

HANOVER & DISTRICT HOSPITAL 2019-2024



**Conservation and Demand
Management Plan**

Hanover & District Hospital
90 7th Ave.
Hanover, ON
N4N 1N1

July 2019

Hanover & District Hospital is proud to provide the enclosed renewal of our 5-year CDM plan. This plan highlights our successes over the past 5 years while presenting opportunities for further conservation to 2024.

Some of the key details contained in this plan include but are not limited to:

- ✓ Consumption details from 2013-2018
- ✓ Review of our goals and objectives for conserving along with actual results.
- ✓ Proposed measures conservation measures over the next 5 years along with expected results

We look forward to providing an update on this plan in 2024.

Sincerely,

Paul Burke, Manager of Operations

Kim Mighton, Vice President of Finance & Operations

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HANOVER & DISTRICT HOSPITAL

The Hanover & District Hospital (HDH) provides a full range of primary care hospital services and selected secondary care services to the population of Hanover and the surrounding rural municipalities.

The original hospital was established in 1923 and a new acute care hospital was built in 1973. It is a state-of-the-art facility with a 24-hour Emergency Department.

The Hospital's vision is to be an innovative health care network and its primary goal is to collaborate with partners to ensure that the residents of the region receive the highest quality care possible.

OUR SERVICES:

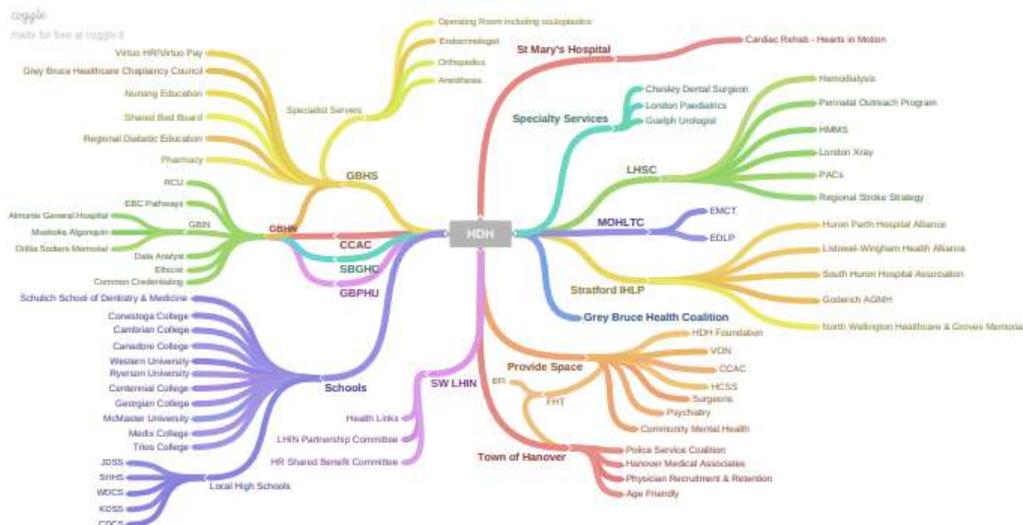
- Two state of the art Operating Rooms
- Day Surgery
- Obstetrics
- Emergency Department
- Specialist Clinics
- Medical/Surgical In-patient Unit
- Special Care Unit
- Palliative Care
- Hemodialysis Unit
- Rehabilitation Services
- Restorative Care Unit
- Laboratory Services
- Diagnostic Imaging

Other services located within the building include: Home & Community Support Services (HCSS), Family Health Team (FHT), a Psychiatrist, a Psychologist, Chaplaincy Services, Victorian Order of Nurses (VON), Diabetic Education and South West Local Health Integrated Network (SWLHIN) Home and Community Support (Formerly known as Community Care Access Center).

OUR MISSION

To collaborate with our partners to ensure that the residents of our region receive the highest quality care possible.

PARTNERSHIPS & COMMUNICATION



OVERVIEW OF OUR PLAN

The purpose of HDH’s energy Conservation and Demand Management (CDM) plan and policies is to promote good stewardship of our environment and community resources. In keeping with our core values of efficiency, concern for the environment, and financial responsibility, HDH’s energy conservation and demand management program will reduce overall energy consumption, operating costs, and greenhouse gas emissions. It will also enable us to provide compassionate service to a greater number of people in the community.

	Electricity [kWh]	Natural Gas [m ³]	Greenhouse Gas [kg CO ₂ e]	Energy Use Intensity [ekWh/ft ²]
2013	1,743,778	442,118	970,783	71.20
2018	2,419,155	597,837	1,216,151	96.95
2013 vs. 2018	+39%	+35%	+25%	+36%

HDH underwent a 3,000 ft² redevelopment of our existing surgical department in 2015/2016. This provided additional preparation and recovery bays, a larger nurse station, and a new procedure room. As part of this renovation, HDH upgraded our mechanical and electrical systems with the overall intent of improving workflow for staff, providing better access to support spaces and creating comfortable and private recovery areas for patients. These upgrades and increased patient capacity would have increased HDH’s energy consumption. Our efforts over the past five years have resulted in a more efficient hospital as well as increasing patient and staff comfort.

As HDH continues to make energy management an integral part of business decisions and patient/staff experience, we can expect to achieve the following targets by 2024:

- 5% reduction in electricity and natural gas use.
- 60,808-kilogram reduction in CO₂e.
- \$24,393 annually to the bottom line (\$121,966 over 5 years).

To further strengthen and obtain full value from energy management activities, a strategic approach will be taken: the organization will fully integrate energy management into its business decision-making, policies, and operating procedures.

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 MANAGEMENT VISION

In 2014, HDH developed an energy management vision for our facility that we have proudly strived towards over the past five years. This vision is as follows:

To improve energy efficiency and reduce waste by improving infrastructure, by developing forward-think policies and processes, and by incorporating new best practices and technologies.

Since 2014, HDH has made energy conservation and demand management a central focus in facility decision making and procurement processes to improve our efficiency and environmental footprint. Taking an active role in the utilization of resources and working towards improved process to further enhance the efficiency in how these resources are used has had a positive impact on HDH's energy use.

We recognize that energy conservation and demand management require ongoing effort and we are excited to continue working towards a more efficient hospital over the next five years. As such, HDH will be renewing our energy management vision and will continue to work towards realizing this vision by 2024.

GUIDING PRINCIPLES TO ACHIEVE OUR VISION

To achieve our vision of energy efficiency and waste reduction, HDH will apply the following guiding principles:

Incorporate Energy Efficiency Considerations in Infrastructure Renewal

HDH has been serving Hanover and the greater region since 1923, and while we have undergone many redevelopments and upgrades, further improvements will be required to ensure the highest quality of care to our patients. When deciding on infrastructure renewal projects, HDH will incorporate energy efficient options into the process. HDH recognizes that improving our infrastructure not only benefits staff, patient, and visitor experience, but also enhances the hospital's efficiency, thereby reducing our energy consumption and greenhouse gas emissions. We will continue to place a focus on choosing options that are the best fit for the hospital and will do the most to improve our patient care while also offering a smaller environmental footprint.

Being Strategic in Our Policies and Processes

While HDH is conscious of, and actively tracks, our electricity and natural gas usages, we strive to significantly improve our energy-related performance. HDH will begin to internalize energy management into our organization's every-day decision-making, policies and operating procedures to help assure substantial and long-lasting reductions in energy, operating costs, and environmental impact.

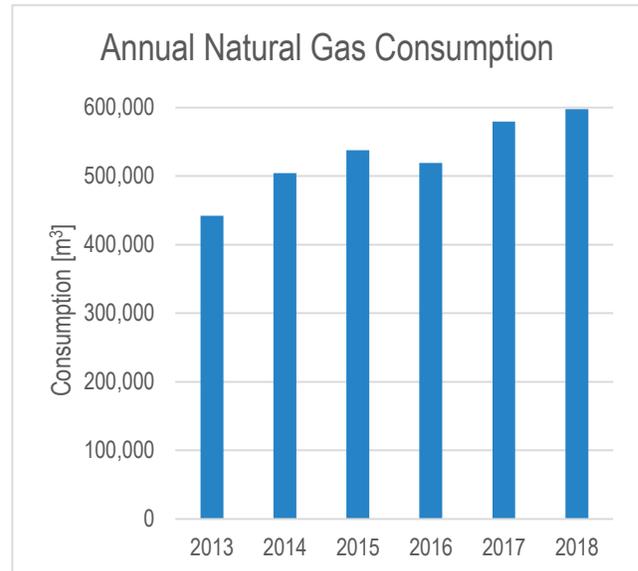
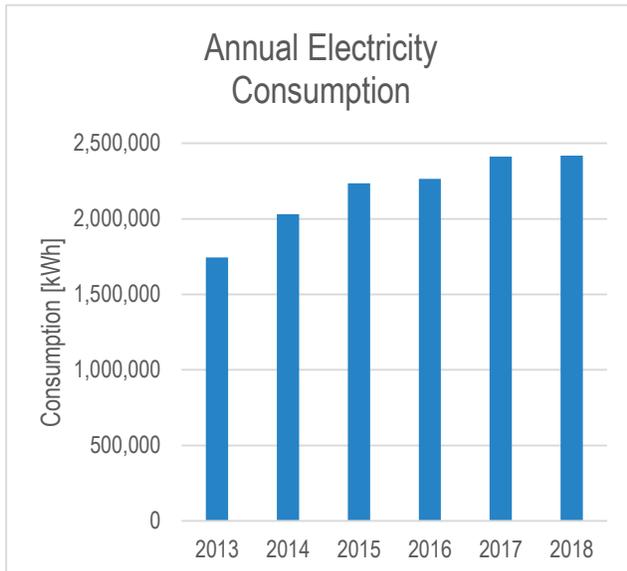
Pursue New Best Practices and Technologies

Similar to incorporating energy efficiency considerations in infrastructure renewal, HDH will look to new practices and technology to better improve our hospital. HDH will continue to stay up to date with current best practices and work towards motivating staff and patients to implement such practices such as turning lights off when leaving a room or unplugging equipment when not in use. With new technologies offering better and cleaner options for equipment, HDH will look for medical equipment with shorter run times and higher efficiency to not only reduce consumption but also improve patient comfort and experience while ensuring high quality care.

ANNUAL ENERGY CONSUMPTION AND GREENHOUSE GAS EMISSIONS

As part of Ontario Regulation 507/18 under the Electricity Act, 1998, HDH prepares, publishes and makes available its annual energy consumption and resulting greenhouse gas (GHG) production. Note that the values reported in 2019 will be for 2017 as reporting requirements are for two years prior.

Year	Total Floor Area (ft ²)	Electricity (kWh)	Natural Gas (m ³)	GHG Emissions (tCO ₂ e)	Energy Use Intensity (ekWh/ft ²)
2013	90,008	1,743,778	442,118	970,783	71.20
2014	90,008	2,030,351	504,339	1,035,733	81.67
2015	90,008	2,235,312	537,732	1,107,166	87.86
2016	90,008	2,263,899	519,009	1,061,607	85.99
2017	90,008	2,411,333	579,408	1,181,031	94.70
2018	90,008	2,419,155	597,837	1,216,151	96.95



CDM INITIATIVES HDH UNDERTOOK BETWEEN 2014-2018

In July 2014, HDH developed goals and green initiatives to decrease the facilities annual energy consumption and resulting greenhouse gas emissions. The following activities, completed between 2014 and 2018, are our past measures that include managing overall energy consumption, lowering annual operating costs, and reducing greenhouse gas emissions.

Project Name & Description	Electricity [kWh]	Natural Gas [m ³]	GHG Emissions [kgCO ₂ e]
Boiler Replacement and Stack Economizers			
Two heating boilers and two steam boilers were replaced. The steam boilers were dated and were limited to firing at either high or low. Stack economizers were added to the new steam boilers. The economizers drop the temperature of the flue gases, in this case by 6-8%.	-	75,415	142,580
Repaired 2nd Floor Wall			
Repaired four sections of 20 ft ² brick wall above the cafeteria.	1,798	1,697	3,272
Roof Repair			
From 2015 to present HDH has been replacing portions of the roof and upgraded the thermal insulation value to R-20 (1½" to a 3"). A total of 30,000 ft ² has been repaired/replaced.	22,846	21,609	41,664
Repaired Exterior Wall			
Repaired 600 ft ² brick wall.	9,283	8,767	16,904
Exterior Door Replacement			
In 2017 HDH's front entry door was replaced with a bi-part glass sliding door.	646	-	23
Chiller Pump Motors Replacement			
Replaced two pump motors that were nearing the end of their service lives. One was 40 hp and the other was 50 hp.	16,566	-	588
Chiller AC Drive Installation			
Installing an AC drive on HDH's chillers allows for part load operation.	193,153	-	6,760
Building Control Panel Replacement			
Upgraded to an auto-control system for the cooling pumps. The prior model was manually controlled and ineffective if shutdown occurred.	17,210	-	611
Exterior Door Replacement			
In 2018 HDH's emergency entrance was upgraded to a bi-part glass sliding door.	854	-	30
TOTAL	262,356	107,488	212,432

In addition to the energy savings outlined above and resulting reductions in operating costs, each one of these measures provided additional benefits the hospital and the community we support, including but not limited to: improved patient and staff comfort and safety with enhanced infection control measures.

BUSINESS PROPOSITION

The following are considerations to be included in HDH's business philosophy and budgetary process. The business proposition is as follows:

- If energy management considerations are integral to relevant business practices, policies, procedures, and decision-making processes, HDH's energy-related costs can be mitigated further over the coming 5-year period.
- HDH has set a goal of reducing our energy consumption by 5% from 2018 values by 2024. A 5% decrease would see the following reductions/avoidances in utility usage:
 - 29,892 m³ reduction in natural gas;
 - 120,958 kWh reduction in electricity; and
 - 60,808 kg CO₂e reduction in greenhouse gas emissions.
- Based on 2019 utility rates, this will result in \$24,393 in annual value to the bottom line, or a total of \$121,966 over a 5-year period.
- Integration of energy management into organizational decision making and business practices will continue to produce value annually for a much longer period.
- To support the achievement of these financial benefits, HDH requires investment in energy-related capital and operating improvements, via municipal, provincial and federal sources.

ENERGY MANAGEMENT GOALS

The following are HDH's energy management goals that we will work towards achieving over the next five years.

1. Obtaining Executive Approval

For HDH to have the resources available to achieve our energy management goals, we will need executive approval. Ensuring that all departments, specifically key staff including financial management, purchasing/procurement, construction and building operations are aware of and ready to support HDH's CDM plans will be essential to our success. This will include clarifying and communicating staff roles and responsibilities, performance foals, and energy management reporting. In addition, creating mechanisms and processes to make resources available will assist in this process.

2. Implement Financial Practices and Decision-Making Processes

Hospitals primarily rely on available funding from the province community and volunteer organizations, and as such, need to make good decisions about how to utilize funding. HDH already has solid decision-making processes in effect but will continue to fine tune these and recognize money spent to achieve energy efficiency as an investment, not a cost. We will continue to use Life Cycle Cost Analysis (LCCA) on all new construction, major renovations, and equipment replacement. The decisions we make about energy management investments will become a part of HDH's high-level, long range process of budgeting for capital and operations.

3. Implement Strategic Energy Management Practices

Energy management is a process of monitoring, controlling and conserving energy and involves many steps. We have broken apart this goal into sub-goals to better explain what HDH will be working towards over the next five years.

Utilize purchasing specifications for energy efficient equipment & services

HDH consistently use purchasing specifications that minimize life-cycle costs for energy efficient equipment and services. We also deploy efficiency specifications for standard equipment routinely replaced (e.g. lights, motors, and unitary HVAC equipment) as well as focus on LCCA for custom equipment purchases (e.g. chillers).

Set and meet clear energy performance targets; measure and improve over time.

To measure our performance goals, HDH will use 2018 as our new baseline year. This will become our target for EUI (normalized for weather and changes to care offerings) to measure our performance and improve over time.

Improve Building Operating Performance

By implementing energy efficiency standards and energy management procedures, hospital equipment will see a tune-up and operations and maintenance will see improvements, all of which will support patient care and facility comfort and safety. As equipment reaches the end of its service life and infrastructure requires upgrades, the improved and up-to-date standards that replace the old equipment/structure will directly improve the hospitals building operating performance.

Implement Cost-Effective Facility Upgrades

When justified by LCCA, HDH will implement equipment and systems upgrades and expand our use of qualified service providers as needed. Additionally, HDH will utilize standard RFP documents, contract terms, and reporting standards.

Actively Manage Energy Commodity

HDH already actively manages energy commodity but will continue to minimize utility costs and exposure to market risks, with utility costs including natural gas, electricity, water, and sewage. We will also participate in the energy and utility regulatory process.

4. Monitor, Report, and Reward Progress

Over the next five years HDH will track our progress on achieving the goals laid out in this plan through active reporting and regular meetings. We will report energy reduction and unexpected increased so senior management and reward staff for successes. Most importantly, we will learn from set-backs and make changes based on them to reach our energy conservation and demand management goals.

5. Continue with Facility Upgrades

HDH will continue to renew, replace, and upgrade our facility infrastructure, systems, and equipment, much of which will directly affect our annual energy consumption. These changes not only improve the hospital

itself, but also its efficiency, environmental impact and patient/staff/visitor experience. The below table includes projects that, funding permitted, we will be targeted over the next five years.

Project	Present State	Proposed State
Roofing	The roof covering is a built up of bituminous roofing system with gravel top coat and rigid insulation. The system exhibits wear and damage.	Engage an external contractor to see the best option to fix the current roof (repair damaged areas, replace the whole section, etc.) and increase the thermal insulation value to meet new building standards.
Cooling Generating Systems	Cooling medium is provided by an air-cooled reciprocating chiller. The compressor is unreliable.	At minimum replace the compressor, otherwise, upgrade the whole cooling system.
Distribution System	The HVAC system has a central AHU with cooling and heating coils, VAV ducted distribution, diffusers and plenum return.	The AHU is scheduled for replacement in 2019-2020.
Exterior Doors – Metal	The building has exterior metal doors at the stairwell exits, service rooms, shops and storage, many of which are in poor condition.	Replace the doors with new ones that have higher thermal insulation values.
Plumbing Fixtures	The plumbing fixtures of the building include a water closet and a lavatory which are in poor condition.	Replacing these fixtures will see a savings in water usage at the hospital.
Pneumatic Tube System	The hospital utilizes a pneumatic tube system which includes blowers, transfer units, tubing network and a control system.	Replace the old pneumatic system to a direct digital control system.

APPENDIX

