The Corporation of the Municipality of Arran-Elderslie

Conservation and Demand Management Plan
2019-2024

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Conservation and Demand Management Plan | Background

On January 1, 2019, a new regulation was introduced under the Electricity Act, 1998 titled Ontario Regulation 507/18 Broader Public Sector: Reporting and Conservation and Demand Management Plan. This replaces Ontario Regulation 397/11, Energy Conservation and Demand Management Plans, under the now repealed Green Energy Act, 2009.

The Municipality implemented a Conservation and Demand Management Plan in 2014, which was created to meet the requirements of Ontario Regulation 397/11. It was used as a guiding document to promote energy efficiencies throughout all municipal operations. The creation of the Plan has resulted in a more structured approach as it relates to tracking energy consumption and spending.

Through the course of the Plan, staff and resources have been continuously allocated to energy conservation in an effort to reduce the Municipality's carbon footprint.

Conservation and Demand Management Plan | Municipal Commitment

The Municipality of Arran-Elderslie will continue to seek energy efficiencies with new infrastructure and invest in existing buildings to upgrade where possible. Municipal Council is supportive of staff sourcing energy efficient projects and is committed to investments that will reduce greenhouse gas emissions. Staff will continue to seek efficiencies in daily operations and when planning long term. All staff will continue to educate and promote energy efficiency to increase awareness and understanding among residents.

The Municipality of Arran-Elderslie will update the Conservation and Demand Management Plan at the duration of this Plan in 2024, or as required by legislation.

Conservation and Demand Management Plan | Vision

The Municipality of Arran-Elderslie will strive to continuously reduce overall energy consumption while optimizing the delivery of services and enhance the overall quality of life for residents of today and tomorrow.

The following are the Municipality of Arran-Elderslie's goals and objectives as it relates to energy conservation and demand management.

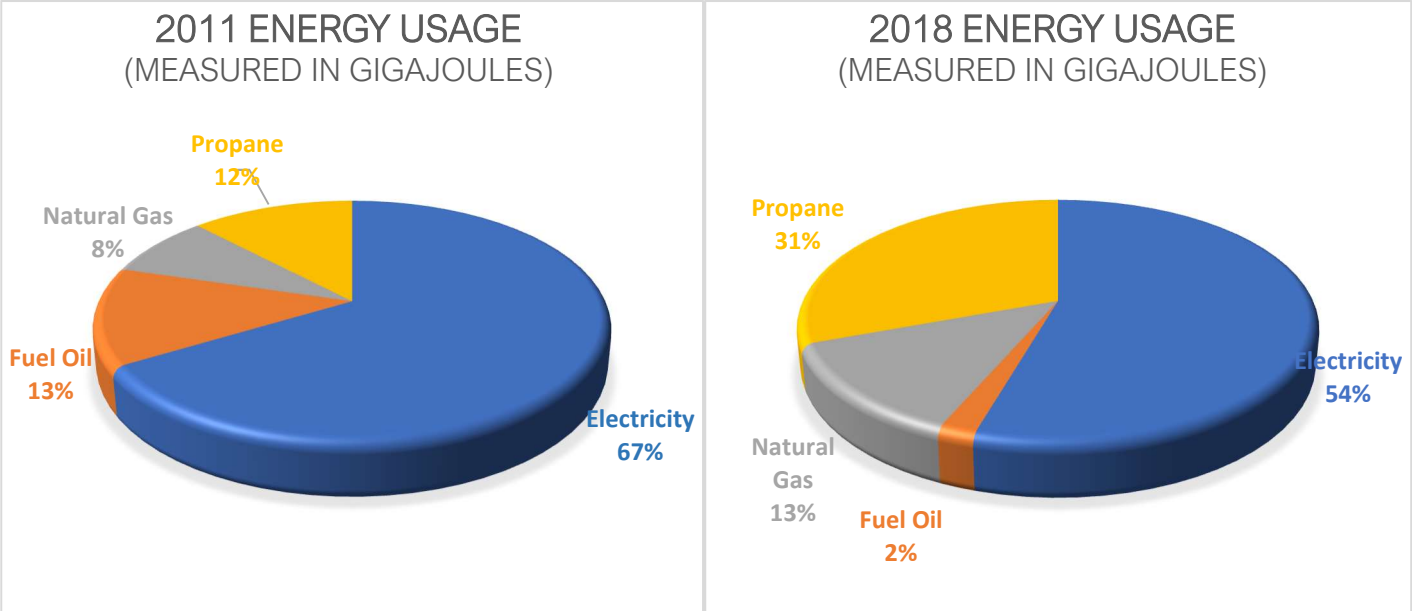
- Identify and implement various energy efficiencies in all municipal operations
- Utilize best practices to reduce municipal operating costs, energy consumption and greenhouse gas emissions
- Achieve cost savings through various energy initiatives and identify potential funding opportunities available to encourage efficiency enhancements
- Demonstrate leadership and awareness by creating a culture of conservation and sustainability
- To improve the reliability of the Municipality's equipment and reduce maintenance costs
- Leverage opportunities to reduce operating costs by creating a positive impact with predictable usages of energy management projects

The following is a series of datasets from the previous five years regarding the progress that the Municipality has made with reducing its carbon emissions.

The Municipality has worked to augment its usage types to more environmentally conscious and economical sources of energy.

Consumption by Energy Type

The charts below illustrate the changes in type of consumption between the baseline year of 2011, and the final year of the Plan, 2018.

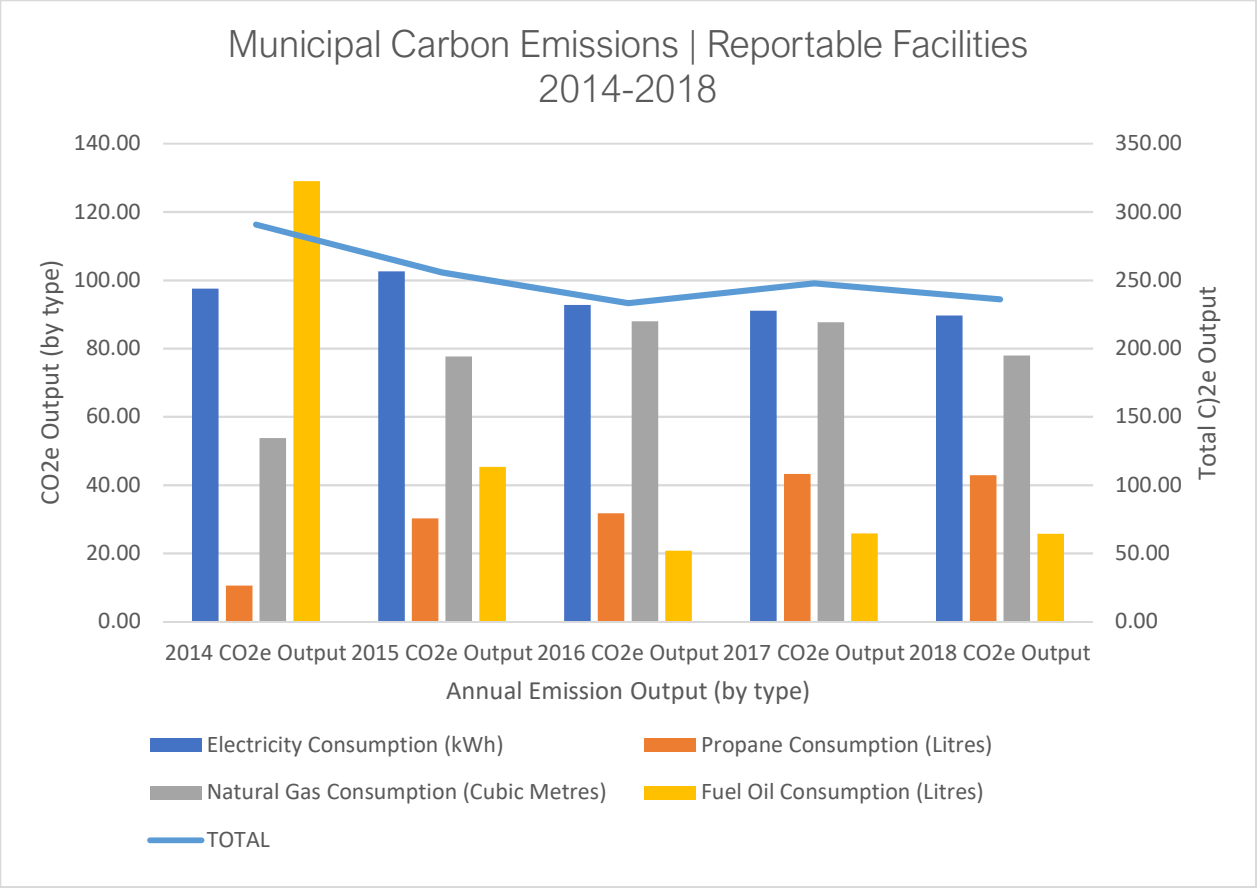


The above indicates the positive changes in nearly eliminating fuel oil usage. The Municipality also increased its propane and natural gas consumption by converting existing units to these sources of energy. In doing so, electricity consumption has decreased.

Note: The information in the above charts is from reportable facilities within the Municipality.

Municipal Carbon Emissions in Reportable Facilities

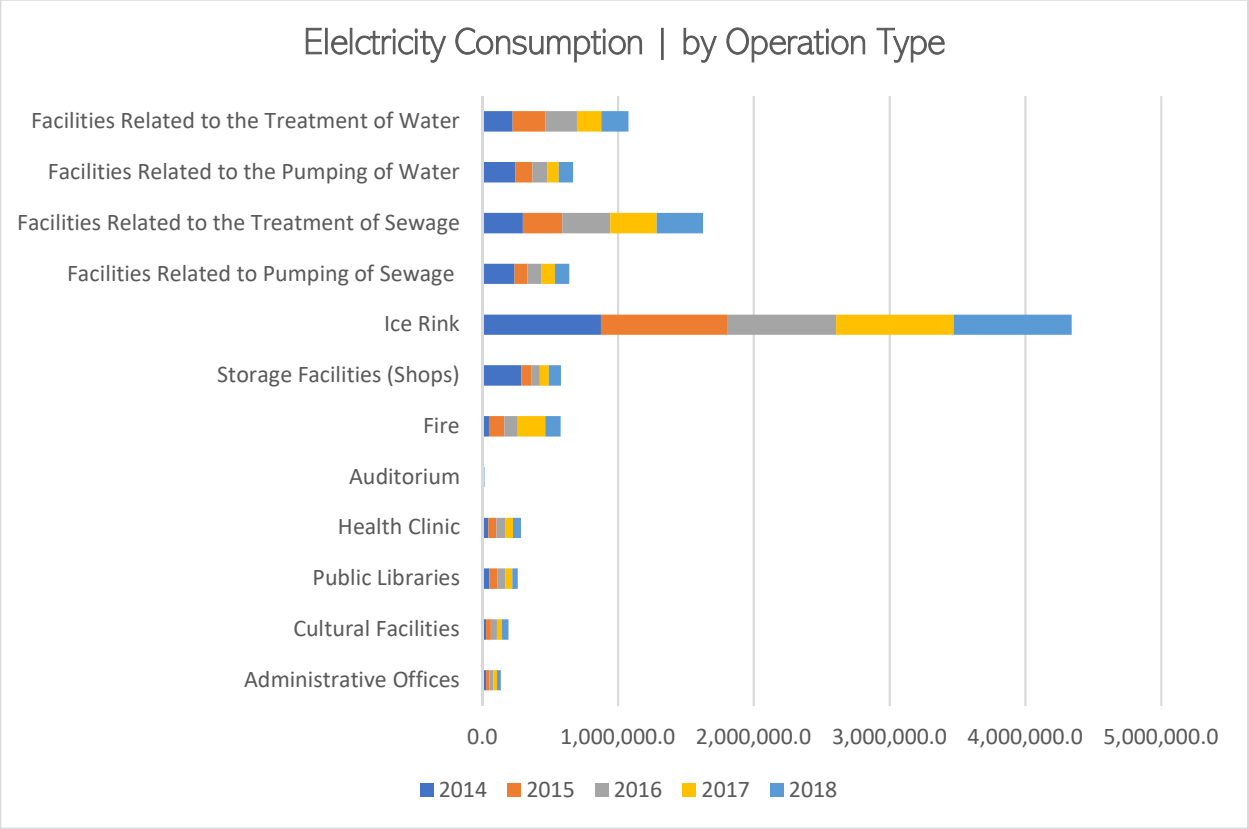
The chart below shows the breakdown of energy usage by type, while also indicating the Municipality's output of carbon emissions (CO2e).



The Municipality's average CO2e outputs from 2014-2018 was 257.74 tonnes annually, based on reportable facilities. This is a 28.33% reduction of CO2e from the 2011 baseline reporting year.

Municipal Electricity Consumption

The chart below illustrates the electricity use in the various facets of municipal operations. Ice rinks continue to use the largest amounts of energy with Facilities Related to the Treatment of Sewage and Facilities Related to the Treatment of Water following as the next largest consumers.

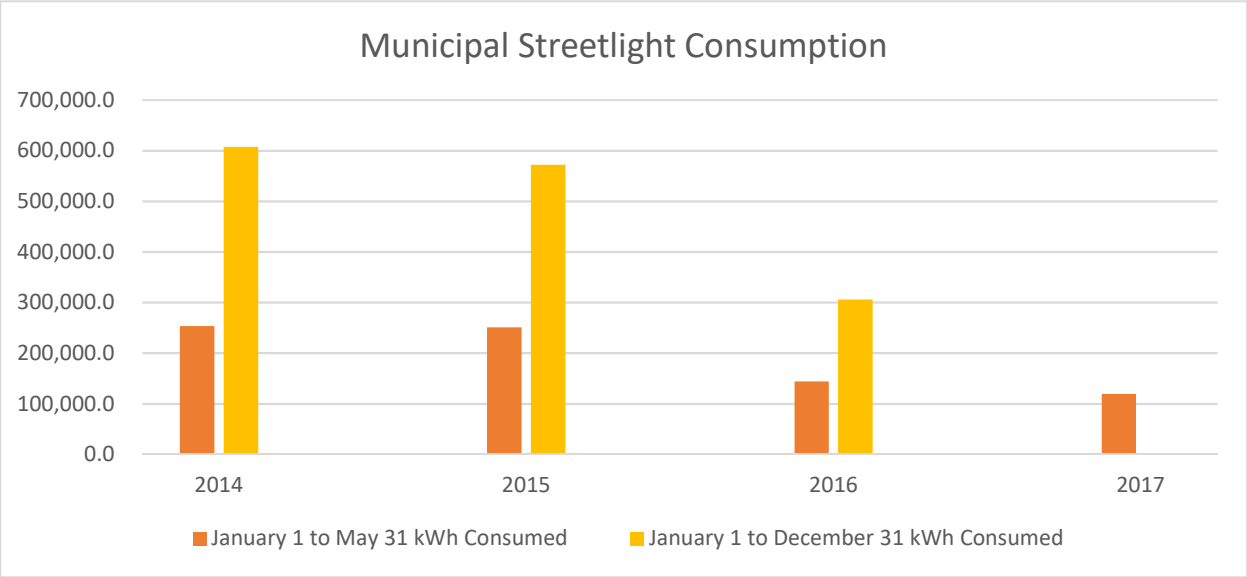


Although it appears that electricity consumption remains stable of the larger facilities, it has been reduced in various smaller facilities.

When comparing electricity consumption to the Municipality's baseline year, which was reported at 2,200,253.0 kWh, the average overall consumption from 2014 to 2018 was 1,894,081.3 kWh, which is a reduction of 306,171.7 kWh, or a 14% decrease on average.

Municipal Streetlights

The Municipality completed a streetlight project in 2015, which changed all streetlights to LED bulbs. The graph below indicates the change in usage by year from 2014 to May of 2017.



The decrease in consumption from January to May 2014 (2014 is the last full year without the light conversion) to 2017 is 133,924 kWh, (253,175 to 119,251) which represents a decrease of 52.9%.

The decrease is consumption from January to December 2014 (2014 is the last full year without the light conversion) to 2016 is 301,780 kWh (607,445 to 305,665) which represents a decrease in consumption of 49.7%.

Equipment Consumption

Although the 2014 Plan indicated that the Municipality would report on it emission outputs in equipment, staff did not have the capacity to track and report on this aspect of operations. The Municipality will endeavor to find solutions to report on fleet emissions and seek opportunities to reduce carbon emissions within this area.

Facility	Measure	Completion
Arran Shop	Exterior lighting upgraded to LED	2016
Arran-Elderslie Municipal Office	Pot lights replaced with LED	2017
	Air conditioning unit replaced	2017
Chesley | Community Centre	Upgrade lighting to LED	2016
	Exterior lighting upgraded to LED	2016
Chesley | Fire Hall	Upgrade lighting to LED	2018
Chesley | Library	Hot water tank replaced	2018
Chesley | Pool	Heater replaced	2018
Chesley | Town Hall/Bijou	Roof replaced	2017
Paisley | Community Centre	Oil furnace replaced with propane unit	2015
	Exterior lighting upgraded to LED	2016
Paisley | Fire Hall	Oil furnace replaced with propane unit	2018
Paisley | OPP/LCBO	Roof replaced	2018
Paisley | Town Hall	Oil furnace replaced with propane unit	2018
Tara | Community Centre	Exterior lighting upgraded to LED	2016
Tara | Library	Roof replaced	2017
Tara | Pool	Pump motor replaced	2018

Conservation and Demand Management Plan | Reduction Target

The Municipality of Arran-Elderslie will continue to strive to reduce its overall carbon footprint within all aspects of its business. The Municipality will aim to further reduce its emissions output by five percent from 2019 through 2023, using 2016 as baseline data.

Conservation and Demand Management Plan | 2019-2023 Plan

The Municipality of Arran-Elderslie will continue its investment into energy efficiencies and promoting environmental stewardship. The following are potential projects that will be considered during the upcoming five years.

Facility	Measure	Estimated Cost	Estimated Energy Savings (yearly)	Anticipated Completion
Arran-Elderslie Municipal Office	Replace inefficient and inexpensive appliances	$ 200.00	250 kWh	2021
	Switch HVAC system to natural gas from propane	$ 2,500.00	unknown	2022
	Replace desktop computers with laptops	$ 5,000.00	4,000 kWh	ongoing
Arran-Elderslie | Water Plant	Installation of 3 VFD's	$ 27,000.00	28,600 kWh	2023
Arran-Elderslie | Water Shop	Convert HVAC systems to natural gas, from electricity	$ 4,000.00	unknown	2022
Chesley | Community Centre	Replace current rink lights with LED	$ 12,000.00	124,000 kWh	2019
	Convert indoor exit signs to photoluminescent	$ 1,000.00	3,150 kWh	2021
	Switch HVAC system to natural gas from propane	$ 10,000.00	unknown	2022
Chesley | Lagoon	Replace inefficient blower	$ 70,000.00	38,000 kWh	2022
Elderslie Shop	Switch HVAC system to natural gas from propane	$ 4,000.00	unknown	2022
	Replace bay doors	$ 17,500.00	unknown	2024
	Repair and seal roof	$ 3,000.00	unknown	2019

Paisley | Community Centre	Switch HVAC system to natural gas from propane	$ 10,000.00	unknown	2022
	Replace current rink lights with LED	$ 12,000.00	36,000 kWh	
	Convert indoor exit signs to photoluminescent	$ 1,000.00	3,150 kWh	2021
Paisley | Library	Re-locate Library to Community Centre and eliminate consumption within this facility	$ 200,000.00	unknown	2021
Paisley |Sewage Treatment Plant	Replace inefficient blower	$ 70,000.00	34,000 kWh	2023
Paisley | Shop	Replace fuel oil furnace with high efficiency natural gas unit	$ 15,000.00	25 tonne CO2e	2022
Tara | Community Centre	Replace current rink lights with LED	$ 12,000.00	84,000 kWh	2019
	Convert indoor exit signs to photoluminescent	$ 1,000.00	3,150 kWh	2021
	Repair and seal roof	$ 3,000.00	unknown	2020
Tara | Fire Hall	Replace current fluorescent lights with LED	$ 7,500.00	13,000 kWh	2020

Equipment	Measure	Estimated Cost	Estimated Savings	Anticipated Completion
Fleet	Replace car with hybrid model	$ 45,000.00	82% less CO2 emissions than current vehicle	2020
Fleet	Replace two trucks with smaller, more fuel-efficient model	$ 84,000.00	6% less CO2 emissions than current vehicles	2021

Behavioural Change	Who will Lead	Who is Involved	Timing
Turn off computers during evenings and weekends	Council/CAO	All Staff	Ongoing
Turn off lights when leaving a room	Council/CAO	All Staff	Ongoing
Employee survey including identification of potential savings	Council/CAO	All Staff	2020

Create an energy savings challenge among departments	Council/CAO	All Staff	2020
Develop "Conservation Champions" among team members	Senior Management	All Staff	2021
Continue to invest in energy conservation training opportunities for all employees	Council/CAO	All Staff	Ongoing

Conservation and Demand Management Plan | Renewable Energy

The Municipality currently does not have renewable energy systems but is committed to explore the viability of implementing such systems within Municipal facilities. Research regarding technical and economic feasibility of incorporating a renewable energy system will be performed and presented to Municipal Council as it becomes available.

Conservation and Demand Management Plan | Municipal Energy Leader

The Municipality of Arran-Elderslie will continue to incorporate energy management planning as an integral component of the management structure, including the Municipality's budget process and overall asset management plan. Municipal Council, in cooperation with the management team will be responsible for leading the Municipality in a supportive energy conscious environment.

Municipal energy data is managed by the Municipal Treasurer. The data is received via supplier invoices and reported to the Ministry annually, as required under Ontario Regulation 507/18.

Conservation and Demand Management Plan | Energy Use – Municipal Level

Municipal staff will implement energy efficiencies and reduction at the direction of the management team. Municipal Council will provide adequate resources and provide skill training for employees that are involved with energy consumption systems, in order to enhance their capacity to achieve energy efficiency improvements.

Conservation and Demand Management Plan | Asset Level Execution

Providing education to all staff is essential to energy conservation and reducing greenhouse gases. Training focused on energy use and conservation opportunities associated with an employee's daily workflow will be utilized where possible.

Life-cycle cost analysis of HVAC systems (boilers, chillers, pumps, motors), lights and controls, building envelope, water and sewage usage will identify projects to be undertaken and assist with long term capital planning and budgeting.

Conservation and Demand Management Plan | Plan Review

The Municipality of Arran-Elderslie will annually review, evaluate and update the Plan, as required by Ontario Regulation 507/18.