

The Corporation of the Township of Algonquin Highlands

By-law No. 2024-60

A By-law to adopt a Municipal Energy Management Plan for the Township of Algonquin Highlands.

Whereas the Electricity Act, 1998 requires public agencies, including municipalities, to report annually on energy consumption and greenhouse gas emissions and to develop a five year energy conservation and demand management plan;

And Whereas the Council of the Township of Algonquin Highlands adopted an Energy Management Plan on July 18, 2019;

And Whereas Council deems it expedient to update and adopt a five year energy conservation and demand management plan for the Township of Algonquin Highlands;

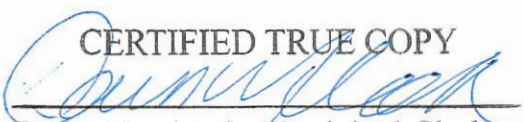
Now Therefore, the Council of the Corporation of the Township of Algonquin Highlands enacts as follows:

That the 2025 -2029 Energy Management Plan attached hereto as Schedule "A" and forming part of this By-law be adopted.

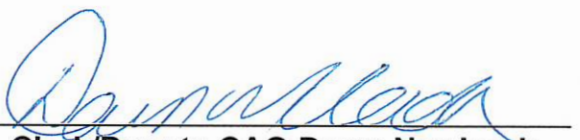
Read a First, Second and Third time and finally passed this 20th day of June, 2024.



Mayor Liz Danielsen

CERTIFIED TRUE COPY


Dawn Newhook, Municipal Clerk
Township of Algonquin Highlands
705-489-2379



Clerk/Deputy CAO Dawn Newhook



**The Township of Algonquin Highlands
Energy Management Plan Update
2025-2029**

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Introduction

The *Green Energy Act* was passed by the Ontario Government in 2009 as part of a commitment to help public agencies better understand and manage their energy consumption. Ontario Regulation 397/11 was released and required public agencies to report their energy consumption and greenhouse gas (GHG) emissions, as well as develop and implement an energy Conservation and Demand Management (CDM) plan. In 2018, the Green Energy Act was repealed, and O. Reg. 397/11 was moved to the *Electricity Act, 1998* and re-named as O. Reg. 507/18. In 2023, the O. Reg was noted to now be 25/23, no changes were made to the regulation's requirements. The Energy Management Plan developed by the Township in 2014. The Township of Algonquin Highlands is required in compliance with legislation to update the Energy conservation and demand management plan (CDM) every five years. The first update was completed in 2019, this is the second update of the Energy Management Plan.

1.0 Township Profile

The Chief Administrative Officer is the Township of Algonquin Highlands Plan Administrator. It is his/her responsibility to ensure all aspects of the plan are implemented, and that best practices are being followed. The Plan Administrator will also be responsible for updating Council on all aspects of the plan. Department Heads are responsible for ensuring that their staff are utilizing best practices in the conservation of energy.

Annual reporting of energy intensity and greenhouse gas emissions to the Province will be carried out under the direction of the Plan Administrator. On an annual basis Department Heads will be provided with previous annual consumption and determine the best course of action for the following year. During the annual meeting with Department Heads, strategies will be discussed for any upcoming or future projects.

This plan relates to the Township's 21 facilities that are heated or cooled covering a gross floor area of approximately 49,250 ft². As of 2023, this number has reduced to 18 facilities due to the closure of the Hawk Lake Landfill outbuilding, the sale of Club 35 and the removal of the AH Satellite Administrative Office. This number is expected to increase on future updates, as we are in the planning stages of a new Public Works Garage. Community centres and fire stations are available 24/7 on an as needed basis. The remainder of the buildings operate on scheduled hours ranging from 10 to 40 hours per week.

2.0 Energy Management Policy

2.1 Commitment by the Township

The Township of Algonquin Highlands will use existing resources and leverage outside agencies where appropriate, to implement a strategic energy management plan that will reduce our energy consumption and its related environmental impact. The Township of Algonquin Highlands will produce hard copies of the CDM plan when requested to the Plan Administrator.

2.2 Vision

This CDM plan is guided by the vision and goals contained in the Township's Strategic Plan. The Township of Algonquin Highlands will strive to continually reduce energy consumption and costs through sensible use of energy and resources, while still maintaining an efficient and effective level of service for our ratepayers and the general public.

2.3 Goals and Objectives

- To improve energy efficiency of Township facilities by utilizing best practices to reduce operating costs, energy consumption and the associated greenhouse gas emissions.
- To improve awareness of climate change and greenhouse gas emissions by providing education and awareness of opportunities to Township staff as well as the general public.
- Demonstrate energy management leadership and commitment within the Township of Algonquin Highlands.
- Demonstrate sound operating and maintenance practices to improve the reliability of the Township of Algonquin Highlands' equipment and reduce maintenance costs.
- Enhance fiscal accountability through savings and cost avoidance leading to both direct and indirect savings.
- Provide an ongoing forum for discussion within the Township of Algonquin Highlands on energy management to explore new ideas and trends.

2.4 Reduction Target

The Township will continue to make every effort to reduce energy consumption by 1% per year between now and 2029.

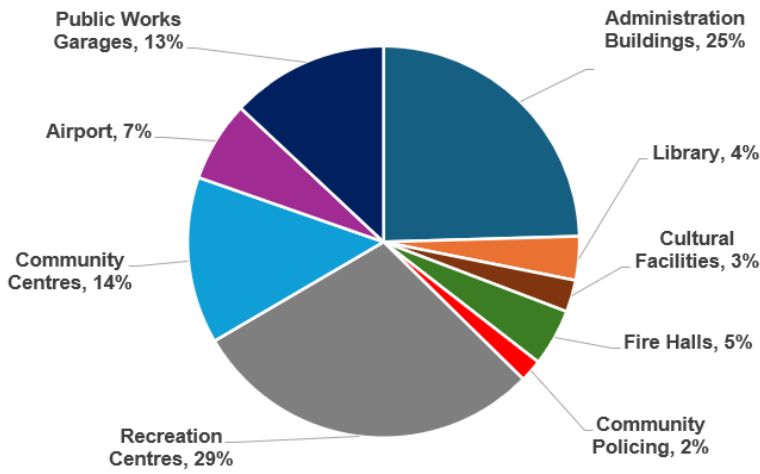
3.0 Energy Consumption and Green House Gas Emissions

3.1 Energy Consumption for 2017 through 2023

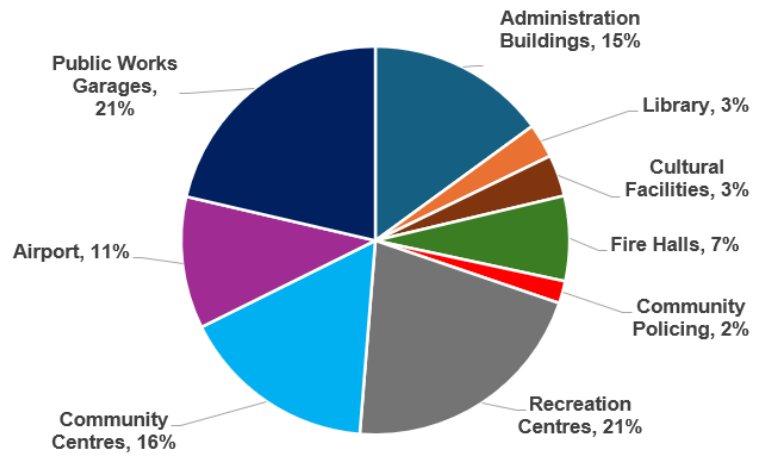
Year	Kwh	Furnace Oil (L)	Propane (L)
2017	381,713.43	24,031.63	55,934.13
2018	424,355.97	24,954.72	65,196.08
2019	416,029.90	22,142.69	66,200.09
2020	354,294.70	9,543.00	67,173.00
2021	266,036.21	10,459.64	76,765.90
2022	368,263.31	8,159.20	94,451.80
2023	340,037.66	6,806.80	86,381.80

The following graphs illustrate the usage of energy throughout the Township facilities in 2017 compared to 2023.

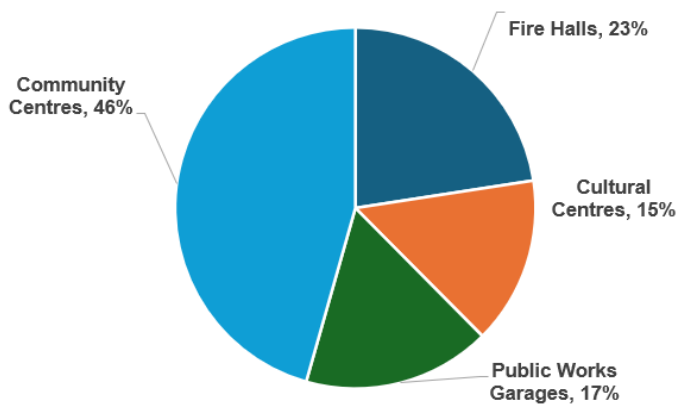
Electricity Use 2017



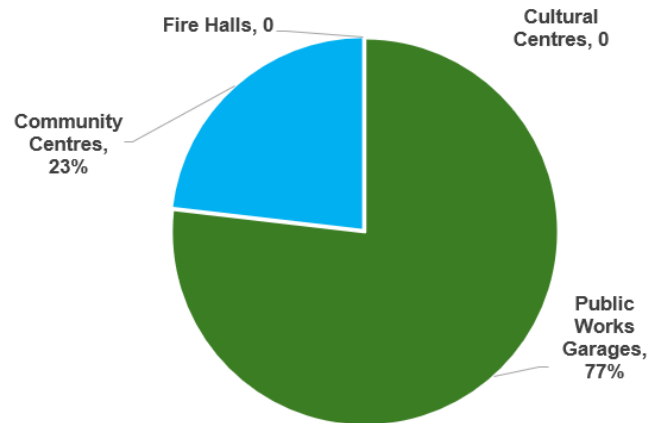
Electricity Use 2023

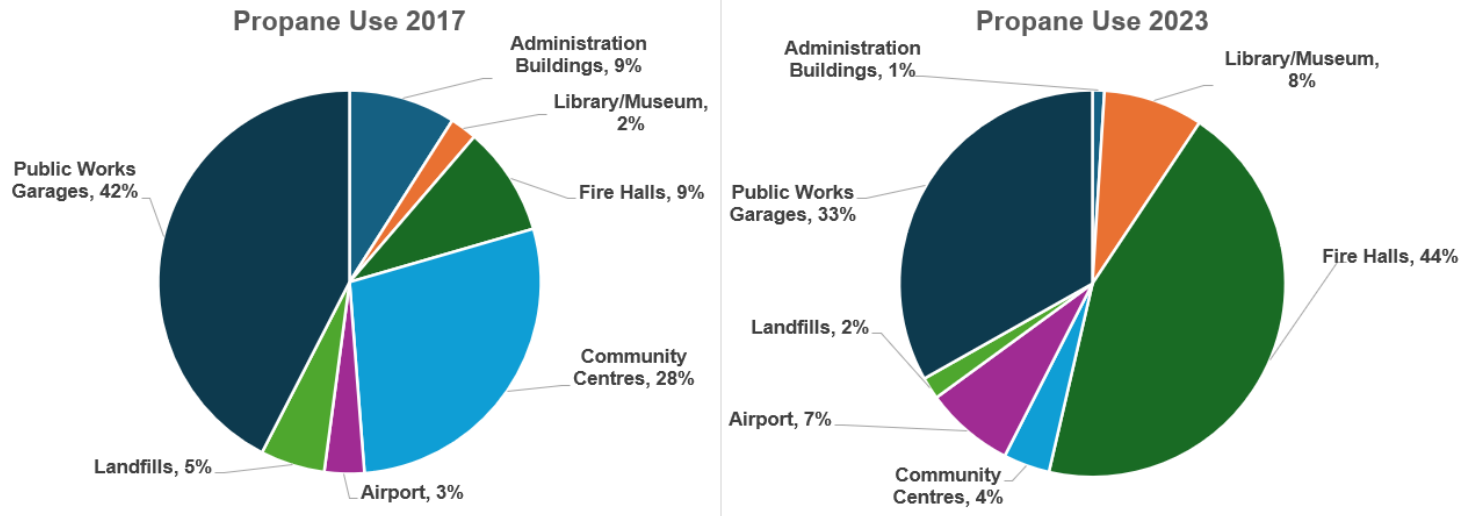


Furnace Oil 2017



Furnace Oil 2023





3.2 Greenhouse Gas Emissions (kg) for 2017 through 2023

	2017	2018	2019	2020	2021	2022	2023
A H Fire Station 60 (Dorset)	14,958.44	11,131.03	12,798.84	17,934.56	12,200.00	11,200.00	12,100.00
A H Fire Station 70 (Oxtongue)	8,126.36	11,174.33	8,450.07	9,006.63	8,400.00	8,400.00	8,800.00
A H Fire Station 80 & Community Centre (Stanhope)	47,893.56	53,631.40	56,483.40	30,063.49	37,200.00	45,800.00	40,400.00
A H Main Administrative Office	4,914.26	5,404.55	5,947.86	5,358.76	3,700.00	4,400.00	2,500.00
A H Satellite Administrative Office	662.83	1,428.39	1,052.31	23.20	0.00	0.00	0.00
Club 35	1,852.20	0.00	0.00	0.00	0.00	0.00	0.00
Dorset Community Police	122.49	210.02	235.30	177.46	100.00	200.00	200.00
Dorset Museum	10,021.08	11,856.20	424.03	225.98	9,700.00	12,100.00	11,500.00
Dorset Public Works Garage (OLD)	11,143.30	12,489.48	17,347.10	9,484.00	17,300.00	16,400.00	16,600.00
Dorset Recreation Centre	1,928.42	3,417.15	3,719.43	2,636.28	1,900.00	2,300.00	2,000.00
Dorset Roads Garage (NEW)	21,054.96	26,050.18	27,493.04	23,943.95	23,500.00	25,200.00	26,900.00
Haliburton-Stanhope Airport	3,339.17	3,745.61	3,564.03	3,561.71	9,400.00	12,200.00	11,000.00
Landfill - Dorset	1,168.36	1,107.11	696.79	472.15	900.00	900.00	700.00
Landfill - Hawk Lake	1,062.34	887.17	696.18	981.45	0.00	0.00	0.00
Landfill - Maple Lake	863.14	1,017.65	697.58	1,144.79	600.00	600.00	400.00
Landfill - Oxtongue Lake	594.65	829.75	907.70	869.11	600.00	900.00	700.00
Landfill - Pine Springs	1,005.38	895.52	3,111.24	932.91	500.00	800.00	700.00
Oxtongue Lake Community Ctr	5,472.08	5,809.84	7,703.01	7,474.45	4,500.00	7,300.00	4,500.00
Stanhope Public Library	2,200.14	2,803.85	4,329.90	3,923.13	2,800.00	3,900.00	3,100.00
Stanhope Roads Garage	16,316.09	23,743.69	23,566.02	22,085.41	19,200.00	22,800.00	17,300.00
Water Trails Office	3,827.45	3,627.02	5,106.58	2,252.35	2,700.00	3,700.00	2,600.00
Total	158,526.70	181,259.94	184,330.41	142,551.77	155,200	179,100	162,000.00

3.3 Energy Intensity (ekWh/sqft) for 2017 through 2023

	2017	2018	2019	2020	2021	2022	2023
A H Fire Station 60 (Dorset)	18.27	16.89	17.50	21.01	14.71	19.51	18.69
A H Fire Station 70 (Oxtongue)	13.09	16.40	14.02	13.47	11.34	13.59	13.51
A H Fire Station 80 & Community Centre (Stanhope)	22.82	25.33	25.64	16.45	18.58	22.85	21.04
A H Main Administrative Office	14.12	14.39	14.15	13.07	10.00	13.74	10.19
A H Satellite Administrative Office	14.72	18.57	13.26	0.35	0.00	0.00	0.00
Club 35	5.84	0.00	0.00	0.00	0.00	0.00	0.00
Dorset Community Police	18.44	18.50	20.10	18.16	11.72	16.29	16.44
Dorset Museum	15.27	17.39	4.34	2.77	15.62	19.54	19.54
Dorset Public Works Garage (OLD)	21.50	24.06	32.90	25.15	34.90	35.69	36.48
Dorset Recreation Centre	19.49	20.21	21.33	18.11	11.80	14.62	12.51
Dorset Roads Garage (NEW)	23.84	29.36	30.28	25.91	25.90	28.16	30.59
Haliburton-Stanhope Airport	38.61	38.65	32.03	31.56	71.30	93.69	82.73
Landfill - Dorset	66.63	63.13	39.73	26.92	48.67	49.00	37.36
Landfill - Hawk Lake	60.58	50.59	39.70	55.97	0.00	0.00	0.00
Landfill - Maple Lake	39.38	46.42	31.82	52.22	25.52	27.46	16.58
Landfill - Oxtongue Lake	27.13	37.85	41.41	39.65	28.48	39.53	33.79
Landfill - Pine Springs	45.87	40.85	141.94	42.56	23.48	37.77	32.29
Oxtongue Lake Community Ctr	26.92	27.83	33.91	33.36	21.40	35.25	24.03
Stanhope Public Library	21.46	23.62	28.60	25.65	16.64	21.74	21.21
Stanhope Roads Garage	26.77	36.62	36.90	38.71	30.68	35.87	27.75
Water Trails Office	49.02	49.33	65.25	49.80	39.68	55.83	39.71
Total	589.77	615.99	684.81	550.85	460.42	580.13	494.44

3.4 Percentage Change GHG Emissions and Energy Intensity

	Percentage Change (2017 - 2023) GHG Emissions	Percentage Change (2017 - 2023) Energy Efficiency
A H Fire Station 60 (Dorset)	-19.11%	2.30%
A H Fire Station 70 (Oxtongue)	8.29%	3.21%
A H Fire Station 80 & Community Centre (Stanhope)	-15.65%	-7.80%
A H Main Administrative Office	-49.13%	-27.83%
A H Satellite Administrative Office	0.00%	0.00%
Club 35	0.00%	0.00%
Dorset Community Police	63.28%	-10.85%
Dorset Museum	14.76%	27.96%
Dorset Public Works Garage (OLD)	48.97%	69.67%
Dorset Recreation Centre	3.71%	-35.81%
Dorset Roads Garage (NEW)	27.76%	28.31%
Haliburton-Stanhope Airport	229.42%	114.27%
Landfill - Dorset	-40.09%	-43.93%
Landfill - Hawk Lake	0.00%	0.00%
Landfill - Maple Lake	-53.66%	-57.90%
Landfill - Oxtongue Lake	17.72%	24.55%
Landfill - Pine Springs	-30.37%	-29.61%
Oxtongue Lake Community Ctr	-17.76%	-10.74%
Stanhope Public Library	40.90%	-1.16%
Stanhope Roads Garage	6.03%	3.66%
Water Trails Office	-32.07%	-18.99%
Average Change Across Facilities	9.67%	1.40%

** Haliburton-Stanhope Airport – Prior to 2020, the energy information recorded was based on the terminal building only. In 2021, multiple airport facilities were combined into one reporting cell, which is why there is a significant increase in the percentage change. **

** The use of the Airport facilities increased due to the COVID 19 pandemic, when we relocated our Maintenance department to base their operations out of that building.**

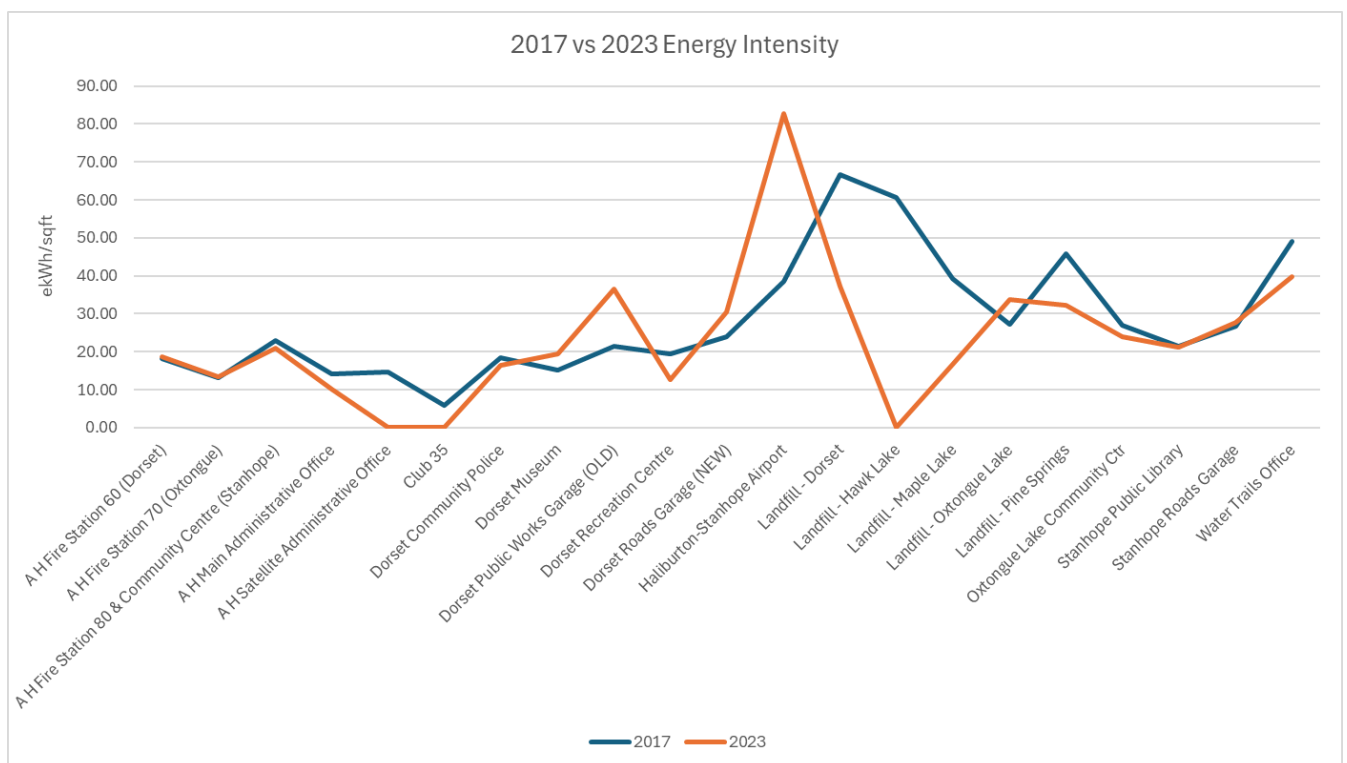
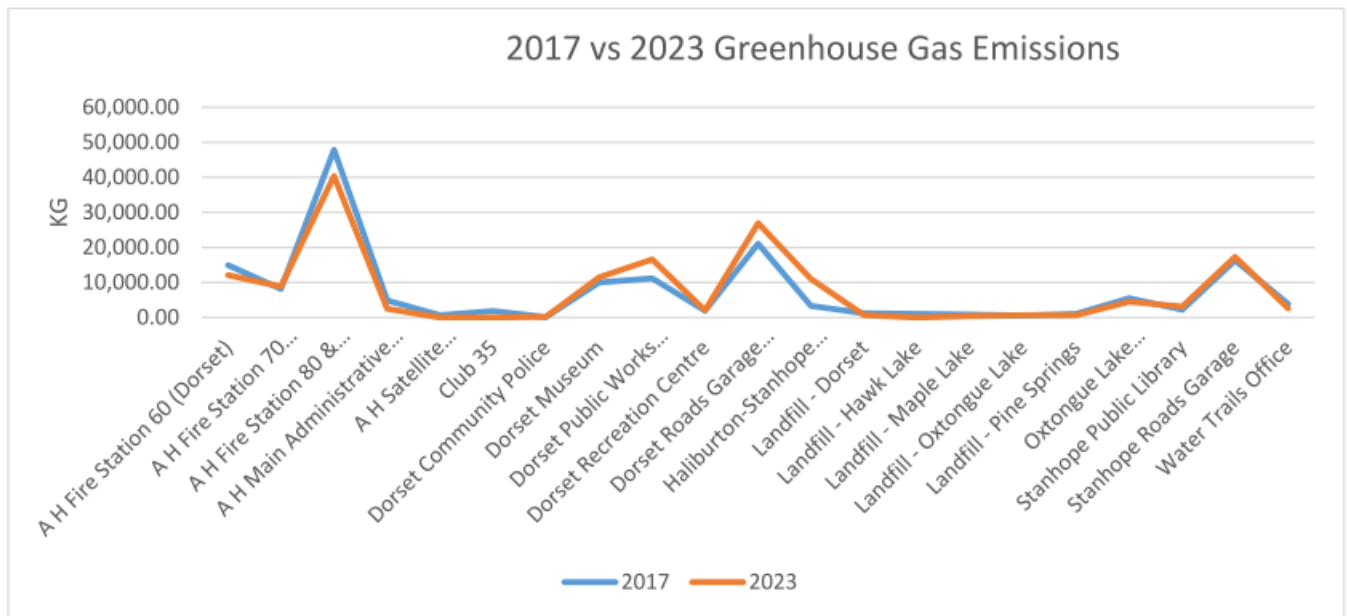
The following chart represents our percentage change not including the Airport buildings to best present that we are meeting our goal with the exception of the change of the data reported. Moving forward, we will now have a new baseline for the energy consumption including all airport facilities.

	Percentage Change (2017 - 2023) GHG Emissions	Percentage Change (2017 - 2023) Energy Efficiency
A H Fire Station 60 (Dorset)	-19.11%	2.30%
A H Fire Station 70 (Oxtongue)	8.29%	3.21%
A H Fire Station 80 & Community Centre (Stanhope)	-15.65%	-7.80%
A H Main Administrative Office	-49.13%	-27.83%
A H Satellite Administrative Office	0.00%	0.00%
Club 35	0.00%	0.00%
Dorset Community Police	63.28%	-10.85%
Dorset Museum	14.76%	27.96%
Dorset Public Works Garage (OLD)	48.97%	69.67%
Dorset Recreation Centre	3.71%	-35.81%
Dorset Roads Garage (NEW)	27.76%	28.31%
Haliburton-Stanhope Airport		
Landfill - Dorset	-40.09%	-43.93%
Landfill - Hawk Lake	0.00%	0.00%
Landfill - Maple Lake	-53.66%	-57.90%
Landfill - Oxtongue Lake	17.72%	24.55%
Landfill - Pine Springs	-30.37%	-29.61%
Oxtongue Lake Community Ctr	-17.76%	-10.74%
Stanhope Public Library	40.90%	-1.16%
Stanhope Roads Garage	6.03%	3.66%
Water Trails Office	-32.07%	-18.99%
Average Change Across Facilities	-1.26%	-4.05%

3.5 Data Analysis and Trends

Staff analyzed the data, and a comparison was completed on the data from 2023 using 2017's data as a baseline to determine our reduction percentage. Due to the COVID 19 pandemic, the data during 2020-2022 does not best represent our energy efficiencies because of the closures and use of the buildings was inconsistent.

The below charts illustrate the energy insanity and greenhouse gases for each building, with a summary of the changes the Township of Algonquin Highlands made during 2017-2023 to illustrate the progress we are making to reduce our energy consumption.



- Station 80 and AH Main Administrative Office have decreases in both their energy intensity and greenhouse gas emissions.
- AH Satellite Administrative Office and Club 35 are at 0. The AH Satellite Office was torn down and Club 35 was sold during this time period.
- Dorset Museum is noted to have an increase, but this building underwent an addition that we hope to see in the future comparisons a decrease.
- Old Public Works garage did see an increase and have noted it as a potential area to explore to increase energy efficiencies.

- Dorset Recreation Centre has been closed in 2023 but this building has undergone a major renovation to which we will be able to establish a new baseline.
- Airport noted an increase due to the change in data reporting. A new baseline will be established for the next update in the CDM plan.
- Landfills have decreases due to the removal of electricity and installation of solar panels, propane and generator use when necessary.
- Water Trails office had a significant decrease in energy intensity, during the comparison time an upgraded energy efficient heat source was completed.

4.0 Energy Conservation Measures

4.1 Past and Current Projects

Like many others worldwide, the onset of the COVID-19 pandemic necessitated an immediate shift in priorities to safeguard the health and well-being of our employees, the public, and our community. These critical measures, while essential, unavoidably resulted in delays for some of our planned projects in the Township. Despite these challenges, we are committed to ensuring projects that were delayed, are now being completed.

The Public Works Department has continued to purchase equipment with Tier 4 requirements. The aim is to drastically reduce two primary exhaust pollutants. Particulate matter, or PM, is mostly unburned hydrocarbons like soot that previously shot out the exhaust stack unimpeded, and nitrates of oxygen or NO_x, which is a primary ingredient of smog.

In 2019, all windows in the original part of the main administrative office on North Shore Road were upgraded.

In 2020, new windows, roof, soffit, and fascia has now been completed at the Stanhope Library.

In 2022, additional insulation was added to the Administrative Office to decrease heat loss for the building.

In 2023, the Township of Algonquin Highlands purchased two hybrid gasoline SUVs.

In 2023, we installed our first EV station, and another one is set to be installed in 2024.

A project that was delayed due to the pandemic, was the mold remediation of the Dorset Recreation Centre. In 2023, we moved forward with the project with a nearing completion date of July 2024. In that building, some of the insulation required replacement and upgrading. The lighting was also upgraded throughout the entire building to energy efficient LED lighting with motion sensors. New exterior doors were also replaced, energy efficient toilets were installed and the installation of a new HVAC system. We anticipate seeing significant improvements in the building's emissions.

In 2024, at the Dorset Lions Centennial Park lighting was upgraded there removing existing outdoor lanterns to energy efficient LED lighting.

Our Fire Departments have been continuously upgrading their hall lighting from incandescent to LED, with the addition of motion sensors where applicable. They have also made the following upgrades to further reduce the Townships carbon footprint: extraction equipment changed from gas operated to rechargeable batteries, scene lighting is now on rechargeable batteries

removing the operation of gas generators, and all of the ice augers are now battery-operated removing gas powered augers.

4.2 Proposed Projects

The Township of Algonquin Highlands is currently in the planning stages of building a new Public Works Garage for the Stanhope yard. This is a project that was delayed, due to the pandemic. Construction is planned to start in 2024, with completion in 2025. The Township is reviewing a variety of options for energy efficient products, including motion sensor switches, LED lighting, high efficiency heat source furnace and any exterior lighting will have dusk to dawn timers.

The existing Public Works Garage will be upgraded and renovated to utilize the space. Lighting will be upgraded, along with any additional insulation upgrading during the renovation that will be required. The exterior lighting on the building will be upgraded to have dusk to dawn timers.

In 2024, the Dorset Museum will undergo a flat roof replacement and additional insulation will be added.

The Airport Terminal building will be undergoing a renovation to utilize the space. Lighting will be upgraded, along with any additional insulation during the renovation that will be required. The timeline on this project will be dependent on funding.

There is currently heat loss at the Administration Building on North Shore Road through the front doors, those are scheduled to be replaced in 2024.

In 2024, the Kawagama Lake Public Works Garage will undergo a renovation to replace and upgrade the insulation in the building. There has been evidence of heat loss, so we anticipate that this change will help in decreasing the building's emissions.

At the Stanhope Community Centre, the hot water tank was upgraded in 2024 and additionally this building will undergo an assessment to replace windows, doors, and insulation upgrades for consideration in 2025.

In 2025, the Oxtongue Community Centre will undergo a furnace upgrade to a more energy efficient furnace.

Future opportunities are being considered for energy audits to identify thermal and lighting efficiencies in our buildings to determine next best steps for any further upgrades that can be made.

4.3 Renewable Energy Considerations

The Algonquin Highlands Main Administrative Office located on North Shore Road has had a ground source heat pump in place since 1990, providing central heating and cooling for the building.

The feasibility of implementing other types of renewable energy technologies with building systems should be evaluated when opportunities arise with building renewals, major renovations, etc.

4.4 Measures to Ensure Success

Staff will continue to monitor and assess energy performance of municipal facilities and will seek energy efficiency improvements.

Energy efficiency and cost analysis will be incorporated into the design of new construction projects and incorporated into capital planning and budget development procedures where practicable.

Staff will investigate and communicate funding sources for energy projects including government and utility grants and incentives.

The Township will utilize purchasing cooperatives to procure diesel and furnace oil. Opportunities to jointly procure other energy commodities will be investigated.

Energy efficient will be considered as part of the criteria for selection and evaluation of materials and equipment.

5.0 Evaluation

On an annual basis Department Heads will meet to review annual consumption. They will be updated on the energy usage across the Township, compared with the data from previous years. This will assist the Township in monitoring, measuring, and managing consumption in facilities.

Upon completion of the annual reporting to the Province, Township staff will complete the following:

- Review past annual consumption for all buildings.
- Identify any upcoming projects in relation to energy efficiencies and prioritize any required actions to ensure that all energy efficiencies are being explored.
- Plan Administrator will direct changes to be captured in the next CDM update, along with progress towards next projects, and cost savings achieved.

In addition, the Energy Management Plan will be reviewed and updated as necessary.

6.0 Conclusion

The greatest reductions were:

- AH Main Administrative Building reduced the usage of 9577.48 kWh from 2022 to 2023, due to the projects that were completed to support this change. Overall, using our baseline of 2017 compared to 2023, a reduction of 41,675.77 kWh was observed.
- In 2017, we were utilizing 24,031.63 litres in furnace oil across the Township. A reduction was noted in 2023 to 6806.80 litres. This represents a reduction of 17,224.83 litres, which is a decrease of approximately 43,406.57 kg of net CO₂. This reduction was due to switching out oil heating furnaces to propane high efficiency furnaces, which burn more efficiently and release less CO₂.

The Township of Algonquin Highlands continues to prioritize importance of the reduction of energy consumption and environmental impact by fulfilling the goals outlined in section 2.3 of this plan.