



City of Timmins

5-Year Corporate Energy Conservation and Demand Management Plan

July 2019

Prepared in co-operation with:



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Introduction – Executive Summary

Background

The City of Timmins' Energy Conservation and Demand Management (ECDM) Plan was developed in response to Ontario Regulation 507/18 which requires all public sector organizations to complete an update to their original 2014 ECDM Plan by July 1, 2019. In response to this regulatory requirement, as well as rising energy costs, the City of Timmins has developed this Energy Conservation and Demand Management (ECDM) Plan. This comprehensive Plan is the most effective method of identifying energy conservation opportunities, selectively implementing the best projects and then measuring their effectiveness. The Plan has been developed to protect the interests of our constituents and ensure that the City of Timmins obtains the best possible value from our operating budgets. In addition to meeting our regulatory obligations, the City believes that a strong commitment to energy conservation and a reduction of energy use is demonstrated evidence of our belief in becoming a more sustainable community while operating in a cost-effective manner that respects the value of taxpayer dollars.

Purpose of the Plan

The 5-Year Corporate Energy Conservation and Demand Management Plan is designed to guide the City of Timmins towards a more energy-efficient future. The policies, practices and energy conservation measures identified illustrate the importance the City places on acting responsibly towards energy consumption through the wise use of resources in City operations.

To enhance our understanding of energy use and return on investment through conservation, this document contains a thorough review of the measures implemented since the creation of the original plan, issued on July 1, 2014. Since then, the City has initiated several substantial energy projects, yielding significant savings results including:

- City-wide street lighting replacements (2015-16)
- Arena and sports facility LED lighting conversions (2014-15)
- Operations equipment upgrades (throughout Plan period)

The above projects have resulted in an estimated annual savings of over \$300,000.

The wise and efficient use of energy are two of the lowest cost options for meeting energy demands. They also provide many other environmental, economic and social benefits, including reducing greenhouse gas (GHG) emissions, cost avoidance and savings. Along with the primary benefits, the responsible use of energy also promotes local economic development opportunities, energy system reliability, improved energy supply security and reduced-price volatility.

Following the path of our previous ECDM Plan, this document is a continuation of a process involving the:

- Integration of establishing and evaluating a baseline for performance to be measured against;
- Reviewing the effectiveness of previous conservation efforts while setting future performance goals and objectives;
- Continuous improvement through identification of energy conservation potential;
- Strategic alignment of improvement measure implementation and fiscal constraints; and,
- Evaluation, measurement and communication of results achieved.

The following report summarizes the significant efforts applied by the Timmins Energy Conservation Team to create a Plan that can be implemented responsibly, over time, to create lasting results. The Plan takes advantage of internal expertise as well as all available external financial incentives and rebates currently being offered to support the implementation of energy savings ideas. The current energy picture for the City of Timmins and our future Vision, Goals and Objectives as shown in the Corporate Energy Conservation and Management Policy, are outlined. Our strategic focus areas are discussed in detail and our 5-year Action Plan is laid out on a project-by-project basis.

1.0 Historic Energy Performance

Historical Energy Usage

Effectively managing energy requires the creation of a robust energy monitoring strategy and procedures and establishing an accurate energy baseline is an essential first step in this process. This baseline 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. The City of Timmins, similar to many other communities, relies on utility bills to establish this energy baseline.

To evaluate the effectiveness of the City’s previous energy conservation measures, the year 2013 was chosen as the base year for measurement; this aligns with the Ministry of Energy’s Regulation 507/18 requirements for reporting. Overall, the City’s consumption in 2013 was 26.7 million kWh of electricity and 2.7 million m³ of natural gas. This usage equates to spending \$3.7 million for electricity and \$863,000 for natural gas for the year (2013). The breakdown of energy use by facility type is as follows:

Figure 1-1 – Energy Use by Facility Type in 2013

Facility Type	Electricity Use (1,000's kWh)	Natural Gas Use (1,000's m3)
Administrative offices and related facilities, including municipal council chambers	5,295	573
Community centres	22	17
Cultural facilities	565	77
Facilities related to the pumping of sewage	2,286	245
Facilities related to the pumping of water	4,282	168
Fire stations and associated offices and facilities	286	83
Indoor sports arenas	3,283	720
Police stations and associated offices and facilities	834	65
Public libraries	395	141
Storage facilities where equipment or vehicles are maintained, repaired or stored	1,340	540

For comparative purposes, the raw energy consumption breakdowns by month since the original baseline for the City are as follows:

Figure 1-2 – Electricity Use (2013 – 2018)

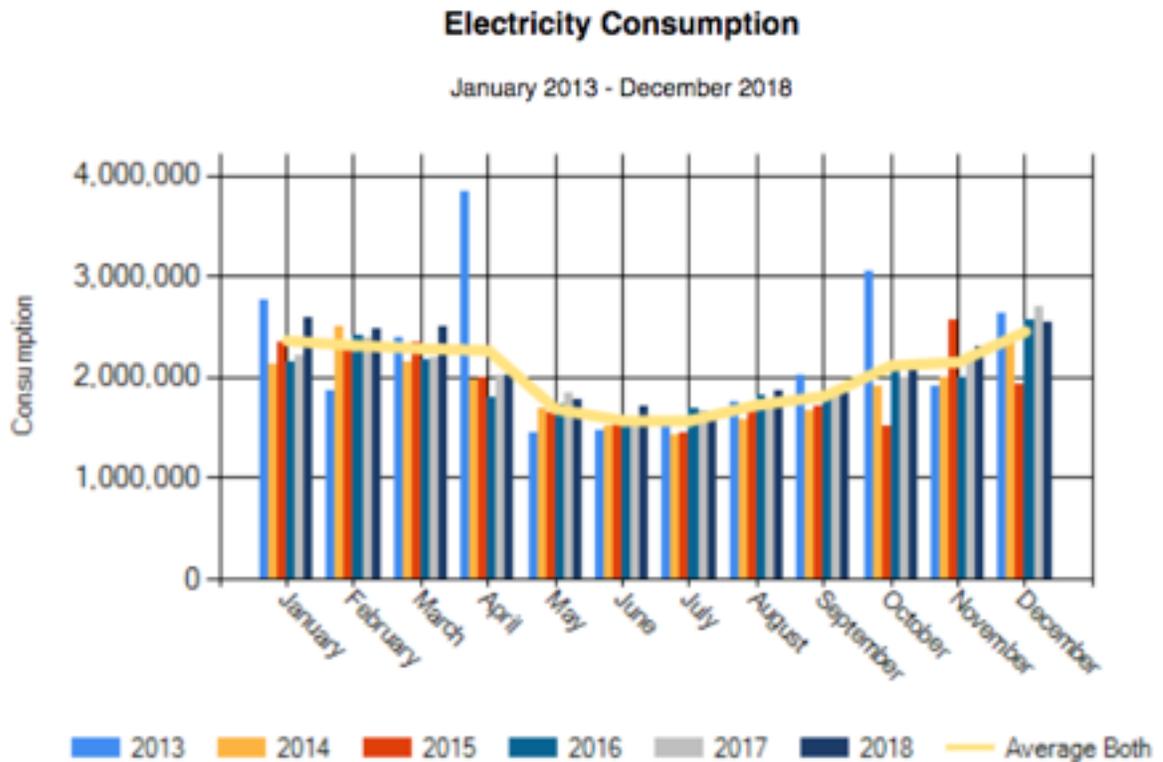
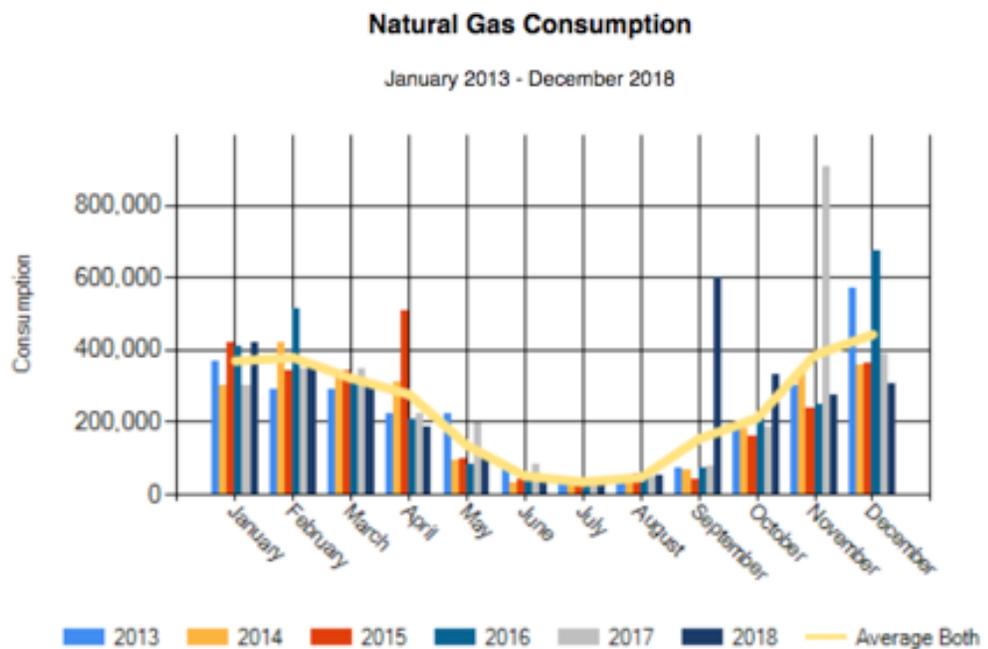


Figure 1-3 – Natural Gas Use (2013 – 2018)

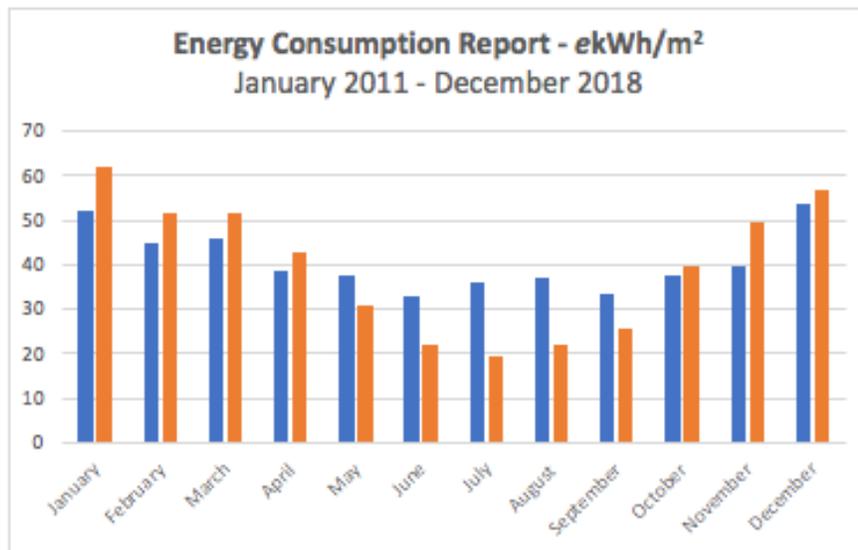


The review of this raw energy consumption data can be mis-leading as the period saw a major expansion of the Waste Water Treatment Plant during the original Plan period. This expansion increased the facility's annual electricity consumption by 330% (3.6 million kWh) and annual natural gas consumption by 225% (300,000 m³). This increase, at one of the City's highest energy consuming facilities, masks the energy conservation and savings achievements made by the City since the first Plan was created in 2014.

City of Timmins Energy Baseline Analysis

The following analysis uses an analysis of consumption data for the base year (2011) forward. In the original ECDM Plan, the City set a target of a 5% reduction in ekWh/m² energy intensity over the 5-year term of the Plan (2014-2019). The graph below illustrates that the City not only met this target but exceeded it with an overall 6.3% reduction in ekWh/m² energy intensity over the 5-year period when compared to the original base year of 2011. A reminder that the consumption of the Waste Water Treatment Plant has been removed to prevent this data from skewing the results. However, this plant will be included in future Plan analysis.

Figure 1-4 - Energy Intensity (ekWh/m²)



MONTH	2011 ekWh/m ²	2018 ekWh/m ²
January	52.1	61.8
February	44.8	51.5
March	45.9	51.4
April	38.8	42.7
May	37.7	30.8
June	32.9	22.2
July	36.2	19.6
August	36.9	21.8
September	33.7	25.8
October	37.7	39.8
November	39.9	49.5
December	53.8	56.6
Annual Totals	490.4	473.5

Energy Conservation Project Successes

Since the creation of the last 5-Year ECDM Plan, the City has initiated significant investments in energy efficiency and energy-cost reduction. These projects include:

Facility-Related Projects

2014

LED lighting retrofits for the McIntyre Arena, Archie Dillon Arena and the Terry Fox Trail.

2015-2016

Facilities:

- McIntyre Arena – Re-commissioning (Building Functional Test), Boiler Fan Dampers and Domestic Hot Water Pipe Insulation
- Whitney Arena - LED lighting retrofit
- City Hall – Building Automation System (BAS) Re-commissioning
- Sportsplex – HVAC Re-commissioning
- Various other smaller lighting Upgrades

Operations:

- Whitney Plant – Two new high efficiency Heaters, window upgrades (replaced louvers), replaced HPS lights with LEDs
- Station #6 - Installed 100HP high efficiency motor
- Timmins Area Plants – Upgraded to high efficiency heaters
- Whitney Pumping Stations - upgraded cabinet heaters with bar style, LED perimeter lights
- Mattagami Plant – Upgraded exterior lighting to LED

The City received over \$40,000 in funding to complete these projects and realized \$65,000 in annual energy savings.

City-Wide Street Lighting

In 2015 and 2016 the City of Timmins embarked on a major street lighting retrofit across the City. This project included the replacement of over 4,000 HPS street lights, leading to an annual savings of over \$240,000. In addition, the City received over \$380,000 in project funding incentives to complete these projects.

2.0 Energy Conservation and Management Policy

Our Commitment

The City of Timmins remains committed to allocating staff and financial resources to develop and implement a strategic Energy Conservation and Demand Management (ECDM) Plan to reduce energy consumption and lessen its environmental impact. As an organization, we value the notion of protecting taxpayer interests through efficient operations and creating a more sustainable community.

We are committed to managing energy responsibly and will use energy efficiency practices throughout all our facilities, fleet, operations and equipment wherever it is cost effective to do so.

Our Vision

The City of Timmins will endeavour to minimize energy consumption, related costs, and carbon emissions by continuously improving its energy management practices without compromising the level of service delivery to the community.

Our Goals and Objectives

As part of our 2019 ECDM Plan, the City created several strategic avenues to achieve specific goals and targets with regards to energy management. We have re-examined our past objectives and are re-committing to this updated version.

1. Reduce energy intensity in City facilities by 5% by 2024 compared to our revised base year (2018). This is in addition to the over 6% reduction achieved between 2013 and 2018, based on our original 2011 base year.
2. Enhance our culture of conservation within the Corporation through training and outreach to staff, clients and business partners. All employees will have the appropriate knowledge and training to be empowered to reduce energy consumption.
3. Expand upon our comprehensive corporate energy management policy and practices by enhancing key existing business practices to include energy efficiency standards and energy management best practices.
4. Expand our monitoring and tracking program for energy use by providing access to our energy management system to make energy consumption visible to everyone in the Corporation and support facility/management decision-making.

5. Deliver energy cost savings through the identification and implementation of processes, programs and projects that will reduce energy consumption.
 - Re-assess and benchmark the top energy consuming facilities across the Corporation. (2019)
 - Review previously identified energy savings opportunities by reviewing past energy audits and plan to renew energy audits and analysis of the capital asset renewal program. (Ongoing)
 - Review and/or enhance standard operating and maintenance procedures to include energy conservation best practices. (Ongoing)
 - Seek funding for energy-related projects from various sources to enhance the payback and reduce implementation costs. (Ongoing)

Strategic Action Plan

To achieve our new ECDM Plan, the City will employ three strategic actions designed to ensure a positive outcome over the next 5 years. These key strategies support the delivery of our Goals and Objectives.

Strategy 1. Corporate Practices

Develop Corporate policies and practices that support the energy conservation effort and show leadership and commitment within the Corporation and community.

- Energy Management Team: Roles, Responsibilities and Accountability
- Energy Procurement

Strategy 2. Education, Awareness & Outreach

Provide the guidance, leadership and framework necessary to empower employees and develop a culture of conservation.

- Energy Skills Training Program
- Energy Awareness Training
- Outreach, Engagement and Recognition Programs
- Feedback System for Employee Suggestions
- Employee Brainstorming Sessions

Strategy 3. Energy Conservation Action Plan and Energy Information Management

Continually identify and deliver energy conservation processes, programs and projects in all areas of the Corporation (facilities, fleet, equipment, water plants etc.). Demonstrate sound operating and maintenance practices to complement the energy efficiencies implemented through the capital asset renewal program. Employ a robust Energy Information Management System to ensure that all conservation activities are measured and verified to ensure the City receives and maintains specified energy reductions and savings.

Energy Conservation Action Plan

- Key facility energy audits
- Asset renewal plan and energy conservation project delivery
- Standard facility operations procedure review

Energy Information Management

- Maintenance of the online energy monitoring and reporting system (electricity, natural gas and fuels)
- Regular Energy Use Review presentations for the community, council, senior leadership, accountable staff and energy users
- Energy bill verification and rate optimization
- Reporting requirements for Regulation 507/18 (formerly 397/11)
- Consistent updates and review of key performance indicators (KPIs) / benchmarking
- Standardize and implement project measurement and verification

3.0 STRATEGY 1: Energy Management Corporate Practices

The City of Timmins has implemented essential corporate practices, including key personnel deployment, to ensure a strong focus on energy management and savings. These efforts remain a key component of our renewed ECDM Plan.

The Energy Management Team: Roles and Responsibilities

Energy Sponsor: Manager of Environmental Services and Public Utilities

The Energy Sponsor is ultimately responsible for creating budgets, securing spending authority and resources for the program and is the highest-ranking management person on the Energy Management Team. This role is responsible for setting and/or legitimizing the program's high-level goals and objectives, keeping track of major project activities and approving resources and funding for the team and its approved projects.

Energy Champion: Environmental Coordinator, Instrumentation / Electrical Specialist

The Energy Champion has direct knowledge of the organization's major energy-using systems and is responsible for developing and maintaining the focus for the Energy Management Team. The City of Timmins' Energy Champion coordinates meetings, sets agendas, and delegates and manages tasks related to the Energy Management Team. This role also helps create the vision for the program and will help the program maintain momentum particularly when barriers arise. The Energy Champion is also responsible for ensuring that the monitoring and tracking systems for energy are accurate, up-to-date and available for use by City employees.

Energy Project Champion: Manager of Parks, Recreation and Building Services

The Energy Project Champion should have a technical background and is responsible for supporting and reporting on the technical aspects of the energy projects at all facilities. This role may also lead energy conservation projects as the project manager.

Corporate Energy Management Team

The Corporate Energy Management Team functions on a strategic level to set expectations for each of the facilities, develop metrics for tracking overall energy improvement, and build accountability for energy management activities. In addition, this cross-functional team has direct responsibility for the consumption of energy within their respective departments. As a group, the team supports and monitors the energy management initiatives (processes, programs, and projects) at the various facilities and across the Corporation.

The Energy Management Team currently includes the following positions:

- Manager of Parks, Recreation and Building Services
- Chief Accountant
- Environmental Coordinator

- Director of Community Economic Development, Timmins Economic Development Corporation
- Instrumentation/Electrical Specialist

Actions: Continue to seek cross-departmental membership and support for the Energy Management Team. Continue to meet bi-weekly to discuss the Energy Management Program to ensure implementation of new savings ideas, as well as maintain the positive momentum built over the past 5 years.

Energy Procurement

The City continues to utilize the energy procurement service provided by Local Authority Services (LAS). This program provides options for fixed-price energy procurement services permitting the City to maintain predictable electricity and natural gas commodity costs. In addition, the program permits the City to work together with a large number of other municipal entities throughout the province to create bulk-buying power to leverage aggregated energy purchasing opportunities.

Actions: Continue to review the LAS program annually and evaluate the City's level of participation. Review potential alternative programs for merit and analyze the net result of City participation annually.

4.0 STRATEGY 2: Education, Awareness and Outreach

The City's Education, Awareness and Outreach program has been utilized over the past 5 years to assist with the maintenance of the City's culture of conservation. This has been achieved by raising the level of awareness, understanding and general knowledge amongst staff regarding energy spending, usage and conservation. The City will continue to utilize a successful combination of program engagement, direct awareness marketing and hands-on training to enhance our energy reduction efforts to support the achievement of our energy conservation goals and objectives. As well, energy will continue to be a regular agenda item at staff meetings to solicit new ideas for reduction of energy use, promote continued awareness of the cost of energy and ensure that energy conservation remains a key consideration for all City employees.

The Education, Awareness and Outreach program provides guidance, leadership and the framework to empower employees and foster our culture of conservation. The program informs the organization in terms of current energy use, operational practices as well as improvement opportunities, while ensuring that all City of Timmins employees have an opportunity to remain informed of the City's energy reduction efforts. This continued practice will foster the greatest possible impact of education and awareness.

The program is comprised of the following four focus areas:

Energy Skills Training Program

The Energy Skills Training Program is a vehicle for City employees to continue to develop a general awareness and understanding of current energy use within City facilities as well as skills to identify opportunities for improvement. The Training Program combines both general knowledge training and hands-on experience to gain maximum benefit.

Employee Brainstorming Sessions are an important part of the Energy Skills Training Program and are encouraged during the Energy Team meetings as a way of generating new ideas for energy conservation. As regular users and managers of City facilities, our employees are one of the City's most valuable resources to both generate and implement our energy conservation strategies.

Outreach, Engagement, Recognition and Energy Awareness Training Program

The City will continue to engage all users of City facilities (both staff and the general public) and recognizes that this is essential to the continued success of the energy management program. Our energy program will continue to employ a comprehensive approach to both engaging employees and recognizing the efforts of City staff who provide important support and ideas.

The Energy Awareness Training Program has been developed to provide consistent energy conservation messaging throughout all departments using Community-Based Social Marketing (CBSM) techniques to engage all users of City facilities.

Specific methods used to date include conservation tips, eye-catching posters, City intranet messaging and other relevant marketing tools. It is the intention of this plan to expand our ability and focus to enable the City to become a 'clearinghouse' of information for local residents to discover ideas and incentives to improve their own energy usage practices.

Feedback System for Employee Suggestions

The City will continue to employ a feedback system to allow for City employees to provide input and ideas. The email messages that are sent to a specific address and are forwarded to members of the Energy Management Team in order to ensure prompt response. The Energy Team members can engage relevant City employees to ensure that all ideas are captured and explored.

Actions: Review available energy training opportunities both generally (i.e. all staff) and for specific facilities (i.e. water plant). Establish and maintain at least annual Outreach and Engagement efforts to keep energy conservation 'top-of-mind' for staff and stakeholders.

5.0 STRATEGY 3: Energy Conservation Activities and Information Management

Energy Conservation Action Plan

The Energy Conservation Action Plan (Appendix A) forms the blueprint for implementing energy conservation and cost saving measures. The City has created a list of potential projects based on previous facilities' energy audits. The attached action plans have been created to guide the City of Timmins through this process based on a prioritized implementation schedule. All available incentives and funding sources will be considered to minimize the implementation cost of each measure. In addition to the measures shown, the City anticipates that further energy audits, completed over the next 5 years, will augment the list of available energy conservation measures.

Appendix A also contains a year-by-year implementation strategy, including a by-facility breakdown. The strategy also highlights the measures that will be completed as part of our on-going maintenance program along with measures that were disqualified and those requiring further investigation to determine feasibility.

In all, the measures will achieve:

- Improved facility functionality and occupancy comfort
- Reduced maintenance requirements
- Energy savings (estimated at \$80,000 to \$100,000 annually)

Additional measures will be added as funding becomes available on an annual basis. In general terms, our actions are expected to yield the following results:

- Education, Awareness and Outreach: 1-2% annual energy savings
- On-going regular reviews of consumption and baselines: 0.5 to 1% annual energy savings
- Re/retro Commissioning: 2-7% annual energy savings within the facilities where it is implemented (estimated to be 1% overall potential total annual savings)

Actions: Maintain a schedule of energy audit renewals to ensure that our list of measures is up-to-date and that previous measures are still functional and providing savings. Perform periodic reviews of available incentives and stay up-to-date on potential sources of money to offset the implementation costs of the proposed future measures. Review the list of measures at least annually and update as necessary.

Energy Information Management

Online Energy Monitoring and Reporting System

The City of Timmins has implemented an online system for managing and reporting on its energy consumption (electricity, natural gas, fuels) and water. The motivation for this effort is the notion that "you can't manage what you are not

aware of". By making our energy usage visual, and keeping the information 'real-time', all personnel with access to the information can benefit from understanding the nature of energy use in their facilities, as well as the impact their actions or inactions have on the City's overall energy cost and budgeting. This information is also key in evaluating the potential of new conservation projects as well as measuring the effectiveness of initiatives already taken.

Actions Continue to gather and upload energy data into the Energy Information Management System regularly and analyze the data for patterns and savings opportunities.

Energy Management Presentations for the Community, Council, Accountable Staff and Energy Users

To gain traction for the initiatives within this plan and ensure that the City reaches its stated reduction targets, it is imperative that information regarding energy usage and cost, as well as the City's energy conservation plans and projects, are well understood and front of mind of everyone from front-line employees to senior department heads and City Council. This broad awareness will lead to additional buy-in and support for the City's continued efforts to reduce its energy usage and spending.

Actions: Make energy a key topic at staff and senior management meetings as well as provide an update on energy use and conservation to Council at least annually.

Key Performance Indicators (KPI's) and Monitoring and Verification

To ensure momentum continues, and the City receives value-for-money with regards to its energy conservation efforts, a rigorous program of establishing KPI's and then monitoring and verifying ongoing savings is an essential element of this Plan. By establishing agreed upon KPI's (as suggested in the table below) and then performing regular and frequent monitoring, not only will City personnel be able to verify that savings expected from various projects is achieved, but that the savings continue for the duration of the project or retrofit's useful life. This practice will protect the City's investments as well as provide transparency and support for successful savings initiatives.

Figure 5.1 – KPI Suggestions

Facility Type	Energy KPIs	Measured Variables
Cultural Facilities, Indoor Recreational Facilities and Community Centres	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather • Occupancy Rates / month • Sheet rentals / month

Facilities Related to Treatment or Pumping of Water or Sewage	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather (Temperature and Rainfall) • m³ treated water or waste water / day
Administrative Offices	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather
Public Libraries	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather • Occupancy
Fire Stations and Associated Offices	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather • Occupancy
Storage Facilities	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month Baseline Natural Gas <ul style="list-style-type: none"> • m³ / month Other Energy Sources	<ul style="list-style-type: none"> • Daily Weather
Street Lighting	Electricity	<ul style="list-style-type: none"> • Number of Lights
Recreation and Outdoor Lighting	Baseline Electricity (Summer/Winter/Shoulder Season) <ul style="list-style-type: none"> • kWh / month • Peak kW / month 	<ul style="list-style-type: none"> • Occupancy or Rentals / Month • Opening / Closing Dates
Fleet	Baseline Diesel Use Baseline Gasoline Use	<ul style="list-style-type: none"> • Number of Vehicles • km driven / month

Actions: Review all conservation initiatives to understand the most appropriate monitoring and verification process. Review the project savings at pre-defined regular intervals and report outcomes to senior management/City Council.

Bill Verification and Rate Optimization

A consistent, periodic review of the City’s energy invoices is important to ensure that rates and recorded consumption values on energy bills is accurate. This ensures that the invoices presented by utilities are correct and are providing appropriate and relevant data to the City’s Energy Management Platforms.

Actions: Perform a rationalization check on monthly invoices and conduct at least annual detailed billing reviews to ensure accuracy.

Ongoing Ontario Regulation 507/18 Reporting

In addition to completing this Plan, the City is required to submit annual energy consumption and greenhouse gas emissions templates to the appropriate Ministry of Energy portal. Gathering and recording monthly energy invoices are necessary to complete these reports.

Actions: Complete all required regulatory reporting by July 1 of each year.

APPENDIX A: Future Energy Conservation Action Plan Measures Summary

Facility	Opportunity	Target Completion	
Waste Water Plant Mattagami	Replace Primary Clarifier pumps #1 and #2 at 12.4kW / 600v each	2019	
	Replace 6 Infrared Heaters at 6.9kW / 600v each	2019	
	Replace 2 Longitudinal Collector motors at .75kW / 600v each	2019	
	Replace 1 Primary inlet gate motor at 4.0kW / 600v	2019	
Whitney Station #1	Replace 2 Submersible pumps 7.5 hp / 208v each	2019	
	Replace 1 Baseboard Heater at 2.0kW 208v	2019	
	Replace 1 Unit Heater at 2kW / 208v	2019	
	Replace 1 Diesel Backup pump at .75hp	2019	
	Replace 1 Dewatering pump .75hp / 120v	2019	
	New 1 Load Bank at 40kW / 208v	2019	
	Replace 1 Standby Diesel Generator at 40kW / 208v / 139A, Toromont D40LC	2019	
	Replace 1 Ventilation Exhaust Fan at 50w / 120v	2019	
	New 1 Heat Rejection Fan at 20w / 120v each	2019	
	Replace 1 Emergency Lights at 18w	2019	
	Replace 2 outside lights at 47w each	2019	
	Replace 1 inside light at 38w	2019	
	Whitney Station #2	Replace 1 Discharge pump 60 hp / 600v	2019
Replace 1 Unit Heater at 10kW / 600v		2019	
Replace 1 Discharge / Bypass pump at 60hp		2019	
Replace 1 Bypass pump 50hp / 600v		2019	
New 1 Load Bank at 100kW / 600v		2019	
Replace 1 Standby Diesel Generator at 125kW / 600v / 144A, Toromont D125		2019	
Replace 1 Ventilation Exhaust Fan at .25hp / 120v		2019	
New 1 Heat Rejection Fan at 1hp / 208v		2019	
Replace 1 Emergency Light at 18w		2019	
Replace 2 VFD 60hp , 600v, each		2019	
Whitney Station #3		Replace 1 Discharge pump 75 hp / 600v	2019
		Replace 1 Unit Heater at 10kW / 600v	2019
		Replace 1 Discharge / Bypass pump at 75hp / 600v	2019
	Replace 1 Bypass pump 75hp / 600v	2019	
	New 1 Load Bank at 150kW / 600v	2019	
	Replace 1 Standby Diesel Generator at 175kW / 600v / 211A, Toromont D175	2019	
	Replace 1 Ventilation Exhaust Fan at .25hp / 120v	2019	
	New 1 Heat Rejection Fan at 1.5hp / 208v	2019	
	Replace 3 Emergency Lights at 18w	2019	
	Replace 2 VFD 60hp , 600v, each	2019	
Whitney Station #5	Replace 2 Discharge pump 110 hp / 600v	2019	
	Replace 2 Unit Heater at 10kW and 2 kW / 208v	2019	
	Replace 1 Dry Well Sump pump .75hp / 120v	2019	
	New 1 Load Bank at 150kW 600v	2019	
	Replace 1 Standby Diesel Generator at 175kW / 600v / 211A, Toromont D175	2019	
	Replace 1 Ventilation Exhaust Fan at .10hp / 120v	2019	
	New 2 Heat Rejection Fan at 1/3hp and 1/10hp / 120v	2019	
	Replace 1 Emergency Light at 18w	2019	
	Replace 4 outside lights at 47w each	2019	
	Replace 4 inside light at 38w	2019	
Whitney Station #6	Replace 2 VFD 60hp , 600v, each	2019	
	Replace 2 Discharge pump 250 hp / 600v	2019	
	Replace 2 Unit Heater at 10kW, 3kW / 600v	2019	
	Replace 1 Drywell sump pump at .75hp	2019	
	Replace 1 area Transfer pump 1/10 hp / 600v	2019	
	New 1 Load Bank at 200kW 600v	2019	
	Replace 1 Standby Diesel Generator at 350A / 600v / 275KW, Toromont C9	2019	
	Replace 1 Ventilation Exhaust Fan at 1/10 hp / 120v	2019	
	New 2 Heat Rejection Fan at 1hp and 1/40hp / 208v	2019	
	Replace 2 Emergency Light at 18w	2019	
McIntyre Arena	Upgrade Building Automation System (BAS) and Install Variable Frequency Drives (VFDs) to Supply Fan	2019	
	Upgrade Building Automation System (BAS) & Install Variable Frequency Drives (VFDs) to Supply & Return Fan	2019	
Archie Dillon Sportsplex	Install Automatic Vent Damper for Boilers	2019	
Timmins Water Filtration Plant	T8 - Lamp Replacement	2019	
Engineering Building	Install Software Power Management Settings of Computer and Desktop Load	2019	
	Install Timer Plug Strip for Printers	2019	

City Hall	Variable Frequency Drives (VFD) for the Heating System Pumps	2019
	Variable Frequency Drives (VFD) for the Rooftop Unit (RTU) and Air Handling Unit (AHU) Supply Fan	2019

Facility	Opportunity	Target Completion
Timmins Water Filtration Plant	Metal Halide Fixture Replacement with LED	2020
	Install Heat Exchangers to Pre Warm Water from Flue	2020
City Hall	Install Variable Air Volume (VAV) Box to Council Chamber HVAC System	2020
	Baseboard Hot Water Heaters (BBH-W) and Ceiling Diffuser Upgrade	2020

Facility	Opportunity	Target Completion
Archie Dillon Sportsplex	Re-Commissioning HVAC System	2021
Engineering Building	Replace Temperature controls and implement Energy Saving Settings	2021
Various	Energy Audits and Building Commissioning	2021

Facility	Opportunity	Target Completion
McIntyre Arena	Re-Commissioning HVAC System	2022
Various	Energy Audits and Building Commissioning	2022

Facility	Opportunity	Target Completion
Various	Energy Audits and Building Commissioning	2023

**APPENDIX B: Previous Energy Conservation Measures
Summary**

EMS #	Facility	Opportunity	Completion
F02	McIntyre Arena	Install Automatic Vent Damper for Boilers	2014
E08	McIntyre Arena	Rink Lighting Upgrades	2014
F01	McIntyre Arena	Domestic Hot Water (DHW) Pipe Insulation	2014
E07	Archie Dillon Sportsplex	Rink Lighting Upgrades	2014
E02	City Hall	Re-Commissioning BAS System	2014
E00	Terry Fox Trail	Replace HID lighting with LED (14 in 2014)	2014

EMS #	Facility	Opportunity	Completion
F02	McIntyre Arena	Install Automatic Vent Damper for Boilers	2015
E08	Archie Dillon Sportsplex	Replace T8 Lamps with LED Lamps	2015
E02	Engineering Building	Replace Thermostat with Energy Saving Features	2015