



Energy Conservation & Demand Management (ECDM) Plan 2024

May 21, 2024



Compassion – Accountability – Integrity – Respect

Overview



- Introduction of O. Reg. 25/23 for BPS Reporting Organizations
- Goals of HHHS ECDM Plan for 2024 to 2029
- Energy Consumption from 2019 to 2023
- Energy Conservation & Demand Initiatives from 2019 to 2023
- Renewable Energy from 2019 to 2023
- Proposed Future Energy Initiatives from 2024 to 2029

Introduction



O. Reg 507/18 under the *Electricity Act, 1998*, titled Broader Public Sector (BPS): Energy Reporting and Conservation and Demand Management Plans, was revoked and replaced with the new reporting regulation O. Reg 25/23 for BPS organizations in Ontario.

This new regulation aims to streamline reporting, simplify language, and eliminate duplicative and unclear reporting requirements..

HHHS ECDM plan will include:

- Annual energy consumption during the last year.
- Information on renewable energy generation from solar array and geo-thermal heating and cooling.
- Goals and objectives for conserving and/or reducing energy consumption and managing demand for energy.
- **Confirmation that HHHS has approved the Strategic Energy Conservation and Demand Management Plan (ECDM).**

ECDM Plan for 2024 to 2029



- Reduce energy usage by 5% over the next 5 years, 2024 through 2029, through both behavioural and facility improvement initiatives.
- Optimize the Geothermal performance
- Optimize the 10kW Solar Panel output
- Re-invest surpluses into front line care services and programs
- Key measures for improvement will be:
 1. Electrical average KWh per month per facility
 2. Fuel Oil #2 consumption in Litres per month
 3. Propane consumption in Litres per month

Energy Consumption from 2019 to 2023



Table 1 – HHHS Haliburton 5-Year Energy Summary

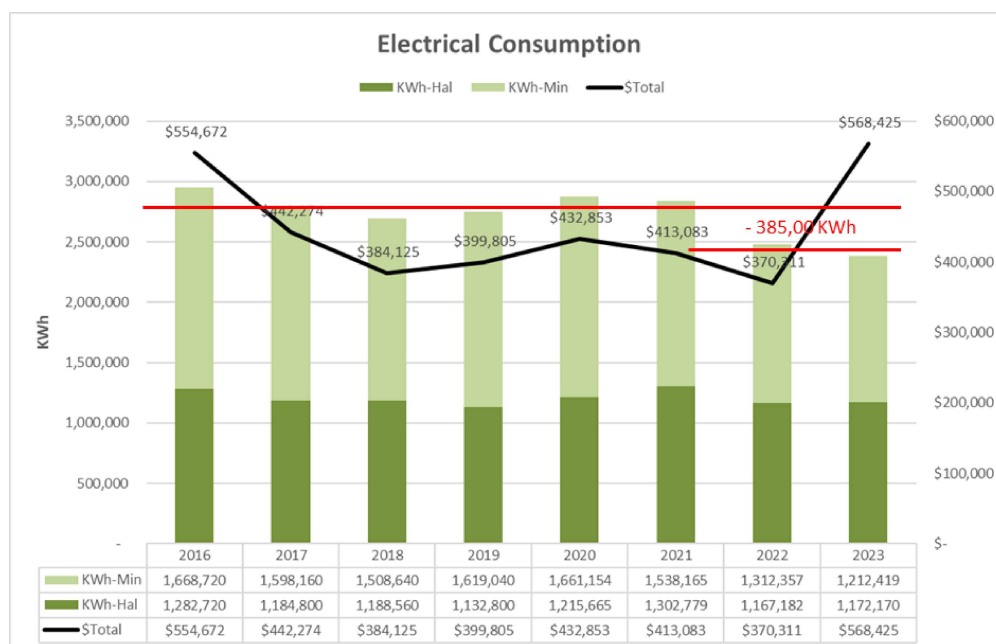
Energy Type	Average 2016-2018	2019	2020	2021	2022	2023
Electricity Kilowatt Hours (KWh)	1,218,693	1,132,800	1,215,665	1,302,779	1,167,182	1,172,170
Fuel Oil #2 Litres (L)	71,268	93,344	72,141	93,188	126,308	92,450
Propane Litres (L)	12,774	11,696	15,232	18,143	17,201	16,916

Table 2 – HHHS Minden 5-Year Energy Summary

Energy Type	Average 2016-2018	2019	2020	2021	2022	2023
Electricity Kilowatt Hours (KWh)	1,591,840	1,619,040	1,661,154	1,538,165	1,312,357	1,212,419
Fuel Oil #2 Litres (L)	113,400	110,607	103,639	116,070	107,067	106,688
Propane Litres (L)	11,882	11,019	15,132	18,715	16,602	14,386

Appendix A

Electrical Power Consumption



Key Points –

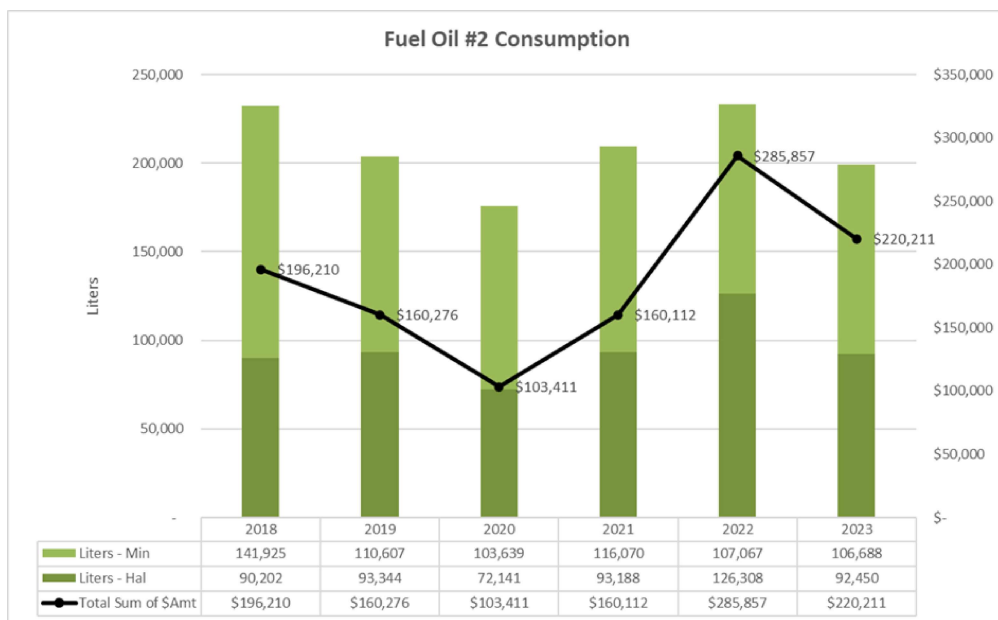
1. Combined reduction of 385,000 KWh driven by:
 - a) LED Lighting complete at both facilities with ~100,000 KWh reduction per site.
 - b) New higher efficiency & modulating boilers and air-cooled chiller installed for 2020 to 2021.
 - c) Fans modulating on variable frequency drives to maintain static pressure in buildings.

2. Significant IESO increases in HOEP and Global Adj. Rates in 2023

IESO = independent electricity system operator
 HOEP = hourly Ontario energy price

Appendix B

Fuel Oil #2 Consumption

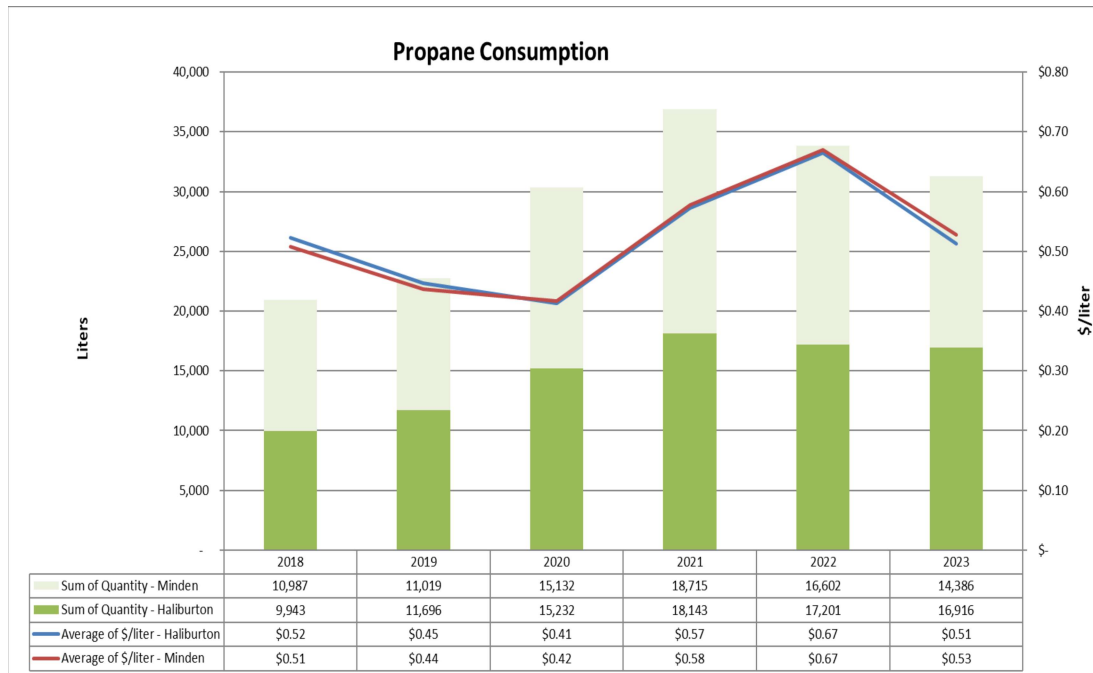


Key Points –

1. Fuel Oil consumption impacted by weather & the number of Heating Degree Days.
2. Johnson Controls Energy Project executed 2020 to 2022
 - a) Haliburton had boiler control issues during 2022 causing both boilers to fire until corrected.
 - b) Estimated 9,000-litre savings in Haliburton, 16,000-litre savings in Minden
 - c) More electrical savings with injection pump design and modulating burner

Appendix C

Propane Consumption



Key Points –

1. Propane is only used in Cooking and Laundry Dryers
2. New Laundry equipment installed in Feb. 2020
 - a) 30% less water & detergent
 - b) Heat Sensor controlled versus Operator decision
3. New machine ran with no breakdowns through COVID-19 Pandemic extended hours.

Energy Conservation & Demand Initiatives from 2019 to 2023



Project Description	Year	Project Cost	Energy Savings per year estimate	Green House Gas Reduction KG of CO ₂
1. Replacement of HHHS Haliburton Laundry Equipment	2020	\$82,000	2,053 KWh 783L Propane	Not significant
2. Replacement of HHHS Minden Laundry Equipment	2020	\$82,000	2,874 KWh 1,096L Propane	Not significant
3. HHHS Haliburton air-cooled chiller replacement with multi-scroll compressors.	2020	\$135,000	Est. 35,000KWh Dependent on Cooling Degree Days & Grass Lake water temperature	1,118
4. HHHS Minden air-cooled chiller replacement with multi-scroll compressors.	2020	\$135,000	25,917 KWh Dependent on Cooling Degree Days	803
5. HHHS Minden – Low Flow Water Fixtures a) Replace all toilets with 4.5-liter toilets	2021	\$50,000	Water Savings 2071 m ³ / year	Not applicable
6. HHHS Haliburton - Hydronic Heating including: a) modulating boiler upgrade b) Exterior Piping Insulation	2021	\$425,000 +\$8,000	8,900 L Fuel Oil 25,200 KG of CO ₂ Dependent on Heating Degree Days	36,058
7. HHHS Minden – Hydronic Heating including: a) Modulating Boiler b) Perimeter Heating Automation c) Exterior Ductwork Insulation	2021	\$560,000 + \$75,000 + \$35,000	15,700L Fuel Oil 52,500 KG of CO ₂ Dependent on Heating Degree Days	62,978
8. HHHS Minden LED Lighting including: a) Exterior Lighting b) Hyland Crest LTCH c) Minden Hospital wing 2018	2022	\$195,000	99,982 KWh KWh ~8-9% reduction Exclude 2018 retrofit ~ 45,500 KWH or 5%	Not estimated
9. HHHS Haliburton LED Lighting including: a) Exterior Lighting b) Hospital Lighting c) Highland Wood LTCH	2022	\$197,000	133,282 KWh ~12-14% reduction	Not estimated

Johnson Controls Energy Project executed during 2020 to 2022 delivering:

- a) LED Lighting complete at both facilities with 100,000 to 133,000 KWh reduction per site.
- b) New higher efficiency, modulating Boilers with variable frequency injection pumps targeting 8,900 to 15,700-litre reduction in fuel oil.
- c) Modulating air-cooled chiller installed with 26,000 to 35,000 KWh reduction per site.
- d) New Laundry equipment installed in 2020 requiring less water, chemical and propane. COVID19 drove extended laundry requirements.

Renewable Energy from 2019 to 2023



Table 3 – HHHS Haliburton Renewable Energy Summary

Energy Type	2008 Benchmark	2019	2020	2021	2022	2023
Solar Panels Kilowatt Hours (KWh)	0	9,285	4,455	8,941	0	0
Geothermal Fuel Oil #2 (L) reduction to benchmark year	208,133	114,789	135,992	114,945	81,825	115,683

Table 4 – HHHS Haliburton Renewable Energy Summary

Energy Type	2008 Benchmark	2019	2020	2021	2022	2023
Solar Panels Kilowatt Hours (KWh)	0	10,468	6,294	8,913	0	0
Geothermal Fuel Oil #2 (L) reduction to benchmark year	277,240	166,633	173,601	161,170	170,173	170,552

Key Points:

- a) Haliburton facility had a boiler control issue resolved in late February 2022
- b) Solar Panel Inverter Controller Failures in Spring 2022
 - a) Local Electrical Contractors unable to identify root-cause
 - b) Contacted local Solar & Wind Power Contractor in April 2024.
 - Inverter Controller purchased for both sites = \$6,000/ea.
 - Minden on-line April 26th
 - Haliburton installed May 1st; concern with feed line electrical resistance and water contamination. To be tested on a wet day.

Proposed Future Energy Initiatives from 2024 to 2029

1. Re-initiate Environmental Committee starting Q2 2024

- a) Become a member of The Canadian Coalition for Green Health Care.
- b) Increase awareness of the Green Hospital Score Card.
- c) Pursuit of smaller individual behavioural ideas,
 - i.e. turning computer monitors off, signage to turn lights off, closing windows during heat of the day, etc.

2. Building Automation Optimization targeting 5% KWh reduction

- a) Investigate extended “Free Cooling” conditions for the hospital and common areas.
 - LTCH is restricted to 100% supply air limiting options.
- b) Investigate fans & pump shut down or slow down during night operation where practical.
- c) Investigate Energy Monitoring Module & Devices to monitor area consumption to identify opportunities (requires capital)
- d) Turning off re-heat coils in common areas, i.e. offices, meeting rooms, corridors & utility areas

3. EV Charging Stations for Revenue

- a) Consider investing in EV charging stations by repurposing current block heater circuits noting that infrastructure upgrades would also be required
- b) Requires engineering & Hydro One analyses of loads.
- c) Potential for minor revenue generation.