FORTFRANCES
BOUNDLESS

TOWN OF FORT FRANCES

JULY 1, 2020 TO JULY 1, 2023

Energy Conservation and Demand Management Plan Update

Contents

Our Commitment to Energy Conservation

Message from the Mayor and CAO

The Town of Fort Frances Council and staff understand the importance of reducing energy consumption and green house gases within our community.

The Corporation will continue to reduce energy consumption and mitigate costs through the wise and efficient use of energy and resources. This will involve a collaborative effort to increase the education, awareness, and understanding of energy management within the Corporation. The Town of Fort Frances will investigate the use of new technologies to increase the efficiency of our facilities while maintaining or improving the level of service already provided.

The 2020 Energy Conservation and Demand Management Plan update has been jointly developed and approved by the Town of Fort Frances Mayor and Council and completed in accordance with Ontario Regulation 507/18 of the Electricity Act.

Sincerely,

June Caul

June Caul
Mayor
Town of Fort Frances

Doug Brown

Doug Brown
CAO
Town of Fort Frances

Introduction

In 2011 the Ontario Government passed O. Reg. 397/11 Energy Conservation and Demand Management Plans requiring annual energy consumption reporting for Municipalities, municipal Service Boards, Universities and Colleges, Schools and Hospitals. This regulation outlined what facilities are to be reported on and the data that is to be reported. The first reporting year for energy consumption and greenhouse gas emission data was 2013 with data from 2011. The Town of Fort Frances has been submitting energy reports in accordance with the regulation since the initial submission deadline of July 1st, 2013. Further, in accordance with the regulation The Town of Fort Frances implemented a 5 year Energy Conservation and Demand Management Plan in 2014 that expired on July 1st,2019. In 2018 O.Reg 397/11 was revoked due to the repeal of The Green Energy Act, 2009. The Electricity Act, 1998 was amended by adding Part II.3 Conservation and Energy Efficiency and a new regulation, O.Reg. 507/18: Broader Public Sector: Energy Reporting and Conservation of Demand Management Plans was created in order to supersede O.Reg. 397/11.

The purpose of this document is to

- Report on the results of the 2014 ECDM Plan
- Update the Energy Conservation and Demand Management Plan for 2020-2023
- Provide new goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy
- Outline proposed measures to achieve these objectives
- Provide cost and saving estimates for proposed measures including proposed timeline

Energy Consumption Overview

The Town of Fort Frances retained all energy related accounts since the 2014 ECDM plan was implemented. The following tables are broken into three amount centers: facilities, sewer and water, and street lights.

Table 1: Township Facilities and Infrastructure Within the Scope of the Plan

Facilities			
Name	Address	Use	Floor Area (sqft)
Museum	259 Scott St.	Museum	9,359.00
Memorial Sports Centre		Recreational Centre	95,554.00
Library	601 Reid Ave.	Library	15,000.00
Hallett			
Sorting Gap		Boat Launch/Park	1,024.00
Public Works	900 wright Ave	Office/Shop	12,017.00
Fort Frances Cemetery	401 Kings Highway	Cemetery	4,225.00
Riverview Cemetery*	1319 Colonization Road W.	Cemetery	2,500.00
Civic Centre*	320 Portage Ave.	Offices	35,000.00
Dog Pound*		Dog Park	200.00
Sister Kennedy Centre	401 Nelson St.	Community Centre	5,896.00
East End Hall	1227 5th St. E.	Community Centre	6,184.00
Point Park Garage		Shop	
Vanjura			
Lions Park			
Daycare		Daycare	6,184.00
St. Frances Sports Fields		Recreational	
McIrvine Road Rink		Recreational	500.00
North End Rink		Recreational	100.00
Recycle Depot (2016 Baseline)		Operations	
Tourist Info Building (2015 Baseline)		Community Centre	
Airport		Airport	8,984.00
Rainy Lake Square (2018 Baseline)		Community Centre	
Sunny Cove Camp Office	#960 Highway 11	Community Centre	
Russell Hall			
McGregor Hall*			
Portage Avenue Storm Lift Station		Operations	

Water and Sewage			
Name	Address	Use	Floor Area (sqft)
Water Treatment Plant	901 Colonization Road E.	Water Treatment	
Sewage Treatment Plant	2 Mcirvine Road	Sewage Treatment	5526
Central Ave Lift Station		Sewage Treatment	
5th Street Lift Station		Sewage Treatment	
Minnie Avenue Lift Station		Sewage Treatment	
White Pine Lift Station		Sewage Treatment	
Boundary Road Lift Station		Sewage Treatment	
Patcin Avenue Lift Station		Sewage Treatment	
Water Tower		Water Treatment	1000

Water and Sewage			
Name	Address	Use	Floor Area (sqft)
Street Lights		Other	

Table 2: Energy Consumption Overview

Account	Floor Area (sqft)	2011 Baseline ekWh	2016 ekWh	2017 ekWh	2018 ekWh	2019 ekWh	2019GHG Emissions (kg)
Facilities	Column1	Column2	Column4	Column5	Column6	Column62	Column7
Museum	9,359.00	191,778.63	147,508.44	208,758.60	257,677.06	74,177.04	118,453.60
Memorial Sports Centre	95,554.00	4,573,885.84	4,224,146.10	4,231,092.88	3,669,379.80	4,564,139.05	4,141,582.55
Library	15,000.00	61,216.74	321,042.37	304,561.51	291,395.31	132,715.31	119,033.41
Hallett		1,658.65	661.19	365.19	351.10	130.86	2.26
Sorting Gap	1,024.00	46,148.56	35,707.73	38,546.75	47,156.68	42,439.94	733.79
Public Works	12,017.00	439,306.60	265,921.20	296,799.12	340,076.92	326,417.34	435,488.48
Fort Frances Cemetery	4,225.00	83,238.89	52,363.08	70,014.98	89,114.80	111,643.26	1,930.31
Riverview Cemetery	2,500.00	49,686.65	29,219.83	30,258.61	34,019.25	32,141.70	555.73
Civic Centre	35,000.00	1,270,258.49	891,981.52	897,636.23	1,010,784.87	1,031,508.10	1,013,440.15
Dog Pound	200.00	18,384.91	8,099.45	8,838.69	9,348.64	10,518.61	181.87
Sister Kennedy Centre	5,896.00	174,519.31	150,091.08	156,598.03	164,428.37	156,243.97	111,552.55
East End Hall	6,184.00	70,291.27	49,238.17	48,762.19	47,312.96	51,722.38	84,370.64
Point Park Garage		83.33	164.91	306.90	545.92	92.88	1.61
Vanjura		1,165.48	79.99	-	-	-	-
Lions Park		16,569.35	17,608.92	17,960.89	19,009.49	14,833.19	256.47
Daycare	6,184.00	161,392.91	253,006.16	234,513.60	213,661.57	194,740.92	195,890.23
St. Frances Sports Fields		1,285.15	988.92	3,785.87	2,459.84	3,361.91	58.13
McIrvine Road Rink	500.00	49,460.96	42,081.36	39,142.09	47,006.40	47,882.97	87,692.62
North End Rink	100.00	15,840.60	9,196.43	2,322.52	-	-	-
Recycle Depot (2016 Baseline)		-	13,860.25	16,735.10	17,245.02	17,780.32	307.42
Tourist Info Building (2015 Baseline)		-	31,473.53	32,779.28	32,779.28	34,514.75	596.76
Airport	8,984.00	137,086.60	117,119.25	183,677.63	197,327.17	173,759.40	3,004.30
Rainy Lake Square (2018 Baseline)		-	-	1,199.98	4,399.82	4,079.81	70.54
Sunny Cove Camp Office		11,477.88	3,923.32	1,214.91	1,235.86	2,256.36	39.01
Russell Hall		7,413.00	10,037.23	8,456.06	7,340.75	768,832.00	13,293.11
McGregor Hall		2,620.00	2,131.71	2,298.43	2,267.87	2,068.08	35.76
Portage Avenue Storm Lift Station		8,081.03	3,142.53	4,346.30	6,062.07	8,539.78	147.65
Water and Sewage							
Water Treatment Plant		1,643,954.56	1,392,451.89	1,672,856.72	1,650,459.11	1,457,725.69	1,429,257.07
Sewage Treatment Plant	5,526.00	1,970,286.36	1,973,587.80	2,009,661.97	1,835,716.03	1,714,044.93	976,162.75
Central Ave Lift Station		147,238.84	149,926.39	141,333.37	130,254.44	140,720.68	2,433.06
5th Street Lift Station		44,623.63	41,636.49	42,929.82	28,741.92	44,620.46	771.49
Minnie Avenue Lift Station		1,698.56	1,485.80	1,590.48	1,465.61	1,756.00	30.36
White Pine Lift Station		29,526.54	33,525.90	33,300.07	33,821.15	36,802.98	636.32
Boundary Road Lift Station		5,679.41	7,125.24	7,082.93	6,983.40	7,391.49	127.80
Patcin Avenue Lift Station		2,406.48	2,399.88	2,399.07	1,370.58	1,987.70	34.37
Water Tower	1,000.00	265,348.87	71,542.09	307,657.22	421,009.70	365,215.66	602,572.61
Water and Sewage							
Street Lights		1,231,535.63	414,303.24	452,483.96	452,483.96	452,483.96	7,823.45
Total		**12,735,149.70**	**10,768,779.39**	**11,512,267.95**	**11,074,692.72**	**12,029,289.47**	**9,348,568.22**

2014 Energy Conservation and demand Management Plan

2014 Goals and Objectives

The 2014 short-medium term objectives were as follows.

1. Undertake energy audits on all Town owned Buildings by the end of 2012.
2. Implement energy saving retrofits discovered in the energy audits over the next five (5) years.
3. Implement a preventative maintenance program to track maintenance work on Town facilities and fleet to ensure proper preventative and ongoing maintenance occurs.
4. Engage staff at all levels to conserve energy and provide training by way of seminars, newsletters, and/or other means as available.

In 2012, Honeywell completed an energy audit identifying the following measures to be addressed.

Table 3: Planned Actions 2014-2019

Measure List	Airport	Civic Centre	Daycare	East End Hall	Memorial Sports Centre	Museum	Public Works Garage	RV Cemetery	Sister Kennedy Centre	Sorting Gap Marina	WWTP	WTP	City Wide	Criteria
Lighting Systems Upgrade & Controls	x	x	x	x	x	x	x	x	x	x	x	x		A,C
Install Fine Bubble Aeration System (No Blower Replacement)											x			A,E
Control System Upgrades & Scheduling		x			x	x								A,C
Heating Plant Upgrades		x										x		B,E
Ice Refrigeration Plant Upgrades					x									A
Install New High Lift Pumps and VFDs												x		E
Pool Dry-O-Tron Upgrade					x									B
HVAC Upgrade			x											B
Car Plug Controls		x					x							A
Building Envelope	x	x	x	x	x	x	x	x	x	x	x	x		A,C
Im prove Building Insulation				x										A,C
Street-Lighting Upgrade													x	A,C

A - Financial, B-Required Renew al, C-Working Environment, D-Environmental Stew ardship, E-Strategic / Funded

2014 Results

Over the previous 5 years, the Town successfully completed all recommendations as outlined in the table below.

Table 4: Results from 2014-2019

Actions	Completion Date	Results
All Sites		
Lighting Systems Upgrade & Controls	Feb-13	T12 to T8 with electronic ballasts installed. Occupancy sensors installed where beneficial.
Building Envelope	Oct-12	Doors and Window seals inspected and upgraded as required. Spray foam used to seal gaps in building structure.
Civic Centre		
Control System Upgrades & Scheduling	Dec-13	New programable thermostats installed.
Car Plug Controls	May-13	Intelligent parking lot controllers installed on parking lot outlets.
Heating Plant Upgrades	Jan-13	New boilers installed which operate more efficiently.
Daycare		
HVAC Upgrade	Sep-13	New Furnace and duct work modifications
East End Hall		
Improve Building Insulation	Oct-12	Insulation added to increase thermal efficiency.
Memorial Sports Centre		
Control System Upgrades & Scheduling	Mar-14	New programable thermostats installed.
Ice Refrigeration Plant Upgrades	Mar-14	New controls installed and brine headers insulated.
Pool Dry-O-Tron Upgrade	Jun-13	New Dry-O-Tron installed and related duct work upgraded improving operating efficiency.
Museum		
Control System Upgrades & Scheduling	Mar-14	Intelligent parking lot controllers installed on parking lot outlets.
Public Works Garage		
Car Plug Controls	Feb-13	Intelligent parking lot controllers installed on parking lot outlets.
Waste Water Treatment Plant		
Install Fine Bubble Aeration System	Aug-19	Process used for treating wastewater which decreases energy consumption.
Water Treatment Plant		
Heating Plant Upgrades	Jan-13	New boiler installed improving operating efficiency.
Install VFD Drive and HE Motors (HLPs)	Dec-13	New motors and controlled installed on 2 high lift pumps.
Town Wide		
Streetlighting Upgrade (LED)	Dec-13	All streetlamps converted to LED

The results from the Town's efforts can be shown in the following figures.

Figure 1 shows the comparison in energy consumption of all major facilities between 2011 and 2019. The Library shows a slight increase in energy used. This can be attributed to an increase in demand at the facilities which is a positive for the Town. The Civic Center and Museum showed a slight reduction in consumed energy. This can be attributed to small upgrades at each facility and better operational practices. The installation of a Fine Bubble Aeration system at the Sewage Treatment Plant in 2019 is already showing significant signs of reduction in electricity consumed. Big changes occurred at the Memorial
Sports Centre between 2017-2019. Poor ventilation and harsh climate caused damage to the roof structure over top of the swimming pool which meant immediate repairs were required. It was decided this was a good opportunity to install much needed insulation. This was completed in 2018 and a decrease in energy consumption was noticed immediately. Unfortunately, above average gas consumption at the Memorial Sports Centre in 2019 caused a spike in GHG emissions erasing the reduction we saw in 2018. This is being treated as an anomaly and we expect to see the reduction of GHG emissions to trend back towards the 2018 results. Figure 2 shows the comparison between 2011 & 2018 GHG emissions.

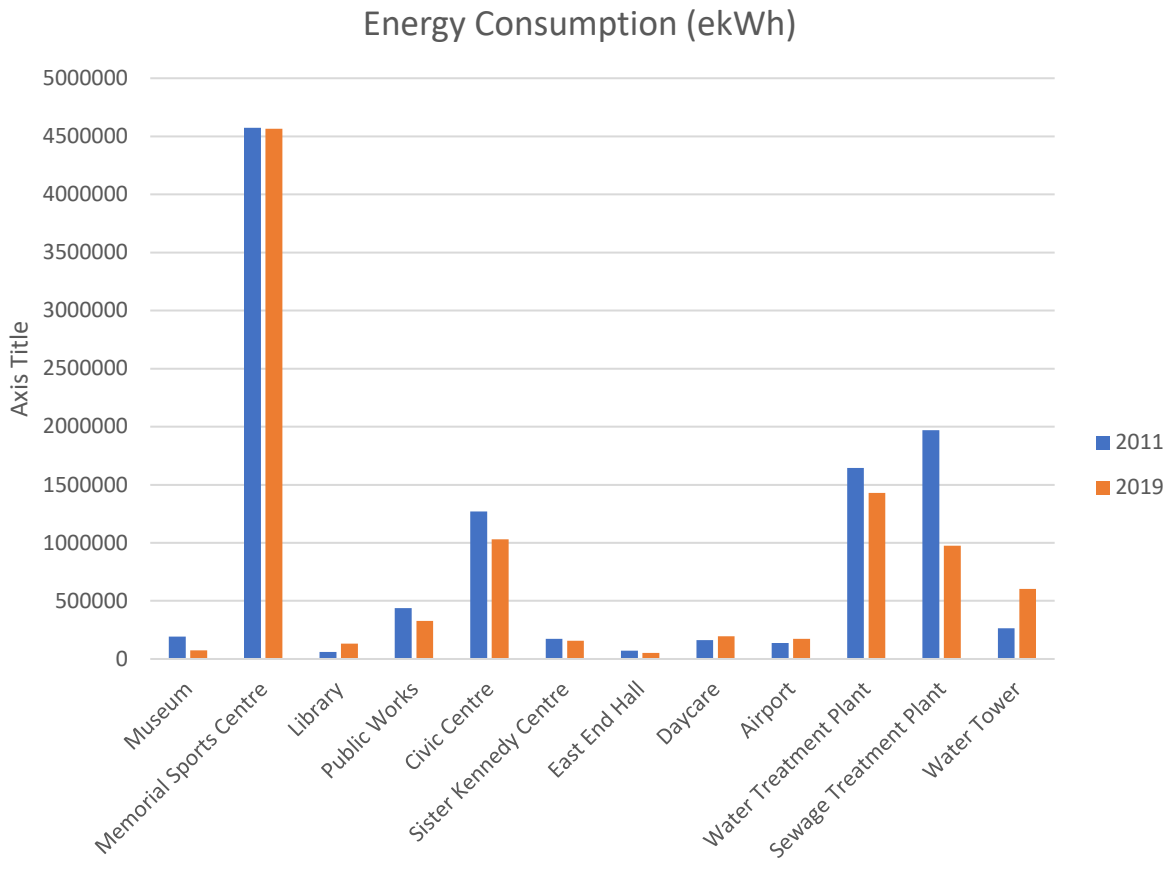


Figure 1: Change in Energy Consumption

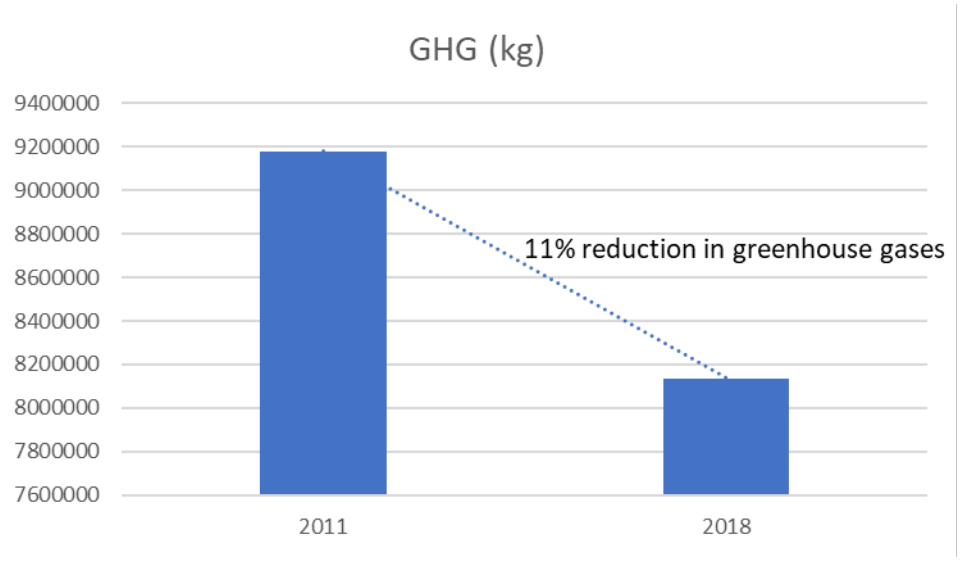


Figure 2: Green House Gas Emissions

Figure 3 shows the breakdown of large energy using accounts. It is evident that converting the streetlights in the Town to LED had a significant impact on energy usage. This can be seen in further detail in Figure 4 and Figure 5. In 2011, the Town's 4 largest energy consumers accounted for 88% of the Town's total energy. By 2019, the usage associated with these accounts had decreased to 82%.

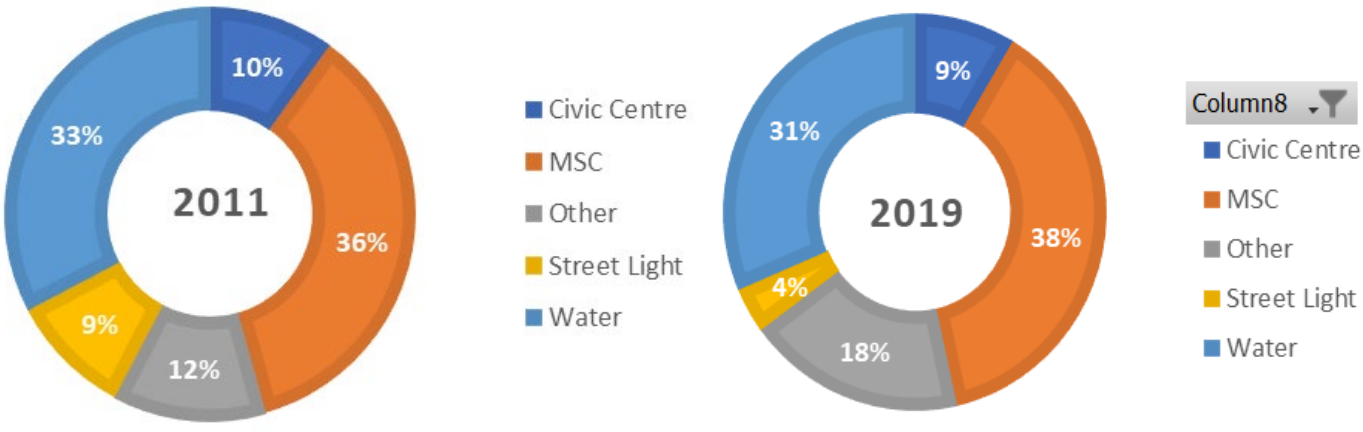


Figure 3: Large Energy-Using Accounts

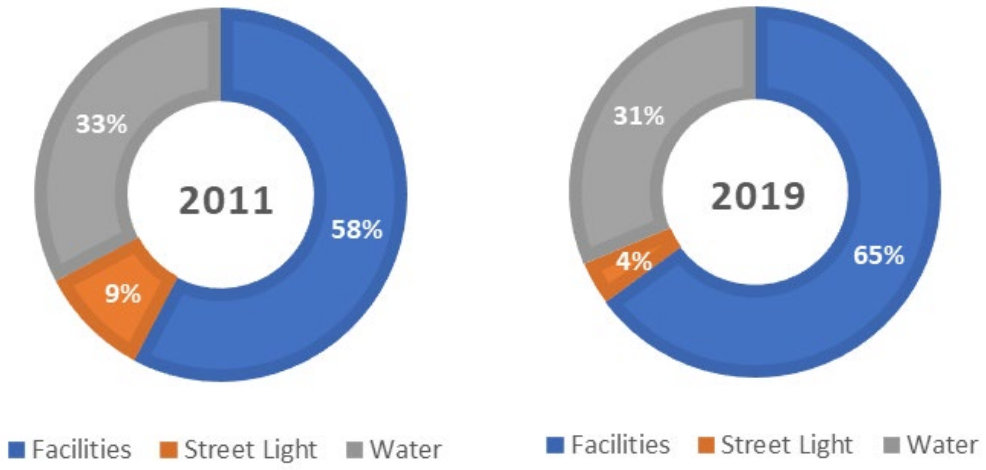
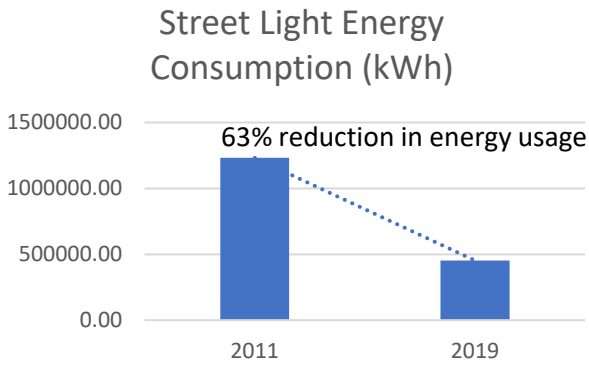


Figure 4: Energy Use by Account Centre

The streetlight retrofit was one of the most significant sources of energy reduction. Figure 4 shows a 63% reduction in energy. This was accomplished by converting all streetlights in Fort Frances to LED lights.



Other Initiatives between 2014-2019

Though not planned, the Town of Fort Frances implemented several other energy conservation measures. The Town focused on replacing and purchasing equipment that was more energy efficient. Operational practices were also improved over the 5 year span. The biggest operational improvement is the implementation of a new Facilities Superintendent. This position should drastically improve the day-to-day operations of all the Town owned facilities. One of the main objectives will be better managing our facility systems which will have an impact on overall energy consumption. This will partly be achieved by implementing better preventative maintenance practices.

2014 Areas of Improvement

An area of improvement that would be beneficial to the Town's goals and objectives would be to increase the awareness of this report. Moving forward, one of the new objectives will be to ensure that the information of this plan is more widespread, and staff and council have a better understanding of what is expected of them. The 2014 plan was largely successful because it targeted easily obtainable goals and it benefited from having an energy audit conducted in 2011 which provided recommendations for reducing energy consumptions. As we continue to advance our energy conservation efforts year over year it will only become more difficult to find areas of savings. Conducting energy audits in conjunction with the update of this plan would greatly assist in targeting new areas of improvement. This is addressed in the new goals and objectives set in 2020.

New Energy Consumption Goals and Objectives

The Town of Fort Frances strives to ensure energy conservation is a calculated factor in the daily decision making processes within the Town. The Town has set updated objectives to ensure that the plan remains as relevant as possible.

Target

The Town of Fort Frances will strive to continuously reduce its energy consumption and greenhouse gas emissions while realizing operational and maintenance expense reductions and replacing aging systems.

Goals – Long Term

To continuously improve the energy efficiency within the Town of Fort Frances facilities and operations, with an overreaching goal to improve user comfort and reduce operational costs.

Objectives – Short to Medium Term

1. Undertake Energy Audits on all Town owned buildings by end of 2022
2. Implement energy saving retrofits discovered in the energy audits over the next five years
3. Fully integrate the preventative maintenance program with all facility assets to ensure proper preventative and ongoing maintenance occurs
4. Increase awareness about the ECDM plan and the role the Town has
5. Implement best practices in all buildings and sites, wherever possible
6. Incorporate energy efficient equipment whenever possible

Planned Actions 2020-2023

Actions	Estimated Completion Date	Anticipated Results
All Sites		
Energy Audit	2022	Identify energy consumption and energy costs of the facility and develop measures to eliminate waste, maximize efficiency and optimize supply energy. The energy audit affects three key factors: • profitability through optimization of energy expenditure • productivity through optimization of equipment and processes • performance, thanks to the rationalization of energy use.

Programable Thermostats	2021	By implementing programable thermostats you can expect to take advantage of additional energy savings that may be reflected in a lower utility bill. Beyond the money savings, programmable thermostats can help you maintain an ideal atmosphere throughout your interior spaces.
Implementation of best practices	Immediately	The Town will focus on implementing best practices including turning off equipment when not in use/needed, purchasing energy efficient products whenever possible and planning to use equipment at the most beneficial times
Airport		
Propane Furnace	2021	Currently fuel with heating oil which is less efficient and more costly then propane.
Civic Centre		
Upgrade Windows and Doors	Ongoing	New windows and doors will decrease the thermal loss of the building ultimately increasing the buildings efficiency.
East End Hall		
Upgrade building insulation	Ongoing	Increased insulation will reduce the heating load on the facility resulting in reduced energy consumption.
Replace aging HVAC system	Ongoing	By upgrading to a new more efficient HVAC system, less energy will be used to control the buildings atmosphere resulting in cost savings. The existing equipment has reached the end of its useful life.
Memorial Sports Centre		
ICIP Funding Project	2020-2025	The Town is waiting to see if they are successful recipients of the ICIP funding opportunity. If so, several major upgrades will be completed at the Memorial Sports Center with dramatically improve the energy efficiency of this facility. Upgrades include and are not limited to; • Insulating the roof of the 52 Canadians Ice Surface • Upgrading much of the aging HVAC system • Upgrades to 52 Canadians refrigeration system
Museum		
Upgrade building insulation	Ongoing	Increased insulation will reduce the heating load on the facility resulting in reduced energy consumption.
Replace aging HVAC system	Ongoing	By upgrading to a new more efficient HVAC system, less energy will be used to control the buildings atmosphere resulting in cost savings. The existing equipment has reached the end of its

		useful life. Design works for replacement have been completed.
Public Works Garage		
Upgrade building insulation	Ongoing	Increased insulation will reduce the heating load on the facility resulting in reduced energy consumption.
Upgrade Windows	Ongoing	New windows will decrease the thermal loss of the building ultimately increasing the buildings efficiency.
Riverview Cemetery		
LED Lighting	Ongoing	LED lighting offers increased energy efficiency, increased life expectancy and low radiated heat which all combine to offer much less energy consumption and overall increased cost effectiveness.
FF Cemetery		
Upgrade building insulation	Ongoing	Increased insulation will reduce the heating load on the facility resulting in reduced energy consumption.
Sister Kennedy Centre		
LED Lighting	Ongoing	Complete conversion to LED lights
Replace aging HVAC system	Ongoing	By upgrading to a new more efficient HVAC system, less energy will be used to control the buildings atmosphere resulting in cost savings. The existing equipment has reached the end of its useful life.
Library		
Recommission the building	2023	Ensure building equipment and systems are operating optimally.
Building automation revamp	2024	Ensure controls properly align with operational demand and make necessary changes aimed at increasing efficiencies.
McIrvine Rink		
Upgrades to building envelope	2024	Update man door to ensure proper seal between inside and outside will increase energy efficiency increase building insulation and upgrade furnace will result in a reduction in energy consumption.

Renewable Energy Sources within Fort Frances

The Town has 4-10kW solar installations that have been generating power since 2011 as part of the Ontario Power Authority MicroFIT program. The Town will continue to benefit from this 20 year contract through to 2032 where it produces a return of $0.80 per Kwh generated. The 4 solar units were installed in 2012 for $369,950.52. After 7 years of operation the program has generated $294,653.37 averaging an annual return of $42,093.34. Using this average, the breakeven point of this investment will be the end of Q3 2020. Once surpassed all monies generated from these units will be revenue for the Town. Please note that operational costs are not accounted for in this analysis as maintenance and insurance costs are covered under each facilities operating budget. A rough calculation estimates that the Town will generate $471,916.85 in profit from this investment over the remaining term of this contract.

Currently the Town of Fort Frances does not have any plans to add additional renewable energy sources but remains open to future possibilities.

Conclusion

The Town of Fort Frances has made large strides in advancing their energy efficiency and did an exceptional job at completing all objectives from the 2014 plan. The next revision of this plan is to be completed in 2023. Annual progress updates are to be conducted to ensure that the goals and objectives are being achieved. Overall, the addition of a Facilities Superintendent in 2019 should have a dramatic impact on reducing energy consumption throughout our facilities and major improvements to the Towns preventative maintenance program will be made.