for measuring waste: measuring the waste by volume or measuring the waste by weight (Dowie, McCartney, & Tamm, 1998).

### **2.3.5 A Waste Comparison with another country**

There is a significant need for Canadians to reduce their waste production that is easily illustrated by contrasting waste production in Canada with Norway or other European countries. In 2002, Canadians produced over 30.4 million tonnes of waste (Statistics Canada, 2005). Annually, Norwegians produce 8.8 millions tonnes of waste (Government of Norway, 2004). In 2002, the average Canadian produced nine hundred and seventy one kilograms of waste (Statistics Canada, 2005). In 2003, the average Norwegian annually produced three hundred and sixty five kilograms of waste (Government of Norway, 2004). The average Canadian produced more than twice the waste of the average Norwegian. In 2002, Norway used 67% of all industrial and

residential waste as raw materials for recycling or as energy sources (Government of Norway, 2004).

## **2.4 Reducing Energy Consumption**

### **2.4.1 Energy Efficiency**

Increasing energy efficiency can reduce environmental impacts and operational costs. There are many no-cost or low-cost opportunities for reducing energy bills in commercial buildings. According to Manitoba Hydro, there are three main ways to reduce energy consumption: 1) reducing operating time; 2) controlling temperature; and 3) preventing losses (Manitoba Hydro, 2006). To reduce operating time, employees are encouraged to turn-off devices that are not being used (Manitoba Hydro, 2006).

According to Manitoba Hydro (2006), the largest uses of energy in a commercial building is space heating (31%), ventilation (15.8%) and lighting (17.9%) (Table 1).

**Table 1. Typical Energy Use for a Manitoba Commercial Building (Manitoba Hydro, 2006).**

<b>Uses of Energy</b>	<b>Percentage</b>
Space Heating	31.9 %
Ventilation	15.8 %
Lighting	17.9 %
Office Equipment and Plug Load	10.7 %
HVAC Equipment Electricity	8.9 %
Refrigeration Equipment	5.3 %
Service Hot Water	3.2 %
Space Cooling	3.0 %
Miscellaneous Equipment	2.6 %
Food Service Equipment	0.7 %
Total	100.0 %

### **2.4.2 Energy Audit**

Energy audits are used to determine: how energy is used and cost effective strategies for reducing energy usage and operating costs (Manitoba Hydro, 2006). Often energy audits will identify energy savings of 10% to 15% depending on the current efficiency of the building (Manitoba Hydro, 2006).

### **2.4.3 Canadian Energy Consumption**

In 2003, Canadians consumed 7,605 petajoules of energy, a 3% increase from 2002 (Statistics Canada, 2003). On average, every fifty minutes Canadians use one petajoule of energy (Statistics Canada, 2003).

## **2.5 Reducing Water Usage**

Canadians are only 0.5% of the world's population but have access to 20% of the global fresh water stock and 7% of the renewable water flow (Statistics Canada, 2003). In 1996, personal and government water usage accounted for 9% of Canada's total annual water consumption (Statistics Canada, 2003).

### **2.5.1 Water Efficiency**

Increasing water efficiency has benefits for the individual user (lower water bills) and society (less pollution, lower water costs, extending the lifecycle of water and wastewater treatment plants) (Public Works and Government Services, 2006). According to Public Works and Government Services (2006), if Canadians were to improve water efficiency by 10%, Canadians would save \$460 million dollars annually. According to Public Works and Government Services (2006), the greatest water usage in a commercial

building is from water-cooled air conditioning units (51%), domestic water usage (34.3%) and kitchen usage (8.6%) (Table 2).

**Table 2. Water usage in a typical office building. (Adapted from Public Works and Government Services, 2006).**

<b>Water Use</b>	<b>% of Total Consumption</b>
Water-cooled AC units	51.0 %
Domestic	34.3 %
Kitchen	8.6 %
Humidification	2.8 %
Drinking fountain chillers	2.3 %
Pump leakage	1.0 %

### **2.5.2 Reviewing water usage**

Water usage can be tracked by comparing water bills over the past two years and graphing water usage to understand peaks in water consumption (Public Works and Government Services, 2006).

### **2.5.3 Comparison to other countries**

On average, Canadians use 326 litres of water a day (Public Works and Government Services, 2006). Canadians have the second highest rate of water consumption per capita in the World after the United States (Public Works and Government Services, 2006). On average, a Canadian will use twice as much water daily as someone living in France or Germany (Public Works and Government Services, 2006).

## **2.6 Environmental Management**

### **2.6.1 The Environmental Management System**

An EMS is a component of an organization's overall management system that commonly includes an environmental policy, environmental aspects, objectives, targets, actions, significant aspects, environmental programmes, legal requirements, training and awareness, organizational structure, communication, emergency preparedness, operational and document control, plans for addressing non-conformities, monitoring, management reviews and auditing (Morrow & Rondinelli, 2002; Rondinelli & Vastag, 2000).

ISO 14001 standard, an internationally recognized environmental management framework, recognizes five main components in an EMS:

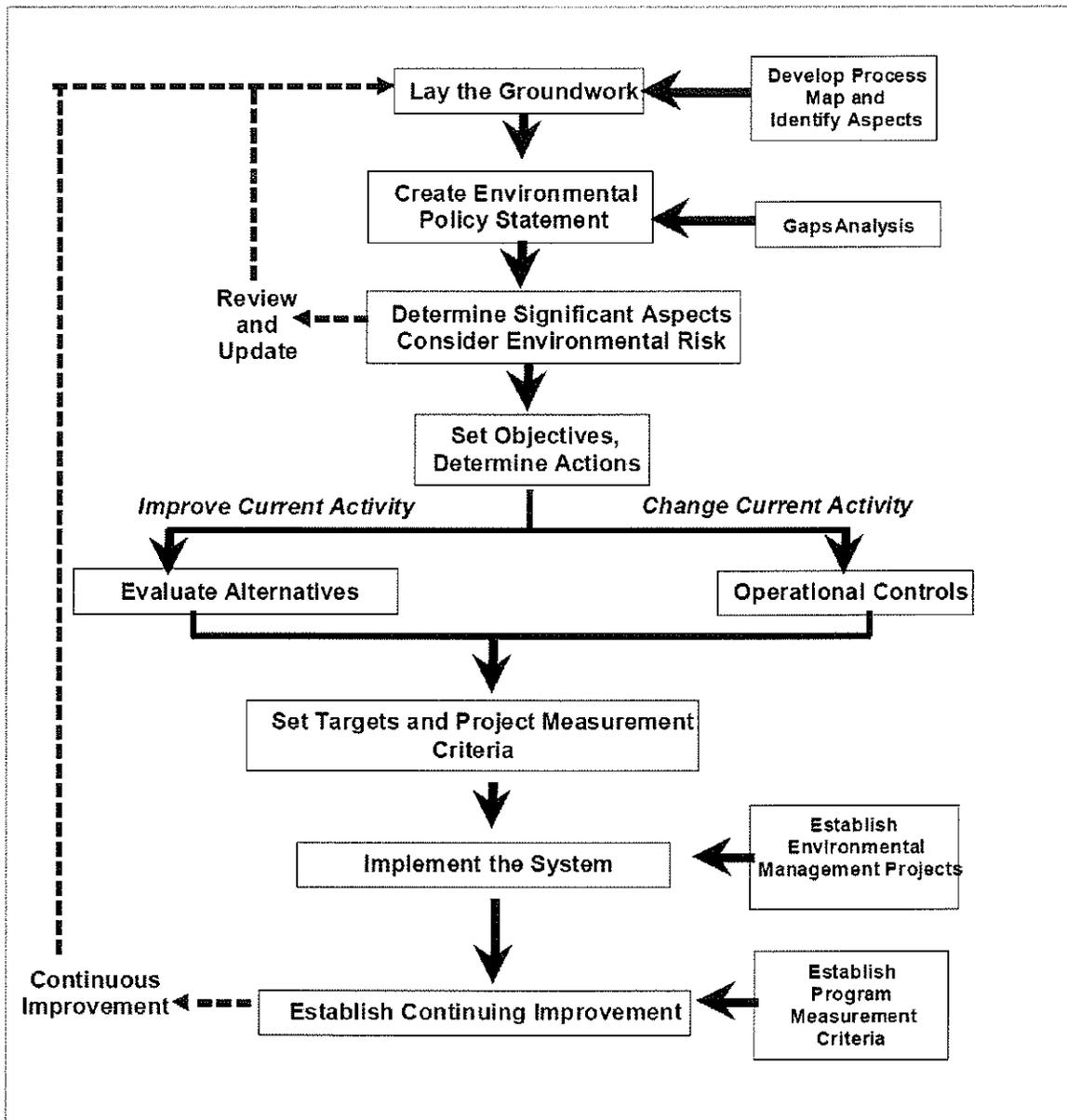
1. Commitment and policy
2. Planning
3. Implementation
4. Evaluation
5. Review

The first component of an EMS is obtaining a commitment from the organization to improve their environmental performance and increase environmental considerations in their daily operations (Rondinelli & Vastag, 2000; González-Benito & González-Benito, 2006). An environmental policy is created to document the organization's commitment and provide a foundation for the organization's EMS (Kerr, 2006; Ferreira, Lopes, & Morais, 2006). An environmental policy should include the organization's

environmental vision, as well as be relatively general, brief, and measurable (United States Environmental Protection Agency, 2000).

The second component is planning the EMS process. In this stage, the organization reviews their current environmental performance, identifies areas of improvement for their current operations, creates future goals and targets, and generates a plan for achieving their determined goals and targets (Rondinelli & Vastag, 2000). The third component of the process is implementing the EMS (Rondinelli & Vastag, 2000). All identified improvements are enacted. In the fourth component of the process, the organization evaluates their EMS through audits and monitoring to ensure that they are reaching their goals and targets and improve any identified deficiencies in the system (Rondinelli & Vastag, 2000). In the fifth and final component of the program, the EMS is reviewed for continuous improvement (Rondinelli & Vastag, 2000). The process is cyclical and improvements can always be made to the EMS (Halila, 2007).

Figure 1. EMS Process (U.S. Environmental Protection Agency, 2000).



## 2.7 Environmental Management Systems

### 2.7.1 Eco-Management and Audit Scheme

In 1993, the European Union created the Eco-Management and Audit Scheme (EMAS), a voluntary regulation that was only applicable to the industrial sector (Steger, 2000). In 2001, participation in EMAS increased by allowing the public and private

sector to register (Morrow & Rondinelli, 2002). EMAS is only available to organizations and companies in the European Union and the European Economic Area (EEA).

Involvement in EMAS requires: creating an environmental statement, implementing an EMS, and ensuring legal compliance (European Union, 2004). The environmental statement contains the organization's objectives, targets, current environmental impacts, and future environmental targets. To ensure transparency among participating organizations, each organization's environmental statements are available to the public (European Union, 2008). The purpose of the EMS is to assign responsibilities, improve operational procedures, identify training needs, create monitoring regimes, and improve communication (European Union, 2004). To ensure legal compliance, organizations must complete an environmental review to assess their regulatory and legal obligations and their current management procedures (European Union, 2004).

Participating organizations' environmental statements are independently reviewed. Registered organizations may use the EMAS logo.

### **2.7.2 ISO 14001**

In October 1996, the International Organization for Standardization approved and published ISO 14001 as its environmental standard (Honkasalo, 1998; Rondinelli & Vastag, 2000). ISO 14001 is a voluntary tool used by companies and organizations to minimize environmental impacts and improve environmental performance. ISO 14001 was developed to provide corporations with the ability to implement actions towards sustainable development (International Organization for Standardization, 2002). ISO 14000 and ISO 9000 are both generic management standards that address operational processes (International Organization for Standardization, 2002). One of the major

criticisms of ISO 14001 is that it does not require organizations to provide quantitative proof that they are actually improving their environmental performance (Rondinelli & Vastag, 2000).

### **2.7.3 The Natural Step Framework**

The Natural Step Framework (TNS) was created to assist companies and organizations develop strategies for attaining a sustainable future (The Natural Step, 2000). The framework helps companies to maximize their short-term profits while creating strategies for achieving long-term sustainability (The Natural Step, 2000).

One of the main concepts of TNS is backcasting, which is a visioning tool used to analyze the present situation by considering the future (The Natural Step, 2000). Another important concept is system conditions. System conditions are the basic principles identified and agreed on by international scientists that must be applied for a sustainable future. TNS uses the system conditions and backcasting to create a strategy for maximizing profits and attaining future sustainability (The Natural Step, 2000).

#### **2.7.3.1. Implementing TNS**

Step 1: Discuss sustainability objectives

According to TNS, an organization becomes sustainable once it is environmentally sustainable and its practices meet human needs (The Natural Step, 2000). The Natural Step outlines four sustainability objectives: eliminate the organization's contribution to the increasing need for resources extracted from the earth's crust, eliminate the organization's contribution to over-consumption and over-production, eliminate the organization's contribution to environmental degradation through over-harvesting, and environmental modifications, and ensure that the organization meets all

human needs (The Natural Step, 2000). According to Manfred Max-Neef, there are nine basic necessities to meet human needs: subsistence, protection, participation, leisure, affection, understanding, creation, identity, and freedom (The Natural Step, 2000).

Step 2: Analyze operations to identify current energy and material usage

After discussing the sustainability objectives, the next step is to analyze the organization's current operations to identify solutions. It is important that all employees are involved in identifying areas of improvement and creating solutions. TNS recommends using each objective to analyze the current situation and then envision the future if society continues down that path without change.

Step 3: Envision your organization in a sustainable society

This step assists organizations to envision their organization without the constraints of current reality. Each current action by the organization is contrasted with the organization's vision of the future. Organizations should create a list of solutions to meet each of the four objectives.

Step 4: Create a list of priorities

The final step in the process is to prioritize the list of solutions identified in the third step. For each solution, the organization should ask whether it will help them move towards their sustainability objectives, whether they are creating a system that can be continually improved and whether solutions offer adequate return (The Natural Step, 2000).

## **2.8 Benefits of an Environmental Management System**

The potential benefits of developing an EMS for the MMF include improving:

- Cost savings

- Environmental awareness
- Employee and community health
- Public relations and marketing
- Environmental and economic sustainability

Implementing an EMS can reduce operational costs for an organization (U.S. Green Building Council, 2005). Implementing an EMS will increase employee environmental considerations in daily activities, which often leads to increasing environmental awareness (Rondinelli & Vastag, 2000). This may be particularly true for the Métis as the environment is integral to the culture.

Once successfully implemented, the MMF could use the EMS in their communication strategy to portray the organization as a leader in environmental responsibility and awareness. This could also compliment the existing MMF Harvesting Initiative, as it will increase the positive public image of the MMF and the Métis Nation in Manitoba. The MMF, as the self-government representative of the Métis Nation in Manitoba, differs from the majority of organizations or corporations that implement an EMS. This political connection with Métis in Manitoba gives the MMF the ability to improve the health of not only their employees but also the Manitoba Métis Community by increasing sustainability and environmental awareness. As the MMF becomes more environmentally aware, their environmental visions and targets will further develop. An EMS that is constantly evolving and improving will increase the environmental sustainability of the MMF.

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## **CHAPTER 3: METHODOLOGY**

### **3.1 Introduction**

This research was carried out as participatory action research involving the MMF and its employees to design an EMS for their Home Office. An environmental survey and focus group were conducted to help determine the unique elements of a Métis approach. The following section addresses how the project achieved its goals and objectives as stated in the Introduction section.

#### **3.1.1 Designing an Environmental Management System for the MMF's Home Office**

This project achieved its overall goal of designing an EMS with the MMF in two stages: Stage 1 – Commitment and Policy, and Stage 2 – Planning. The first objective, utilizing participatory research to ensure that the EMS builds on the strengths of the MMF Home Office was accomplished by designing an EMS that fits into the MMF's existing management system and meets the needs of the Métis people. The second objective of the project was to ensure that the project was inclusive and sought to reflect the Métis worldview. Fully involving MMF Home Office employees and members of the Manitoba Métis Community in all stages of the project accomplished this objective. Initiatives to involve employees and reflect the Métis Worldview included: the online survey; the focus group held with MMF employees and management; and a presentation at the Managers Meeting.

##### **3.1.1.1. Stage 1: Commitment and policy**

The first stage of commitment and policy was receiving a commitment from the Executive Director at the MMF to improve their environmental performance and increase

their environmental considerations in their daily operations at the Home Office. The next step in Stage 1 was formulating an environmental policy for the MMF Home Office. The first draft of the environmental policy was submitted to the Executive Director of the MMF for review (Table 3).

#### 3.1.1.2. Stage 2: Planning

During the second stage, a link to an online survey was sent via email to the employees of the MMF's Home Office and seven regional offices regarding the environmental aspects in the building and their recommendations for what they would like to see improved about the building and its operations (Table 3).

### **3.2 Data Collection**

#### **3.2.1 Survey**

Once approval was received from the Joint-Faculty Research Ethics Board of the University of Manitoba, a link to an online survey was sent via email to the employees of the MMF's Home Office and seven regional offices regarding the environmental aspects in the building and their recommendations for what they would like to see improved about the building and its operations. To filter the results, a survey question asked employees to identify where they worked.

The MMF Environmental survey was posted online from January 29, 2007 to February 9, 2007. In total, 61 employees from the Home Office completed the survey. The survey consisted of 33 questions and the average completion time for the survey was ten minutes.

### 3.2.2 Focus Groups

On November 20, 2007, Dr. Shirley Thompson facilitated the focus group with employees and management from the MMF's Home Office. The focus group session lasted approximately two and a half hours. The purpose of the focus groups was to gain more in-depth information regarding the MMF's environment responsibilities, Métis environmental knowledge, and sustainability.

**Table 3. MMF EMS Timeline.**

<b>EMS Stages and Actions</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Commitment and policy</b>			
Commitment from the Executive Director	✓ <sup>1</sup>		
Draft the environmental policy			✓
Meet with the Executive Director to discuss the environmental policy, targets and actions	X <sup>2</sup>	X	X
<b>Planning</b>			
Develop the survey	✓		
Distribute the survey		✓	
Formulate the survey results		✓	
Analyze the survey results		✓	
Conduct the focus group session		✓	
Present at a Managers Meeting at the MMF		✓	
Create a list of improvements, targets and goals		X	✓
Research possible funding sources		X	✓
Gather baseline data for the Home Office		X	X
Involve experts to conduct a baseline energy audit at the MMF Home Office		✓	

<sup>1</sup> The ✓ denotes that the action was accomplished.

<sup>2</sup> The X denotes that the action is ongoing.

### Chapter 3: Methodology

<b>EMS Stages and Actions</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Involve experts to conduct a waste audit at the MMF Home Office			✓
Produce a draft EMS for the MMF			✓
Meet with the Executive Director to discuss the draft EMS			✓

## **CHAPTER 4: PARTICIPATORY RESEARCH OF AN ENVIRONMENTAL MANAGEMENT SYSTEM - BUILDING ON THE STRENGTHS OF THE MANITOBA MÉTIS FEDERATION**

### **4.1 Introduction**

Does a participatory process for designing an Environmental Management System (EMS) at the Manitoba Métis Federation's (MMF) Home Office result in a better EMS? The goal of this section is to examine how participatory research can be used to design an EMS plan that best suits the needs of an organization by building on: the organizational strengths of the Métis self-government office, and the environmental interests of their Métis employees. The motivation for this section is to determine how to best utilize the information gathered from the participatory research and convey that information into an EMS that fits into the existing management system of the organization.

An EMS is a component of an organization's overall management system that commonly includes an environmental policy, environmental aspects, objectives, targets, actions, significant aspects, environmental programmes, legal requirements, training and awareness, organizational structure, communication, emergency preparedness, operational and document control, plans for addressing non-conformities, monitoring, management reviews and auditing (Morrow & Rondinelli, 2002; Rondinelli & Vastag, 2000). But are EMSs generic or can an EMS reflect the culture of the MMF? The MMF is a unique organization and it was questioned how its EMS may vary from typical Small and Medium Sized Enterprises (SMEs) or government offices.

Many MMF employees share similar cultural values and have a worldview that differs from mainstream society. Métis unity is apparent by examining the success of the

## Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

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MMF, which has grown from a small group of Métis people in the late 1960s to approximately two hundred and fifty employees across the Province representing the Métis Nation in Manitoba. The cultural worldview of the Métis was evident during the focus group session where the participants explained that environment is integral to Métis culture. According to the focus group participants, the environment is the Métis way of life. Métis are a distinct people with a unique history, language, governance system, and culture. The Métis National Council (2002) defines a Métis as: *“a person who self-identifies as Métis, is of historic Métis Nation Ancestry, is distinct from other Aboriginal Peoples and is accepted by the Métis Nation”*. Section 35 of the Canadian Constitution recognizes Métis as one of the three distinct Aboriginal Peoples in Canada.

Métis people originated from First Nation mothers and European fathers in Western Canada. Due to the slowness of European settlement and their isolation, the First Nation women and European men intermarried and formed the Métis Nation. According to Crawford (1985), the Métis language, Michif, developed after a long period of Métis people speaking both French and Cree.

The MMF is the self-government representative of the Manitoba Métis Community and is one of the five governing members of the Métis National Council. The MMF has a three level-governing system with locals, regional offices and a provincial board. The MMF has employees at its Home Office and seven regional offices: Interlake Region, Northwest Region, Southeast Region, Southwest Region, The Pas Region, Thompson Region, and Winnipeg Region. The MMF houses over 150 employees at their Home Office Branch in Winnipeg, as well as the Canadian Pacific Railway (CPR) Police Service, as CPR at one time owned the building. The Home

## Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

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Office building was built in 1958, when energy and resources were inexpensive, resulting in a building that does not include high efficiency toilets, lights, furnaces, or windows.

The MMF Home Office building is located at 150 Henry Avenue in the South Point Douglas area of Winnipeg, Manitoba, an economically depressed area in Winnipeg's inner core that is surrounded by many social service providers and is an area where many people are afraid to walk.

Discussions around establishing an EMS at the MMF Home Office began in spring 2005. The motivations for implementing an EMS varied among employees and management. One senior manager viewed the EMS as an opportunity to reduce operating costs and address environmental impacts while another senior manager viewed the EMS as an opportunity for the MMF to be innovative and demonstrate corporate social responsibility.

### **4.2 Methods**

Participatory research methods were undertaken to determine the potential focus of the EMS (Table 4). To determine the areas and level of interest in the environment and, more specifically, environmental change for the MMF, a link to an electronic survey was emailed to the approximately 150 employees at the MMF's Home Office and the link was sent to the 100 employees at the MMF's seven Regional offices. To filter the results, a survey question asked employees to identify where they worked. Posted online from January 29, 2007 to February 9, 2007, the MMF Environmental survey consisted of 33 questions. The survey questions focused on the employees' level of interest in environmental issues; the need for addressing the MMF's impact on the environment; the level of comfort in the work environment; whether the MMF is a healthy workplace;

## Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

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perceived safety; time spent outdoors; exposure to chemicals; lighting; view; temperature and air control; noise; water wastage; daily transportation; and identifying significant environmental aspects. With sixty-one Home Office employees responding, the response rate was 40.3%. The average completion time for the survey was ten minutes.

After conducting the survey, a focus group session was held on November 20, 2007, to gain further insight into organizational strengths, the employees' perceptions of the MMF's environment responsibilities, Métis environmental knowledge, and recommended methods for achieving sustainability. The two and a half hour session held at the MMF Home Office involved eight MMF employees and managers.

To analyze the baseline or current environmental impact of the MMF, information was gathered regarding the MMF's current energy consumption through a baseline energy audit, waste generation through a waste audit, employees' perceptions from the MMF Environmental Survey, and the employees' daily transportation from the MMF Environmental Survey. Manitoba Hydro conducted the benchmark energy audit for the MMF's Home Office and other buildings (Silcox, 2007).

Once the areas of interest were identified, an EMS plan was developed that could improve the current situation based on the identified baseline information by incorporating the feedback obtained from employees and managers. To ensure that the employees were aware that management was responsive to their suggestions, a few measures were implemented including a composting program.

Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

**Table 4. MMF EMS Timeline.**

<b>EMS Stages and Actions</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Commitment and policy</b>			
Commitment from the Executive Director	✓ <sup>3</sup>		
Draft the environmental policy			✓
Meet with the Executive Director to discuss the environmental policy, targets and actions	X <sup>4</sup>	X	X
<b>Planning</b>			
Develop the survey	✓		
Distribute the survey		✓	
Formulate the survey results		✓	
Analyze the survey results		✓	
Conduct the focus group session		✓	
Present at a Managers Meeting at the MMF		✓	
Create a list of improvements, targets and goals		X	✓
Research possible funding sources		X	✓
Gather baseline data for the Home Office		X	X
Involve experts to conduct a baseline energy audit at the MMF Home Office		✓	
Involve experts to conduct a waste audit at the MMF Home Office			✓
Produce a draft EMS for the MMF			✓
Meet with the Executive Director to discuss the draft EMS			✓

<sup>3</sup> The ✓ denotes that the action was accomplished.

<sup>4</sup> The X denotes that the action is ongoing.

### **4.3 Results and Discussion**

One of the major strengths of the MMF for implementing the EMS is that sustainability is integral to Métis culture and knowledge (Métis National Council 2006). The Métis worldview has been shaped over centuries through their unique relationship with the environment. The Métis worldview arose from their successful participation in a mixed economy that optimized profits while sustainably using natural resources.

At the focus group session, participants discussed how Aboriginal culture is based on the environment as it is about preserving and respecting the environment. Environment sustainability is a huge factor for the Métis as it is important for spirituality and it is very strong within Aboriginal culture. The environment is the Métis way of life. A participant discussed that as part of Métis knowledge, there is a respect for nature and replenishing environmental resources. A few participants stated that they believe there is Métis specific environmental knowledge but they are not sure how it is unique from First Nation environmental knowledge. The participants acknowledged that there is a need for more environmental education and awareness. Education should be the first priority for Métis as it is required for change and once educated about the environment, Métis people will demand change. This strength will greatly assist the MMF's EMS, as many of the employees of the Home Office believe that the environment is integral for their culture and way of life.

The focus group participants also discussed how the MMF requires innovative solutions and to be more proactive. The participants mentioned that achieving environmental sustainability could be something that is unique to the MMF and the

## Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

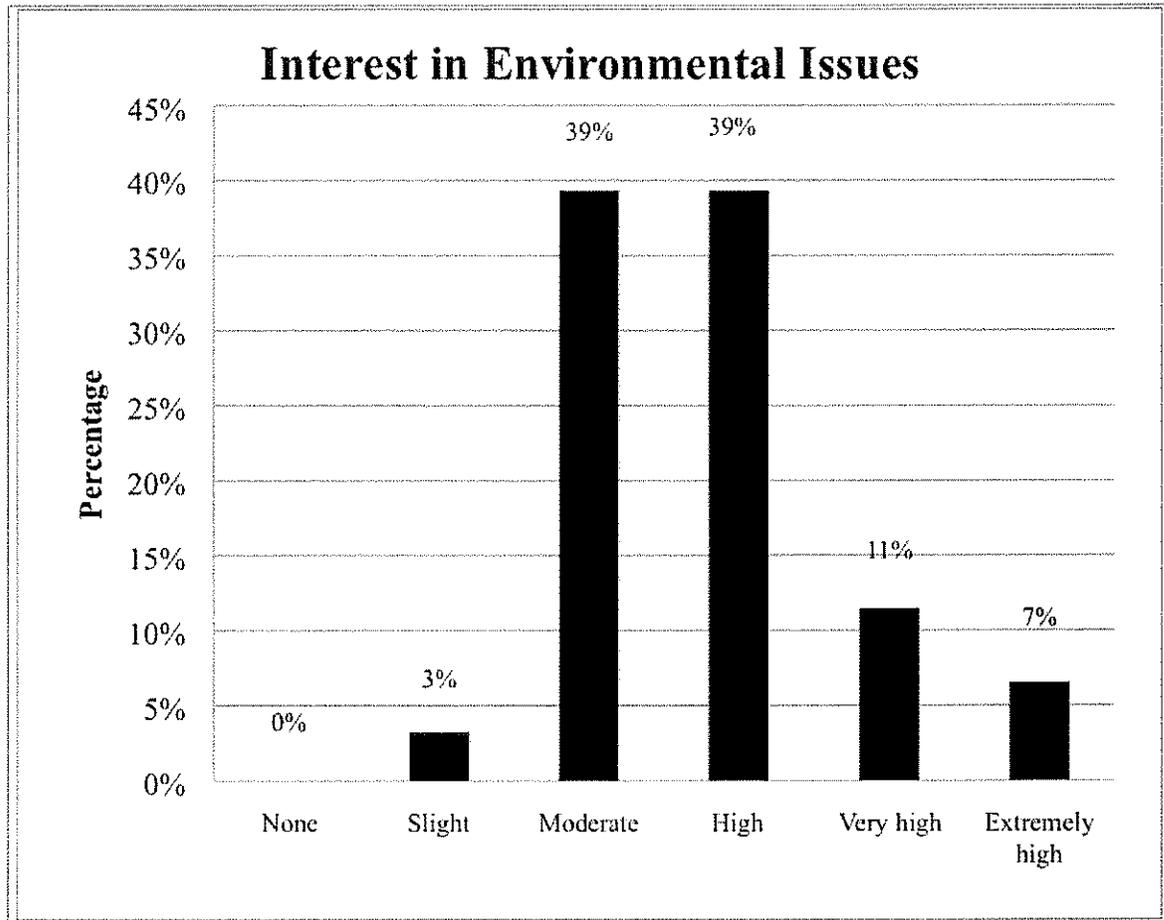
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Manitoba Métis Community. The participants agreed that it is best to start with a test project, such as the Home Office, for ease of implementation. Once successful at the Home Office, it would be easier to promote the project and gain the interest of the other regions.

Another major strength of the MMF is the employees' and management's motivation for addressing the environmental impact of the MMF. The MMF employees participated in the survey, attended the focus group session, attended numerous meetings, and offered innovative solutions for addressing the environment. The MMF employees have also shown initiative for the project by researching various solutions for preventing waste, and reducing energy and water consumption.

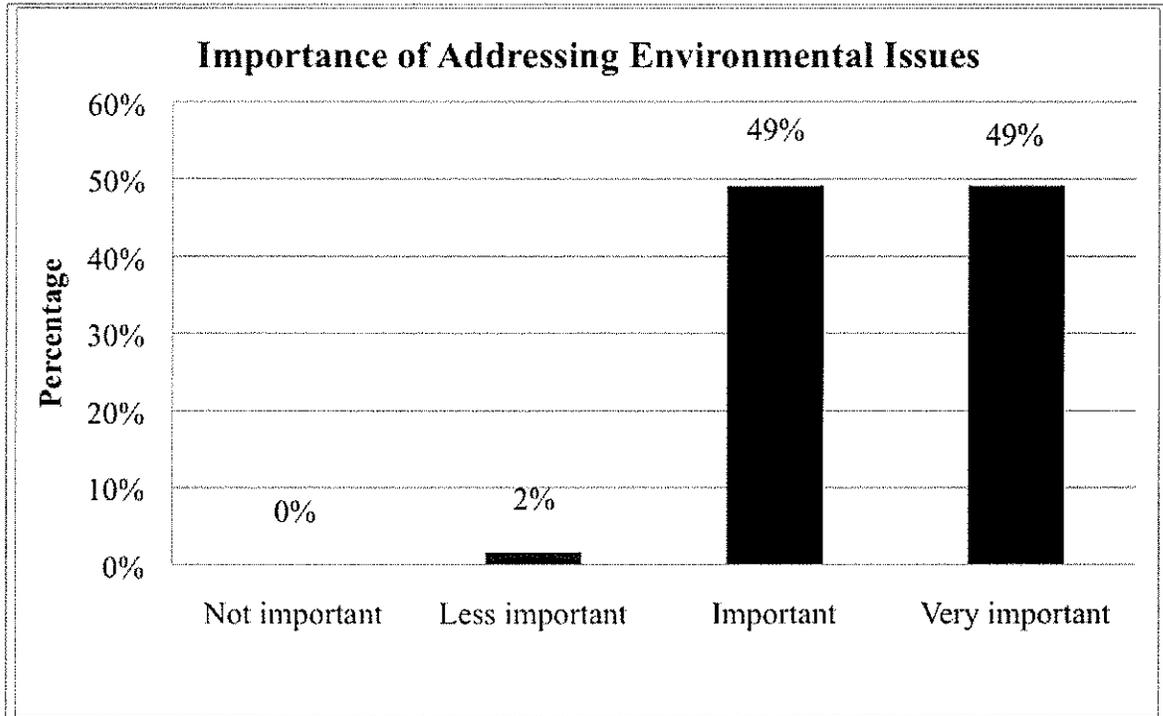
In total, thirty-five of the sixty-one surveyed Home Office employees (57 %) rated their level of interest in environmental issues as high, very high, or extremely high, while twenty-four employees had moderate interest (39%) and two employees had slight interest (3%) (Figure 2). None of the employees surveyed stated that they have no interest in environmental issues (Figure 2).

Figure 2. Interest in Environmental Issues (n=61).



Sixty (98%) of the Home Office employees surveyed stated that it is important or very important for the MMF to address its impact on the environment while one employee (2%) stated that it is less important (Figure 3). The correlation between the level of interest in the environment and the need to address the impact on the environment was 0.9645. The most significant environmental aspects that surveyed employees wanted improved at the MMF include: improved thermal climate (35 employees), windows that open (35 employees), and controllable lighting (33 employees) (Table 6).

**Figure 3. Importance of Addressing Environmental Issues.**



Another major strength of the MMF is their ability to communicate with their members and the public. Each September, the MMF hosts an Annual General Assembly that involves approximately 12,000 of their members. The MMF also has close partnerships with many external communication sources such as Pemmican Publications Inc, a publishing company located in the Home Office and various Aboriginal newspapers and Native Communications Inc. (NCI), a local Aboriginal radio station.

Another strength of the MMF is their Information Technology (IT) Department. The MMF's IT Department designed the online environmental survey that was sent to the MMF employees and management.

### 4.3.1 Environmental Aspects

The MMF Home Office's current energy consumption was estimated through a baseline energy audit conducted by Manitoba Hydro. According to Manitoba Hydro, the total floor area of the MMF Home Office is 105,325 square feet and the energy index is 32.34-kWh/sq. ft, which is higher than other office buildings of this size (i.e., 29.80-kWh/sq. ft). The majority of electricity (75.8%) was used for lights, hot water and miscellaneous equipment (Table 5). The majority of natural gas (98.6%) was used for heating (Table 5). The baseline energy audit offered many recommendations for reducing the Home Office's energy consumption such as reducing the temperature of the offices by 1°C in the winter, increasing the temperature of the offices in the summer by 1°C and caulking and weather-stripping all windows and doors. The baseline audit also recommended replacing single or double paned windows as required with energy efficient models as the Home Office's current windows have considerable leakage and the survey participants were concerned about the windows in the MMF Environmental Survey.

**Table 5. Energy Usage at the MMF Home Office at 150 Henry Avenue in Winnipeg, Manitoba.**

Energy	Indicator	Baseline Data	Percentage	Cost
Electricity	Lights, hot water and miscellaneous equipment	1,197,504 kWh	37.9%	\$55,375.96
	Heating equipment	71,280 kWh	2.3%	\$3,296.19
	Cooling equipment	303,534 kWh	9.6%	\$14,036.27
	<b>Total</b>	<b>1,572,318 kWh</b>	<b>50%</b>	<b>\$72,708.42</b>
Natural gas	Lights, hot water and	33,203 kWh	0.9%	\$1,328.00

Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

Energy	Indicator	Baseline Data	Percentage	Cost
	miscellaneous equipment			
	Heating equipment	1,800,993 kWh	49.3%	\$72,009.00
	Cooling equipment	0 kWh	0%	\$0.00
	<b>Total</b>	<b>1,834,196 kWh</b>	<b>50%</b>	<b>\$73,337.00</b>

One question in the survey asked MMF Home Office employees to select the environmental aspects that they most wanted improved at the Home Office. The three most selected options were the thermal climate (61%), windows that open (61%), and controllable lighting (58%), which all related to the building environment (Table 6).

**Table 6. Environmental Aspects (n=60).**

Category	Area of Interest	Level of Interest
Temperature	Thermal climate	61%
Energy	Controllable lighting	58%
	Improved lighting	49%
Waste	More recycling facilities	44%
Outdoor Environment	More green spaces	42%
Green Purchasing	More organic/fair trade options in the cafeteria	33%
Transportation	Alternative transportation	32%
Energy	Draft free windows	28%
	Window that open	61%
Green Purchasing	Green cleaning products	26%
Other	Increased security	25%
Waste	Composting	14%

As full time employees spend quite a substantial amount of time at work, it was not

surprising that the three most popular environmental aspects all relate to the need for more personal control within the employees' work environment. To respond to the concerns of the employees, the MMF could achieve greater personal control and environmental sustainability by retrofitting the building to include dimmers for workspaces, fluorescent task lighting, or individually operable task lighting, air quality controls and changing some windows so that they open. Implementing an EMS plan that addresses environmental concerns about the building while fully engaging the MMF Home Office employees will benefit the MMF through lower energy, water, and waste costs but also greater environmental awareness and level of comfort at work.

The building focus is also partly an artifact of the survey's focus. It was also not surprising that the MMF employees chose three aspects that related to the building as seventy-five percent (75%) of the options listed in the survey related to the building. The only three options that did not directly relate to the building were more green spaces, alternative transportation, and increased security. To build on the results of the environmental survey, it would be interesting to conduct a follow-up survey that relates to more general environmental aspects and program delivery for the MMF.

The focus group participants agreed that the MMF should address its environmental impacts and identified many possible environmental aspects for the MMF to address including: energy efficiency; thermal climate; overall comfort; reduction in paper usage; recycling; ergonomically friendly workspaces and offices such as hiring someone who specializes in ergonomics; waste reduction; green spaces to encourage staff to go outside; new windows that open for comfort and fire safety; cleaner ventilation system; and increased ventilation.

## Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

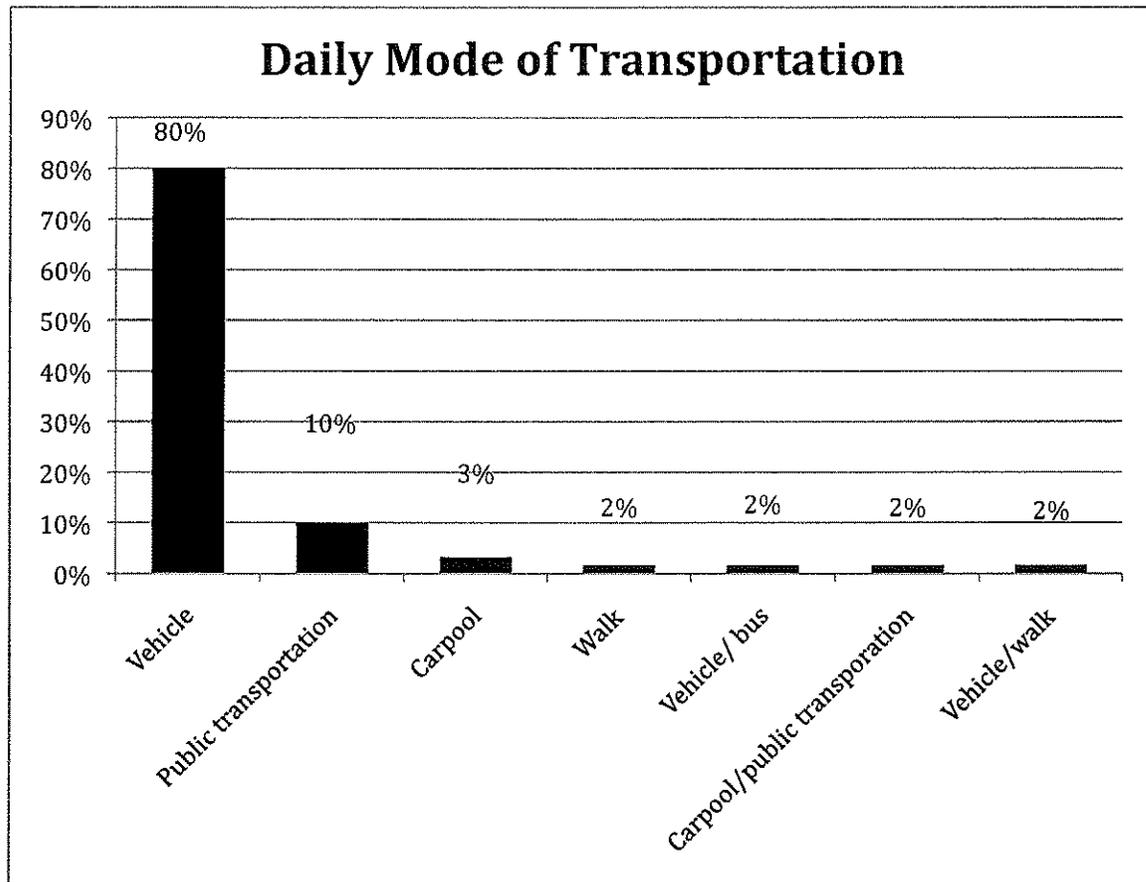
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One participant also recommended organizing the offices so that common areas are open with views outside including open-air meeting areas. The participant also mentioned that all employees would enjoy adequate office space, a window, and a view. Another innovative idea was to have open-air museums that profile Métis cultural history as you walk through the building.

The focus group participants mentioned that the MMF could look at reducing their usage of office materials by implementing a comprehensive inventory of existing supplies. The MMF could also benefit from sending more emails and electronic memos.

The baseline data for transportation was collected from the MMF Environmental Survey. Forty-eight (80%) of the sixty employees who responded to the question in the survey travelled to the MMF by personal vehicle, six employees used public transportation (10%), two employees carpooled (3%), one employee walked to the MMF Home Office (2%), one employee carpooled and used public transportation (2%), one employee used their own vehicle and public transportation (2%), one employee used a personal vehicle in the winter and walked in the summer (2%) (Figure 4).

**Figure 4. Daily transportation to the MMF Home Office.**



#### **4.4 Conclusion and Recommendations for the EMS from the findings**

Environment is an important issue for the majority of the employees at the MMF's Home Office. It is evident from the rate of participation and the results of the survey that MMF Home Office employees have a lot to contribute to the creation and implementation of an EMS.

##### **4.4.1 The major difference between the MMF and typical SMEs or government offices is the Métis worldview.**

Sustainability is integral to Métis culture and knowledge (Métis National Council 2006). As demonstrated by the survey and focus group session, the environment is very

important to Métis people and that needs to be demonstrated by the Home Office's EMS.

The Home Office's EMS needs to be a proactive plan that is unique like the Métis people. It was mentioned by the focus group participants that the MMF can be more sustainable through cooperation, innovation, education, retention, training, research, support, protection of identity, working together, and working more with less.

#### **4.4.2 Organizational Strengths and Challenges**

One of the greatest strengths of this project is that sustainability is integral to Métis culture and knowledge (Métis National Council 2006). This strength will greatly assist the MMF's EMS, as many of the employees of the Home Office believe that the environment is integral for their culture and way of life.

Another strength is the high level of participation by Home Office employees and management in the EMS. The employees need to address the MMF's impact on the environment has been apparent in all aspects of this project, as employees have been quick to participate and offer assistance. The willingness to participate is also integral to the creation of the EMS and has been incorporated into the EMS. If the employees were not willing to participate, designing an EMS would have been pointless.

Senior management at the MMF quickly supported the concept of an EMS at the MMF Home Office. Even senior management and a political representative have offered their support for the project. According to the MMF's President, David Chartrand, "*This project is another concrete example of what we can do to create a sustainable future for our children and grandchildren*", (Province of Manitoba, 2007). Before continuing discussions, it was important to determine whether employees would support the EMS. Without employee and management support for the EMS, the project would have little

chance for success (Pedersen, 2007). The results of the environmental survey were excellent motivators for this project as they demonstrated the high level of interest in the environment among employees at the MMF's Home Office. Ninety-eight percent of MMF Home Office employees believe that the MMF should address its impact on the environment.

The greatest challenge for the project is designing an EMS that the MMF is able to implement and maintain. While working with the MMF to design the project, it was evident that the employees and managers at the MMF are balancing many priorities. When day-to-day issues are pressing, it is often very difficult for larger governance organizations to make organizational changes. For an EMS to be successful, it should be integrated into the organization's existing structure including all corporate policies and procedures and be compatible with the organization's corporate culture (Kirkland & Thompson, 1999; Jansson, Nilsson, & Rapp, 2000). Management and employees may view drastic attempts to alter the way they operate as a critique of their work and may result in less employee and management acceptance of the EMS (Kirkland & Thompson, 1999). To accommodate for the challenge, a flexible EMS had to be designed to fit into the MMF's existing organizational structure. It is also highly recommended that the MMF designate or hire an employee to be their EMS Coordinator. According to Herremans and Allwright (2000), having a full-time employee dedicated to the EMS is one of the activities that have the greatest significance in the success of an EMS.

Traditionally Métis people passed their knowledge orally and there seems to be varying perspectives among MMF employees and management about whether the Home Office requires more written policies. When discussing the potential structure of the

EMS, the focus group participants mentioned that the MMF might benefit from more written, formal policies, as they were concerned that oral policies may be lost in translation. In contrast to the focus group's concerns, a senior member of management at the MMF expressed his concern about creating more documents as he felt that the MMF was already overburdened by documentation. An EMS that relied on oral transmission of knowledge would vary greatly from ISO 14001 standards and would require a innovative approach to ensure that the organization would still achieve its targets.

Another strength of the MMF is their Information Technology (IT) Department that designed and distributed the online environmental survey to the MMF employees and management. The MMF's IT department could potentially design a web-based software for collecting environmental data to monitor the success of the EMS plan.

#### 4.4.2.1. Internal and External Communication

The MMF's ability to communicate with their members and the public is a major strength of the organization. The MMF has the opportunity to share their EMS with approximately 12,000 of their members at their Annual General Assembly. The MMF also has close partnerships with many external communication sources. Starik (1995) stated that Ecologically Sustainable Organizations utilize the media to communicate their initiatives and to increase the environmental awareness of their audience. The Home Office's EMS recognizes the importance of communicating the MMF's initiative and environmental performance to its citizens to increase Métis people's environmental awareness and interest in environmental issues.

Another challenge faced by designing the EMS is ensuring that there is sufficient internal and external communication among employees and management regarding the

## Chapter 4: Participatory Research of an Environmental Management System - Building on the Strengths of the Manitoba Métis Federation

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EMS. The EMS has to identify required resources such as training, education, awareness, and personnel to be successfully implemented (Kirkland & Thompson, 1999). The EMS should be a collaboration that involves interaction among many different departments and outside organizations to provide a venue for sharing challenges and offering solutions (Matthews, Christini, & Hendrickson, 2004). Involvement with outside organizations through meetings, workshops, and conferences provides an opportunity to share experiences and learn new approaches (Matthews, Christini, & Hendrickson, 2004). According to Halila (2006), the first step towards reducing complexity and successfully implementing an EMS is facilitating training and education sessions. To address this challenge, the MMF EMS should include training sessions, workshops, and newsletters for MMF employees regarding the progress of the EMS. As Ecologically Sustainable Organizations benefit from having many partnerships with varying organizations, the Home Office EMS recommends that the MMF collaborate with environmental organizations in Manitoba such as Resource Conservation Manitoba for assistance with environmental awareness and training (Starik, 1995).

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## **CHAPTER 5: MANITOBA MÉTIS FEDERATION DRAFT EMS HANDBOOK**

### **5.1 Scope Description**

Built in 1958, the Manitoba Métis Federation's (MMF) Home Office is located at 150 Henry Avenue in Winnipeg, Manitoba. The Home Office houses approximately 150 employees. This EMS encompasses the operations, programs, and policies of the MMF Home Office.

### **5.2 Rationale for the EMS**

The MMF, as the self-government representative of the Métis people in Manitoba, has the responsibility to act in the best interest of Métis people. By creating and implementing an Environmental Management System (EMS), the MMF has the opportunity to reduce its environmental impacts. Reducing the environmental impact of the MMF is important to the employees, as ninety-eight percent of MMF Home Office employees believe that the MMF should address its impact on the environment. In Métis culture, there is a respect for nature and replenishing environmental resources. According to President Chartrand, "Wildlife conservation, habitat protection and environmental responsibility have always been strong priorities for the Manitoba Métis community" (Province of Manitoba, 2007).

An EMS would also allow the MMF to reduce its economic costs enabling the organization to spend funding on programs that benefit Métis citizens in Manitoba.

Implementing and maintaining an EMS provides the MMF with security by knowing that they are complying with all applicable environmental legislation. By being

proactive and maintaining proper documentation the MMF is demonstrating due diligence.

### 5.3 Steps for implementing the EMS

To implement the EMS, the MMF should initially:

1. Review and discuss the EMS
2. Review, if necessary revise, and commit to the Environmental Policy
3. Inform MMF employees and management about the Environmental Policy and the EMS
4. Conduct a compliance audit to review the MMF's compliance with legislation, municipal bylaws, and Traditional laws
5. Review the environmental aspects, objectives, targets and actions and revise as required
6. Implement a plan for achieving the identified targets
7. Conduct training needs assessments
8. Hire or designate an employee as the EMS Coordinator
9. Implement the document control system for EMS related documents
10. Implement a procedure for documenting and addressing any nonconformities, corrective and/or preventative actions

**Table 7. Actions for Implementing the EMS.**

<b>Implementing the EMS</b>		
<b>Immediate</b>	<b>Midterm</b>	<b>Long-term</b>
Review and discuss the EMS		Expand the EMS to involve the seven regions
Review, if necessary revise, and commit to the	Annually review and revise the Environmental Policy	Adapt the policy over time to become more Métis

<b>Implementing the EMS</b>		
<b>Immediate</b>	<b>Midterm</b>	<b>Long-term</b>
Environmental Policy		specific and better reflect Métis identity Implement the Environmental Policy for the seven regions and MMF locals
Inform MMF employees and management about the Environmental Policy and the EMS	Involve and inform MMF employees and members about the EMS during Managers' Meetings, the Annual General Assembly and by using the MMF website	
Conduct a compliance audit to review the MMF's compliance with legislation, municipal bylaws, and Traditional laws	Review biannually legislative requirements and recommend any applicable revisions to the Home Office's Environmental Policy, environmental aspects, objectives, targets, actions, and programmes	
Review the environmental aspects, objectives, targets and actions, revise as required	Revise the environmental aspects, objectives, targets and actions Monitor the MMF's progress on implementing the environmental policy, environmental aspects, targets, actions and programmes	
Implement a plan for achieving the identified targets	Conduct an audit and management review of the MMF's EMS	Expand the EMS to include MMF programs such as housing
Conduct training needs assessments	Offer training for employees as identified in the EMS Handbook Retain documentation of training offered to employees	
Hire or designate an		

<b>Implementing the EMS</b>		
<b>Immediate</b>	<b>Midterm</b>	<b>Long-term</b>
employee as the EMS Coordinator		
Implement the document control system for EMS related documents	Review the document control system	
Implement a procedure for documenting and addressing any nonconformities, corrective and/or preventative actions	Review any nonconformities, corrective and/or preventative actions Review the procedure for documenting and addressing nonconformities, corrective and/or preventative actions	

## **5.4 Environmental Policy for the MMF**

### **5.4.1 Purpose**

The purpose of an environmental policy is to commit to continually reducing your environmental impact. It is important that MMF employees are aware that the MMF has an environmental policy, why the MMF has an environmental policy, where the policy is located and that the policy commits to continual improvement, meeting legislative requirements and reducing environmental impacts.

### **5.4.2 Policy**

Métis culture is based on a respect for the environment. The MMF commits to continually reducing our environmental impacts by:

- Integrating environmental considerations into our planning and daily activities
- Meeting or exceeding regulatory environmental requirements
- Regularly reviewing our environmental objectives and targets
- Communicating our environmental policy to our employees and members

For more information on the MMF's Environmental Policy, please visit the MMF's website at [www.mmf.mb.ca](http://www.mmf.mb.ca).

### **5.4.3 Procedure**

The Home Office's EMS Coordinator annually reviews and recommends revisions to the MMF's environmental policy. The Workplace Safety and Health Committee then reviews the EMS Coordinator's recommended revisions and provides their recommendations to the Executive Director who approves or revises the revisions to the policy and signs to approve any changes.

### **5.4.4 Recommendations**

The current MMF Environmental Policy meets ISO 14001 requirements but it is expected that the MMF's Environmental Policy will adapt and evolve over time to become more Métis specific and better reflect Métis identity.

## **5.5 Organizational Chart**

The MMF is currently reviewing the organizational structure of the Home Office. Once finalized, a copy of the organizational chart will be located in the MMF Human Resources Department.

## **5.6 Legal Requirements**

### **5.6.1 Purpose**

The compliance audit is useful for identifying all applicable federal and provincial legislation, municipal bylaws, and Traditional laws and is basic to the design, implementation and maintenance of the EMS. The compliance audit also clarifies whether legislation is applicable to the Home Office's environmental aspects.

### **5.6.2 Procedure**

Before implementing the EMS, the EMS Coordinator of the Home Office or other designated employee will conduct a compliance audit to verify whether the MMF is complying with all applicable legislation. On a biannual basis, the EMS Coordinator will review legislative requirements and recommend any applicable revisions to the Home Office's Environmental Policy, environmental aspects, objectives, targets, actions, and programmes. The Workplace Safety and Health Committee will review the EMS Coordinator's revisions and recommend amendments as required. The Executive Director will approve any revisions.

## **5.7 Environmental Aspects, Objectives, Targets, Actions and Responsibilities**

### **5.7.1 Purpose**

The purpose of identifying environmental aspects, objectives, targets, and actions is to identify the MMF Home Office's potential environmental impacts and determine targets and actions for reducing potential impacts. There are many actions identified in the EMS to provide options for the MMF although each action does not need to be completed in the first year. Table 8 outlines the MMF EMS's environmental aspects, objectives, targets, possible actions, and responsibilities. The table lists the five identified aspects, the MMF's objective for the aspect, the first yearly target and possible actions to accomplish the target, and the employees who are responsible for the actions.

The MMF has identified the following five environmental aspects based on information gathered from an environmental survey, focus group, meetings, and waste and energy audits.

### 5.7.2 Energy Use

Energy is an environmental and economic concern for the MMF's Home Office. According to a baseline audit completed by Manitoba Hydro, the MMF consumes 1,572,318 kWh of electricity.

#### 5.7.2.1. Objective

- Reduce energy consumption at the MMF Home Office.

#### 5.7.2.2. Target

- Yearly 5% reduction in energy consumption

#### 5.7.2.3. Actions

- Apply for Manitoba Hydro's Commercial Lighting Program to retrofit existing light fixtures
- Involve design students in designing a new lighting scheme for the Home Office
- Conduct an energy audit of the MMF Home Office
- Retrofit existing light fixtures
- Reduce the number of light fixtures
- Fulfill health and safety = top environmental demand of employees

#### 5.7.2.4. Responsibility

- EMS Coordinator
- Maintenance Department

#### 5.7.2.5. Future Actions

- In the future, the MMF will research the viability of replacing the existing boiler and cooling system with a new energy efficient models and replacing the existing windows with new energy efficient windows that can open

### **5.7.3 Purchasing**

The MMF's Home Office is divided into various departments. Each department is responsible for purchasing their supplies. By participating in bulk green purchasing for the entire Home Office, the MMF could easily reduce their environmental impact while saving money. The MMF plans to eventually incorporate bulk purchasing into their purchasing plan.

#### 5.7.3.1. Objective

- Purchase more environmentally friendly products at the Home Office

#### 5.7.3.2. Target

- Yearly 20% increase in green purchasing

#### 5.7.3.3. Action

- Increase green purchasing
- Provide training for the EMS Coordinator about green purchasing

#### 5.7.3.4. Responsibility

- EMS Coordinator

### **5.7.4 Transportation**

According to the MMF Environmental Survey, many employees are interested in subsidized bus passes, carpooling, and/or cycling to work. Having employees take alternative transportation could vacate one of the Home Office's surface parking areas providing the MMF with options for leasing their parking spots.

#### 5.7.4.1. Objective

- Encourage MMF employees to take alternative transportation to the MMF Home Office

5.7.4.2. Target

- Yearly 10% increase in alternative transportation by MMF employees

5.7.4.3. Action

- Participate in the Commuter Challenge
- Research viability of subsidized transit passes, carpooling and bicycle storage
- Explore charging nominally for parking

5.7.4.4. Benefits:

- Improved fitness and health for MMF Home Office employees
- Opportunity to use parking spaces for other uses such as green spaces or increase revenue by renting more parking spaces to neighbourhood businesses

5.7.4.5. Responsibility

- EMS Coordinator

**5.7.5 Waste Generation**

The MMF collaborated with the University of Manitoba's Natural Resources Institute to implement waste reduction strategies and programs at the Home Office.

5.7.5.1. Objective

- Reduce, divert and prevent waste and pollution at the MMF Home Office

5.7.5.2. Target

- Yearly 10% reduction in overall waste

5.7.5.3. Action

- Implement a composting program
- Reduce use of disposable cups and plates
- Educate MMF employees about methods for reducing paper usage

- Conduct a waste audit
- Increase the variety of products that are recycled
- Reduce paper usage

#### 5.7.5.4. Benefits:

- Less waste
- Less money spent on creating and hauling waste

#### 5.7.5.5. Responsibility

- EMS Coordinator
- Elsie Bear's Kitchen

### **5.7.6 Water Usage**

The MMF recognizes the environmental and economic importance of reducing unnecessary water consumption.

#### 5.7.6.1. Objective

- To reduce water usage at the MMF Home Office

#### 5.7.6.2. Target

- Yearly 10% reduction in water usage

#### 5.7.6.3. Action

- Install sink aerators
- Replace urinals with waterless urinals
- Replace toilets with low flush

#### 5.7.6.4. Benefits:

- Less unnecessary water consumption
- Less money spent on water

#### 5.7.6.5. Responsibility

- EMS Coordinator
- Maintenance Department

**Table 8. MMF EMS Aspects, Objectives, Targets, Activities and Employee Responsible.**

<b>Aspect</b>	<b>Objective</b>	<b>Target</b>	<b>Activities</b>	<b>Responsibility</b>
Energy	Reduce energy consumption	Yearly 5% reduction in energy usage	<ul style="list-style-type: none"> <li>- Apply for Manitoba Hydro's Commercial Lighting Program to retrofit existing light fixtures</li> <li>- Involve students in designing a new lighting scheme for the Home Office</li> <li>- Conduct an energy audit of the MMF Home Office</li> <li>- Retrofit existing light fixtures</li> <li>- Reduce the number of light fixtures</li> <li>- Fulfill health and safety = top environmental demand of employees</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> <li>- Maintenance Department</li> </ul>
Purchasing	Purchase more environmentally friendly products	Yearly 20% increase in green purchasing	<ul style="list-style-type: none"> <li>- Increase green purchasing</li> <li>- Provide training for the EMS Coordinator about green purchasing</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> </ul>
Transportation	Encourage MMF employees to take alternative transportation	Yearly 10% increase in alternative transportation by MMF employees	<ul style="list-style-type: none"> <li>- Participate in the Commuter Challenge</li> <li>- Research viability of subsidized transit passes, carpooling and bicycle storage</li> <li>- Explore charging nominally for parking</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> </ul>
Waste	Reduce, divert	Yearly 10% reduction	<ul style="list-style-type: none"> <li>- Implement a composting</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> </ul>

Aspect	Objective	Target	Activities	Responsibility
Generation	and prevent waste and pollution	in overall waste	program - Reduce use of disposable cups and plates - Educate MMF employees about methods for reducing paper usage - Conduct a waste audit - Increase the variety of products that are recycled - Reduce paper usage	- Elsie Bear's Kitchen
Water Usage	Reduce water usage	Yearly 10% reduction in water usage	- Install sink aerators - Replace urinals with waterless urinals - Replace toilets with low flush	- EMS Coordinator - Maintenance Department

## 5.8 Significant Aspects

The five main environmental aspects identified by the MMF are energy, purchasing, transportation, waste, and water (Table 9).

**Table 9. Significant Environmental Aspects Identified at the MMF Home Office.**

<b>Environmental Aspect</b>	<b>Category</b>	<b>Indicator</b>
Energy usage	Cooling	Energy bill
	Heating	Energy bill
	Lighting	Energy bill
	Windows	Energy audit
Purchasing	Green purchasing	Budgets and reporting
Transportation	Bicycle	Employee survey
	Carpool	Employee survey
	Public transportation	Employee survey
Waste generation	Composting	Invoices
	Disposables	Number purchased
	Paper usage	Amount purchased
Water usage	Consumption	Water bills

## 5.9 Environmental Programmes

The actions selected in the environmental aspects, objectives, targets and actions section will also be included in the Environmental Programmes section.

### 5.9.1 Composting

The MMF Home Office houses Elsie Bear’s Kitchen, which is an independent Métis owned and operated cafeteria. The MMF will pilot a composting program through Elsie Bear’s Kitchen. Composting will be collected weekly from the cafeteria.

## **5.10 Structure and Responsibility**

### **5.10.1 Purpose**

The purpose of outlining the structure and responsibility of the EMS is to ensure that the EMS is incorporated into existing systems at the MMF Home Office and to outline necessary responsibilities and resources.

### **5.10.2 Procedure**

To ensure the success of the MMF Home Office's EMS, the MMF should ensure that can expend the following resources:

- Human resources including training for employees
- Time for implementing and maintaining the EMS
- Financial resources for participating in the identified actions and programmes

The Executive Director of the MMF will appoint a management representative or an employee to work with the EMS Coordinator who will be responsible for implementing and maintaining the EMS. It is important that the EMS coordinator has a close working relationship with MMF management, particularly the President's Office and the Executive Director, as well as the Workplace Safety and Health Committee.

The MMF should integrate the EMS into their existing management systems. By involving the Workplace Safety and Health Committee, the EMS will not exist as a separate management system.

### **5.10.3 Recommendations**

The MMF could involve university and/or college students by offering them term positions as the MMF's EMS Coordinator. Part of the EMS Coordinator's job description could be applying for funding to maintain and improve the MMF's EMS. By

involving students, it would provide the MMF with employees who have EMS related knowledge and would provide students with hands-on work experience.

## **5.11 Competence, Training and Awareness**

### **5.11.1 Purpose**

The purpose of providing EMS related training and teaching environmental awareness is to ensure that employees are competent to fulfill their job requirements and to motivate employees to strive to active the targets outlined in the EMS.

### **5.11.2 Procedure**

The MMF will ensure that all employees or representatives who may cause significant environmental impacts, as identified in Section 5, have received adequate training, awareness, and education to ensure their competence.

The MMF will conduct training needs assessments to ensure that Home Office employees receive adequate EMS and environmental training and are competent to fulfill their environmental responsibilities as identified in their job descriptions. Employees will also receive environmental education that will inspire them to participate and teach about general environmental responsibilities such as recycling, composting and energy, water and waste reduction.

The MMF will retain documentation of EMS and environmental related training in each employee's personnel file.

### **5.11.3 Recommendations**

The MMF could collaborate with environmental organizations in Manitoba such as Resource Conservation Manitoba for assistance with environmental awareness and training.

## **5.12 Internal Communication**

### **5.12.1 Purpose**

The purpose of internal communication is to involve all employees and departments in the EMS, share EMS related information and management review and audit results, demonstrate the MMF's environmental commitments, learn new perspectives, and motivate employees to become further involved in the initiative.

### **5.12.2 Procedure**

Internal communication of the MMF's EMS will occur at Managers meetings, Board of Directors meetings and during yearly reporting.

### **5.12.3 Recommendation**

It is important that the MMF ensure that all departments and employees are involved in the EMS as different perspectives can add a lot of value to the process and it may increase Home Office employees' environmental awareness and interest in the initiative.

## **5.13 External Communication**

### **5.13.1 Purpose**

The purpose of external communication is to inform Métis citizens and the general public about the MMF Home Office's EMS. It is an opportunity to involve interested parties and receive input.

### **5.13.2 Procedure**

External communication will be facilitated by sharing the Home Office's EMS on the MMF's website. The MMF will communicate its successes through its communication strategy, and during each Annual General Assembly.

### **5.13.3 Recommendations**

Implementing and maintaining an EMS is a great asset for an organization. The MMF should communicate its results to the public as it demonstrates that the MMF is an innovative organization. The MMF's ability to communicate with their members and the public is a great strength. The MMF should utilize the Annual General Assembly to communicate the results of their EMS with their members. The MMF could also benefit from their close partnerships with many external communication sources, such as Pemmican Publications Inc, various Aboriginal newspapers, and Native Communications Inc. (NCI).

### **5.14 Documentation**

#### **5.14.1 Purpose**

The purpose of maintaining records is to demonstrate the MMF's legal compliance and continual improvement. The records are used for monitoring, management review, and audits.

#### **5.14.2 Procedure**

The MMF Home Office will maintain and periodically update an EMS manual that contains the following:

- Environmental policy
- Environmental aspects, objectives, targets, and actions
- Environmental programmes

**Table 10. Environmental Records.**

<b>Environmental Records</b>		
<b>Record</b>	<b>Location</b>	<b>Retention Period</b>
Environmental policy		7 years
List of environmental aspects, objectives, targets and actions		7 years
List of significant aspects		7 years
Environmental programmes		7 years
Monitoring and measurement records		7 years
Training records		7 years
Communication records		7 years
Compliance, correction and prevention records		7 years
Management review minutes		7 years
EMS internal audit results		7 years
Legal review results		7 years
Document revisions		7 years

### **5.15 Document Control**

#### **5.15.1 Purpose**

The purpose of document control is to ensure that EMS related documents are maintained, reviewed, approved, relevant, and easily assessable.

#### **5.15.2 Procedure**

The MMF will develop, implement, and continue a document control system to ensure that EMS related documents are:

- Maintained and controlled
- Read-only by other MMF employees and representatives
- Reviewed prior to implementation

- Approved prior to implementation
- Reviewed, updated, and approved annually
- Available at the location identified in the Environmental Records Table
- Relevant, up-to-date, legible, and clearly labelled
- Identified and destroyed or archived once deemed obsolete

The MMF will maintain a document that lists any revisions to the handbook.

### 5.16 Document Header

The EMS documents will contain a header that indicates:

- The name of the document
- The number of the document
- The date the document was approved
- The department where the policy originates
- Who approved the document
- The page number (example x of y)
- What the document supercedes

**Figure 5. Document Header.**

<b>Document Name:</b>	<b>No.</b>	<b>Page #</b>
<b>Department</b>	<b>Approved By</b>	
<b>Effective Date</b>	<b>Supercedes</b>	

**Table 11. Document Control Procedure.**

<b>Task</b>	<b>Responsibility</b>
Maintained and controlled	EMS Coordinator
Read-only by other MMF employees and representatives	EMS Coordinator
Reviewed prior to implementation	Workplace Safety and Health Committee
Approved prior to implementation	Executive Director
Reviewed, updated annually	EMS Coordinator
Available at the location identified in the Environmental Records Table.	EMS Coordinator
Relevant, up-to-date, legible, and clearly labelled	EMS Coordinator
Identified and destroyed or archived once deemed obsolete	EMS Coordinator

## **5.17 Operational Control**

### **5.17.1 Purpose**

Maintaining operational control is important to ensure that the MMF has documented procedures to meet any legal requirements, to achieve its identified targets and reduce its impact on the environment.

### **5.17.2 Policy**

The EMS Coordinator at the Home Office will create a plan for addressing significant environmental aspects related to MMF's environmental policy, environmental aspects, objectives, targets, and actions to ensure that the MMF reduces its environmental impacts.

## **5.18 Emergency Preparedness and Response**

### **5.18.1 Procedure**

For more information on the MMF Home Office's emergency preparedness and response plan, please refer to the Workplace Safety and Health manual.

## **5.19 Monitoring and Measurement**

### **5.19.1 Purpose**

The purpose of regular monitoring is to ensure that the MMF is conforming to its environmental policy, environmental aspects, targets, and actions. Regular monitoring is useful for identifying any deviation from the EMS.

### **5.19.2 Procedure**

The EMS Coordinator of the Home Office will monitor and document monthly the MMF's progress on implementing its environmental policy, environmental aspects, targets, actions and programmes. The EMS Coordinator will monitor the success of the EMS through many sources including internal and external EMS related correspondence, energy bills, budgets, reporting, employee surveys, invoices, and water bills.

### **5.19.3 Recommendation**

The MMF's Information Technology (IT) Department could potentially design a web-based software for collecting environmental data for monitoring the success of the EMS plan

**Table 12. Monitoring and measurement.**

<b>Documentation</b>	<b>Category</b>	<b>Indicator</b>
Environmental policy	Policy	Internal and external EMS related correspondence
Energy usage	Cooling	Energy bill
	Heating	Energy bill
	Lighting	Energy bill
	Windows	Energy audit
Purchasing	Green purchasing	Budgets and reporting
	Bulk purchasing	Budgets and reporting
Transportation	Bicycle	Employee survey
	Carpool	Employee survey
	Public transportation	Employee survey
Waste generation	Composting	Invoices
	Disposables	Number purchased
	Paper usage	Amount purchased
Water usage	Consumption	Water bills

## **5.20 Compliance with Legal and Other Requirements**

### **5.20.1 Purpose**

The purpose of reviewing and documenting the MMF's compliance with legal requirements is to ensure that the MMF has the documentation to prove that they are in compliance if they were legally challenged and to measure the current compliance status of the Home Office.

### **5.20.2 Procedure**

The EMS Coordinator of the Home Office will annually review, record, and maintain documentation on the MMF's legal compliance and report the results to the Workplace Safety and Health Committee.

## **5.21 Nonconformity, Corrective and Preventative Action**

### **5.21.1 Purpose**

The purpose of procedures for documenting, addressing, correcting, and preventing nonconformities is to ensure that the MMF has a plan for any divergences from its EMS and to prevent occurrences or recurrences of actions that cause harm to the environment.

### **5.21.2 Procedure**

The EMS Coordinator of the Home Office will develop, instigate, and maintain procedures for documenting, addressing, correcting, and preventing actions and preventing occurrences or recurrences of environmental actions that cause harm to the environment.

**Table 13. Non-conformity, Corrective and Preventative Actions.**

<b>Description of nonconformity</b>	<b>Date</b>	<b>Cause of non conformity</b>	<b>Implemented Corrective Action</b>	<b>Effectiveness of Action</b>	<b>Preventative Action</b>
Example: Failure to compost	January 11, 2008	Misunderstanding procedure	Sorted through refuse to add compostable to bin	Very effective	Provided more training to employees about composting  Created a list of compostable items

## **5.22 Internal Audit**

### **5.22.1 Purpose**

The purpose of the audit is to determine and inform management about whether the MMF Home Office has correctly implemented, and maintained their EMS.

### **5.22.2 Procedure**

Each year, an authorized employee of the MMF will audit the Home Office's EMS. The EMS Coordinator will not conduct the audit to ensure that the auditor is impartial and objective. To audit the MMF's EMS, the auditor may:

- Review EMS related documentation
- Conduct interviews with the EMS coordinator, the Workplace Safety and Health Committee and the Executive Director
- Observe how the MMF's EMS is operating

### **5.22.3 Recommendation**

The MMF would benefit from hiring external auditors for their first audit and having an interested MMF Home Office employee shadow the auditors to learn the auditing process. The interested employee could then conduct the next annual audit.

## **5.23 Management Review**

### **5.23.1 Purpose**

The purpose of the review is to:

- Determine whether the EMS is still relevant and up-to-date
- Identify areas of improvement
- Review whether the Home Office is achieving its targets

- Approve or revise recommendations for the improvement of the EMS and environmental performance

#### **5.23.2 Procedure**

- The MMF Home Office's Workplace Safety and Health Committee, Managers and Executive Director will, at a minimum, annually review the Home Office's EMS.

**Table 14. Management Review Chart.**

Element	Responsibility			
	EMS Coordinator	Workplace Safety and Health Committee	Managers	Executive Director
Policy	Annually review and recommend revisions	Review the EMS coordinator's recommended revisions		Approve or revise recommendations and sign to approve
Legal requirements	Biannually review requirements	Review amendments as required		Approve or revise amendments and sign to approve
Environmental aspects, objectives, targets and actions	Annually review progress and recommend revised targets, actions and aspects	Annually review progress and recommended revised targets, actions and aspects	Submit reports and budgets based on applicable targets and actions and review progress	Annually review progress and approve amendments
Audit results	Organize audit and review results	Review audit results	Review audit results	Review audit results
Communication	Review and collect any internal and external EMS related correspondence			
Corrective / preventative action	Annually review any corrective / preventative action. Annually review any nonconformities and non-compliances.			
Continual improvement				

<b>Element</b>	<b>Responsibility</b>			
	<b>EMS Coordinator</b>	<b>Workplace Safety and Health Committee</b>	<b>Managers</b>	<b>Executive Director</b>
Relevant, and up-to-date	Review EMS to ensure it is relevant and up-to-date			
Report	Annually draft an EMS report	Review and discuss report	Review report and share with employees	Review and approve report

## **CHAPTER 6: VISUALIZING SUSTAINABILITY FOR THE MANITOBA MÉTIS FEDERATION: EVALUATING THE RATIONALE FOR ENVIRONMENTAL PROGRAMMES, TARGETS AND ACTIONS AS COMPONENTS OF AN ORGANIZATION'S ENVIRONMENTAL MANAGEMENT SYSTEM**

### **6.1 Introduction:**

Organizations require methodologies for collecting data to determine the success of their EMS's programmes, actions, and targets and to effectively communicate the information to their employees, management, and stakeholders (Ramos & Joanaz de Melo, 2006). The main goal of this section is to examine the methods used for a Métis organization to identify, address, and evaluate their environmental impacts. The first objective of this section is to critically evaluate the author's rationale for designing the Manitoba Métis Federation's (MMF) environmental targets and actions. The second objective is to assess the proposed EMS's relevance and effectiveness. The significance of this section is to determine the potential effectiveness and relevancy of a proposed EMS before implementation.

Based on the environmental survey, focus group, and baseline data, the author selected five areas as having the largest impact: energy use, purchasing, transportation, waste generation, and water usage. The author selected actions based on the priorities of MMF employees as identified during the environmental survey, focus group, and baseline data and is now verifying whether the identified actions are the most economical and will most reduce the MMF's environmental impact. It can be easily questioned whether this method optimizes sustainability? Would the author have selected the same areas if they have used different quantifiers to select targets and actions?

To describe the programmes, actions and targets selected by the MMF, it is

important for the reader to understand the people and their organization. The Métis nation formed over time as First Nation women and European men intermarried and developed their own unique history, culture, language, and governance system. Métis people's unique history and culture was shaped through their participation in the fur trade, agriculture, politics, and the arts. Métis people were highly involved in transportation as inventors of the York boat and the Red River Cart and as workers on the rail system (Préfontaine, Paquin, & Young, *Traditional Métis Transportation*, 2003). The Red River Cart was highly versatile as it was used to transport up to one thousand pounds of Buffalo meat or other freight across the prairie, as a raft or boat for crossing water and as temporary shelter (Anderson 2004). The Métis language, Michif, was developed after a long period of Métis people speaking both French and Cree (Crawford, 1985).

The Métis people's unique history includes their role in Manitoba's entrance into confederation through the creation of the Manitoba Act. On December 8, 1869, the Métis in Manitoba formed a provisional government to negotiate Manitoba's entry into Canada (Teillet. 2006, Préfontaine & Dorion 2003). The Métis were successful in negotiating that the Manitoba Act would include English and French as the official languages, protect current resident's land from settlers, and grant the Métis a homeland, although the system for distributing land and protecting the current residents of Manitoba was flawed and resulted in many Métis people losing their land and becoming marginalized (Teillet, 2006).

After a long period of marginalization in Manitoba, the MMF was formed in 1967 to represent the Métis Nation in Manitoba. The MMF is the Métis self-government representative for the Manitoba Métis community and is one of the five governing

members of the Métis National Council. The Métis National Council (2002) defines a Métis as: *“a person who self-identifies as Métis, is of historic Métis Nation Ancestry, is distinct from other Aboriginal Peoples and is accepted by the Métis Nation”*. One of the recent victories for the Métis people was their recognition in Section 35 of the Canadian Constitution that acknowledged Métis as one of the three distinct Aboriginal Peoples in Canada.

Since 1967, the MMF has rapidly grown and now has approximately 250 employees at its Home Office and seven regional offices: Interlake Region, Northwest Region, Southeast Region, Southwest Region, The Pas Region, Thompson Region, and Winnipeg Region. The MMF still has a grassroots governance system as it is governed through its locals, regional offices, and provincial board.

The MMF Home Office Branch in Winnipeg houses approximately 150 employees, as well as the Canadian Pacific Railway (CPR) Police Service, as CPR at one time owned the building. The Home Office building was constructed in 1958, at a time when energy and resources were inexpensive, resulting in a building that does not include high efficiency toilets, lights, furnaces, or windows. The MMF Home Office building is located at 150 Henry Avenue in the South Point Douglas area of Winnipeg, Manitoba, an economically depressed area in Winnipeg’s inner core that is surrounded by many social service providers and is an area where many people are afraid to walk.

The MMF began discussions around establishing an EMS at the MMF Home Office in spring 2005. As a self-government office, the MMF Home Office differs from larger production oriented corporations as it has few environment regulations to follow and did not choose to implement an EMS solely to conform with legislation. The

motivators for implementing the EMS were primarily as an opportunity to reduce operating costs, address environmental impacts, be innovative, and demonstrate corporate social responsibility.

### **6.1.1 MMF's Aspects, Actions, Targets and Goals**

The purpose of identifying environmental aspects, objectives, targets, and actions is to identify the MMF Home Office's environmental impacts and determine targets and actions for reducing potential impacts. This requires that we look at each of the five areas identified as having the largest impact. These are energy use, purchasing, transportation, waste generation, and water usage. Table 15 outlines the MMF EMS's five identified aspects, objective for each aspect, the first yearly target and possible actions to accomplish the target, and the employees who are responsible for the actions.

### **6.1.2 Energy Use**

Energy is an environmental and economic concern for the MMF's Home Office. According to a baseline audit completed by Manitoba Hydro, the MMF Home Office consumes more electricity than the typical office space. The MMF's energy target is to reduce energy consumption by 5% annually by applying for Manitoba Hydro's Commercial Lighting Program to retrofit existing light fixtures; involving design students in designing a new lighting scheme for the Home Office; conducting an energy audit of the MMF Home Office; and reducing the number of light fixtures.

### **6.1.3 Purchasing**

The MMF's Home Office is divided into various departments where each department is responsible for purchasing their supplies. By participating in green purchasing for the entire Home Office, the MMF could easily reduce their environmental

impact. The MMF's purchasing target is a 20% yearly increase in green purchasing. The MMF plans to eventually incorporate bulk purchasing into their purchasing plan.

#### **6.1.4 Transportation**

According to the MMF Environmental Survey, many employees are interested in subsidized bus passes, carpooling, and/or cycling to work. Having employees take alternative transportation could vacate one of the Home Office's surface parking areas providing the MMF with options for their land. The MMF's transportation target is a 10% yearly increase in alternative transportation by MMF employees by participating in a Commuter Challenge; researching the viability of subsidized transit passes, carpooling and bicycle storage; and exploring charging nominally for parking.

#### **6.1.5 Waste Generation**

The MMF collaborated with the University of Manitoba's Natural Resources Institute to implement waste reduction strategies and programs at the Home Office. The MMF's waste goal is to reduce, divert, and prevent waste and pollution at the MMF Home Office. The MMF's target is a 10% yearly reduction in overall waste by implementing a composting program; reducing the use of disposable cups and plates; educating MMF employees about methods for reducing paper usage; conducting a waste audit; increasing the variety of products that are recycled; and reducing paper usage.

#### **6.1.6 Water Usage**

The MMF recognizes the environmental and economic importance of reducing unnecessary water consumption and understands the need to reduce water usage at the MMF Home Office. The MMF's water target is a 10% yearly reduction in water usage

by installing sink aerators; replacing urinals with waterless urinals; and replacing toilets with low flush models.

**Table 15. MMF EMS Aspects, Objectives, Targets, Activities, and Employee Responsible.**

<b>Aspect</b>	<b>Objective</b>	<b>Target</b>	<b>Activities</b>	<b>Responsibility</b>
Energy	Reduce energy consumption	Yearly 5% reduction in energy usage	<ul style="list-style-type: none"> <li>- Apply for Manitoba Hydro's Commercial Lighting Program to retrofit existing light fixtures</li> <li>- Involve students in designing a new lighting scheme for the Home Office</li> <li>- Conduct an energy audit of the MMF Home Office</li> <li>- Retrofit existing light fixtures</li> <li>- Reduce the number of light fixtures</li> <li>- Fulfill health and safety = top environmental demand of employees</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> <li>- Maintenance Department</li> </ul>
Purchasing	Purchase more environmentally friendly products	Yearly 20% increase in green purchasing	<ul style="list-style-type: none"> <li>- Increase green purchasing</li> <li>- Provide training for the EMS Coordinator about green purchasing</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> </ul>
Transportation	Encourage MMF employees to take alternative transportation	Yearly 10% increase in alternative transportation by MMF employees	<ul style="list-style-type: none"> <li>- Participate in the Commuter Challenge</li> <li>- Research viability of subsidized transit passes, carpooling and bicycle storage</li> <li>- Explore charging nominally for parking</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> </ul>
Waste Generation	Reduce, divert and prevent waste and pollution	Yearly 10% reduction in overall waste	<ul style="list-style-type: none"> <li>- Implement a composting program</li> <li>- Reduce use of disposable cups and plates</li> <li>- Educate MMF employees about methods for reducing paper usage</li> <li>- Conduct a waste audit</li> <li>- Increase the variety of products that are recycled</li> <li>- Reduce paper usage</li> </ul>	<ul style="list-style-type: none"> <li>- EMS Coordinator</li> <li>- Elsie Bear's Kitchen</li> </ul>

Chapter 6: Visualizing Sustainability for the MMF

<b>Aspect</b>	<b>Objective</b>	<b>Target</b>	<b>Activities</b>	<b>Responsibility</b>
Water Usage	Reduce water usage	Yearly 10% reduction in water usage	<ul style="list-style-type: none"><li>- Install sink aerators</li><li>- Replace urinals with waterless urinals</li><li>- Replace toilets with low flush</li></ul>	<ul style="list-style-type: none"><li>- EMS Coordinator</li><li>- Maintenance Department</li></ul>

## **6.2 Methods**

The Home Office's EMS applied a participatory research methodology to involve MMF employees and management (Table 16). MMF employees and management were involved in an online environmental survey, a focus group session, and many meetings.

### **6.2.1 Environmental Survey**

To determine the areas and level of interest in the environment, approximately 150 MMF Home Office employees and 100 employees at the MMF's seven Regional offices were emailed a link to an electronic survey. To filter the results, the employees were asked in the survey to identify where they worked. The MMF Environmental survey was posted online from January 29, 2007 to February 9, 2007, and consisted of 33 questions. The survey questions focused on environment, health and quality of life issues asking about the employees' level of interest in environmental issues; the need for addressing the MMF's impact on the environment; their level of comfort in the work environment; whether the MMF is a healthy workplace; perceived safety; time spent outdoors; exposure to chemicals; lighting; view; temperature and air control; noise; water wastage; daily transportation; and identifying significant environmental aspects. With sixty-one employees of one hundred and fifty employees responding, the response rate was 40.3%. The average completion time for the survey was 10 minutes.

### **6.2.2 Focus Group**

After completing the survey, a two and a half hour focus group session was held with eight MMF employees and managers on November 20, 2007, to gain further insight into organizational strengths, the employees' perceptions of the MMF's environment

responsibilities, Métis environmental knowledge, and recommended methods for achieving sustainability.

### 6.2.3 Baseline Data

To analyze the baseline or current environmental impact of the MMF, information was gathered regarding the MMF's current energy consumption through a baseline energy audit, waste generation through a waste audit, and employees' perceptions from the MMF Environmental Survey. Manitoba Hydro conducted the benchmark energy audit for the MMF's Home Office and other buildings (Silcox, 2007).

Once the areas of interest were identified, an EMS plan was developed that could improve the current situation based on the identified baseline information and incorporating the feedback obtained from employees and managers. To ensure that employees quickly began to see results from the project, a few measures were implemented including a composting program.

**Table 16. MMF EMS Timeline.**

<b>EMS Stages and Actions</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Commitment and policy</b>			
Commitment from the Executive Director	✓ <sup>5</sup>		
Draft the environmental policy			✓
Meet with the Executive Director to discuss the environmental policy, targets and actions	X <sup>6</sup>	X	X
<b>Planning</b>			
Develop the survey	✓		

<sup>5</sup> The ✓ denotes that the action was accomplished.

<sup>6</sup> The X denotes that the action is ongoing.

EMS Stages and Actions	2006	2007	2008
Distribute the survey		✓	
Formulate the survey results		✓	
Analyze the survey results		✓	
Conduct the focus group session		✓	
Present at a Managers Meeting at the MMF		✓	
Create a list of improvements, targets and goals		X	✓
Research possible funding sources		X	✓
Gather baseline data for the Home Office		X	X
Involve experts to conduct a baseline energy audit at the MMF Home Office		✓	
Involve experts to conduct a waste audit at the MMF Home Office			✓
Produce a draft EMS for the MMF			✓
Meet with the Executive Director to discuss the draft EMS			✓

#### 6.2.4 Feasibility Calculator

To calculate the feasibility of a project, one could estimate the severity of the environmental impact, the scale of the environmental impact, the payback period, and the capital cost. For the feasibility calculator, an activity is rated as feasible (2) if it would mitigate a significant environmental impact, mitigate a large scale environmental impact, its capital costs could be returned in a year, or if it does not require more than \$5,000. An activity is rated as moderately feasible (1) if it would mitigate a moderate environmental impact, mitigate a moderately scaled environmental impact, its capital costs will take between 2 to 5 years for returns, or it requires less than \$20,000. An activity is rated as limited feasibility (0) if it would mitigate a minor environmental impact, mitigate a small scale environmental impact, its capital costs require more than 5 years to be returned, or

if it requires more than \$50,000. The higher the activity is rated, the more important or easier the item is to implement.

An activity is deemed as a significant environmental impact (2) if it causes irreversible damage, is a persistent toxin or carcinogen, utilizes non-renewable energy, or virgin materials. An activity is a moderate environmental impact (1) if it can be remediated with effort, may be toxic but not a persistent toxin or carcinogen, uses renewable energy sources, or over consumes recycled materials, An activity is a minor environmental impact (0) if it is reversible, is non toxic, uses limited renewable energy, or limited recycled materials.

An activity is deemed as a large-scale environmental impact if it could impact the Métis Nation, a moderately scaled environmental impact if it could impact the Manitoba Métis Community and low scale environmental impact if it could impact the MMF Home Office.

Once each activity is rated, the total feasibility rating is analyzed to determine whether the activity is not feasible (rating of zero, one or two), low feasibility (rating of three or four), moderate feasibility (rating of five or six), or high feasibility (rating of seven or eight) (Table 17).

**Table 17. Overall feasibility rating.**

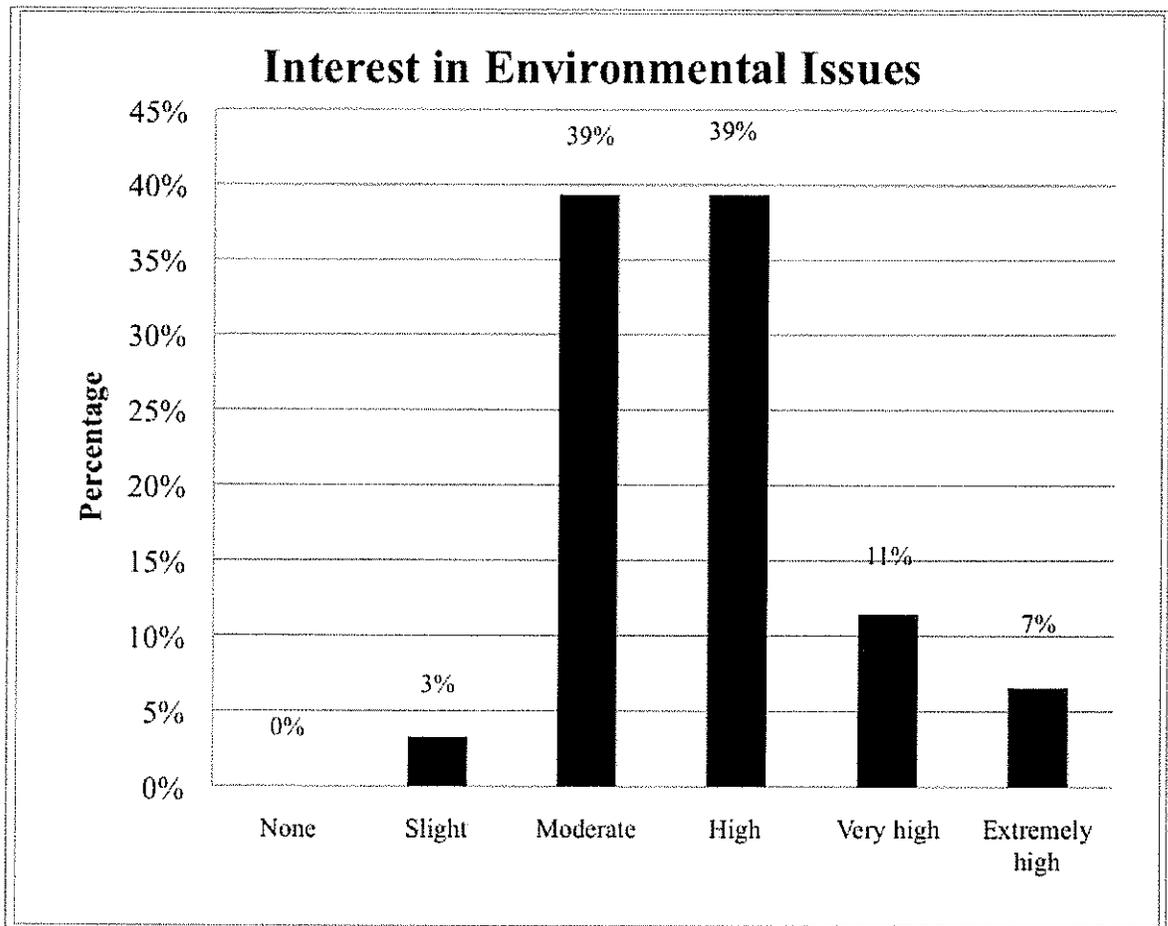
<b>Feasibility</b>	<b>Rating</b>
Not feasible	0, 1, 2
Low feasibility	3, 4
Moderate feasibility	5, 6
High feasibility	7, 8

### 6.3 Results

#### 6.3.1 Environmental Survey

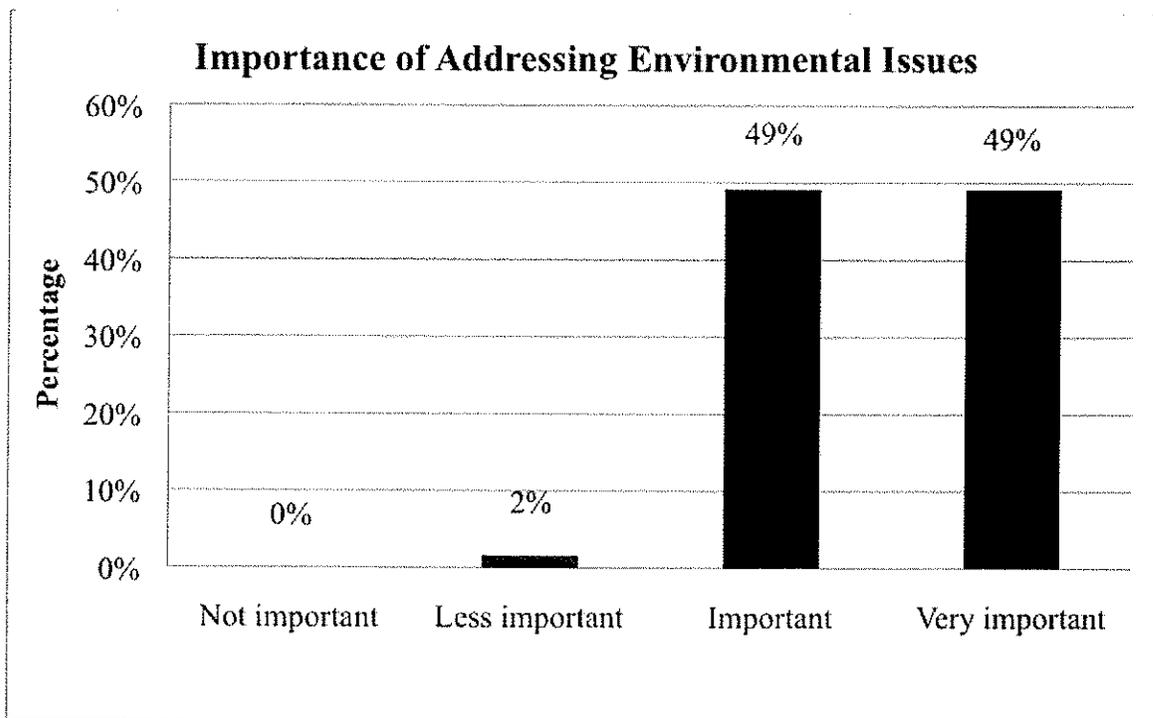
The results from the MMF's Environmental Survey demonstrated the MMF's level of interest in the environment and support for addressing the MMF environmental impacts. In total, thirty-five of the surveyed Home Office employees (57 %) rated their level of interest in environmental issues as high, very high, or extremely high, while twenty-four had moderate interest (39%) and two employees had slight interest (3%) (Figure 6). None of the employees surveyed stated that they have no interest in environmental issues (Figure 6).

**Figure 6. Interest in Environmental Issues (n=61).**



The MMF Environmental Survey confirmed that Home Office employees support environmental initiatives at the MMF as sixty (98%) of Home Office employees surveyed stated that it is important or very important for the MMF to address its impact on the environment while one (2%) stated that it is less important (Figure 7). The correlation between the level of interest in the environment and the need to address the impact on the environment was 0.9645.

**Figure 7. Importance of Addressing Environmental Issues (n=61).**



The most significant environmental aspects that the fifty-seven responding employees would like improved at the MMF include: improved thermal climate (35 employees), windows that open (35 employees), and controllable lighting (33 employees).

Respondents also recommended improved lighting (28 employees), more recycling facilities (25 employees), more green spaces (24 employees), more organic/fair trade options in Elsie Bear's Kitchen (19 employees), alternative transportation (18

employees), draft free windows (16 employees), green cleaning products (15 employees), increased safety (14 employees) and composting (8 employees).

**Table 18. Significant Environmental Aspects Indicators at the MMF Home Office.**

<b>Environmental Aspect</b>	<b>Category</b>	<b>Indicator</b>
Energy usage	Cooling	Energy bill
	Heating	Energy bill
	Lighting	Energy bill
	Windows	Energy audit
Purchasing	Green purchasing	Budgets and reporting
	Bulk purchasing	Budgets and reporting
Transportation	Personal vehicle	Employee parking passes
	Bicycle	Employee survey
	Carpool	Employee survey
	Public transportation	Employee survey
Waste generation	Composting	Invoices
	Disposables	Number purchased
	Paper usage	Amount purchased
Water usage	Consumption	Water bills

The results of the Environmental Survey were incorporated into the MMF's EMS plan. The MMF's EMS actions include reducing the Home Office's energy consumption and addressing the employees' lighting concerns by retrofitting existing light fixtures; involving design students in designing a new lighting scheme for the Home Office; conducting an energy audit of the MMF Home Office; retrofitting existing light fixtures; and reducing the number of light fixtures.

The employees' recommendation for alternative transportation is addressed by having the Home Office participate in a Commuter Challenge and researching the

viability of subsidized transit passes, carpooling and bicycle storage. The MMF Home Office's EMS actions include green cleaning products through their plan to increase green purchasing by 20% annually. The MMF's EMS plan addresses the employees recommendation for increased recycling and composting by implementing a composting program at the MMF Home Office; reducing the use of disposable cups and plates, educating MMF employees about methods for reducing paper usage; conducting a waste audit; increasing the variety of products that are recycled; and reducing paper usage.

### **6.3.2 Focus Group**

The focus group participants discussed the MMF's responsibility to the Métis people to address its environmental impacts and provide a healthy working environment for its employees. The focus group participants mentioned that the MMF could utilize their EMS to increase environmental awareness among their people.

The focus group participants were asked to identify actions that the MMF could pursue to help the Home Office become more environmentally friendly and improve the office-working environment. The focus group participants' recommendations included: energy efficiency; thermal climate; overall comfort; reduction in paper usage; recycling; ergonomically friendly workspaces and offices such as hiring someone who specializes in ergonomics; waste reduction; green spaces to encourage staff to go outside; new windows that open for comfort and fire safety; cleaner ventilation system; and increased ventilation. Many of the focus group's recommendations were incorporated into the MMF's EMS through their commitments to improve energy efficiency, reduce waste consumption and increase recycling.

### **6.3.3 Baseline Data**

Manitoba Hydro conducted a baseline audit to determine the MMF Home Office's yearly energy consumption. According to Manitoba Hydro, the total floor area of the MMF Home Office is 105,325 square feet and the energy index is 32.34-kWh/sq. ft, which is greater than the typical energy index for similar office buildings in this area at 29.80-kWh/sq. ft. The majority of electricity (75.8%) was used for lights, hot water, and miscellaneous equipment (Table 19). The majority of natural gas (98.6%) was used for heating (Table 19).

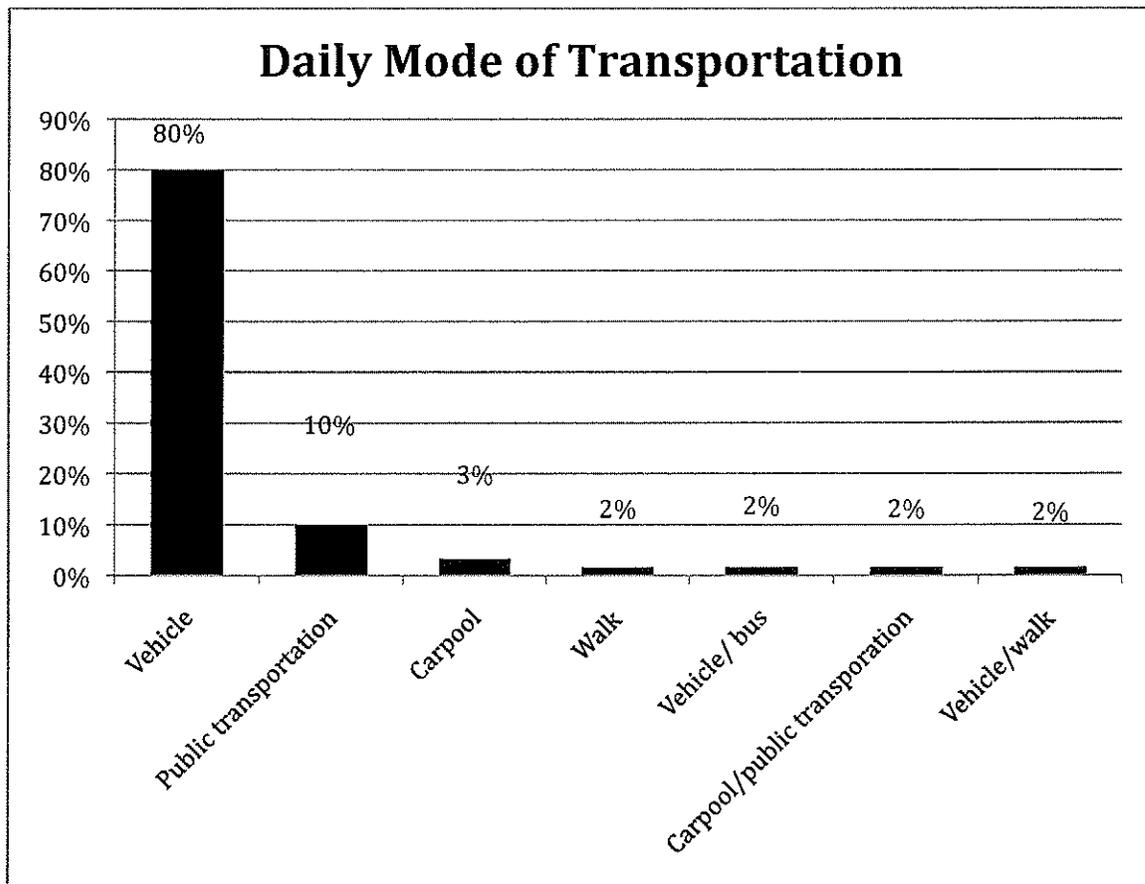
**Table 19. MMF Home Office Energy Usage and Estimated Savings.**

<b>Energy</b>	<b>Indicator</b>	<b>Energy usage*</b>	<b>Percent of bill</b>	<b>Cost per annum</b>	<b>Target</b>	<b>Reduction*</b>	<b>Consumption*</b>	<b>Saving</b>
<b>Electricity</b>	Lights, hot water and miscellaneous equipment	1,197,504	37.90%	\$55,375.96	13%	157,911	1,039,593	\$7,302.27
	Heating equipment	71,280	2.30%	\$3,296.19	0%	0	71,280	\$0.00
	Cooling equipment	303,534	9.60%	\$14,036.27	0%	0	303,534	\$0.00
	<b>Total</b>	<b>1,572,318</b>	<b>50%</b>	<b>\$72,708.42</b>	<b>13%</b>	<b>157,911</b>	<b>1,493,702</b>	<b>\$7,302.27</b>
<b>Natural gas</b>	Lights, hot water and miscellaneous equipment	33,203	0.90%	\$1,328.00	0%	0	33,203	\$0.00
	Heating equipment	1,800,993	49.30%	\$72,009.00	0%	0	1,800,993	\$0.00
	Cooling equipment	0	0%	\$0.00	0%	0	0	\$0.00
	<b>Total</b>	<b>1,834,196</b>	<b>50%</b>	<b>\$73,337.00</b>	<b>0%</b>	<b>0</b>	<b>0</b>	<b>\$0.00</b>
<b>Grand Total</b>		<b>3,406,514.00</b>	<b>100%</b>	<b>\$146,045.42</b>	<b>13%</b>	<b>170,326.00</b>	<b>3,236,188.00</b>	<b>\$7,302.27</b>

\* Manitoba Hydro measures the energy using a kilowatt-hour equivalent (kWhe). Electricity is measured in kilowatt hour (kWh) and natural gas is converted to the equivalent energy in kilowatt hour (kWhe)

Transportation baseline data was collected from the MMF Environmental Survey. Forty-eight (80%) of the sixty employees who responded to the question in the survey travelled to the MMF by personal vehicle, six employees used public transportation (10%), two employees carpooled (3%), one employee walked to the MMF Home Office (2%), one employee carpooled and used public transportation (2%), one employee used their own vehicle and public transportation (2%), one employee used a personal vehicle in the winter and walked in the summer (2%) (Figure 8).

**Figure 8. Daily transportation to the MMF Home Office (n=61).**



### 6.3.4 Payback Time, Required Capital and Environmental Impact

#### 6.3.4.1. Energy

In Manitoba, the majority of electrical energy is produced at fourteen generating stations located on the Nelson River, the Winnipeg River, the Saskatchewan River, and the Laurie (Manitoba Hydro). Two percent of the electricity produced in Manitoba is from six diesel sources: two diesel-generating stations and four remote diesel-generating stations (Manitoba Hydro).

Assessing the impact caused by electricity usage in Manitoba is controversial. One could argue that hydroelectricity generation in Manitoba has a significant impact as hydro generation has resulted in major consequences for Northern and Aboriginal peoples by flooding large areas of land, causing mercury contamination, impacting livelihoods, and disrupting communities (Kulchyski & Neckoway, 2006; Boyd, 2003).

One could also argue that many of the other options for energy generation in Manitoba are less viable or green than hydroelectricity. Manitoba Hydro currently purchases wind power from a site in St. Leon, Manitoba. Wind is an excellent addition to diversify Manitoba Hydro's energy but the cost of wind energy is very high in comparison with hydroelectricity and wind energy is not very reliable. Two other energy sources in Canada include coal and nuclear energy. Energy produced by coal has significant environmental consequences including impacts on ecosystems, air quality, waste generation, and surface and groundwater flows (Cuddihy, Kennedy, & Byer, 2005). One of the largest environmental impacts caused by nuclear energy is disposing of waste fuel (Cuddihy, Kennedy, & Byer, 2005).

### *Heating*

Heating at the MMF Home Office causes a significant environmental impact as the boiler relies on natural gas, which is a non-renewable energy source and heating

accounts for 98.6% of the MMF's natural gas consumption (rating of two for environmental impact). The scale of the impact of the MMF's Home Office heating system is large as natural gas production and consumption impacts Métis across the Nation (rating of two for scale). According to Manitoba Hydro, the payback period for a new energy efficient boiler is two years to five years (rating of one for payback). Manitoba Hydro states that the installation of a new energy efficient boiler could result in up to a 30% decrease in heating costs. A new boiler would require significant capital, and would cost significantly more than \$50,000 (rating of zero for required capital). The overall feasibility rating for heating is moderate (rating of five for feasibility) (Table 22).

### *Lighting*

The lighting at the MMF causes a moderate environmental impact, as it uses hydroelectricity, which is renewable (rating of one for environmental impact). Lighting accounts for 37.90% of the MMF's total energy usage. Energy usage for electricity is a moderate scale environmental impact as energy generation has impacted members of the Manitoba Métis community (rating of one for scale). According to Manitoba Hydro, replacing existing lighting with energy efficient lighting could have a payback period of less than two years (rating of two for payback). The lighting would cost less than \$20,000 (rating of one for cost). The overall feasibility rating for lighting is moderate (rating of five for feasibility) (Table 22).

### *New windows*

The MMF's existing windows cause a significant environmental impact as they are inefficient, which results in the MMF using more natural gas to heat the building (rating of two for environmental impact). The environmental impacts caused by the

windows are large scale as natural gas consumption and production impact Métis people across the nation (rating of two for scale). The average payback period for retrofitting the windows would be between two years to five years (rating of one for payback). The average cost would be greater than \$50,000 (rating of zero for cost). The overall feasibility rating for new windows is moderate (rating of five for feasibility) (Table 22).

#### 6.3.4.2. Green purchasing

Non-green products can cause significant environmental and health impacts as non-green cleaning products can include carcinogens, neurotoxins and heavy metals (Government of Ontario, 2007). Paper can be from virgin forests (rating of two for environmental impact). Green purchasing is a low scale environmental impact, as by not purchasing green it will mainly impact MMF Home Office employees (rating of zero for scale). There is a short monetary payback for green purchasing as recycled paper and green cleaning supplies can be purchased for the same cost as non-environmentally friendly paper and cleaners (rating of two for payback). The cost of green purchasing would be less than \$5,000 annually (rating of two). Green cleaning products and recycled paper are both great options for reducing an organization's environmental impacts as they replace products that can cause large environmental and health impacts. The overall feasibility rating for green purchasing is moderate (rating of six for feasibility) (Table 22).

#### 6.3.4.3. Transportation

Single vehicle transportation has a significant environmental impact as it releases toxic air pollution, is very energy intensive, and mostly relies on non-renewable energy (rating of two for environmental impact). The greatest contributor to air pollution in

Canada is the transportation sector (Boyd, 2003). According to David Boyd, from 1950 to 1990, public transportation per person declined from two hundred and fifty to one hundred uses per year while from 1970 to 1999, the number of motor vehicles doubled (2003). As the number of vehicles increase, so does asthma, heart disease, bronchial infections, and emphysema (Hawken, Lovins, & Lovins, 1999). In Manitoba, motor vehicle collisions are the number one cause of death for young adults between the ages of 15 - 24 (Manitoba Healthy Living, 2004). Single vehicle transportation is a large scale environment impact as air pollution and consumption of gasoline impact Métis across the nation (rating of two for scale).

### *Bicycling*

By organizing an area for safe bicycle storage and offering shower facilities for employees, an organization could easily and affordably increase the use of bicycles among their employees. If the organization were to encourage employees and offer adequate facilities for bicycling and then utilize the extra parking space for daily or monthly parking leases, the payback would be less than one year (rating of two). The cost of organizing a safe area for storage and allowing employees to use existing shower facilities would cost less than \$5,000 (rating of two for cost). The overall feasibility rating for bicycling is high (rating of eight for feasibility) (Table 22).

### *Carpooling*

The payback of organizing a carpooling program for the MMF would be very quick, less than one year, as the MMF could immediately start to gain revenue by renting monthly parking spots to interested members of the public (rating of two for payback). There are programs available such as Carpool.ca that assist with matching possible

carpoolers, and offers tips and guidelines on carpooling etiquette. The overall feasibility rating for carpooling is high (rating of eight for feasibility) (Table 22).

#### *Public transportation*

Winnipeg Transit has an EcoPass program that offers twenty different options for businesses that are considering subsidizing their employees' monthly transit passes (Winnipeg Transit). To participate in the program, companies select the discount that they want to offer and sell the monthly transit passes to their employees. The possible discounts vary from 5% to 100% (Winnipeg Transit). A monthly transit pass in Winnipeg is currently \$71.25 (Winnipeg Transit). If a company chooses to subsidize 30% of the monthly transit pass, the employees would pay the company \$49.90, the company would contribute \$14.25 and Winnipeg Transit would rebate the company \$7.10 (Winnipeg Transit).

The payback period for participating in the EcoPass program would be less than a year if the company could use the extra parking spaces to generate revenue by monthly or daily leases (rating of two for payback). The cost of the project is dependent on the level chosen by the company and could easily be implemented for under \$20,000 (rating of one for cost). The initiative would require little organizational change as it would only require the company to determine the amount they would want to discount the passes and then sell the passes to their employees. The overall feasibility rating for public transportation is high (rating of eight for feasibility) (Table 22).

#### 6.3.4.4. Composting

Not composting could cause significant environmental impacts as the composted organic waste could be used as a fertilizer replacing chemical fertilizers that may include

persistent toxins or be carcinogenic although one could debate whether the environmental costs of having an organization pick up the food waste outweigh the benefits of having the food not composted (rating of two for environmental impact). Composting is a low scale environmental impact, as not composting will mainly impact the MMF's Home Office (rating of zero for scale).

The payback period for composting would be very slow especially for weekly pickup and would take more than five years for payback (rating of zero). Based on the data gathered from the waste audit and a price quote from a local company that provides weekly compost pickup, the estimated cost for a composting program for the Elsie Bear's Kitchen at the MMF is \$2,242.65 (rating of two for cost) (Table 20). Implementing a composting program would require little organizational change, but would require employee education and training for the employees of the cafeteria. The company that offers the compost pickup provides very clear directions on what can be composted.

The overall feasibility rating for composting is low (rating of four for feasibility) (Table 22).

**Table 20. Composting Yearly Cost Estimate.**

<b>Item</b>	<b>Price</b>
75 Kg/day * 5 days/week @ \$0.10 per kg	\$2,100.00
Tote Rental (65 Gal.) \$5.00 per month plus GST (.05 %)	\$63.00
64 Gal. Compostable Bin Liner 56/Case \$79.95	\$79.65
Yearly Price Estimate	\$2,242.65

#### 6.3.4.5. Reducing and replacing disposables

Styrofoam has a significant environmental impact, as it cannot be recycled in Winnipeg and therefore causes irreversible damage to the environment (rating of two for

environmental impact). Styrofoam is also manufactured from a non-renewable energy source. Styrofoam is a moderate scale environmental impact as its failure to decompose impacts members of the Manitoba Métis community (rating of one for scale). Replacing disposables with biodegradables has a long payback period that is greater than five years (rating of zero for payback). The capital cost of replacing disposables with biodegradable options is moderate and could be estimated at \$7,167.56 annually (rating of one for cost) (Table 21). In Winnipeg, the Waste Reduction Store, which offers biodegradable options, offers free delivery for purchases over \$275.00 (The Waste Reduction Store, 2007).

According to the results from the August 12, 2008 waste audit at the Home Office, the MMF used approximately 1.5 lbs of Styrofoam in one day or approximately 50 Styrofoam containers. If one were to utilize the results from the waste audit, it could be estimated that the MMF would utilize 250 Styrofoam containers a week. If 250 people are using disposable containers a week, it could be estimated that 250 would also use disposable cutlery. During the waste audit, it became evident that the MMF employees utilize many plastic stir sticks, if one hundred employees had a cup of coffee a day, one could estimate 500 stir sticks and coffee cups would be used weekly.

The overall feasibility rating for reducing and replacing Styrofoam is low (rating of four for feasibility) (Table 22).

**Table 21. Estimated Biodegradable Products Price List (The Waste Reduction Store, 2007).**

Item	Units Per Case	Price	Weekly Use	Monthly Cost	Yearly Cost
6x6 Sugarcane Hamburger Clamshell	250	\$45.33	75	\$54.40	\$652.76
20oz Sugarcane Medium Clamshell	250	\$47.55	100	\$76.08	\$912.96
Sugarcane Soup Container - 16 oz	600	\$93.00	75	\$46.50	\$558.00
Sugarcane Biodegradable Lid - 7 oz and 19 oz	600	\$54.44	75	\$27.22	\$326.64
7" Wooden Stir Sticks	1000	\$3.10	500	\$6.20	\$74.40
Fork, Knife and/or Spoons	1000	\$62.10	1000	\$186.30	\$2,235.60
8 oz World Art Hot Cup	1000	\$100.30	500	\$200.60	\$2,407.20
<b>Total</b>					<b>\$7,167.56</b>

#### 6.3.4.6. Reducing paper usage

The forest industry is a contributor to air and water pollution, waste production and energy consumption in Manitoba. Conventional forestry results in deforestation, relies on non-renewable energy consumption to power machinery and for transportation, and contributes to greenhouse gas production (Kissinger & Rees, 2006). By reducing the amount of paper the MMF uses it would mitigate a significant environmental impact (rating of two for environmental impact). Excessive paper usage is a large scale environmental impact as conventional forestry impacts Métis across the Métis nation (rating of two for scale). Implementing programs to reduce paper usage would have a very short payback period (rating of two for payback) and cost very little (rating of two

for cost). There would be moderate organizational change required as employees would require training on how to preview their documents, print double sided, reuse paper for scrap and send online memos.

The overall rating for reducing paper usage is high (rating of eight for feasibility) (Table 22).

#### 6.3.4.7. Water Wastage

There are many affordable and accessible strategies that organizations can use to reduce their water consumption. By installing sink aerators and fixing leaks, organizations can significantly reduce their water consumption for very little cost (rating of two for cost). The payback period for these initiatives would be very quick (rating of two for payback).

Unnecessary water consumption is a significant contributor to pollution, waste and energy usage in Manitoba and across the country. Excessive water usage can cause irreversible damage to the environment (rating of two for environmental impact). Water waste is a large scale environmental impact as harm caused by over consumption can affect Métis across the nation. Other than the Americans, Canadians use the largest amount of water per capita (Boyd, 2003). The average Canadian uses 343 litres per day, which equals 500,000 litres annually per household (Body, 2003). The overall feasibility rating for reducing water wastage is high (rating of eight for feasibility) (Table 22).

**Table 22. Feasibility Rating.**

Category	Feasibility Rating					
	Impact	Scale	Payback	Money	Rating	Feasibility
Heating	2	2	1	0	5	Moderate
Lighting	1	1	2	1	5	Moderate
Windows	2	2	1	0	5	Moderate
Green purchasing	2	0	2	2	6	Moderate
Bicycle	2	2	2	2	8	High
Carpool	2	2	2	2	8	High
Transit	2	2	2	1	7	High
Composting	2	0	0	2	4	Low
Styrofoam	2	1	0	1	4	Low
Paper usage	2	2	2	2	8	High
Water usage	2	2	2	2	8	High

## 6.4 Discussion

### 6.4.1 Evaluation for the MMF's EMS Programmes, Actions and Targets

This section evaluates the MMF's EMS Programmes, Actions and Targets by comparing the feasibility rating with information gathered during the participatory research. Table 23 compares the feasibility rating, employee survey results and action plan.

#### 6.4.1.1. Heating, and windows

The MMF chose not to focus on heating, or windows yet as they are very difficult to mitigate as they require great effort to change and are very expensive. In the feasibility rating heating, and windows are rated as moderate feasibility (rating of five). The MMF Environmental Survey found that thermal comfort and windows were tied as

the most significant aspects participants would like addressed at the MMF Home Office (Table 23). In total, 56% of the employees surveyed were either uncomfortable (18%) or less comfortable (38%) with the temperature and air exchange in their workspace. The remaining 44% were either comfortable (37%) or very comfortable (7%). The most common temperature and air exchanges concerns were: office space is too cold (22 employees), office space is too hot (18 employees), cannot control heating and cooling (6 employees), too stuffy because there is not enough ventilation; (6 employees), and too much dust (4 employees). Although it would be ideal if the MMF's EMS targets and actions were able to address the two most cited significant aspects by their employees, the cost of replacing the heating and cooling system and windows is too high for the MMF at this present time. Hawken, Lovins, & Lovins (1999), also recommend beginning retrofitting initiatives with lighting as once the lighting is changed the buildings need for heating and cooling may also change.

#### 6.4.1.2. Lighting

The MMF Home Office EMS target focuses on addressing their lighting as it was a concern identified during the Environmental Survey and focus group session. The feasibility rating for lighting is moderate feasibility (rating of five). Although lighting was only rated as moderate feasibility, lighting accounts for 37.9% of the MMF's annual energy costs. With a payback period of less than two years, lighting is a priority for the MMF Home Office.

The MMF action plan and targets correlate with the data from the environmental survey where lighting, especially controllable lighting, was identified as the second most important aspect for the MMF to address.

#### 6.4.1.3. Purchasing

The MMF's Home Office EMS has a target to increase green purchasing by 20% annually. Green purchasing was rated as moderate for feasibility (rating of six). In the MMF Environmental Survey, the employees were asked about specific green purchasing options including whether Elsie Bear's Kitchen should offer more organic and fair trade options, which was selected by 19 employees of the fifty-seven responding employees as an aspect for the MMF to address and whether the MMF should use more green cleaning products, which was selected by 15 employees of fifty-seven responding employees as an aspect for the MMF to address.

To achieve the MMF's target, the EMS Coordinator will require training to increase their knowledge about green purchasing such as what is considered a green product; why is the product considered green; and the benefits of purchasing green (Chen, 2005).

#### 6.4.1.4. Transportation

Bicycling, carpooling and public transportation were rated as having high feasibility (rating of eight). The MMF's EMS target is a 10% increase in alternative transportation by MMF employees. The MMF's target should be easily attainable as twenty four of the sixty surveyed employees (40%) at the MMF would be willing to take transit to work if their monthly passes were subsidized by the MMF. If the MMF were to organize carpooling, thirty of the sixty-one surveyed employees (49%) would be willing to carpool to work. In addition, if the MMF were to offer bicycle storage facilities, twenty-three of the sixty-one surveyed employees (38%) would be willing to cycle to work.

The MMF Home Office EMS targets transportation as it was identified during the participatory research and can offer many benefits to the MMF including improved fitness and health for MMF Home Office employees and an opportunity to use parking spaces for other uses such as green spaces or increase revenue by renting more parking spaces to neighbourhood businesses. Each employee travelling to the MMF in a personal vehicle causes a significant impact to the environment by utilizing fossil fuels and emitting greenhouse gases into the atmosphere. Encouraging alternative transportation is seen as easy to mitigate.

The MMF's EMS actions for transportation include researching the viability of subsidized transit passes, carpooling and bicycle storage and exploring charging nominally for parking. The rationale for conducting further research on methods for encouraging alternative transportation at the MMF is not due to a question of the feasibility of the actions but rather choosing to explore the best possible route for encouraging alternative transportation. Winnipeg Transit's EcoPass program has twenty possible options for subsidizing monthly transit and each option will have to be evaluated to determine which is the most feasible for the MMF. Carpooling also requires further research to determine whether the MMF should participate in an online carpooling program or create their own carpooling program. Further research is required to determine how the MMF can best accommodate safe bicycle storage and provide showering facilities for their employees at their Home Office. Market research is also required to determine the feasibility and possible monthly cost for leasing additional monthly parking in the Home Office parking lot.

Alternative transportation may be an aspect that was rated as very feasible during the quantitative rating and was of interest to the MMF employees but it is often very hard to modify behavior although there has been a recent shift towards alternative transportation since gas prices have risen.

#### 6.4.1.5. Waste Generation

The MMF Home Office EMS targets waste as it was frequently recommended during the participatory research

##### *Composting*

Using the feasibility rating, composting was rated as low feasibility (rating of four). Composting was the significant aspect that surveyed employees least mentioned for wanting the MMF to address during the MMF Environmental Survey. The MMF chose to address composting in their EMS as it reduces the amount of waste entering the waste stream. The MMF partnered with the Natural Resource Institute at the University of Manitoba to implement a composting program for Elsie Bear's Kitchen. The MMF now has weekly commercial composting pickup by a local company. Since a private company runs Elsie Bear's Kitchen, the MMF could choose to include composting as a requirement under their contract.

##### *Styrofoam*

Using the feasibility rating, replacing Styrofoam was rated as low feasibility (rating of four) but the MMF included it in their action plan as it is easy to mitigate because there are many other options for Styrofoam including biodegradable corn products. The employees were not specifically asked about Styrofoam in the MMF Environmental Survey.

*Paper usage*

Paper usage was rated as high feasibility (rating of eight) using the feasibility rating and was chosen by the MMF as it is easy to mitigate by educating MMF employees about methods for reducing their paper usage. Employees discussed the need to reduce paper usage in the MMF Environmental Survey and the focus group session.

6.4.1.6. Water Usage

Water usage was rated as high feasibility (rating of eight) using the feasibility rating and was also of great significance to the MMF Home Office. Water wastage has a significant impact of the environment and reducing water consumption is easy to mitigate. The employees were not asked about whether the MMF should reduce water usage in the MMF Environmental Survey but they were asked to identify methods for reducing waste usage. The most common solution for eliminating water wastage was to install low flow toilets (4 employees).

**Table 23. Comparison of Feasibility Rating, Employee Survey Results and EMS Action Plan.**

Category	Feasibility Rating	Employee Survey	Action Plan
Water usage	High	n/a <sup>7</sup>	- Install sink aerators - Replace urinals with waterless urinals - Replace toilets with low flush
Paper usage	High	n/a	- Educate MMF employees about methods for reducing paper usage - Reduce paper usage
Green purchasing	Moderate	Moderate	- Increase green purchasing - Provide training for the EMS Coordinator about green purchasing

<sup>7</sup> n/a denotes specific categories that were not asked during the MMF Environmental Survey

Category	Feasibility Rating	Employee Survey	Action Plan
Carpool	High	Moderate	<ul style="list-style-type: none"> <li>- Participate in the Commuter Challenge</li> <li>- Research viability of carpooling and bicycle storage</li> <li>- Explore charging nominally for parking</li> </ul>
Bicycle	High	Moderate	<ul style="list-style-type: none"> <li>- Participate in the Commuter Challenge</li> <li>- Research viability of bicycle storage</li> <li>- Explore charging nominally for parking</li> </ul>
Public transportation	High	Moderate	<ul style="list-style-type: none"> <li>- Participate in the Commuter Challenge</li> <li>- Research viability of subsidized transit passes</li> <li>- Explore charging nominally for parking</li> </ul>
Lighting	Moderate	High	<ul style="list-style-type: none"> <li>- Apply for Manitoba Hydro's Commercial Lighting Program to retrofit existing light fixtures</li> <li>- Involve students in designing a new Lighting scheme for the Home Office</li> <li>- Retrofit existing light fixtures</li> <li>- Reduce the number of light fixtures</li> </ul>
Composting	Low	Very Low	<ul style="list-style-type: none"> <li>- Implement a composting program</li> </ul>
Styrofoam	Low	n/a	<ul style="list-style-type: none"> <li>- Reduce use of disposable cups and plates</li> </ul>
Windows	Moderate	Very High	<ul style="list-style-type: none"> <li>- Future initiative</li> </ul>
Heating	Moderate	Very High	<ul style="list-style-type: none"> <li>- Future initiative</li> </ul>

#### 6.4.2 Evaluation for the MMF's EMS Actions and Targets

The MMF Home Office's EMS has five targets: to reduce energy consumption yearly by 5%; to increase green purchasing by 20% yearly; to increase alternative transportation by 10% annually; to reduce waste by 10% annually; and to reduce water wastage by 10% annually. The MMF Home Office's EMS outlines actions that are required to meet the yearly targets. Each year, the MMF will review their plan to identify

whether they met their targets and to create new actions for the following year. Each year the targets may appear harder to achieve but the MMF's EMS will become more established, the MMF will see the benefits of the actions they have already implemented and their employees' level of environmental awareness will continually increase making their targets desirable and achievable.

#### 6.4.2.1. Energy

Utilizing the baseline data, it is simple to estimate the MMF's savings from implementing the program. By reducing their energy consumption by 5%, the MMF could save approximately \$7,302.27 by reducing their lighting costs by 13%.

#### 6.4.2.2. Alternative transportation

Forty percent of the survey employees in the MMF Environmental Survey indicated that they would be willing to take transit to work if the MMF were to subsidize transit passes. By offering the EcoPass program and subsidizing employee transit by 10%, the program would cost the MMF \$4,140.00 annually. By subsidizing transit passes by 75%, the program would cost \$28,728.00 (Table 25).

If the MMF were to have fifteen of their Home Office employees utilize public transportation, walk or carpool, and they were to charge \$50/month for monthly parking in the vacated spots, the MMF could save nine thousand dollars annually. By having sixty of their employees utilizing public transit and charging \$75/month for parking the MMF could generate \$54,000.00 annually (Table 26). The revenue from the additional parking spaces could easily cover the MMF cost for subsidizing employee transit passes by 75%.

**Table 24. Annual Eco Pass Transit Costs Per Employee. Winnipeg Transit.**

<b>Transit Discount</b>	<b>Employee Contribution</b>	<b>Rebate to the MMF</b>	<b>MMF Payment</b>	<b>Total Cost</b>
10%	\$769.20	\$16.80	\$69.00	\$855.00
30%	\$598.80	\$85.20	\$171.00	\$855.00
50%	\$427.80	\$119.40	\$307.80	\$855.00
75%	\$213.60	\$162.60	\$478.80	\$855.00

**Table 25. Annual Eco Pass Transit Costs for Sixty Employees. Winnipeg Transit.**

<b>Transit Discount</b>	<b># of Employees</b>	<b>Employee Contribution</b>	<b>Rebate to the MMF</b>	<b>MMF Payment</b>	<b>Total Cost</b>
10%	60	\$46,152.00	\$1,008.00	\$4,140.00	\$51,300.00
30%	60	\$35,928.00	\$5,112.00	\$10,260.00	\$51,300.00
50%	60	\$25,668.00	\$7,164.00	\$18,468.00	\$51,300.00
75%	60	\$12,816.00	\$9,756.00	\$28,728.00	\$51,300.00

**Table 26. Potential Parking Revenue.**

<b>Additional Parking</b>	<b>Monthly Rent</b>	<b>Annual Revenue</b>
15	\$50.00	\$9,000.00
15	\$75.00	\$13,500.00
30	\$50.00	\$18,000.00
30	\$75.00	\$27,000.00
45	\$50.00	\$27,000.00
45	\$75.00	\$40,500.00
60	\$50.00	\$36,000.00
60	\$75.00	\$54,000.00

## 6.5 Conclusion

By contrasting the quantitatively rated environmental aspects with the action plan designed for the MMF's Home Office, it demonstrates that the MMF's action plan is prioritizing actions that are feasible and reduce environmental impact. One of the items that was rated as low during the feasibility analysis is identified as an activity for the MMF's action plan: reducing the number of Styrofoam containers. Reducing Styrofoam containers was identified a priority as they cannot be recycled and there are many other options that would be easy to implement.

According to the feasibility rating, the most feasible activities are bicycling, carpooling, public transportation, reducing paper and water usage. The more feasible activities are all inexpensive, easy to implement and require little organizational change. The activities that were identified as less feasible were composting and replacing or reducing Styrofoam. Heating, and windows were identified as actions that were moderately feasible as they cause a significant environmental impact and are identified as future targets for the MMF but they are currently too expensive to implement.

As the MMF Home Office implements the more feasible aspects and the employees see the benefits of their actions, the MMF may chose to tackle the more expensive and challenging aspects.

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## CHAPTER 7: CONCLUSION

### 7.1 Summary

This research strived to design an EMS that will meet the needs of the MMF Home Office. The participatory research for this project included an environmental survey; a focus group; Managers meetings; and many other meetings to ensure that the project was inclusive but also to benefit from the knowledge and innovative recommendations from the MMF employees and management.

The EMS was designed to build on the MMF's greatest strengths while reflecting the employees' priorities as identified during the environmental survey, focus group, and baseline data and reflect the employees' and management's understanding of what is feasible for the MMF.

One of the strengths of the MMF for implementing the EMS is that sustainability is integral to Métis culture and knowledge (Métis National Council, 2006). A secondary strength of the MMF is the employees' motivation to address the MMF's impact on the environment, which has been apparent in all aspects of this project, as employees have been quick to participate and offer assistance. Employees and management of the Home Office strongly feel that the MMF has a responsibility to address its environmental impacts. Sixty (98%) of Home Office employees surveyed stated that it is important or very important for the MMF to address its impact on the environment while one employee (2%) stated that it was less important. The correlation between the level of interest in the environment and the need to address the impact on the environment was 0.9645. This secondary strength was essential for designing the EMS. If the MMF employees had not shown interest in the environment, the EMS would have little hope in

being implemented or continued. Another strength of the MMF is their ability to communicate with their members. This was incorporated into the EMS by ensuring that the MMF share the Home Office's EMS on their website and communicate their successes through their communication strategy, and during each Annual General Assembly.

By conducting the participatory research, it provided an invaluable understanding of the organization and assisted with identifying the organizations strengths in Chapter Four, which were incorporated into the EMS in Chapter Five. By contrasting the quantitatively rated environmental aspects with the qualitative action plan designed for the MMF's Home Office in Chapter Six, it demonstrates that the MMF's action plan is prioritizing actions that are feasible and reduce environmental impact.

Contrasting the quantitatively rated environmental aspects with the results from the participatory research demonstrated the difference between what is quantitatively rated as feasible for the organization with what is preferred by the MMF employees. Replacing the heating system, and windows were rated as moderate for feasibility but were tied as the most significant aspects participants would like addressed at the MMF Home Office. To accommodate for the differing priorities, an EMS should strive to meld both the feasibility rating and employee priorities into the plan. Certain actions, including replacing the heating system, and windows may be too expensive for the first year of the EMS but may become more feasible as the organization implements other actions to reduce their operating costs.

Ideally, the designed EMS will provide the MMF with an opportunity to address their environmental impacts, reflect their unique culture and become leaders in sustainability.

## **7.2 Future Research**

Future research could follow the progress of the MMF's EMS to determine the success of this initiative. As this was the first EMS designed specifically for a Métis organization, one could conduct future research to determine whether the EMS meets their needs. If not, how could or did they further adapt the EMS to meet their unique needs? Were there any identified deficiencies of the EMS? Did the MMF choose to expand the pilot project to include their seven regional offices?

By conducting future research on the progress of the MMF EMS, one could revisit the initial EMS to determine how an EMS could be more effective and provide the organization with better direction. Understanding the limitations of the MMF's initial EMS could benefit other Métis organizations that may be interested in designing and implementing their own EMS.

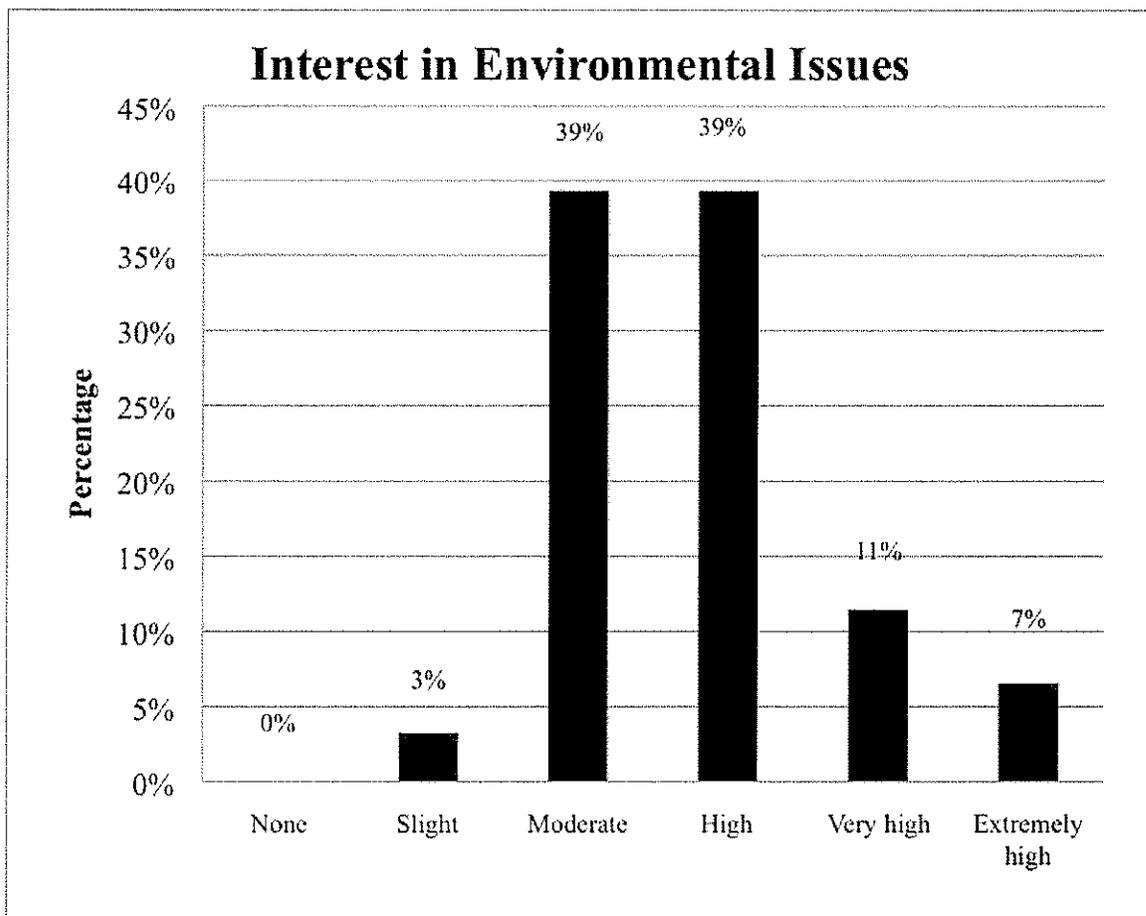
Another area of future research could be contrasting the MMF's EMS with an EMS created by another Indigenous organization. One could research how and if EMSs can reflect unique cultural groups and how various EMSs would differ to meet Indigenous peoples needs.

## APPENDIX 1: MMF HOME OFFICE ENVIRONMENTAL SURVEY

### 7.3 Level of interest in environmental issues

In total, 57 % of the Home Office employees surveyed would rate their level of interest in environmental issues as high, very high, or extremely high, while 39% had moderate interest and 3% had slight interest (Figure 9). None of the employees surveyed stated that they have no interest in environmental issues (Figure 9).

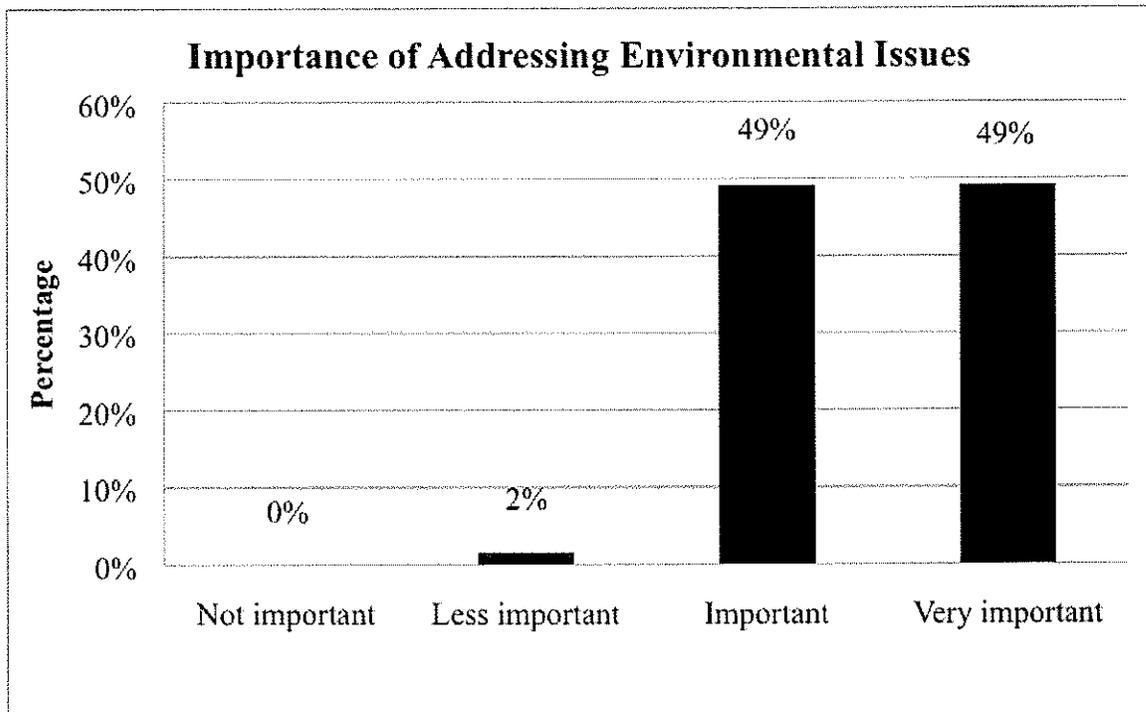
Figure 9. Level of interest in environmental issues (n=61).



### 7.3.1 Importance of the MMF addressing its environmental impacts

When asked how important is it for the MMF to address its impact on the environment, 98% of Home Office employees surveyed stated that it is important or very important (Figure 10).

Figure 10. Importance of Addressing Environmental Issues (n=61).



### 7.3.2 Comfortable in work environment

When asked if they are comfortable in their work environment, 80 % of employees surveyed were comfortable. The most common reasons employees listed for not being comfortable include: temperature (7 employees), air circulation (6 employees), lighting (5 employees), noise (4 employees) and windows (4 employees).

*"I feel the MMF could improve by cutting back on the amount of paper we use. We could do more correspondence via on-line. We are not great*

*at recycling materials - we could improve on getting the word out. We could participate with the Conservation Manitoba commuter challenge”*

### **7.3.3 Healthy workplace**

When asked if the MMF is a healthy workplace, 83% of the employees surveyed stated yes. The most common health concerns include: lack of air circulation (3 employees), stress (2 employees), lighting (2 employees) and dust (2 employees).

*“Working in an environment that is not positive creates unnecessary stress and mental breakdowns, which in turn leads to unproductive employees.”*

### **7.3.4 Safety**

In total, 98% of employees surveyed felt safe in the MMF Home Office.

### **7.3.5 Time spent outdoors**

Of the employees surveyed, 62% spent time outdoors during work hours including lunch hour.

### **7.3.6 Exposure to chemicals**

In total, 10% of the employees surveyed stated that they are exposed to chemicals. Chemical exposures include: strong smelling cleaners and polishers, building material by-products, mould, and toners.

### **7.3.7 Lighting**

Lighting at the MMF Home Office is a concern for 39% of the surveyed employees. Common lighting concerns include: too much lighting (5 employees), the need for more natural light (5 employees), the sun is too bright in their office (3 employees), not enough lighting (3 employees), too much glare on their computer screens

(3 employees), sore eyes from improper lighting (2 employees) and need for task lighting (2 employees).

*“There would be less need for ceiling lights if desks had lights installed. My cubicle is a little dark despite the ceiling lights.”*

*“Currently in my office I'd prefer natural lighting. Is our current lighting safe for the employees or is it just cost effective? What is the price the staff will pay or the office if the lighting is not up to standards? More options should be available.”*

*“The lighting is too harsh, I have lights above my computer that throw off a huge glare. I have to move my monitor around to be able to work on it at times.”*

### **7.3.8 Daylight**

Of the employees who participated in the survey, 68% have daylight in their office.

### **7.3.9 Controllable lighting**

Of the surveyed employees, 45% have controllable lighting in their office.

### **7.3.10 View**

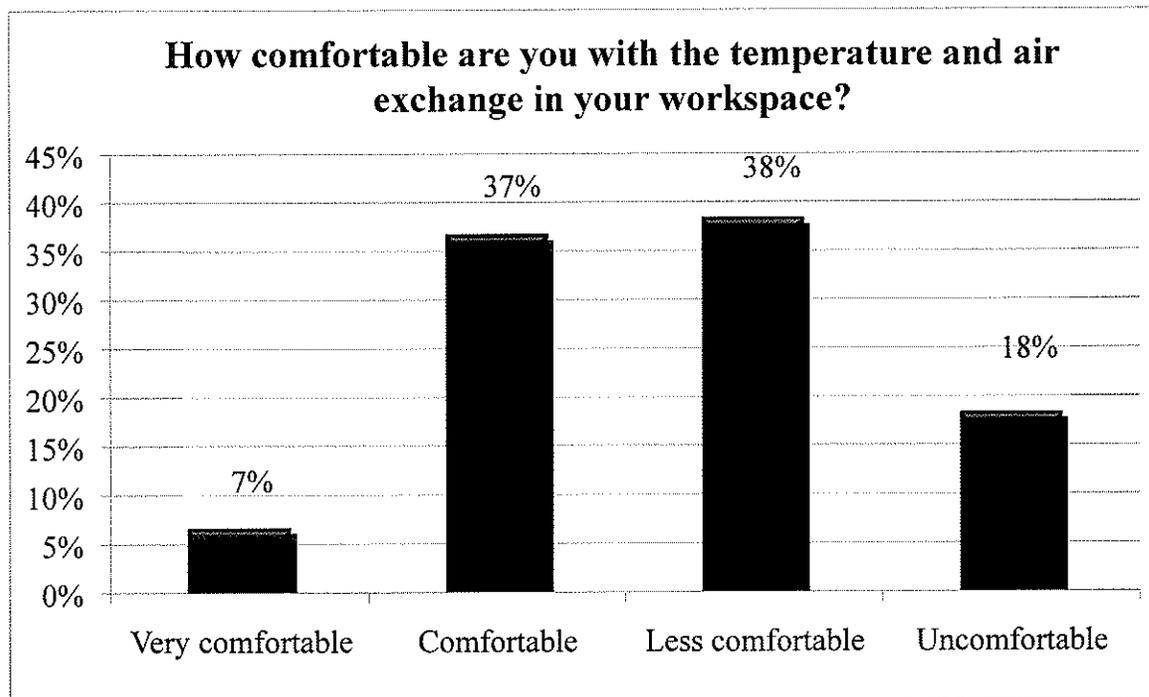
According to the surveyed employees, 53% have a view from their office.

### **7.3.11 Temperature and air exchange**

In total, 56% of the employees surveyed were either uncomfortable (18%) or less comfortable (38%) with the temperature and air exchange in their workspace. The remaining 44% were either comfortable (37%) or very comfortable (7%). The most common temperature and air exchanges concerns were: office space is too cold (22

employees), office space is too hot (18 employees), cannot control heating and cooling (6 employees), too stuffy because there is not enough ventilation; (6 employees), and too much dust (4 employees).

**Figure 11. Comfort level with temperature and air exchange (n=60).**



*“The system has a forced air register which must continual be on to maintain a comfortable working temperature. This is quite loud and it hard to regulate to individual’s own preferences.”*

*“If I didn't have a heater of my own I would be freezing. Temperature is never at a comfortable state.”*

*“It feels as if there is no fresh air being circulated. There is no happy medium, we are either very hot or cold.”*

*“Being beside the window, during the winter, it gets very cold. I’m not sure if it is due to the heat not working properly, or the insulation, or the window not blocking drifts, but it is very cold during the winter.”*

*“It’s next to impossible to know how to dress for work because of the temperature variations. The building is cold and then within a couple of days it will be too hot. It is frustrating year round. As far as air exchange, I do not know enough about our system to know whether it works well, but I do worry about it. I have asthma, and would like to be reassured that we have a good air exchange system in place.”*

#### **7.3.12 Noise**

Noise in their workspace is a concern for 40% of the employees surveyed.

*“Staff do not respect the open office concept. Which is to say that some staff have no regard for the noise level they personally are at.”*

#### **7.3.13 Water wastage**

Thirteen percent of the employees who completed the survey were able to identify methods for reducing water wastage at the MMF Home Office. The most common solution for eliminating water wastage was to install low flow toilets (4 employees).

*“Short-term costly solution = upgrade plumbing and long-term savings = eliminate bottled water”.*

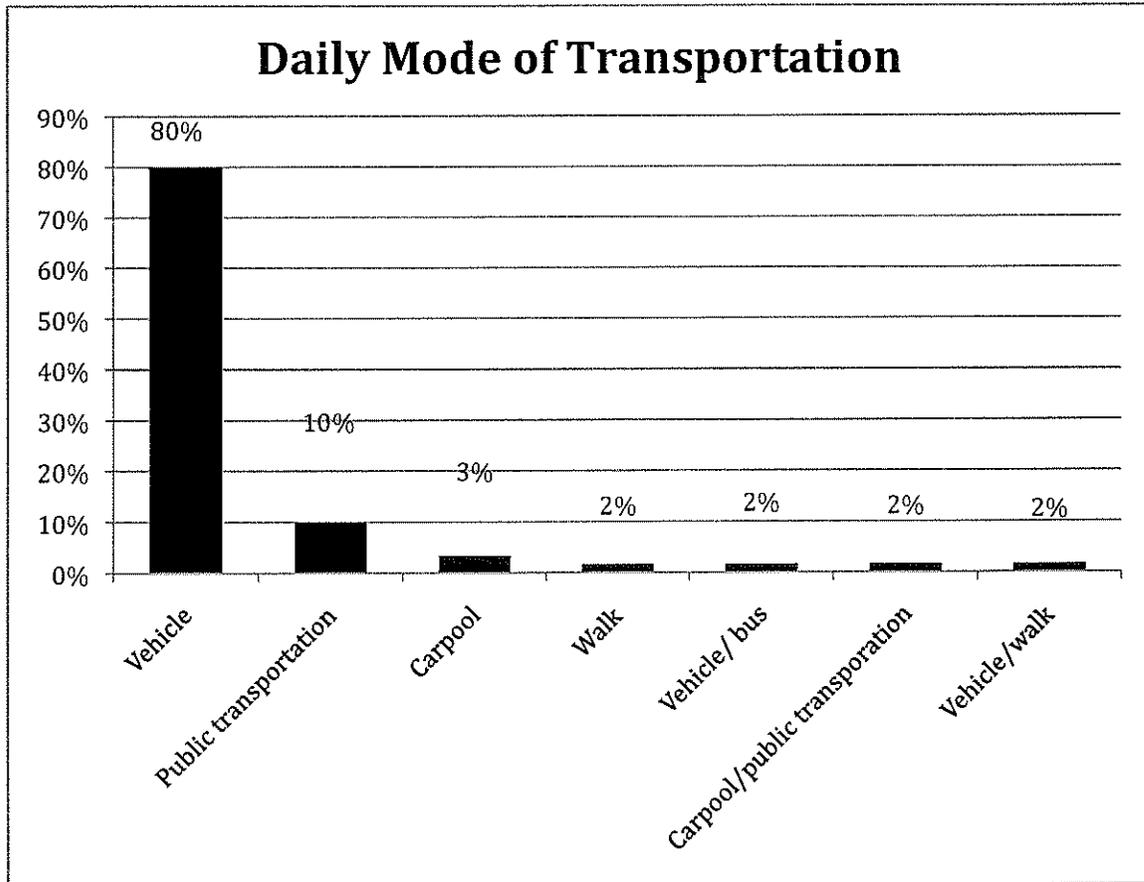
*“Fixing the taps in the washrooms.”*

*“Toilets and urinals use too much water. Sinks could have aerators.”*

**7.3.14 Daily mode of transportation**

Forty-eight (80%) of the sixty employees who responded to the question in the survey travelled to work by personal vehicle, six employees used public transportation (10%), two employees carpooled (3%), one employee walked to the MMF Home Office (2%), one employee carpooled and used public transportation (2%), one employee used their own vehicle and public transportation (2%), one employee used a personal vehicle in the winter and walked in the summer (2%) (Figure 12).

**Figure 12. Daily mode of transportation (n=60).**



**7.3.15 Subsidized bus passes**

If the MMF were to offer subsidized bus passes, 40% of the surveyed employees would be willing to take transit to work.

### **7.3.16 Carpooling**

If the MMF were to organize carpooling, 49% of the surveyed employees would be willing to carpool to work.

### **7.3.17 Bicycle storage**

If the MMF were to offer bicycle storage facilities, 38% of the surveyed employees would be willing to cycle to work.

### **7.3.18 Barriers to public transportation**

Of the employees surveyed, 54% faced barriers that prevented them from taking the bus, carpooling, or cycling to work.

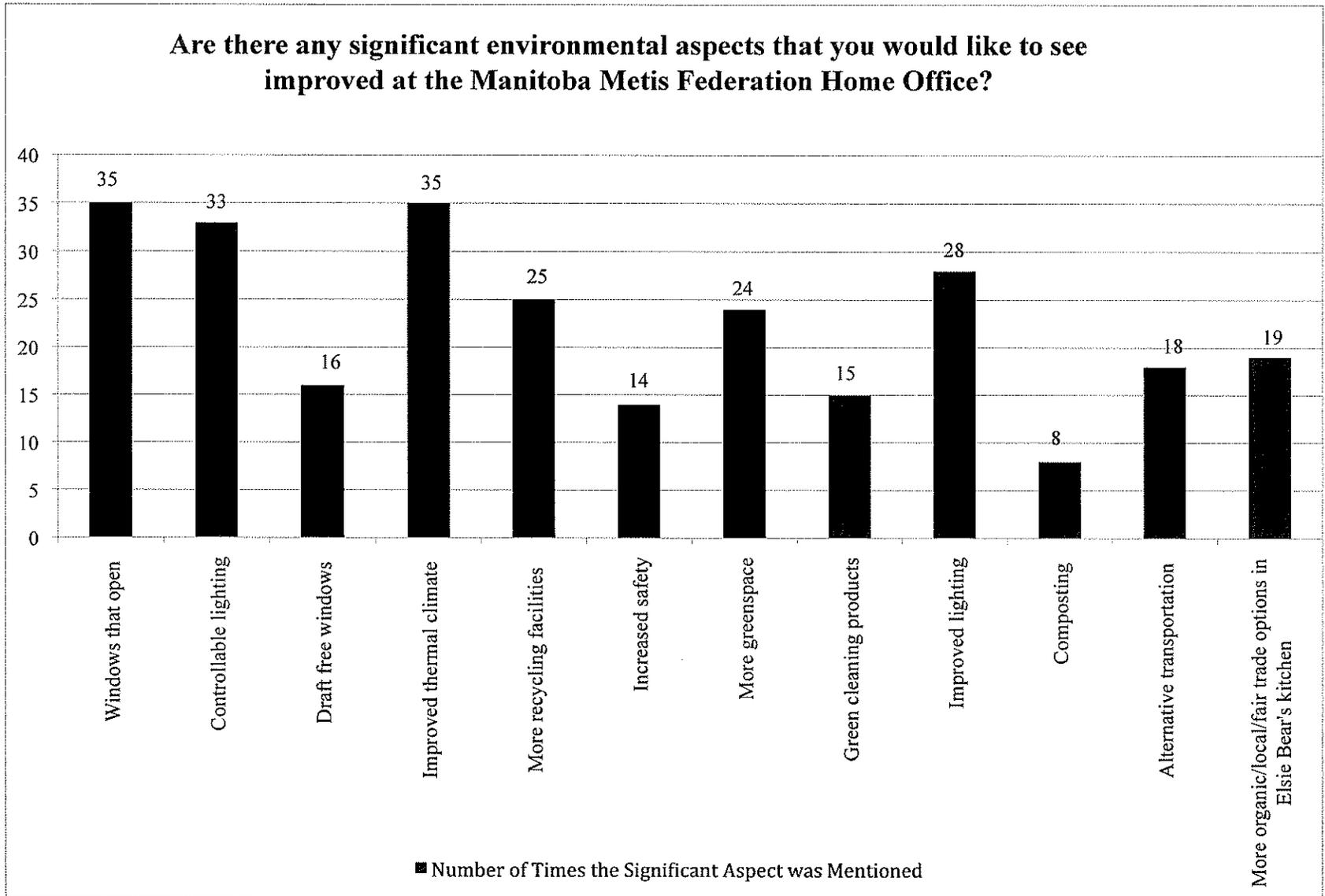
*“I live in a bedroom community just outside the Perimeter Hwy. I also have to travel periodically with my vehicle or attend external meetings and conferences.”*

*“I have a car because I don't feel safe taking the bus to the home office area. I would want to rely on other staff for transportation either.”*

### **7.3.19 Significant environmental aspects**

The most significant environmental aspects that surveyed employees wanted improved at the MMF include: improved thermal climate (35 employees), windows that open (35 employees), controllable lighting (33 employees). Other significant environmental aspects include: improved lighting (28 employees), more recycling facilities (25 employees), more green spaces (24 employees), more organic/fair trade options in Elsie Bear's Kitchen (19 employees), alternative transportation (18 employees), draft free windows (16 employees), green cleaning products (15 employees), increased safety (14 employees) and composting (8 employees).

Figure 13. Significant Environmental Aspects (n=57).





### **7.3.20 Further comments**

*“In a time where Diabetes is a major health concern within the Métis Community, I believe the MMF should proactively be pursuing a health lifestyle program for the staff.”*

*“Geothermal heating! Some sort of internal green space, such as a solarium or roof garden for lunch time.”*

*“Please can we get rid of the Styrofoam cups!”*

*“Currently they have a recycle program in the office but its for paper only and cans. There are a lot of items that can be recycled but we are unable to do so. Also, I would like to see the gym cleaned up, or even made larger. Lot of people would like to go but as soon as you have three people in there it is cramped. I think more people would use the gym if it was larger.”*

*“People who are able to use the stairs, should use the stairs; only people requiring to use the button at Handicap access doors should do so, it saves power and wear and tear on the mechanisms!”*

*“New colors in some of the Meeting rooms or Professional Development areas. One feature wall painted in a warm earth tone would suffice. Plants in the interior and environmental style islands would be appreciated.”*

*“It would be nice if there was a place for us to eat our lunch outside. If we need shelter there would be.”*

## APPENDIX 2: FOCUS GROUP SESSION

1. How important is environmental sustainability to Métis culture and worldview?

Aboriginal culture is based on the environment; it is about preserving and respecting the environment. Environmental sustainability can be something we all share. Achieving Environmental sustainability could be something that is unique to the MMF and the Manitoba Métis Community. Environment is a huge factor for the Métis; it is important for spirituality and it is very strong within Aboriginal culture. The environment is the Métis way of life. Métis people need a healthy indoor and outdoor environment.

2. Is there Métis specific environmental knowledge? Is so, how does differ from non-aboriginal or First Nation's environmental knowledge?

There is a respect for nature and replenishing environmental resources. A few focus group participants stated that they believe there is Métis specific environmental knowledge but they are not sure how it is unique. A participant mentioned that perhaps Métis environmental knowledge is not too different from First Nations knowledge. One participant mentioned that not all Métis were raised on the land.

There is a need for more environmental education and awareness. Education should be the first priority. Education is required for change. Once educated about the environment, people will demand change. The Louis Riel Institute is doing an educational and cultural class in St. Malo and Brandon. They are also working on adding curriculum on Métis for grades 2 – 6 and not just in history classes.

3. Should the Manitoba Métis Federation address its environmental impacts? If so, how?

Yes, they should address their environmental impacts. They have an obligation to the Métis people and the MMF needs a healthy environment for its employees.

There needs to be more awareness and education about the environment at the MMF. The Home Office would be a great place to start.

The MMF needs to determine what to improve:

- energy efficiency
- thermal climate
- overall comfort
- sanitation (bathrooms and staff kitchens)
- reduction in paper usage
- recycling
- ergonomically friendly workspaces and offices (hiring someone who specializes in ergonomics)
- reduce the amount of waste
- greenspaces to encourage staff to go outside
- new windows that open for comfort and fire safety
- clean ventilation system and increased ventilation

The focus group participants discussed many options for change including:

- The office could be organized so that common areas are open with views outside.  
They could have open air meeting areas
- All employees would benefit from adequate office space, a window and a views

- Open air museums as you walk through the building

The number of employees is still increasing and the Home Office could benefit from a more organized and logical office arrangement. The Home Office would benefit from more maps demonstrating their current office layouts with plans for the future including future projections and organizational charts. The office layout should be designed to mitigate any safety concerns and be a participatory process that includes those units affected by changes agreeing and improving those changes, prior to the changes being made.

The MMF and the Manitoba Métis Community would benefit from greater communication. The MMF has 130 locals across Manitoba and they could have a system that increases communication with the locals.

4. Should the Manitoba Métis Federation only address its environmental impacts that will increase economic savings? Or should they also address impacts with less cost savings resulting in social and health benefits?

How to address the MMF's environmental impact is an issue that needs input from the Managers. The MMF could acquire more funding to work in this direction. It is necessary that the MMF present itself in a business manner. There needs to be recognition of the importance of human resources (e.g., improved productivity, less lost work days due to illness should be accounted for and may outweigh the cost for changes if considered). Perhaps increasing economic savings is a good way to start the process.

The MMF requires innovative solutions. The MMF needs to be more proactive and look for solutions that are out of the ordinary. It is good to start with a test project. It

will be easier to sell the project at the Home Office. They could then promote the project and gain the interest of the other regions.

Good lighting is a necessity. Temperature can be an issue at the Home Office. The colours of the walls are also important. One participant mentioned that 54% of workplace injuries are to the back. Need more awareness on ergonomics and the environment. A healthy home environment is also essential. People become emotionally exhausted at work. What can the MMF do to help people be more healthy and well? Many participants of the focus group enjoyed when the Human Resources Department sent out the health and safety tip of the month.

5. How can the Manitoba Métis Federation be sustainable in the long-term?

The MMF can be more sustainable through cooperation, innovation, education, retention, training, research, support, protection of identify, working together, and working more with less. The MMF could look at reducing their usage of office materials by implementing a comprehensive inventory of existing supplies. The MMF could also benefit from sending more emails and printed memos.

The MMF may benefit from more written, formal policies. There is concern that oral policies may be lost in translation. Written policies could help protect more people.

The MMF originally had a walking group. A focus group participant mentioned that neighbourhood safety can be a concern.