2024 Energy Conservation and Demand Management Plan

O.Reg. 507/18

Town of Arnprior

June 2024

ARNPRIOR
WHERE THE RIVERS MEET

2024 Energy Conservation and Demand Management Plan

The Corporation of the Town of Arnprior

I hereby certify and endorse the Town of Arnprior's Energy Conservation and Demand Management Plan as required under O.Reg. 507/18 *"Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans"*, filed under the Electricity Act, 1998

Signed this 24th day of June 2024.

Mayor, Lisa McGee

Town Clerk, Kaila Zamojski

Executive Summary

The Town of Arnprior has developed an Energy Conservation and Demand Management Plan aligning with the requirements outlined in Ontario Regulation 507/18 "*Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans*", filed under the Electricity Act, 1998. Under this regulation, municipalities are required to annually report energy consumption from all municipally owned facilities, including, but not limited to, administrative offices, council chambers, public libraries, cultural facilities, sports facilities, buildings or facilities related to the treatment of water, etc. Municipalities are also required to update their Energy Conservation and Demand Management Plans every five years, on or before July 1st.

Arnprior's plan outlines targets of reducing energy consumption, GHG emissions and overall energy related costs from the 2023 baseline. The plan discusses various goals and objectives that should be considered throughout the next five years in order to meet these targets.

Over the course of the 2024-2029 term, the municipality has outlined four strategic goals that will be the focal points of its efforts.

List of Acronyms

AMP – Asset Management Plan

BAS – Building Automation System

BPS – Broader Public Sector

CFL – Compact Fluorescent Light

EPT – Energy Planning Tool

GHG – Greenhouse Gas

HVAC – Heating, Ventilation, and Air Conditioning

LAS – Local Authority Service

LED – Light Emitting Diode

LRCF – Long Range Capital Forecast

MEP - Mechanical, electrical, and plumbing

VFD – Variable Frequency Drive

WFP – Water Filtration Plant

WPCC – Water Pollution Control Center

List of Units

btu – British Thermal Units

ekWh – Equivalent Kilowatt Hours

kWh – Kilowatt hours

m^2 – Cubic Meters

sqft – Square feet

Definitions

Building Envelope – Thermal and moisture protections of a structure including components such as roofing, exterior cladding, interior insulation, air/moisture barriers, doors and windows.

Public Agency – Per O.Reg. 507/18, public agencies are described as every municipality, municipal service board, post-secondary educational institution, public hospital and school board.

Reportable Buildings – O.Reg. 507/18 outlines all operation types that public agencies are required to report on, including the following:

- All administrative offices, municipal council chambers, cultural facilities, indoor recreational facilities and community centers, including art galleries, performing arts facilities, auditoriums, indoor sports arenas, indoor ice rinks, indoor swimming pools, gyms and indoor courts for playing tennis, basketball or other sports.
- Fire stations and associated offices and facilities.
- Police stations and associated offices and facilities.
- Storage facilities where equipment or vehicles are maintained, repaired or stored.
- Buildings or facilities related to the treatment of water or sewage.

O.Reg. 507/18 – Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans.

Greenhouse Gas (GHG) Emissions – compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. Greenhouse gases are responsible for the greenhouse effect.

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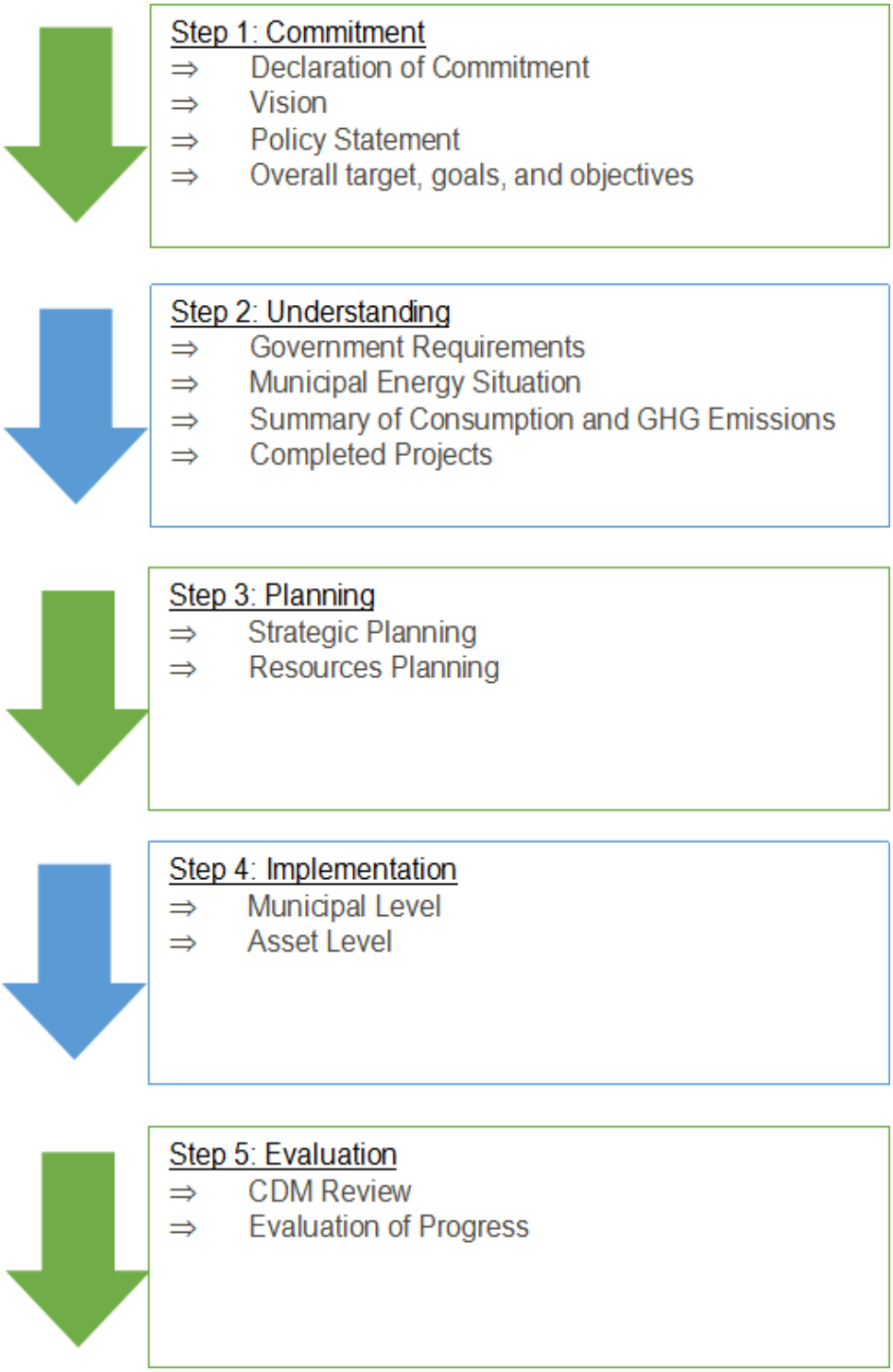
Energy Conservation and Demand Management Plan Flow Diagram



Introduction

The Corporation of the Town of Arnprior (the "Town") has developed an Energy Conservation and Demand Management Plan (the "Plan", CDM) aligning with the requirements outlined in O.Reg. 507/18 "*Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans*", filed under the Electricity Act, 1998 [1]. The objective of this Plan is to summarize the Town's current energy consumption compared to the previous CDM Plan, to analyze all energy management accomplishments over the last five years and develop a new plan for 2024 – 2029.

Commitment

Declaration of Commitment

Resolution: That Council shall direct Staff to allocate the necessary resources to implement a strategic energy management plan aimed at reducing Arnprior's energy consumption and overall environmental impact.

Vision

The Town of Arnprior's vision is to reduce overall energy consumption, emissions and to mitigate energy associated costs.

Policy Statement

In January of 2019, the Province of Ontario enacted O.Reg. 507/18: "*Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans*", filed under the Electricity Act, 1998. The regulation states that all public agencies (Municipalities, Hospitals, and School Boards) must prepare a CDM. Further, Section 4 (2) the O.Reg. 507/18 specifies that CDM Plans must be composed of the following two components:

"1. A summary of the public agency's annual energy consumption and greenhouse gas emissions for its operations.
2. *A description of previous, current and proposed measures for conserving and otherwise reducing the amount of energy consumed by the public agency's operations and for managing the public agency's demand for energy, including a forecast of the expected results of current and proposed measures."*

Overall Target and Goals

The Town of Arnprior has developed a CDM focused on reducing energy consumption. The overall target is to reduce consumption and GHG emissions to below 2023 baseline levels, at all Town owned properties. In order to achieve this target, the following goals have been set fourth:

1. Improve energy efficiencies at all facilities via active or passive means.

2. Reduce GHG emissions at all facilities.
3. Meet the requirements of Ontario Regulation 507/18 under the Electricity Act, 1998.
4. Improve Energy Management processes at the Town of Arnprior.

Objectives

In order to meet the above goals, the following objectives have been set forth. The ability to meet each specific objective will be largely dependent on available staffing, budget, grant opportunities, etc.

1. Explore the feasibility of implementing renewable energy technologies, including fleet electrification,
2. Continual improvement to behavioural change efforts,
3. Upgrade infrastructure including, but not limited to HVAC, lighting, building envelope, etc.,
4. Streamline the energy management process into everyday work,
5. Develop an energy policy,
6. Perform in depth benchmarking of energy consumption patterns,
7. Align the Energy Conservation and Demand Management Plan with existing plans, and
8. Continue to investigate energy saving opportunities within all facilities.

Understanding

Government Requirements

The Town's 2024 - 2029 CDM was created under Reg. 507/18 "*Broader Public Sector: Reporting and Conservation and Demand Management Plans",* filed under the Electricity Act, 1998.This regulation replaces Ontario Regulation 397/11, titled Energy Conservation and Demand Management Plans, was enacted under the now repealed Green Energy Act, 2009 (repealed January 1, 2019). The requirements for broader public sector energy planning and reporting by Ontario agencies are identical to those under the former Regulation 397/11.

Under O.Reg. 507/18, municipalities are required to report energy consumption for all public facilities. The Town reports on the following buildings:

- Arnprior Public Library
- Arnprior Water Pollution Control Center
- Arnprior Water Filtration Plant
- Fire Hall/OPP Station
- Arnprior & District Museum
- Sanitary Pump Stations 1-5
- Robert Simpson Park Concession/ Washroom
- Nick Smith Centre
- Town Hall
- Water Tower

Under Section 5 of O.Reg. 507/18, municipalities must report the following criteria for each of its reportable buildings. Appendix A – Building Information, outlines the address, operation type, floor area, hours of operation and type of energy used for each reportable building.

Stakeholder Needs

The Town recognizes internal stakeholders as Council, various Committees, the CAO and Staff. Internal Stakeholder needs are as follows:

- An up-to-date and relevant CDM plan with vision, goals and targets in order to communicate the Town's commitment to energy efficiency.
- Annual reporting requirements of yearly energy consumption and regular updates to the CDM plan.
- Support to develop the skills and knowledge required to implement energy management practices and measures.

The Town recognizes external stakeholders as residents, various community organizations, and the Provincial and Federal Governments. External stakeholder needs are as follows:

- Minimizing energy costs through reductions in both electricity and natural gas consumption
- Minimizing the municipality's carbon footprint and overall impact on the environment.

Municipal Energy Situation

Energy Data Management

The Town of Arnprior tracks energy costs through the Finance department. The Energy Leaders (the Environmental Engineering Officer and the Engineering Officer, Facilities & Assets) are responsible for tracking all energy data and reporting annually prior to July 1.

The Town has incorporated Local Authority Service's (LAS) Energy Planning Tool (EPT), Hydro One's 'My Account' login, and Enbridge's "My Account" login to track energy usage and costs.

Energy Supply Management

The Town of Arnprior has been proactive in ensuring that it receives the best possible rates for electricity and natural gas. The Town is currently enrolled in a group purchasing program through LAS's Electricity Procurement Program.

The LAS Program was created by municipalities, for municipalities and provides the Town a means to ensure predictable electricity costs through a professionally managed program that leverages aggregated purchasing (i.e., group purchasing power) and "spot market" exposure. The primary goals of the program are to help municipalities realize predictable prices for electricity and to provide municipalities with cost savings through purchase of this required commodity.

In 2022, the market was very unstable due to many factors which led to hedge pricing that was extremely elevated and unpredictable. The early estimate for 2024 is positive so far as energy markets have stabilized significantly since 2022. The projection for 2024 falls in line with the program average at an expected 2-3% savings in comparison to typical market rates.

Energy Management Today

The management of the Town's energy data has typically been the responsibility of the Finance department in relation to paying invoices. By increasing the flow of information (such as consumption data) and the ability to access consumption amounts tracked through the LAS Energy Planning Tool, the Operations department staff (who control the processes that utilize energy) will be able to monitor consumption more practically.

Summary of 2018 – 2024 Energy Consumption, and GHG Emissions

As per Section 6 of O.Reg. 507/18 the Town of Arnprior is required to report on all energy consumption for which complete information is available for a full year. It should be noted that per Section 5 of the Regulation, for the 2024 reporting year, the Town is required by the Ministry of Energy to report the energy consumption for 2022 and 2023.

Electricity Consumption

Combined electricity consumption at all Town facilities in 2018 was 4,062,215.00 kWh. Electricity consumption in 2023 was 3,681,711.00 kWh. This is a decrease of 380,504.00 kWh, approximately 9.37%.

The below figure displays 2018 versus 2023 electricity usage profiles, with the largest users being the Water Filtration Plant (WFP), Water Pollution Control Centre (WPCC) and the Nick Smith Centre. The water treatment section includes the WFP, WPCC, pump stations 1-5 and the water tower. Other recreation facilities include the library, museum, as well as Robert Simpson Park concession and washrooms.

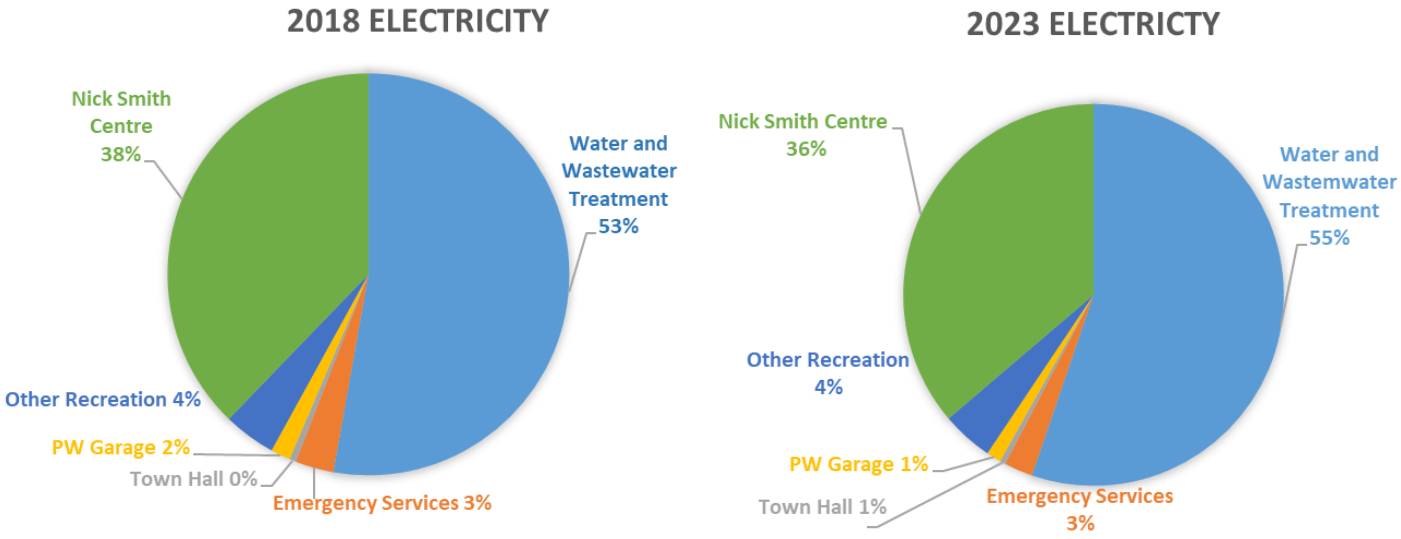


Figure 1: 2018 vs. 2023 Electricity Consumption

Natural Gas

Combined natural gas consumption at all Town facilities in 2018 was 490,954 m3. Natural gas consumption in 2023 was 402,366 m3. This is a decrease of 88,588 m3, approximately 18%.

The below figure displays 2018 versus 2023 natural gas usage profiles, with the largest users being the WFP and WPCC and the Nick Smith Centre.

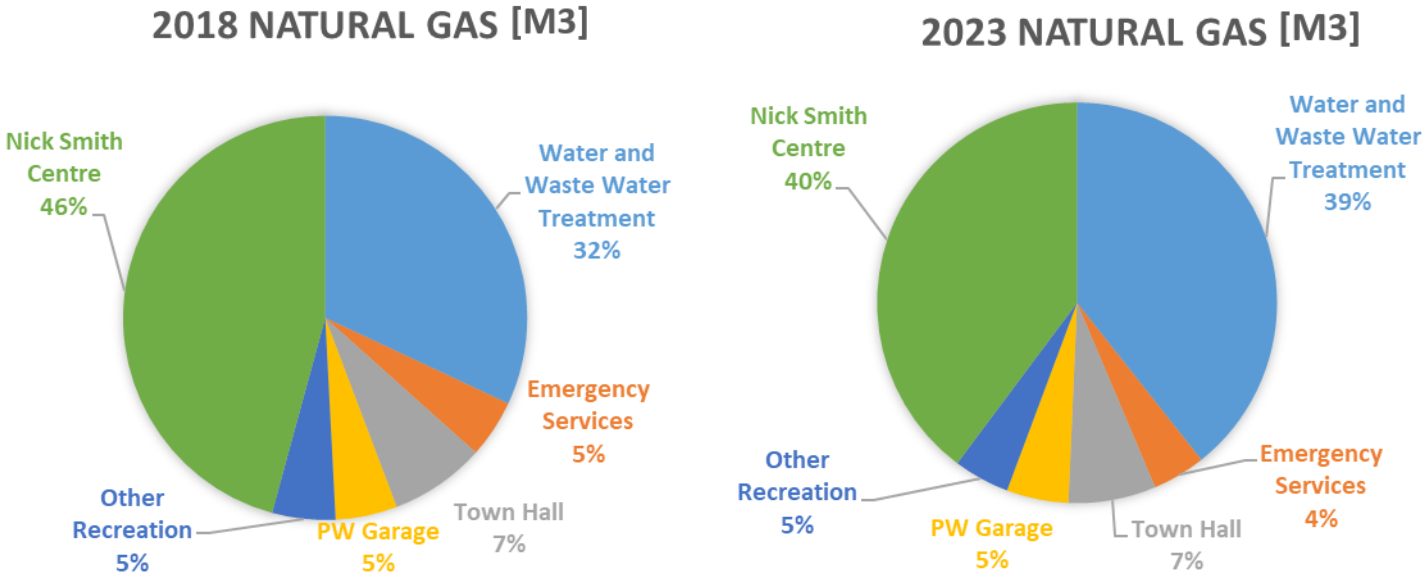


Figure 2: 2018 vs. 2023 Natural Gas Consumption

Green House Gas Emissions

Combined GHG emissions from all Town facilities in 2018 was 1,048,241.25 kg. GHG emissions in 2023 was 877,027.04 kg. This is a decrease of 171,220.21 kg, approximately 16%.

The following two plots display GHG emission trends comparing facilities between 2018 and 2023. The blue bar shows 2018 data, the orange bar shows 2023 data, and the grey line shows a 6-year average of 2018 to 2023.

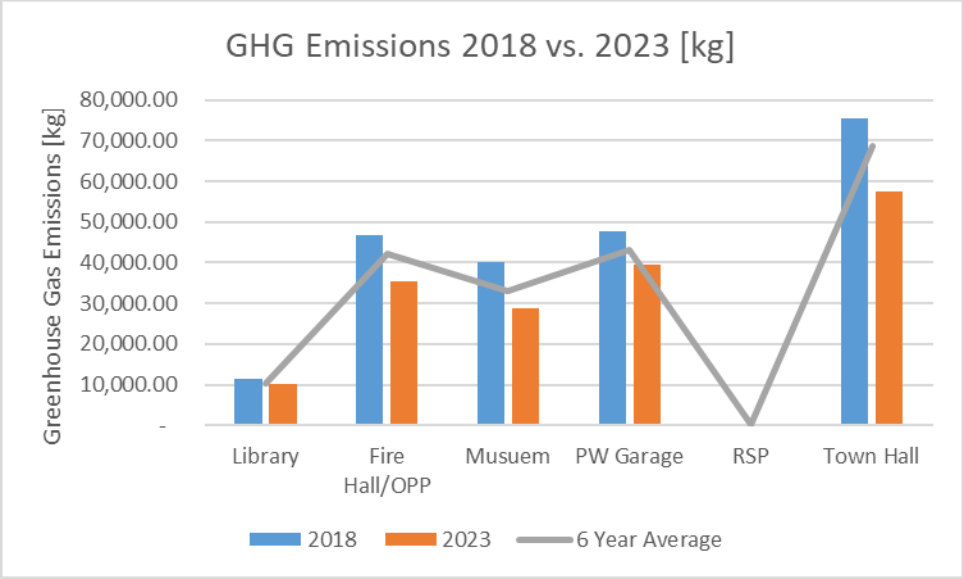


Figure 3: 2018 vs. 2023 GHG Emissions, including a tread line representing a 6-year average.

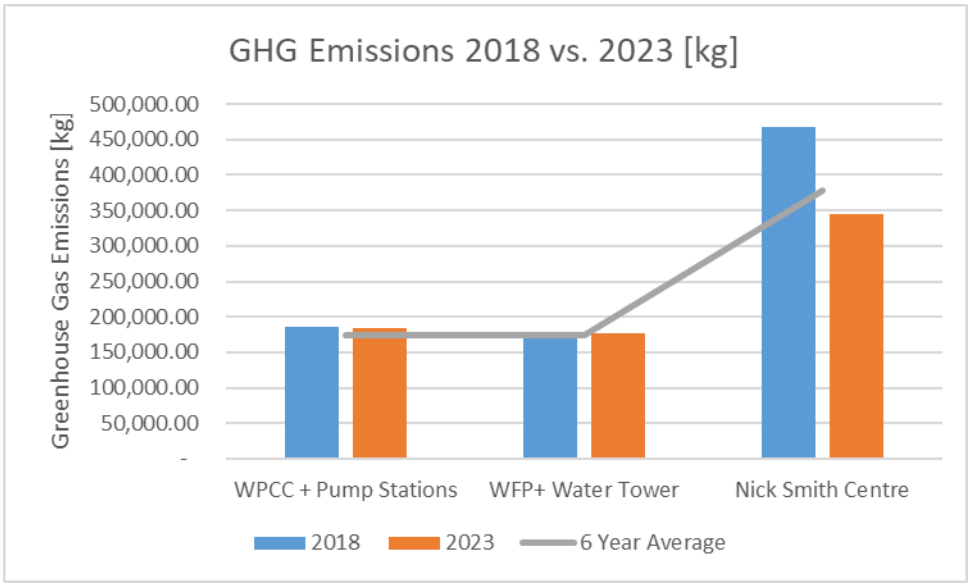


Figure 4: 2018 vs. 2023 GHG Emissions, including a tread line representing a 6-year average.

Summary of Completed Projects

The following section includes a summary of all energy reduction related projects completed since implementation of the 2018-2024 CDM. The below table summarizes the location, a brief description of the project, the year of implementation, the motivation for the change and the expected effect on energy consumption.

Table 1: Summary of completed projects

Building	Project	Year	Motivation	Expected Effect on Energy Usage
Fire Hall/ OPP	Lighting Upgrades – 2 Pack lights - Canopy lights converted from LED Bulb to low energy fixture	2021 2023	AMP, LRCF	Reduction in electricity usage is expected
	Garage Heater Replacement	2021	AMP, LRCF	Reduction in electricity usage is expected
	Heating/ Cooling unit upgrade	2024	AMP, LRCF	Appliances are energy star rated, reduction in energy usage and GHG emissions is expected
Water Filtration Plant	Power Factor Investigation	2024	2018-2024 CDM Plan	Minor efficiency / repair was made, improved efficiencies are expected
Nick Smith Centre	Replacement of rooftop HVAC unit	2019 2021	AMP, LRCF	Appliances are energy star rated, reduction in energy usage and GHG emissions is expected
	Arena A and B insulated panels installation.	2020	AMP, LRCF	Improved building envelope to retain cooling in arenas and reduce electricity usage in refrigeration system.
	Replaced two (2) and repaired two (2) Dehumidifiers	2022	AMP, LRCF	Appliances are energy star rated, reduction in energy usage and GHG emissions is expected

	Replacement of One HVAC Rooftop Units	2024	AMP, LRCF	Appliances are energy star rated, reduction in energy usage and GHG emissions and electricity usage is expected
	Power Factor Investigation	2024	2018-2024 CDM Plan	No findings were discovered following investigation. Power factor is sufficient
	Rink Slab Replacements	2025 *(upcoming)*	AMP, LRCF	Change from brine to glycol for cooling fluid. Energy savings are anticipated.
	Replacement of Pool Dectron (Dehumidifier)	2024	AMP, LRCF	Unit is energy star rated and efficiencies relating to the exhaust system were implemented prior to installation. Reduction in energy usage and GHG emissions and electricity usage is expected
Water Tower	Lighting Upgrades – 2 Pack lights	2024	AMP, LRCF	Reduction in electricity usage is expected
PW Garage	On-Demand Water Heater (tankless)	2022	2018-2024 CDM Plan	Reduction in energy usage and GHG emissions is expected
	Lighting Upgrades T12 light tubes to T8	2023	2018-2024 CDM Plan	Reduction in electricity usage is expected
	Solar Speed radar Sign	2022	2018-2024 CDM Plan	Use of implementing renewable energy
All Facilities	Behavioural change reminders in meeting settings	Ongoing	2018-2024 CDM Plan	Reduction in energy usage and GHG emissions is expected
	Night Watch Program (Last person to leave turns off lights)	Ongoing	2018-2024 CDM Plan	Reduction in energy usage and GHG emissions is expected
	Behavioural change reminders in new employee orientation	Ongoing	2018-2024 CDM Plan	Reduction in energy usage and GHG emissions is expected

Renewable Energy Utilized

Arnprior is situated below the Arnprior Generating Station (owned by Ontario Power Generation)

which produces power through harnessing moving water to produce electricity. This is a renewable energy source that supplies electricity to many businesses and homes.

The Arnprior Water Pollution Control Centre uses a combination of methane (produced from the sewage) and natural gas to heat the building through a boiler. This reduces the total amount of natural gas consumed.

A solar powered speed radar sign has been purchased, which is a durable and easy to install solution for monitoring vehicle speeds without the limitation of needing to replace or recharge batteries manually. Currently the Town does not utilize any other renewable energy technologies but will continue to investigate opportunities in future projects.

Planning

Strategic Planning

To increase the effectiveness of the CDM plan, the Town should consider integrating the plan into existing Town documents, such as the Asset Management Plan (AMP) and Long Range Capital Forecast (LRCF). The AMP, LRCF and the CDM could act hand-in-hand, as both plans discuss municipal infrastructure and operations.

Resources Planning

Energy Leaders

The Town of Arnprior has unofficially appointed two energy leaders, including the Environmental Engineering Officer and the Engineering Officer, Facilities & Assets. The energy leaders are responsible for annual energy reporting, development of the five-year energy management plan and ensuring commitment to the plan.

Energy Team

The energy team will consist of the two Energy Leaders, along with the General Manager, Operations. The team will discuss energy conservation initiatives and will ensure environmentally friendly options are considered throughout all operations.

Implementation Plan

Municipal Level

The administration and implementation of this plan will be the responsibility of the Energy Team, which consists of the Environmental Engineering Officer the Engineering Officer, Facilities & Assets and the General Manager, Operations. The Finance department is responsible for energy cost tracking and bill payments. All town staff and facility users are responsible for the day-to-day improvements resulting from behavioural change.

Asset Level

In order for the Town to meet the target of reducing energy consumption to below 2024 levels, the following objectives have been set forth.

1. Explore the feasibility of implementing renewable energy technologies, including fleet electrification
2. Continual improvement to behavioural change efforts,
3. Upgrade infrastructure including, but not limited to HVAC, lighting, building envelope, etc.,
4. Streamline the energy management process into everyday work,
5. Develop an energy policy,
6. Perform in depth benchmarking of energy consumption patterns,
7. Align the Energy Conservation and Demand Management Plan with existing plans, and
8. Continue to investigate energy saving opportunities within facilities.

The following table breaks down each of the eight objectives and outlines specific projects that can be implemented in order to achieve the objectives. The ability to achieve the seven objectives is limited by available staffing, available budget, and grant opportunities.

Table 2: Implementation, Responsibility and Cost Range of Objectives

Objective	Description	Responsibility	Cost Range
1. Renewable Energy	Solar Panel Installations This project idea has been discussed in the past, however, due to high initial costs and long return on investment periods, the project is not yet feasible in any planned Town projects however, staff will continue to investigate the application of this technology to future projects.	Operations	High
2. Behavioural Change	Day to day activities: Staff should continue to turn lights off when leaving a room, turn computers off at night, ensure that electronic devices with physical switches are turned off at night to avoid unnecessary power draw, turn thermostats down in offices during heating season overnight, turn on power saving features on printers, computers, etc.	All Staff	Low
	New Employee Orientation: HR should continue to communicate the day to day expectations to new staff	All Staff	Low

	Addition of stickers/ posters: Town staff should investigate the feasibility and potential effectiveness of adding stickers and posters to educate staff and regular users of town facilities of the importance of turning off lights/ computers/ etc.	All Staff	Low
3. Equipment and Building Upgrades	Continuing LED lighting and fixture replacements.	Operations	Medium - High
	Upgrade HVAC equipment to energy efficient products when replaced at end of lifecycle.	Operations	Medium - High
	Purchase energy efficient replacements for white goods.	Operations	Medium - High
	Install variable frequency drives where applicable in new installations.	Operations	Low-Medium
	Implement building automation systems in new construction	Operations	Medium - High
	Lighting controls	Operations	Medium - High
	Fleet monitoring/ Fleet and Equipment Electrification	Operations	Low
	Building envelope improvements (such as insulated panels, window replacement, etc.)	Operations	Medium - High
4. Energy Management Processes	Continue to monitor LAS metered data using the Energy Planning Tool	Operations	Low
5. Energy Policy	The development of a commitment policy and Staff education.	Operations/ Senior Management	Low
6. Benchmarking	Once all the new plans are out, benchmark the Town of Arnprior to others government entities.	Energy Leaders	Low
7. Alignment	Align to CDM to existing plans such as the Drinking Water Quality Management System (DWQMS), AMP, and LRCF.	All Staff	Low
8. Investigate Energy Saving Opportunities	Continue to review and consider all energy efficient options during future construction/ rehabilitation jobs.	Operations	Low - High

Variable Frequency Drive Installations:
Variable frequency drives (VFDs) are devices that can be selected as an option in new

equipment that contain a motor. The VFD works by optimizing motor speeds, ensuring the piece of equipment is operating at an ideal frequency [2]. For example, adding a VFD to an exhaust fan will allow the motor to only rotate the fan at the speed that is required to adequately meet air flow needs at the time. An exhaust fan in a public pool needs to move more air during a busy public swim than during a quieter lane swim time. This ensures that the fan has the ability to only use the amount of energy that is needed to meet the objective. which ultimately reduces energy consumption [2].

Building Automation Systems:
Most Town owned facilities currently have no or limited building automation implemented. Building automation may include mechanical, electrical, and plumbing (MEP) systems, and in many instances, retrofit options are available but costly. Building automation can improve building system controls resulting in increased energy efficiency from automated MEP components [3].

Lighting Controls/ Occupancy Sensors:
Occupancy sensors are low-cost installations that generally require very little investment; however, are proven to reduce energy consumption. Occupancy sensors are best used in buildings where certain rooms or areas are used at intermittent periods of the day, such as a meeting room in an office building. Occupancy sensors can be programmed to turn off lighting after certain period of time, which ultimately reduces electricity consumption and prolongs the life cycle of light fixture components, including the bulbs [4].

Fleet Monitoring/ Fleet Electrification:
The Town will improve processes related to tracking the efficiency of the fleet. The Town's fleet includes trucks, vans, ice resurfacers, ride on lawn mowers, utility vehicles, sidewalk vehicles, loaders, dump trucks, snowplows, street sweepers, etc. When purchasing new vehicles and equipment, the Town shall strive to choose energy efficient options for replacements and should consider purchasing electric or hybrid vehicles and equipment where appropriate as well as review the option for charging stations.

The Town is currently investigating the electrification of equipment such the ice resurfacing machine (Zamboni) and has recently purchased electric lawn maintenance equipment such a mowers and trimmers to trial practicality. There are further lifecycle costing that must be explored with electrification and the Town is working to ensure that energy considerations and considered alongside waste reduction considerations. Federal and Provincial legislation will also cause changes in the market availability of electric vehicles.

New Building Construction:
The replacement or retrofit of Town Hall is tentatively scheduled to begin in 2029. When planning activities for new building construction commence, renewable energy options such as solar, ground source thermal, and heat pump technology should be included in any option evaluated. The Town should also consider incorporating the Leadership in Energy and Environmental Design (LEED) building practices and investigate the possibility of LEED certification.

Though renovation as opposed to new construction, these factors were considered in the upcoming Nick Smith Centre Rink Revitalization project. Ultimately due to the current layout,

operational demands and facility footprint, renewable energy options were not feasible. The decision was made to change from brine to glycol which is a more environmentally friendly product that transfers energy more efficiently. Glycol is a salty liquid that is present in cooling pipes under the concrete slab of an arena. These cooling pipes allow the slab to remain a temperature favourable to maintaining ice surfaces.

Evaluation

CDM Review

As per O.Reg. 507/18, the Town is required to report annual energy usage by July 1 of each year. Further, the Town is required to update the CDM plan on each 5-year anniversary of July 1, 2029. The Town should review the plan annually to ensure its accuracy and should review the plan when beginning all new energy related projects (building retrofits, HVAC upgrades, vehicle/ equipment replacements, building construction).

Through a benchmarking exercise of assessing the energy goals of other governmental organizations, it is evident that a goal to reach total consumption and cost reductions of 2% is common. If the Town were to reach this goal, we would achieve the following:

- In 2023, Town facilities/assets consumed 4,439,588.12 kWh of electricity, resulting in a total cost of $ 210,304.56. With a 2% reduction, these values would drop to 4,350,796.36 kWh and $206,098.47.
- In 2023, Town facilities consumed 402,366 m3 of natural gas, resulting in a total cost of $56,365.51. With a 2% reduction, these values would drop to 394,318.68 m3 and $55,238.20.

Evaluation of Progress

The 2018 – 2024 CDM plan will be considered successful when there is a decrease in overall energy consumption from the 2023 levels displayed in this report and when the following goals are met:

1. Improve energy efficiencies at all facilities via active or passive means.
2. Reduce GHG emissions at all facilities.
3. Meet the requirements of Ontario Regulation 507/18 under the Electricity Act, 1998.
4. Improve Energy Management processes at the Town of Arnprior.

When developing the next CDM plan in 2029, the Energy Team should review the success of this plan and evaluate any achievements or shortcomings in order to achieve continual improvement.

References

[1] Government of Ontario, "O. Reg. 507/18: BROADER PUBLIC SECTOR: ENERGY REPORTING AND CONSERVATION AND DEMAND MANAGEMENT PLANS," 14 December 2018. [Online]. Available: https://www.ontario.ca/laws/regulation/r18507.

[2] N. R. Canada, "Variable frequency drives," 06 03 2019. [Online]. Available: https://www.nrcan.gc.ca/energy/products/categories/commercial/motors/14814.

[3] C. Services, "Building Automation," [Online]. Available: http://www.controlservices.com/learning_automation.htm.

[4] B. H. P. Smart, "Occupancy sensors help save energy in the workplace," 2012. [Online]. Available: https://www.bchydro.com/news/conservation/2012/occupancy-sensors.html.

Appendix A – Building Information

Table 3: Summary of Arnprior's Reported Buildings

Operation Name	Building Type as per O.Reg. 507/18	Address	Total Floor Area [m2]	Hours of Operation/ Week	Natural Gas	Electricity
Arnprior Public Library	Public libraries	21 Madawaska St	1,513.00	35	Yes	Yes
Arnprior Wastewater Treatment Plant	Facilities related to the treatment of sewage	233 Albert St.	3,813.00	168	Yes	Yes
Arnprior Water Filtration Plant	Facilities related to the treatment of water	74 James St	1,829.00	168	Yes	Yes
Fire Hall	Fire stations and associated offices and facilities	67 Meehan St.	895.00	42.15	Yes	Yes
Arnprior & District Museum	Cultural facilities	35 Madawaska St	1,263.00	30	Yes	Yes
Nick Smith Centre	Indoor recreational facilities	77 James St.	7,432.00	87	Yes	Yes
OPP Police Station	Police stations and associated offices and facilities	67 Meehan St.	383.00	168	Yes	Yes
Public Works Garage	Storage facilities where equipment or vehicles are maintained, repaired or stored	73 James St.	743.00	35	Yes	Yes
Pump Station 1	Other	50 Elgin St E	-	4.2	No	Yes
Pump Station 2	Other	251 McNab St	5.00	55.3	No	Yes
Pump Station 3	Other	68 Madawaska Blvd	150.00	114.8	No	Yes
Pump Station 4	Other	207 Riverview Dr.	5.00	31.5	No	Yes

Pump Station 5	Other	110 Wolff Cres	5.00	23.1	No	Yes
Robert Simpson Park - Concession	Other	400 John St	138.00	49	No	Yes
Robert Simpson Park - Washrooms	Other	400 John St	70.00	49	No	Yes
Town Hall	Administrative offices and related facilities, including municipal council chambers	105 Elgin St W	1,523.00	35	Yes	Yes
Water Tower	Other	435 Hartney St.	130.00	94.5	No	Yes

Appendix B – Annual Energy Reporting Submissions 2018 - 2023

2018 Reporting Submission

Operation	Address	Floor Space [m2]	Hrs/ Week	Annual Flow [ML]	Electricity [kwh]	Natural Gas [m3]	Calculated, Weather Normalized		
							GHG Emissions [KG]	Energy Intensity [ekWh/ m2]	Energy Intensity [ekWh/ ML]
Arnprior Public Library	21 Madawaska St	1,513.00	35.00		117,739	4,259.00	11,531.13	911.38	
Arnprior Water Pollution Control Centre	233 Albert St.	3,813.00	168.00	1856	1,076,400	79,397.00	181,915.58	284.53	
Arnprior Water Filtration Plant	74 James St	1,829.00	168.00	1460	842,937	77,531.00	171,489.30	203.82	
Fire Hall/ OPP	67 Meehan St.	895.00	42.15		121,162	22,814.00	46,712.86	520.71	
Museum	35 Madawaska St	1,263.00	30.00		38,567	20,593.00	40,073.26	430.72	
Nick Smith Centre	77 James St.	7,432.00	87.00		1,482,367	224,650.00	468,530.34	3,592.00	
Public Works Garage	73 James St.	743.00	35.00		17,960	24,264.00	47,710.55	8,483.60	
Pump Station 1	50 Elgin St E	-	4.20		42,418		530.68	386.12	
Pump Station 2	251 McNab St	5.00	55.30		57,918		1,253.37	664.40	
Pump Station 3	68 Madawaska Blvd	150.00	114.80		3,322		1,711.36	2,037.00	
Pump Station 4	207 Riverview Drive	5.00	31.50		10,185		98.16	911.38	
Pump Station 5	110 Wolff Cres	5.00	23.10		117,739		300.95	284.53	

Robert Simpson Park	400 John St	138.00	49.00		9,266		273.79	44.55	
Town Hall	105 Elgin St W	1,523.00	35.00		158,994	37,446.00	75,494.37	365.70	
Water Tower	435 Hartney St.	130.00	94.50		20,831		615.54	160.25	

2019 Reporting Submission

Operation	Address	Floor Space [m2]	Hrs/ Week	Annual Flow [ML]	Electricity [kwh]	Natural Gas [m3]	Calculated, Weather Normalized		
							GHG Emissions [KG]	Energy Intensity [ekWh/ m2]	Energy Intensity [ekWh/ ML]
Arnprior Public Library	21 Madawaska St	1,513.00	35.00		98,239	3,917.00	10,977.75	92.44	
Arnprior Water Pollution Control Centre	233 Albert St.	3,813.00	168.00	1885	1,031,400	64,902.00	157,656.79	481.70	
Arnprior Water Filtration Plant	74 James St	1,829.00	168.00	1394	726,449	81,175.00	178,062.79	912.88	
Fire Hall/ OPP	67 Meehan St.	895.00	42.15		97,621	23,289.00	47,353.28	278.98	
Museum	35 Madawaska St	1,263.00	30.00		39,857	19,729.00	38,353.28	198.10	
Nick Smith Centre	77 James St.	7,432.00	87.00		1,270,559	201,743.00	424,629.00	479.28	
Public Works Garage	73 James St.	743.00	35.00		66,134	23,132.00	45,992.83	430.64	
Pump Station 1	50 Elgin St E	5.00	4.20		16,245		45,992.83	3,667.20	
Pump Station 2	251 McNab St	5.00	55.30		32,984		558.75	7,718.20	
Pump Station 3	68 Madawaska Blvd	150.00	114.80		46,901		1,175.98	372.93	

Pump Station 4	207 Riverview Drive	5.00	31.50		2,791		1,704.66	605.20	
Pump Station 5	110 Wolff Cres	5.00	23.10		7,922		92.21	1,886.60	
Robert Simpson Park	400 John St	138.00	49.00	-	9,311		287.45	46.45	
Town Hall	105 Elgin St W	1,643.00	35.00	-	130,684	38,921.00	77,976.01	366.21	
Water Tower	435 Hartney St.	130.00	168.00		15,787		566.80	143.08	

2020 Reporting Submission

Operation	Address	Floor Space [m2]	Hrs/ Week	Annual Flow [ML]	Electricity [kwh]	Natural Gas [m3]	Calculated, Weather Normalized		
							GHG Emissions [KG]	Energy Intensity [ekWh/ m2]	Energy Intensity [ekWh/ ML]
Arnprior Public Library	21 Madawaska St	1,513.00	35.00	-	87,375	3,776.00	9,591.53	875.82	
Arnprior Water Pollution Control Centre	233 Albert St.	3813.00	40	1850	1,056,509	64,736.00	151,934.44	242.73	
Arnprior Water Filtration Plant	74 James St	1829.00	56	1458	764,354	71,441.00	156,511.20	192.97	
Fire Hall/ OPP	67 Meehan St.	1,278.00	168		99,168	18,797.00	38,348.52	373.86	
Museum	35 Madawaska St	1,263.00	30.00		40,841	18,515.00	36,199.67	385.46	
Nick Smith Centre	77 James St.	7,432.00	87.00		991,475	155,532.00	322,696.71	3,471.40	
Public Works Garage	73 James St.	743.00	50		50,251	21,273.00	41,754.13	6,075.80	
Pump Station 1	50 Elgin St E	5.00	168		15,281		441.70	343.29	
Pump Station 2	251 McNab St	5.00	168		26,529		773.08	193.00	
Pump Station 3	68 Madawaska Blvd	150.00	168		43,381		1,310.42	875.82	
Pump Station 4	207 Riverview Drive	5.00	168		865		24.56	242.73	
Pump Station 5	110 Wolff Cres	5.00	168		6,842		200.40	1,575.00	

Robert Simpson Park	400 John Street N	208.00	49.00	-	7,467		198.90	37.58	
Town Hall	105 Elgin St W	1,523.00	35		126,461	32,737.00	65,449.69	320.20	
Water Tower	435 Hartney St.	130.00	168		15,385		460.58	139.22	

2021 Reporting Submission

Operation	Address	Floor Space [m2]	Hrs/ Week	Annual Flow [ML]	Electricity [kwh]	Natural Gas [m3]	Calculated, Weather Normalized		
							GHG Emissions [KG]	Energ y Intensi ty [ekWh/ m2]	Energy Intensity [ekWh/ ML]
Arnprior Public Library	21 Madawaska St	1,513.00	35.00		84,956	4,065.00	10,104.35	939.66	
Arnprior Water Pollution Control Centre	233 Albert St.	3813.00	40	1736	1,052,852	72,709.00	170,931.05	232.36	
Arnprior Water Filtration Plant	74 James St	1829.00	56	1463	794,411	80,159.00	176,288.97	170.21	
Fire Hall/ OPP	67 Meehan St.	1,278.00	168		101,478	17,369.00	30.37.44	395.42	
Museum	35 Madawaska St	1,263.00	30.00		26,722	17,713.00	34,249.53	367.69	
Nick Smith Centre	77 James St.	7,432.00	87.00		1,145,196	156,241.00	331,789.75	3,580.00	
Public Works Garage	73 James St.	743.00	50		46,221	20,538.00	40,393.49	6,604.00	
Pump Station 1	50 Elgin St E	5.00	168		15,838		509.67	939.66	
Pump Station 2	251 McNab St	5.00	168		29,037		940.18	232.36	

Pump Station 3	68 Madawaska Blvd	150.00	114.80		51,126		1,651.09	386.59	
Pump Station 4	207 Riverview Drive	5.00	31.50		966		29.93	210.20	
Pump Station 5	110 Wolff Cres	5.00	23.10		7,035		232.08	1,630.20	
Robert Simpson Park	400 John Street N	208.00	49.00		9,616		283.36	47.85	
Town Hall	105 Elgin St W	1,643.00	35.00		130,634	31,925.00	64,429.88	316.67	
Water Tower	435 Hartney St.	130.00	168.00		15,552		514.56	139.02	

2022 Reporting Submission

Operation	Address	Floor Space [m2]	Hrs/ Week	Annual Flow [ML]	Electricity [kwh]	Natural Gas [m3]	Calculated, Weather Normalized		
							GHG Emissions [KG]	Energy Intensity [ekWh/ M2]	Energy Intensity [ekWh/ ML]
Arnprior Public Library	21 Madawaska St	1,513.00	35.00		75,243	4,004.00	10,143.06	977.3	
Arnprior Water Pollution Control Centre	233 Albert St.	3813.00	40	1875	951,275	54,562.00	136,433.53	265.0	
Arnprior Water Filtration Plant	74 James St	1829.00	56	1582	736,045	85,079.00	186,001.94	111.6	
Fire Hall/ OPP	67 Meehan St.	1,278.00	168		102,755	21,167.00	43,256.60	444.6	
Museum	35 Madawaska St	1,263.00	30.00		28,778	10,080.00	20,020.53	380.2	
Nick Smith Centre	77 James St.	7,432.00	87.00		1,167,537	175,581.00	372,911.24	3,759.4	
Public Works Garage	73 James St.	743.00	50		42,994	21,824.00	42,699.53	5,815.2	
Pump Station 1	50 Elgin St E	5.00	168		15,284		535.21	977.3	
Pump Station 2	251 McNab St	5.00	168		24,986		827.88	265.0	

Pump Station 3	68 Madawaska Blvd	150.00	114.80	-	53,916		1,774.92	415.6	
Pump Station 4	207 Riverview Drive	5.00	31.50	-	1,145		35.05	246.2	
Pump Station 5	110 Wolff Cres	5.00	23.10	-	7,197		263.09	1,848.0	
Robert Simpson Park	400 John Street N	208.00	49.00		10,612		316.71	53.5	
Town Hall	105 Elgin St W	1,643.00	35.00		106,492	35,575.00	70,529.72	323.67	
Water Tower	435 Hartney St.	130.00	168.00		16,764		579.51	156.56	

2023 Reporting Submission

Operation Name	Address	Floor Area [m]	Hrs/ Week	Annual Flow [ML]	Electricity Quantity [kWh]	Natural Gas [m3]	Calculated, Weather Normalized		
							GHG Emissions [Kg]	Energy Intensity [ekWh/m2]	Energy Intensity [ekWh/ML]
Arnprior Public Library	21 Madawaska St	1,513.00	35.00		114,787	3,536.00	10,241.16	923.64	
Arnprior Water Pollution Control Centre	233 Albert St.	3813.00	40	2008	1,095,344	77,632.00	181,174.46	219.96	
Arnprior Water Filtration Plant	74 James St	1829.00	56	1416	744,935	80,625.00	176,135.00	152.38	
Fire Hall/ OPP	67 Meehan St.	1,278.00	168		88,784	17,240.00	35,381.60	425.22	
Museum	35 Madawaska St	1,263.00	30.00		33,000	14,688.00	28,804.64	357.85	
Nick Smith Centre	77 James St.	7,432.00	87.00		1,315,117	160,019.00	344,094.49	3,693.60	
Public Works Garage	73 James St.	743.00	50		45,114	20,164.00	39,591.33	6,714.40	
Pump Station 1	50 Elgin St E	5.00	168		16,368	-	525.84	378.21	
Pump Station 2	251 McNab St	5.00	168		29,663	-	955.90	291.80	
Pump Station 3	68 Madawaska Blvd	-			49,284	-	1,615.30	1,768.80	
Pump Station 4	207 Riverview Drive	-			1,344	-	41.54	923.64	
Pump Station 5	110 Wolff Cres	-			7,619	-	251.82	219.96	

	Blvd								
Robert Simpson Park	400 John Street N	208.00	49.00		10,849	-	317.64	53.63	
Town Hall	105 Elgin St W	1,643.00	35.00	-	112,295	28,462.00	57,326.13	279.67	
Water Tower	435 Hartney St.	130.00	168.00	-	17,208	-	564.19	152.42	

Appendix C – Cost Information

Table 4: Electricity Costs and Annual Rates

	Total Electrical Consumption [kWh]	Annual Rate [$/kWh]	Total Cost
2018	4,734,869.63	0.02347	$111,143.87
2019	4,304,063.47	0.02299	$98,969.92
2020	4,053,510.50	0.02158	$87,489.17
2021	4,219,518.11	0.02643	$111,521.89
2022	4,043,009.64	0.04895	$197,912.51
2023	4,439,588.12	0.04737	$210,304.56

Table 5: Natural Gas Costs and Annual Rates

	Total Natural Consumption [m3]	Annual Rate [$/kWh]	Total Cost
2019	456,941.00	0.1022	$46,712.74
2020	386,807.00	0.0670	$34,713.77
2021	400,719.00	0.1099	$44,058.61
2022	407,872.00	0.1325	$54,053.74
2023	402,366.00	0.1401	$56,365.51