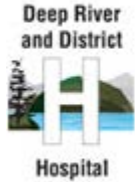


DEEP RIVER & DISTRICT HOSPITAL



CONSERVATION AND DEMAND
MANAGEMENT PLAN
2019-2024



Deep River & District
HOSPITAL

NOVEMBER 2019

RE: Conservation and Demand Management Plan

We are happy to confirm the enclosed Conservation and Demand Management Plan for Deep River & District Hospital has been approved by our senior team.

The implementation of this plan will continue to coordinate our budgeting, strategic plan, purchasing policy, preventative maintenance plans, environmental management plan, and the policy development processes. A communication plan will also be deployed to convey our energy efficiency commitment and priority to staff, stakeholders, patients and visitors.

Deep River & District Hospital staff will carry out a comprehensive review of all business processes and modify them as necessary to incorporate energy efficiency considerations.

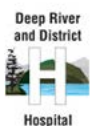
Should you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read 'William Willard'.

William Willard

Vice President of Operations & Chief Financial Officer



Deep River & District
HOSPITAL

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ABOUT DEEP RIVER & DISTRICT HOSPITAL & OUR CDM PLAN

Deep River & District Hospital (DRDH) is an integrated health services organization serving the health needs of North West Renfrew County in partnership with the Champlain Local Health Integration Network (LHIN).

Our Vision

An excellent, compassionate health care experience, every time.

Our Mission

**Caring for every person like a loved one,
within an integrated health system.**

DRDH's Conservation and Demand Management (CDM) plan, which we first completed in 2014, is a step to understanding the impact of our operations on Greenhouse Gas (GHG) emissions, and to take action by setting GHG reduction targets. Both our 2014 and 2019 plans reflect on what we have done, monitor what we are doing, and outline what we are planning to do.

The below table illustrates DRDH's change in energy consumption over the past five years, as well our Greenhouse Gas (GHG) emissions and Energy Use Intensity (EUI). The values from the baseline year (2013) were compared to the last year covered in the previous plan (2018) to quantify our changes over the initial five-year term.

	Electricity	Natural Gas	GHG Emissions	EUI
2013	764,215	116,783	378,452	57.61
2018	837,656	139,878	278,944	66.39
2013 vs. 2018	+10%	+20%	-26%	+15%

As DRDH continued to grow and expand our caring capacity, our energy demand increased between 2013 and 2018. As such, we will use 2018 as our new baseline for energy consumption and strive to reduce these values over the next five years. We are committed to identifying areas to improve efficiencies and finding ways to decrease our overall environmental impact. By doing so, we will aim to achieve the following results by 2024:

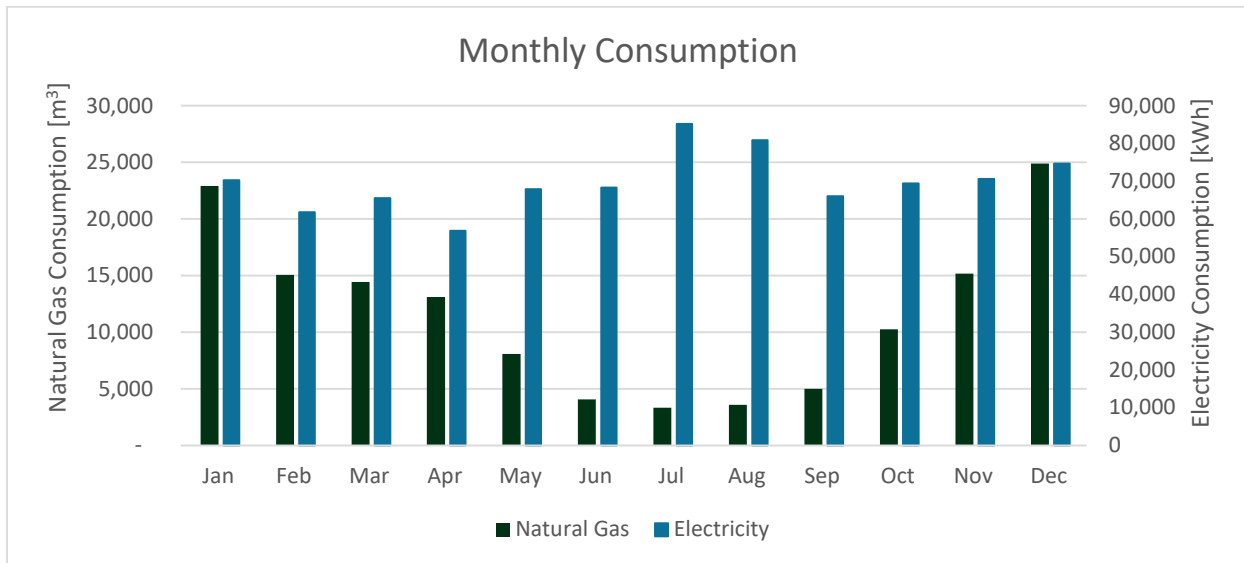
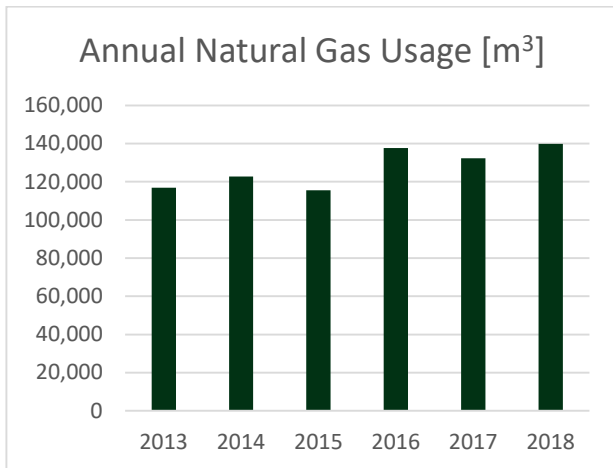
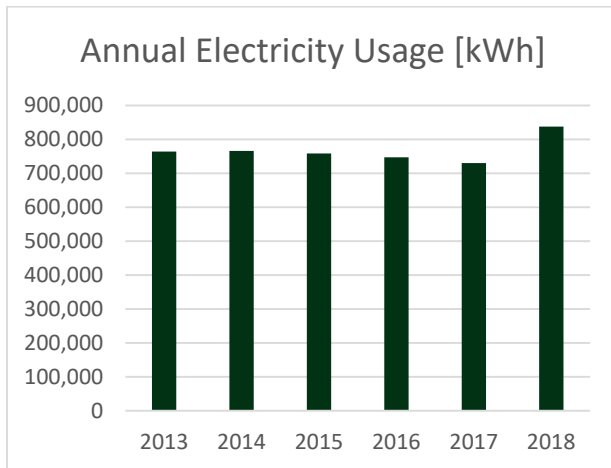
- 4% reduction in total energy use.
- 1,637-kilogram reduction in CO₂e.
- \$5,978 annually to the bottom line (\$29,892 over 5 years).

Active management of energy related costs and risks in this manner will provide a significant economic return to the organization and will support other key organizational objectives.

ENERGY CONSUMPTION 2013-2018

As part of Ontario Regulation 507/18 under the Electricity Act, 1998, DRDH prepares, publishes and makes available to the public our annual energy consumption and resulting greenhouse gas (GHG) production. The following is a summary of these values. Our energy consumption values were plotted to better display our usage trends and have been included below.

Year	Floor Space [ft ²]	Electricity [kWh]	Natural Gas [m ³]	GHG Emissions [kg CO ₂ e]	EUI [ekWh/ft ²]
2013	34,993	764,215	116,783	378,542	57.61
2014	34,993	766,163	122,731	266,864	59.49
2015	34,993	758,334	115,605	245,736	57.05
2016	34,993	747,209	137,598	262,799	63.25
2017	34,993	730,176	132,348	262,847	60.77
2018	34,993	837,656	139,878	278,944	66.39



RESULTS OF OUR ENERGY MANAGEMENT STRATEGIES

Previously, DRDH has used a project-by-project system to address energy conservation and demand management. The system was based on replacing equipment as they broke down and/or at the end of their services lives. This project-by-project system did not have a formal method of recording energy savings, something that DRDH has worked to improve over the past five years. In addition to this, we also identified several CDM opportunities that we aimed to complete. The CDM initiatives that were undertaken have been summarized below.

HYDRONIC HEATING SYSTEM – 2016

Prior to 2016, the hospital had an insufficient capacity to heat the Long-Term Care (LTC) Home. As such, rooms were often heated with electric heaters to ensure residents were comfortable. In late 2016, DRDH underwent a heating system upgrade which saw the feeder pipe being increased and all the radiators being replaced with radiant heating panels. This increased the heating capacity and enabled the LTC to maintain comfortable temperatures, but also switched the fuel source from electricity to natural gas. As the heating capacity increased, so did the hospital's natural gas use. This upgrade improved the hospital's efficiency at heating and temperature control.

COOLING PLANT UPGRADE – WINTER 2017

Previously, DRDH's air conditioning unit had been operating below its capacity which resulted in high temperatures in the Hospital and in the (LTC) Home. Completed during the winter of 2017, two new chillers were installed in preparation for the warmer months, which often see power outages in the area. The new AC units have since improved the working and healing environment of our facility and reduced risk to patients and staff from the otherwise high temperatures. However, the new units have caused an increase in our electricity usage as they run at a higher cooling capacity than the old inefficient system had.



FEED-IN-TARIFF SOLAR PANEL PROJECT – 2016

In 2016, DRDH installed solar panels as part of our energy efficiency efforts. A total of 550 solar panels were installed on DRDH's roof to help generate funding for the hospital.

The Feed-in-Tariff (FIT) solar panel project is designed to encourage and promote greater use of renewable energy sources by allowing DRDH to sell our electrical energy output to the grid. The electricity we produce from our solar panels is sold at an attractive price back to Ontario, with the generated funding being put towards other energy efficiency projects within the hospital. The energy is not used directly in the hospital, but rather the funds are used to support the hospital. Since its installation, the FIT solar panels have generated more than 551,120 kWh of electricity, which would otherwise produce over 292.09 Tonnes of CO₂e from the Ontario grid. At same, the project generated revenues or \$116,721 for the hospital.



Ontario has one of the greenest electricity grids in Canada, but still relies on GHG producing methods to meet the provincial energy demands during peak times. This means that for every kilowatt-hour (kWh) that a facility consumes, a small amount of emissions is released. DRDH's FIT solar panels help to reduce the net emissions released in Ontario by providing an additional source of clean energy to the grid. While we are not directly reducing our own GHG emissions, we are contributing to Ontario's goal of emission reduction.



BUILDING AUTOMATION SYSTEM UPGRADE

The Building Automation System was upgraded, which saw multiple energy efficiency projects within the Hospital. The two new chillers were electronically interlocked to prevent simultaneous operations; only one can be operating at a time. The operation of a controls pneumatic air compressor and air dryer that was supplying about 8 pneumatic thermostats was also eliminated. The pneumatic end devices were replaced with electronic ones, allowing the hospital to power down the dryer and compressor.

ENERGY MANAGEMENT OBJECTIVE AND GOALS

In 2014, our primary objective was to improve the management of DRDH's energy usage, specifically, reducing our 2011 electricity and natural gas values by 5% by the end of 2015. Going forward, we have altered this objective slightly to reduce our energy consumption by 4% by 2024 based on 2018 values.

	Electricity	Natural Gas
2011	832,473	117,366
2015	758,334	115,605
2011 vs. 2015	-9%	-2%

We were successful in achieving this goal, reducing our total annual electricity consumption by 9% and our natural gas consumption by 2%. This energy use reduction represents a decrease of 4,611 kgCO₂e in GHG emissions released from DRDH. We will continue to work towards reducing our consumption and thereby our emissions for the coming five years.

In addition to this, we will be renewing our goals from 2014 to ensure we continue to be conscious of our energy consumption and environmental impact. The goals are as follows:

- Encourage reduced greenhouse gas emissions and energy consumption in the Hospital by promoting building systems that create more sustainable, efficient, healthy, and livable patient environments.
- Maximize the use of operational budgets by ensuring that the Hospital facilities are operating in as energy efficient manner as possible.
- Ensure that minimizing energy use is considered throughout the various aspects of Hospital operations including purchasing where financially viable.
- Recognizing the importance of the input and participation of Hospital employees, patients and visitors in supporting energy conservation and sustainability initiatives through education, awareness and training.

DRDH'S ENERGY MANAGEMENT STRATEGIES

Continuing from our previous plan, DRDH will continue to implement and adhere to the following energy management strategies.

UTILITY DATA MANAGEMENT

DRDH will begin collecting and analyzing monthly energy billing information to track trends and outliers; this will also include informing Staff about energy consumption. This effort will produce an energy costs and consumption database that will be used to monitor excessive variations, target facility follow-up evaluations, and highlight areas that could be candidates for improved conservation. This process of energy management will continue to improve DRDH's understanding of the bottom-line impact of energy management.

ENERGY COMMODITIES MANAGEMENT

DRDH has put in place an adaptable energy procurement strategy that allows for the management of the always fluctuating spot market commodity prices. Working with HealthPRO and a third-party energy consultant, DRDH utilizes strategic energy procurement while also obtaining professional insight into utility rates, structures, and demand management.

EQUIPMENT REPLACEMENTS AND UPGRADES

DRDH will continue to implement our project-by-project method of equipment replacement, as our ability for upgrades is largely dependent on our access to funding. However, decisions on infrastructure and equipment improvements will be made based partially on the efficiency and environmental impact, as well as the other benefits the upgrades will bring to the hospital and our patients.

ORGANIZATIONAL INTEGRATION

DRDH will work towards further enhancing our energy management practices, which will include creating an interdepartmental energy management team, improving our energy monitoring and feedback, and providing interactive energy training and awareness. We will work with staff and provide them the necessary tools to address corporate energy concerns which include budgeting, procurement, conservation and generation.

DRDH'S FUTURE CDM INITIATIVES

BUILDING RE-COMMISSIONING

In addition to the above energy management strategies, DRDH will implement several CDM initiatives. We will continue to place a focus on building re-commissioning, which often sees the greatest energy saving opportunities. This may include improving the scheduling of HVAC equipment, optimizing simultaneous heating and cooling, ensuring that boiler controls operate efficiently and fixing malfunctioning sensors. DRDH's efforts to properly re-commission our facilities will significantly help us reach our energy management goals.

ENERGY AND RESOURCE AWARENESS (ERA) PROGRAMS

DRDH has seen success over the past five years from our implementation of ERA programs. It has proved to be an effective means of maintaining DRDH's energy usage without any capital costs and with minimal operational expenses. As such, we will continue to promote a fundamental shift in the personal philosophies of staff and facility users towards reducing their energy use. This includes initiatives such as a Turn Off the Lights program and encouraging staff and visitors to unplug background equipment such as kettles and computers when not in use.

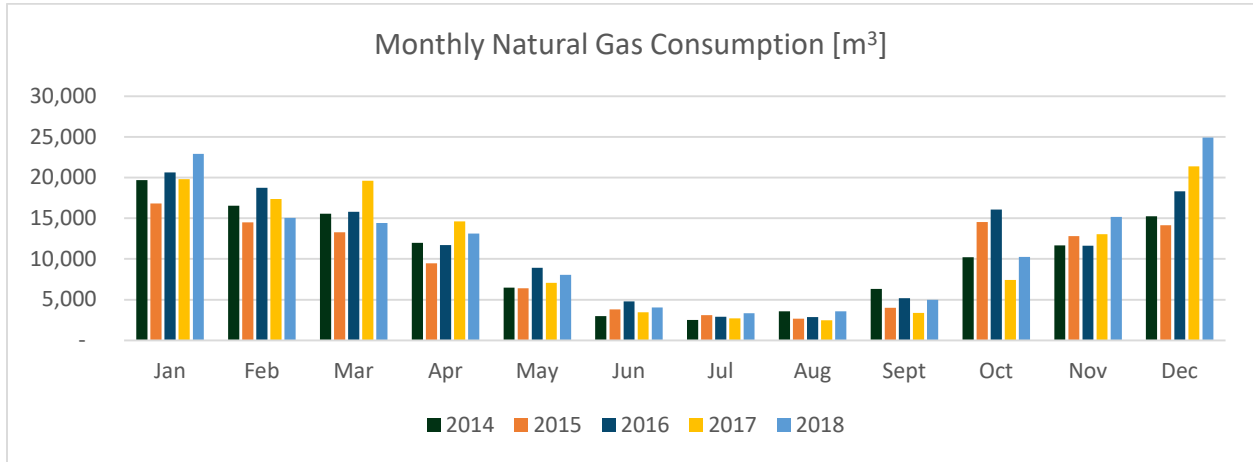
ENERGY MANAGEMENT ACTIONS

DRDH will also strive to complete the following energy CDM projects, funding permitted. Each of the below projects will be in place for the duration of the equipment's/infrastructure's service life, following which the equipment will be replaced again with newer and cleaner technology. A summary of DRDH's future CDM initiatives has been included below. The estimates below may differ from the actual savings depending on the model or type of equipment/infrastructure upgrade that is completed.

Deep River District Hospital's Future CDM Initiatives					
Project Name	Description	Electricity [kWh]	Natural Gas [m ³]	GHG Emissions [kg CO ₂ e]	Savings [\$ /yr]
Roof Repair	Multiple areas of the roof require repair and/or replacement.	TBD	TBD	TBD	TBD
Replace Zone Valves	Continue to replace actuator ducts to ensure HVAC efficiency.	TBD	TBD	TBD	TBD
Install Motion Sensors	Install motion sensors in low traffic areas such as office rooms and bathrooms.	12,871	0	223	\$1,673
Energy & Resource Awareness	Implement programs such as Lights Off within our facility.	25,125	3,600	7,241	\$4,310
TOTAL		45,721	3,600	7,601	\$6,987

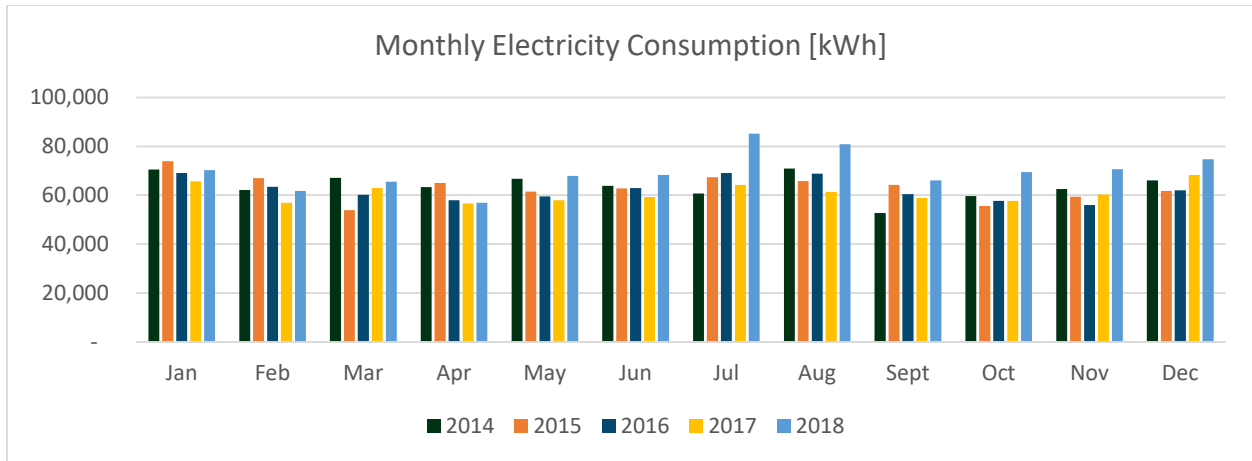
APPENDIX

A1. DRDH'S MONTHLY CONSUMPTION TRENDS FOR NATURAL GAS 2014-2018.



Monthly Natural Gas Consumption							
	2013	2014	2015	2016	2017	2018	2019
January	16,807	19,679	16,831	20,648	19,815	22,920	29,970
February	15,488	16,539	14,496	18,730	17,381	15,068	24,029
March	13,634	15,547	13,301	15,811	19,603	14,430	20,283
April	9,394	11,985	9,476	11,725	14,626	13,118	13,075
May	7,113	6,497	6,398	8,904	7,058	8,068	9,927
June	4,544	2,966	3,826	4,806	3,449	4,062	
July	2,597	2,502	3,119	2,884	2,714	3,335	
August	3,017	3,584	2,649	2,856	2,471	3,574	
September	4,999	6,306	3,985	5,184	3,387	4,985	
October	8,513	10,213	14,556	16,090	7,418	10,246	
November	12,429	11,664	12,823	11,631	13,060	15,163	
December	18,248	15,249	14,145	18,328	21,365	24,909	
TOTAL	116,783	122,731	115,605	137,598	132,348	139,878	97,284

A2. DRDH'S MONTHLY CONSUMPTION TRENDS FOR ELECTRICITY 2014-2018.



Monthly Electricity Consumption							
	2013	2014	2015	2016	2017	2018	2019
Jan	72,539	70,577	73,893	69,026	65,664	70,244	80,474
Feb	64,691	62,133	67,022	63,455	56,887	61,810	71,800
Mar	63,940	67,075	53,936	60,151	62,877	65,521	76,912
Apr	58,036	63,272	65,091	57,943	56,599	56,880	68,231
May	56,707	66,684	61,542	59,507	57,997	67,862	67,748
Jun	62,703	63,876	62,761	62,942	59,231	68,342	66,622
Jul	67,377	60,684	67,370	69,139	64,253	85,203	82,072
Aug	68,450	70,960	65,824	68,868	61,389	80,914	
Sept	56,508	52,686	64,205	60,424	58,930	66,072	
Oct	61,762	59,599	55,566	57,687	57,635	69,450	
Nov	62,204	62,507	59,366	55,986	60,366	70,653	
Dec	69,298	66,109	61,759	62,082	68,349	74,706	
Total	764,215	766,163	758,334	747,209	730,176	837,656	513,859

A3. ELECTRICITY GENERATION FROM FIT SOLAR PANELS

