

Five Year Conservation and Demand Management Plan **2019-2024**



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EXECUTIVE SUMMARY

The Ontario Provincial Government has committed to help public agencies better understand and manage their energy consumption. As part of this commitment, Ontario Regulation 397/11 under the Green Energy Act 2009 requires public agencies, including municipalities, municipal service boards, school boards, universities, colleges and hospitals to report on their energy consumption and greenhouse gas (GHG) emissions annually beginning in 2013, and to develop and implement energy Conservation and Demand Management (CDM) Plans starting in 2014. These plans must be updated every five years.

The purpose of the St. Francis Memorial Hospital (SFMH) energy Conservation and Demand Management Plan is to develop a framework for St. Francis Memorial Hospital to understand the historical impact of its operations on greenhouse gas emissions, and to take action by setting greenhouse gas reduction targets. The first objective of this report was the development of an energy Conservation and Demand Management Plan that addressed the facets of energy consumption in the Hospital. This included the development of a greenhouse gas emissions inventory, benchmarking St. Francis Memorial Hospital's existing energy intensity performance relative to other hospitals, identifying potential energy efficiency projects, and establishing a greenhouse gas emissions reduction target. This strategic approach to energy management ("energy Conservation and Demand Management Plan") supports St. Francis Memorial Hospital's *Strategic Plan 2016-2021*.

Energy efficiency and the wise use of energy are two of the lowest cost options for meeting energy demands, while providing many other environmental, economic and social benefits, including reducing greenhouse gas emissions, cost avoidance and savings. Along with the aforementioned benefits, energy efficiencies and the wise use of energy also promote local economic development opportunities, energy system reliability, improved energy supply security, and reduced price volatility.

There are a variety of low cost/no cost initiatives available to St. Francis Memorial Hospital which can jump-start energy consumption and dollar savings. Simple actions such as turning lights and appliances off, shutting off heaters in the summer, establishing efficient usage times, efficient production requirements, and many other actions can result in energy savings. Such actions, along with energy efficient capital and operating process improvements and project implementation, are key components which are outlined within the energy Conservation and Demand Management Plan (CDM Plan).

This CDM Plan is the culmination of a non-linear process involving the:

- Integration of establishing a baseline for performance to be measured against,
- Setting of future performance goals and objectives,
- Continuous improvement through identification of energy conservation potential,

- Evaluation, measurement and communication of results achieved.

This CDM Plan contains three perspectives: historical, current and future. It looks at "what we have done", "what we are doing", and "what we are planning to do".

KEY COMPONENTS

The Big Picture

Sustainability is a concept which meets the needs of the present without compromising the ability of future generations to meet their own needs. This is sometimes referred to as the "triple bottom line".

- Environmental Sustainability: Managing the effects of human activity so that it does not permanently harm the natural environment.
- Economic Sustainability: Managing the financial transactions associated with human activities so that they can be sustained over the long term without incurring unacceptable human hardship.
- Social/Cultural Sustainability: Allowing human activity to proceed in such a way that social relationships between people and the many different cultures around the world are not adversely affected or irreversibly degraded.

An energy Conservation and Demand Management Plan is the sum of measures planned and carried out to achieve the objective of using the minimal possible energy while maintaining the comfort levels (in offices or dwellings) and production rates (in factories). It can be applied to any process or building where energy use is required. To make an efficient use of the energy and, as a consequence, to save it, the actions are focused on:

- Energy Conservation,
- Energy Recovery,
- Energy Substitution,
- Corporate Goals and Objectives, and
- Corporate Fiscal Management.

Analysis and Benchmarking

It is important to recognize the value of benchmarking and comparison as a starting point. By examining the Hospital's current energy consumption patterns and comparing them with others, a better understanding of the opportunities and the pitfalls of energy conservation and sustainability planning as experienced by other public agencies is gained. This exposure, combined with the information gleaned from the energy audits, will allow SFMH to focus on strategies that have been proven successful elsewhere and can be tailored to the unique nature of the Hospital.

It is apparent that energy conservation is being considered and implemented in most Public Sectors across Ontario and Canada. As well, the insights gained through their experiences with energy conservation can be used as a springboard to further the SFMH's sustainability strategies to encompass both operational and policy improvements. Many public agencies are taking their understanding of environmental issues

and conservation beyond energy consumption and recycling, by addressing the more complex issues of water management, heat island effect, and light pollution, to name a few.

Regulatory Requirements

Under Ontario Regulation 397/11 (Part of the Green Energy Act, 2009), all public sector agencies must now comply with mandatory reporting requirements. Starting in 2013, all energy consumption at Hospital facilities has to be recorded and submitted to the Ministry annually. In 2014, the requirements become more stringent as the Hospital had to submit a CDM Plan, which encompasses measures taken to date with results, as well as a five year plan for further energy conservation measures to be implemented. SFMH has met this requirement as an energy audit was completed, resulting in a compiled list of energy reduction projects, some of which are already implemented. The full list is reviewed throughout this Plan while the implementation program is outlined later in this report. This Plan itself is meant to serve as SFMH's CDM Plan and will help assist SFMH to meet all of its mandatory reporting requirements.

Key Factors and Constraints

It is important to both SFMH's future and to its image in the public at large to understand the value of a comprehensive CDM Plan. Many people around the world are beginning to embrace the notion that the earth's environment and precious resources need to be conserved. However, the necessary changes will not happen overnight. To be successful, a comprehensive energy management plan should embrace long-term thinking, taking advantage of obvious options to achieve immediate cost savings which will be redirected to more complex projects involving higher initial costs with larger net benefits.

Public agencies should realize that each of their circumstances is unique and they may not lend themselves to typical solutions used in many private sector segments. Those who have met their goals have utilized the advantages of the unique physical and non-physical attributes of their facilities, including green power generation on large flat roofs and community gardens on their large properties. While it is easy to be focused on the larger solutions, even seemingly small efforts can make a major long-term impact on the overall goal. A good example of this is Energy Awareness training which encourages Staff to take simple and effective actions such as turning off lights and computers when not in use.

Ongoing professional development is also a key factor in the success of a CDM Plan to ensure that Staff Members understand their role in the greater goal. The CDM Plan and accompanying education should be a required part of their daily activities.

While realities of budget restrictions are an important consideration in any planning activity, it is possible to achieve energy savings while adhering to the financial constraints of a publicly-funded Hospital system.

while improving indoor comfort and environmental sustainability. These cost saving projects can often fund themselves by avoiding the use of previously allocated funds. As long as the savings are reinvested, these improvements can continue for the foreseeable future, ensuring a sustainable process. Many industries have had environmental programs running for over a decade and continue to hit their 3%-5% intensity reduction goals without sacrificing product quality.

HISTORICAL ENERGY MANAGEMENT

Historically, SFMH has addressed Energy Conservation and Demand Management on a project-by-project basis through the activities of the Building Operations. Capital projects were implemented based on equipment's expected useful life or in response to equipment emergency breakdowns. Utility savings, realized as a result of the implementation of these individual projects, have not historically been uniquely reported formally, but have been considered as a component of general operations. Thus, they have been reported through utility expenses in the Accounting System. Sustainability and long-term energy reduction goals, through this CDM Plan, have become integral components of the business reporting system.

Utility costs were viewed as a fixed overhead cost. The management of these costs relied on an exception-based investigation approach. In other words, utility costs were only reviewed if a utility bill was much higher, or lower, than typical.

In 2014, SFMH embarked upon a strategic energy auditing project. The purpose of these audits was to identify and analyze potential energy conservation and demand management opportunities. These efforts have been instrumental in assisting SFMH in aligning the CDM Plan with the Hospital's *Strategic Plan 2011-2016*.

Historical Energy Reduction Projects Summary	
Year	Action Taken
2012	Replaced circulatory pump motors with high efficiency motors
	Lighting upgrade
	Roofing upgrade with increased insulation
	Installed high efficiency ductless Air Conditioning
	Water faucet and shower head upgrades to lower flow units
2013	Roofing upgrade with increased insulation
	Installed high efficiency ductless Air Conditioning
2014	Replaced Chiller with 80 Ton high efficiency model
	Replaced boiler plant with a high efficiency propane heating plant
2015	Retrofit Distribution Systems to improve air exchange efficiency
2016	Replacement of Hot Water Heaters
	Heat Generating System upgrades
	Leaking Skylights replaced
	Roofing upgrade with increased insulation
2017	Site Power Upgrades
	Building Emergency Generator replacement
	Extensive renovations and upgrades at RVCHC

	Walk in Freezer/cooler improvements
	Tub Room upgrades to more efficient and lower floor units
2018	Perimeter Heat Systems upgrade
	Ceiling Fan coil units replacement
	Replaced electrical pumps with more efficient models

CURRENT STATE OF CORPORATE ENERGY

Energy Data Management

While SFMH has an admirable history of managing its energy consumption, the Ontario government has required an increase in Hospital energy management practices. This has resulted in the need to enhance current practices and develop new approaches. To meet this need, SFMH designed a comprehensive program for collecting and analyzing monthly energy billing information, and ensuring Staff is informed about energy consumption. This effort produced an energy costs and consumption database that is used for monitoring excessive variations, targeting facility follow-up evaluations, and highlighting areas that could be candidates for improved conservation. These monitoring enhancements improve SFMH's understanding of the bottom line impact of energy management.

Energy Supply Management

SFMH has currently adopted a strategy of procuring its electricity from Ottawa River Power and Hydro One Networks Inc. The Hospital has chosen to contract its fuel oil and propane through McCarthy Fuels. This strategy is reviewed annually during the budgeting process.

Energy Use in Facilities

SFMH Staff Members have retained a great deal of knowledge with regard to their facility's energy use. This knowledge base has been enhanced by a series of comprehensive audits completed at the SFMH's facilities. Through the deployment of energy management software, SFMH Staff is equipped with the information necessary to make effective energy management decisions. This makes it possible to implement an effective energy procurement process, pursue appropriate capital projects, and implement successful conservation and demand management programs.

Equipment Efficiency

SFMH has pursued many measures to improve the energy efficiency of the Hospital's equipment. Some of these measures include:

- Heating and cooling equipment retrofits,
- Building envelope improvements,
- Electrical systems upgrade, and

- The pursuit of the feasibility of solar thermal and solar photovoltaic applications.

As the understanding of corporate energy consumption improves, SFMH Staff are equipped with the knowledge necessary to make informed decisions. This improved understanding will also reveal how simple actions like commissioning and maintenance procedures can improve existing equipment efficiencies.

Organizational Integration

Day to day management of energy has been primarily the responsibility of SFMH Building Operations. Current practices will be enhanced with future plans including:

- The creation of an interdepartmental energy management team,
- Improved energy monitoring and feedback, and
- Interactive energy training and awareness.

Staff across all departments have been given the necessary tools to address corporate energy concerns such as budgeting, procurement, conservation, and generation.

Prior to the development of the initial CDM Plan, VIP assessed SFMH's energy management practices. This assessment was completed by speaking to SFMH Staff and reviewing relevant Hospital material. Upon completion of this review, VIP determined that SFMH had provided Staff Members with a mandate to pursue proper energy management, and through SFMH Staff ingenuity, SFMH was able to direct resources to energy management. However, VIP also noted that if SFMH is to achieve the Ministry's mandate, it will require the development of this CDM Plan that will address SFMH's energy management needs.

CURRENT ENERGY CONCERNS

Environmental, societal, and fiscal pressures accentuate the need for an energy Conservation and Demand Management Plan (CDM Plan).

Environmental

Concerns surrounding energy consumption with regard to climate change and air pollution have been well documented. Between 1990 and 2013, Ontario's greenhouse gas emissions had increased 14%, but in 2014 emissions reached their lowest level since 1990, reflecting the impact of the closure of Ontario's coal-fired power plants. The Government of Ontario estimates that 75% of Ontario's greenhouse gas emissions are associated with the consumption of fossil fuels for energy purposes. Increased smog and air pollution are also connected to the consumption of energy. Ontario's electricity generation is the Province's second largest source of sulfur dioxide and the third largest source of nitrogen oxides. These pollutants can cause irreparable harm to human health.

Societal

The 2003 Blackout heightened societal concerns surrounding the stability and security of our energy supply. Energy has been imbedded into most societal practices. If energy consumption is not managed appropriately, the frequency of energy interruption and the subsequent societal disruption will increase.

Fiscal

The fossil fuels traditionally used for the generation of energy are no longer financially accessible or environmentally acceptable. This has resulted in the promotion of renewable energy generation which comes with an additional expense. Energy costs are also anticipated to increase as Ontario's existing energy infrastructure is taken off-line or refurbished. Coming off of the lows of the 2009 recession, national electricity and natural gas prices are 27% and 21% greater than they were at the start of the decade. It is not anticipated that this upward trend will be altered in the short to medium future. The Province of Ontario has recently projected an annual increase of 3.5% to 7.9% increase in electricity costs over the next 20 years. Natural gas is also projected to trend upward.

In recent years, SFMH has experienced minor patient growth and is projected to maintain its current level of activity into the future. SFMH recognizes that proper energy management must be pursued if these concerns are to be addressed.

SCOPE OF THE CDM PLAN

St. Francis Memorial Hospital (SFMH) is a 20-bed community hospital located in the village of Barry's Bay. It serves a catchment of approximately 15,000 population dispersed over a large geographic area that includes 1800 sq. kilometers in Renfrew County, a portion of South Algonquin Township in the District of Nipissing and Algonquin Park, Hwy 60 main corridor. This COM Plan addresses all SFMH facilities, including;

St. Francis Memorial Hospital Facilities - General Information					
Building Name	Operation Type	Address	City	Postal Code	Total Floor Area (sq.m)
Rainbow Valley Community Health Centre	Administrative offices and related facilities	49 Mill Street		K0J 2A0	130
St. Francis Health Centre	Facilities used for hospital purposes	21 St. Francis Memorial Drive	Killaloe	K0J 1B0	1858
St. Francis Memorial Hospital (9 Mem)	Administrative offices and related facilities	9 St. Francis Memorial Drive	Barry's Bay	K0J 1B0	232
St. Francis Memorial Hospital (7 Mem)	Facilities used for hospital purposes	7 St. Francis Memorial Drive	Barry's Bay	K0J 1B0	4505
					6725

ENERGY BASELINE AND CURRENT ENERGY PERFORMANCE

Effectively managing energy requires implementing appropriate energy monitoring procedures. The establishment of an accurate energy baseline is essential in this process. It assists with energy conservation and greenhouse gas reduction target setting, energy procurement and budgeting, bill verification, energy awareness, and the selection and assessment of potential energy projects. SFMH, like many Hospitals, relies on its utility bills to establish its energy baseline. In 2014, an energy audit of the facility was conducted by VIP Energy Services, Inc.

The audit consisted of a detailed analysis of historical consumption and demand information as well as a walkthrough of the facility by a qualified energy auditor. Based on the auditor's survey, a detailed equipment list and an energy consumption breakdown have been created, as well as a comprehensive list of potential energy conservation measures for each facility.

Since then, energy consumption and usage has been reported and monitored each year.

BASELINE PERFORMANCE (2011)

FMH has elected to utilize the consumption data from 2011 to represent its baseline energy consumption performance. Based on this information, and normalizing for weather conditions, the baseline energy performance may be represented by a normalization analysis.

St. Francis Memorial Hospital Facilities - 2011 Energy

Building Name	Total Electricity Consumption (kwh)	Total Fuel Oil Consumption (L)	Total Propane Consumption (L)	GHG Emissions (kg)	Energy Intensity (ekWH/ft2)	Energy Intensity (GJ/m2)
Rainbow Valley Community Health Centre	260,815	-	19,058	50,291	20	0.76
St. Francis Health Centre	24,700	406	-	3,083	21	0.81
St. Francis Memorial Hospital (7 Mem)	750,673	20,017	46,521	186,475	27	1.03
St. Francis Memorial Hospital (9 Mem)	39,509	-	2,448	6,941	23	0.88
	1,075,697	20,423	68,027	246,790	25	0.95

CURRENT PERFORMANCE (2017)

It is imperative to understand the energy characteristics of each facility. By understanding these values, baselines can be established and future retrofits and improvements to the buildings can be monitored and tracked to ensure that the intended benefits are fully realized. SFMH's most recent energy consumption inventory was completed in 2017. This inventory took into account the electricity, fuel oil and propane consumption of SFMH's facilities. In 2017 SFMH's total energy use for electricity was 1,070,625 equivalent kilowatt hours (ekWh). The 2017 combined total cost of electricity, fuel oil and propane was \$247,195.

St. Francis Memorial Hospital Facilities - 2017 Energy

Building Name	Total Electricity Consumption (kwh)	Total Fuel Oil Consumption (L)	Total Propane Consumption (L)	GHG Emissions (kg)	Energy Intensity (ekWh/ft2)
Rainbow Valley Community Health Centre	19,074	1,769	2,003	8,254	37
St. Francis Health Centre	290,511		12,413	24,154	19
St. Francis Memorial Hospital (7 Mem)	722,988		131,247	214,755	34
St. Francis Memorial Hospital (9 Mem)	38,052		6,908	11,303	35
	1,070,625	1,769	152,570	258,466	

In all, SFMH energy intensity from 2012 to 2017 indicates a decrease for Rainbow Valley Community Health Centre (likely due to 2017/18 renovations and improvements), and a slight increase for both St. Francis Hospital and Health Centre likely due to additional usage and tenancies (Hospice expansion).

BENCHMARKING

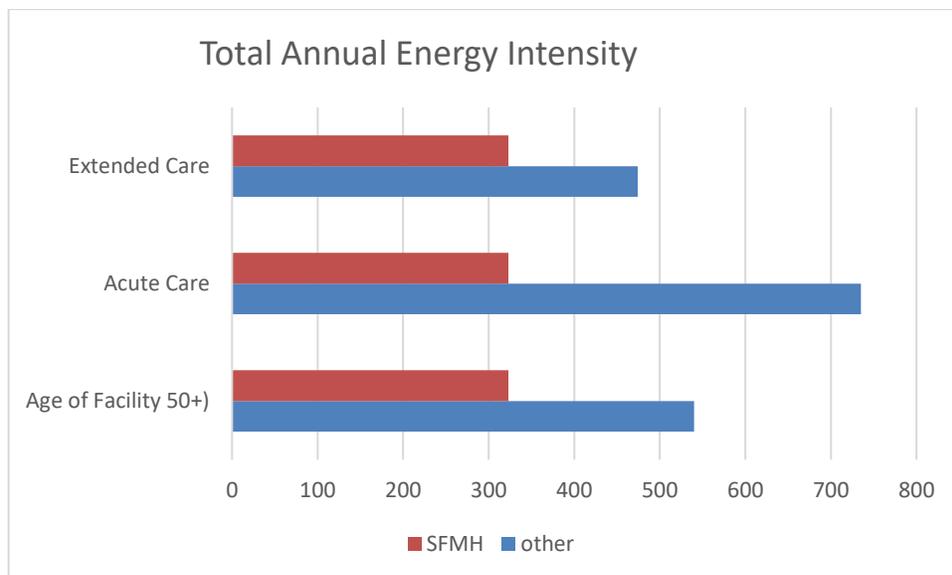
Market Sector

Energy Intensity (ekWh/ft ²)				
Sector	Minimum	Average	Maximum	No. of Organizations
Hospital	1.0	61	350	141

In 2011, SFMH's facilities had an average 28 ekWh/ft² energy intensity, well below the industry average based on the Ministry of Energy's 2011 Public Sector Energy Consumption Data. SFMH ranks 8th amongst all Hospitals in Ontario for energy intensity. In 2017, SFMH's facilities average decreased to 27 ekWh/ft² energy intensity.

SFMH Facilities

In 2017, SFMH's facility annual total energy intensity of 322.88 was lower than other comparative facilities.



MISSION AND VISION

Mission

Excellence in rural health care.

Vision

To be a leader in rural health care delivery through service excellence, effective partnerships and responsiveness to community health needs.

Values

Respect

We treat our patients and their caregivers with dignity, respect and compassion. We recognize the contributions of our Staff, physicians, volunteers, supporters and community partners.

Safety

We strive to achieve the highest level of patient safety. We promote a safe and healthy work environment.

Excellence

We continuously strive to achieve the highest quality of health care services.

Learning and Innovation

We promote a culture of learning, personal growth and innovation. We foster community well-being through education and leadership in health care services.

Leadership and Accountability

We champion collaboration and teamwork within our hospital and with our community partners and stakeholders to support seamless and effective provision of health care services. We manage our resources in a fiscally responsible manner within our regulatory requirements.

SFMH addresses the mission and vision through the application of foundational areas of focus: quality of care, system integration, strength in people and financial performance. SFMH's mission, vision and value set are outlined in the St. Francis Memorial Hospital's Strategic Plan 2016-2021.

The COM Plan has been developed to address the fiscal, societal, and environmental costs and risks associated with energy consumption. Proper energy management will allow SFMH to display leadership,

improve the delivery of services, and enhance the overall quality of life with respect to the community and patient services provided.

This CDM Plan outlines key actions that must be pursued to make this vision a reality. The completion of these actions will assist SFMH to meet its energy conservation targets and its greenhouse gas emission reduction commitment. Achieving these goals will assist SFMH in securing a strong energy management reputation and will allow for cost savings that can benefit SFMH, its employees, and its patients.

It is acknowledged that, for this vision to come to fruition, energy management at SFMH must become an inclusive process. Recognizing that energy affects everyone differently, this Plan was created to address a variety of energy related concerns, while capturing innovative and relevant actions that will lead to meaningful change.

This CDM Plan will allow energy management to be incorporated into all SFMH activities, including organizational and human resource procedures, procurement practices, financial management and investment decisions, and facility capital, operations, and maintenance.

Overview

This CDM Plan is designed to meet the current energy needs and obligations of SFMH. The intent is to guide SFMH in the development of an energy management foundation. This will be a living Plan that will evolve as SFMH's energy needs are revealed and better understood.

SFMH's approach to energy management is three pronged. It begins with:

- Elimination of waste,
- Improving efficiencies, and
- Optimizing energy supply.

Prior to pursuing these actions, SFMH must be aware of the facility and Staff behaviours that influence energy consumption. Once encapsulated, this knowledge must be dispersed throughout the organization, allowing for the development of a culture of sustainability.

An improved understanding of corporate energy consumption will require improvements in energy management and awareness. Energy awareness campaigns will strive to make energy a tangible asset that Staff Members can appreciate when it is being consumed or wasted. In addition to increasing energy awareness, this energy Plan will integrate energy efficiency into the strategic, capital and operational decision making of the organization.

GOALS AND OBJECTIVES

It is of critical importance to improve energy efficiency and reduce our operating costs. Equally important is displaying our commitment to the environment through the reduction of greenhouse gases, while improving our air quality. It is also important that these actions are carried out without adversely impacting SFMH's operations. All SFMH Staff will have an essential role in the success of this energy management Plan. It will be the responsibility of the Energy Management Team to ensure that energy management measures are properly communicated and effectively implemented. An Energy Mandate for SFMH has been developed and is an integral component of this CDM Plan.

SFMH's CDM Plan was completed to help support the following strategic directives:

- Encourage reduced greenhouse gas emissions and energy consumption in the Hospital by promoting systems that create a more sustainable, efficient, healthy, and livable environment,
- Maximize the use of operational budgets by ensuring that SFMH facilities are operating in as energy efficient manner as possible,
- Ensure that minimizing energy use is considered throughout the various aspects of SFMH operations including purchasing where financially viable,
- Recognize the importance of the input and participation of SFMH employees in supporting energy conservation and sustainability initiatives through education, awareness and training,

The primary objective of this Plan is to improve the management of SFMH's energy consumption. Part of this objective is setting a conservation target that will see SFMH reduce its 21017 energy consumption by 5% by the end of 2022. Recognizing that SFMH has a stable patient load, SFMH's energy conservation target will be intensity based. It is also the objective of this Plan to improve SFMH's understanding of energy consumption which is essential for SFMH to meet its corporate energy management goals.

Measurements of Success

The measurements of success will be based on a variety of indicators:

- Reaching the CDM Plan's energy conservation target,
- Assisting with the corporate greenhouse gas reduction target,
- Achieving the savings outlined in the Plan's budget section, and
- Imbedding energy management in SFMH's strategic, capital and operations decision making process.

Reporting Standards

The CDM Plan will allow for the monitoring and reporting that is necessary for SFMH to meet the regulatory requirements of the Green Energy Act and SFMH's greenhouse gas reduction targets. Regular energy monitoring and feedback to the Ministry and SFMH Management and Staff will improve knowledge and help make energy consumption a tangible asset, making possible appropriate behavioural changes. The intent of monitoring and reporting on energy consumption is to make energy management transparent and the consumer accountable. The Ministry will be provided with annual updates on the state of energy management at SFMH. Energy consumption feedback provided to Staff will be imbedded into SFMH's regular business.

ENERGY MANAGEMENT TEAM

Historically, SFMH addressed Energy Conservation and Demand Management on a project-by-project basis through the activities of the Building Services Group. Strategic directives have been provided by the Hospital's Board of Directors and Senior Executive Team.

This COM Plan outlines a commitment to integrate Energy Conservation and Demand Management into the operations of the Hospital, as indicated in the covering letter from the Chief Operating Officer. Within the duration of the COM Plan, COM planned activities will become an integral component of the annual budgeting process. A collaborative effort will be undertaken to achieve this integration, involving:

- Internal Staff (which may include but will not be limited to Facilities Management, Finance, and Procurement),
- Advisement from the Ministry of Energy and Ministry of Health, and
- Consultations with Energy Management experts.

The current energy management team is comprised of the:

- Chief Operating Officer
- Chief Financial Officer
- Manager of Financial Services
- Manager of Maintenance Services

FINANCIAL ASSESSMENT

The energy Conservation and Demand Management Plan's financial assessment philosophy is to treat fiscal resources as if they were energy assets. Therefore, financial investments follow the same three pronged approach used for the management of energy:

- Elimination of waste,
- Improving efficiencies, and
- Optimizing energy supply.

The initial cost and saving estimates for the proposed process improvements, program implementation, and projects are broken down as follows:

St. Francis Memorial Hospital Facilities			
Considered Opportunities	Annual Savings (\$)	Estimated Installation Cost (\$)	Payback Period (years)
T8 / Incandescent - Lamp Replacement with LED	\$ 6,904.00	\$ -	0
MH 70W Fixture Replacement with LED	\$ 752.00	\$ 3,500.00	4.7
Install Occupancy/Motion Sensors for lighting	\$ 2,885.00	\$ 30,313.00	10.5
Ensure all computers purchased are equipped with sleep mode software	\$ 1,000.00	\$ -	0
Replace Older Exhaust Fans with High Efficient Motors	\$ 1,001.00	\$ 6,000.00	6
Replace Non-Energy Star Appliances	\$ 1,437.00	\$ 21,000.00	14.6
Seal HVAC air leakage	\$ 829.00	\$ 50.00	0.1
Investigative Study of Exterior Breaches from Old Chilling System	\$ -	\$ 5,000.00	0
Replace Electric DHW tanks to gas	\$ 177.00	\$ -	0
Replace/ Upgrade Chiller Pumps /High Efficiency	\$ 570.00	\$ 6,000.00	10.5
X-Ray Equipment Shut down	\$ 14,102.00	\$ -	0
Replace Kitchen Walk in Fridge and Freezer cooling units	\$ 4,924.00	\$ 22,000.00	4.5
Replace Kitchen Equipment past its Expected Useful Life	\$ 2,788.00	\$ 29,520.00	10.6
Increase BAS to other equip for further savings	\$ 51,099.00	\$ 931,000.00	18.2
Detailed Engineering Study for addition of an ERV for Lower Mechanical Room	\$ -	\$ 10,000.00	0
Install double or triple glazed windows with low-E glass	\$ 12,000.00	\$ 250,000.00	20
Lighting and other Equipment Shutdown for Off Hours	\$ 5,000.00	\$ 15,000.00	3.0
Office Spaces Heating/Cooling set-back for off hours	\$ 2,000.00	\$ 10,000.00	5.0
DHW: Reduce Heating Temp in off hours	\$ 4,000.00	\$ 12,000.00	3.0
Replace High Flow W/C with Dual Flush W/C	\$ 6,115.00	\$ 8,500.00	1.4
Energy and Resource Awareness	\$ 4,270.00	\$ 12,000.00	2.8

The listed costs and savings are for the inaugural year of a process, program, or project. If initiated and monitored effectively, it can be anticipated that these savings can be sustained. It should also be noted that the price of energy is anticipated to increase, whereas the costs of capital projects will likely decrease with advancements in technology. This could potentially lead to increased savings and decreased costs in the later years of the plan. The potential for avoided costs adds to the relevance of a plan of this nature.

This fiscal assessment does not take into account the economic benefits of achieving all of the corporate energy management goals. Due to the difficulty in quantifying the economic value of extended equipment longevity, improved comfort and productivity, and climate change mitigation, it should not be discounted. Prior to requesting funding for energy actions, SFMH will consult with utility representatives and/or energy consultants, allowing SFMH to schedule project launch dates in parallel with applicable incentive funding programs. The projects may be moved forward or delayed based on changes to incentive programs as well as changes to the COM Plan. However, SFMH will not make significant alterations to the Plan in a quest for incentive funding. This is not a prudent approach to planning. Actions will be pursued only when they coincide with the SFMH's objectives and are appropriate to be pursued at that time.

As SFMH continues to evolve and its energy needs become greater, it will be essential to reassess and clarify, as necessary, the financial indicators that are applied to investment analysis and prioritization of proposed energy projects. Energy efficiency projects must be weighted appropriately relative to other investment needs. There will also be a need to develop procedures for the annual allocation of capital resources for energy efficiency measures in the capital budget.

ENERGY MANAGEMENT ACTIONS

The economic feasibility of proposed actions played a large role in the prioritization of the processes, programs, and projects. Equally important in this prioritization exercise was the evaluation of SFMH's internal capacity to complete the proposed initiatives. Recognizing the need to develop SFMH's internal capacity, the initial years of the Plan focus heavily on processes and programs. The implementation of the recommended processes and programs will result in an improved understanding and awareness of energy consumption. This will allow for improved decision making and greater success with future energy projects (See Appendix C for the CDM Plan timeline). As these actions are completed, the Energy Management Team will meet to discuss monitoring results and how they can be used to enhance the Plan. The CDM Plan is intended to be a living document. Anticipated improvements in knowledge and capacity will result in enhancement of the proposed actions.

Annual Reporting

An Annual Conservation and Demand Management Plan Update Report will be provided that details SFMH's activities and results relating to this 2019-2024 Energy Conservation and Demand Management (CDM) Plan. The Report will describe the CDM Plan related activities that have happened in the previous year and will focus on linking actions to results. In addition, the Report will take a forward view of the upcoming year to lay out the roadmap and identify any changes or adjustments that should be considered based on what the current market conditions are. The overarching goal of the report is to make the 5 year CDM Plan a living document that is reviewed and updated on a yearly basis.

Future Energy Projects

Energy projects at SFMH were evaluated prior to the development of the CDM Plan. SFMH Staff Members have advocated for some ambitious energy initiatives that were investigated and determined to be not feasible for a variety of reasons. It is anticipated that as SFMH grows and energy management practices evolve, these actions will be reassessed.

Future Energy Reduction Project Summary	
Year	Actions Planned
2019	T8 / Incandescent - Lamp Replacement with LED
	MH 70W Fixture Replacement with LED
	Install Occupancy/Motion Sensors for lighting
	Energy and Resource Awareness
	DHW: Reduce Heating Temp in off hours
2020	Ensure all computers purchased are equipped with sleep mode software
	Detailed Engineering Study for addition of an ERV for Lower Mechanical Room
2021	Lighting and other Equipment Shutdown for Off Hours
	Office Spaces Heating/Cooling set-back for off hours
2022	Replace Older Exhaust Fans with High Efficient Motors
	X-Ray Equipment Shut down
	Seal HVAC air leakage
	Replace Kitchen Equipment past its Expected Useful Life
2023	Replace Non-Energy Star Appliances
	Investigative Study of Exterior Breaches from Old Chilling System
	Replace Electric DHW tanks to gas
	Replace Kitchen Walk in Fridge and Freezer cooling units
	Energy and Resource Awareness
2024	Replace High Flow W/C with Dual Flush W/C
	Increase BAS to other equip for further savings
	Replace/ Upgrade Chiller Pumps /High Efficiency

Renewable Energy

Feasibility and promotion of renewable energy technologies were examined throughout the development of the CDM Plan. These technologies have been incorporated into the CDM Plan where it made sense to do so, strategically or fiscally.

Purchasing Practices

Traditionally, purchasing practices in the public sector were designed to favour equipment or physical retrofits at the lowest cost in order to ensure the highest possible financial responsibility. As energy

conservation best practices emerged, it was revealed that there is a major issue in doing this. Almost all wasteful energy consuming equipment is less expensive than their energy conserving counterparts. The practice in itself does not encourage energy efficiency, as most energy intensive alternatives such as standard efficiency motors are less costly than their higher efficiency counterparts. When dealing with energy intensive hardware, the initial capital cost is only a fraction (5%-10%) of the total lifecycle cost.

The practice of 'low bidder wins' purchasing limits the Staff when trying to make the right environmental decision. Making a specific amount of money available to include the conservation upgrades allows the Hospital to take advantage of necessary investments in order to reduce their impact on the bottom line after the cost of purchase. For example, when purchasing a motor, all suppliers will specify standard efficiency motors. An energy smart buyer will know that 90%+ of the motor's lifecycle cost is in its energy use. Therefore, buying a premium efficiency motor at a small incremental cost has a payback of less than three years. Missing this opportunity translates into a long-term financial increase. In fact, the incremental cost between a less efficient and a more efficient alternative is often less than 5% of the capital cost. That 5% capital cost difference is often recuperated in less than three years. This allows Staff to make the right environmental decision based on industry best financial practices.

Energy and Resource Awareness (ERA) Programs

Independent studies done by organizations such as Natural Resources Canada (NRCan) [and the Ontario Hospital Association (OHA)] show that initiatives directed at Staff and facility users, in particular ERA Programs, can lead to significant savings on their own. In fact, the OHA reports indicate that dedicated, consistent Energy Awareness Programs are proven to be the most effective way to reduce energy usage with no capital costs and minor operational expenses. A conservative estimate of savings for an effective ERA Program can be as high as 5% -7% of annual utilities spending.

An effective ERA Program is designed to assist organizations to attain energy savings by promoting a fundamental shift in the personal philosophies of Staff and facility users towards reducing their energy use. The Program utilizes community-based social marketing to develop influential communication materials and in-house displays that are carefully designed to inform and motivate employees to effectively decrease energy consumption. In many cases, an ERA Program has proven to be the most effective way to lower energy usage without any capital costs and minimal operational expenses. SFMH is currently engaged in implementing a staff communication and awareness program to include:

- Energy awareness Staff survey (incl staff suggestions for energy reduction)
- Departmental Energy Challenges
- Posters, stickers and signage
- Communications via various media

A continuous and consistent ERA Program is not only an effective way to lower energy use within a facility,

but can also serve to be an effective marketing tool to spread the word that the Hospital is a community leader in energy conservation and environmental sustainability.

APPENDIX A

Energy Data

ENERGY CONSUMPTION

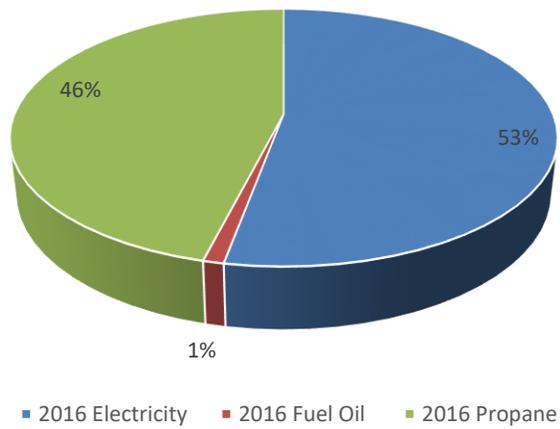
St. Francis Memorial Hospital Facilities - Energy Consumption						
Building Name	2016 Electricity (kWh)	2016 Fuel Oil (L)	2016 Propane (L)	2017 Electricity (kWh)	2017 Fuel Oil (L)	2017 Propane (L)
Rainbow Valley Community Health Centre	23437	1,868	172	19074	1,769	2003
St. Francis Health Centre	234721	0	13892	290511		12413
St. Francis Memorial Hospital (7 Mem)	728118	0	106122	722988		131247
St. Francis Memorial Hospital (9Mem)	38322	0	5585	38052		6908

APPENDIX B

Energy Use Breakdown

ENERGY USE BREAKDOWN

2016 Energy Breakdown -ekWh



2017 Energy Breakdown - ekWh

