Brightshores Health System

Conservation and Demand Management Plan

April 2024

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Overview

Brightshores Health System is a family of six unique hospitals, serving more than 100,000 patients a year. Our mission is **building healthier communities' one patient at a time**.

We have 2,100 dedicated and compassionate staff and over 200 physicians who work together, delivering excellent patient care to residents and visitors across Grey Bruce. Our regional hospital in Owen Sound is the largest of our sites, and offers a full range of specialty services, including complex surgeries, total joint replacements, cancer surgeries, MRI and CT diagnostic services. Our rural hospitals in Lion's Head, Markdale, Meaford, Southampton and Wiarton offer a wide range of primary and ambulatory care services and all have 24/7 Emergency departments. For more information, please visit www.brightshores.ca or follow us @BrightshoresHealthSystem on Twitter or Facebook.

This plan presents the energy performance of its existing facilities and identifies how they will selectively upgraded and renewed for quantifiable energy efficiency gains and longer term infrastructure renewable plans.

An updated provincial regulation – The Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans Act (O. Reg. 507/18) came into force January 1, 2019 – upholding and amending the earlier Green Energy Reg. 397/11 - requiring all broader public sector (BPS) organizations, including hospitals, municipalities, universities, colleges, school boards and municipal service boards (for water and sewage treatment and pumping operations), to:

- Report on their annual energy use and greenhouse gas (GHG) emissions in designated buildings/facilities and make that information available on their website and hardcopy; and
- Develop and implement 5-year energy conservation and demand management plans (CDM) by July 1, 2014, with the second Brightshores Health System update to be done no later than every 5 years, and no later than by July 1, 2024.

The energy use and GHG emissions are reported annually through the Ministry of Energy website and posted on the Ontario Open Data Catalogue as well as the Brightshores Health System website and intranet. The 5-year conservation and demand management plan (CDM) is posted on the Brightshores website and intranet.

The CDM plan also contains conservation efforts such as water and waste, as well as required energy elements as follows: energy consumption data, conservation goals and objectives, proposed measures, cost and savings estimates, length of time measures will be active, description of any renewable energy generation, heat pump or solar technology, and senior management approval.

This report has been prepared in accordance with Ontario Reg. 507/18 for Brightshores Health System by Facilities Management.

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This Conservation Demand Management Plan has been endorsed by Brightshores Health System Executive Leadership team.

Ann Ford, President & CEO Brightshores Health System

Nancy Peter, Interim Vice President Finance Development, CFO

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Kevin Gilbert, Interim Manager Engineering Operations & Maintenance

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1. Executive Summary

On January 1, 2019, the Government of Ontario replaced the Green Energy Act regulation 397/11 with Ontario Regulation 507/18. This legislation requires broader public sector organizations to develop and publish a five-year Energy Conservation and Demand Management (CDM) by July 1, 2019, and to be updated at no more than 5 year intervals. This update is presented prior to the anniversary date of July 1, 2024.

As required by the Green Energy Act, Brightshores Health System updated and published their first plan on July 1, 2014, with an update published in 2019 with a revised plan publishing a summary of the results achieved since 2014, and outlined an updated infrastructure renewal plan with energy conservation measures for 2019 to 2024.

2. Elements of the Plan

The proposed updated (2024) CDM Plan describes in detail:

- Strategic Energy Management Plan for Brightshores Health System.
- Energy Green Team Reporting: Energy Action Team for Brightshores Health System project implementation.
- Facilities Profile: Brightshores Health System energy consumption data.
- Ontario Healthcare Facilities Energy Benchmarks: latest 2021 energy consumption per Ontario Healthcare Facilities.
- Energy and Waste Reduction Initiatives Taken Since 2019.
- Facilities Maintenance: Operations activities utilized to manage energy consumption.
- Energy Efficiency Goals and Objectives Next Five Years:
    - Leverage Health Infrastructure Renewal Fund (HIRF) to complete energy efficiency improvements for projects which also require infrastructure renewal.
    - Identify highest priority energy efficiency improvement projects that can be accomplished within department funding model.
    - Include efficient energy design as major criteria for capital development and redevelopment projects.
    - Develop an Electric Vehicle Plan to investigate the demand for facilities and the feasibility to implement a service model.
    - Publish our commitment to support Canada's Target to Reduce GHG (by 80% below 1990 levels) by 2030, and achieve net zero by 2050.
    - Develop a Decarbonization plan toward full electrification of any fossil fuel burning systems and implement accordingly as resources and available infrastructure shall allow.

Brightshores Health Systems operates multiple facilities that have a combined floor area of 718,474 square ft^2.

Brightshores Facility Building Summary

Name of Facility		Age (Years)	Year Built	OBC Major Occupancy Group	Hospital Category	Number of Stories	Total Building Gross Square Footage	Site Acreage
1.1	Owen Sound Hospital	39	1985-01-01	Group B Division 2	Class B > 100 beds	8	394,887	58.69
1.2	Owen Sound Hospital 8 Units	61	1963-01-01	Group B Division 2		1	48,019	
1.3	Owen Sound Hospital Trades & Laundry	61	1963-01-01	Group F, Division 3		1	23,358	
2	Addiction Treatment Centre	32	1992-01-01	Group B Division 3		3	9,343	1
3	Southampton Hospital	69	1955-01-01	Group B Division 2	Class C <100 beds	3	48,278	1.97
4	Markdale Hospital	1	2023-01-01	Group B Division 2	Class C <100 beds	3	78,362	43.95
5	Meaford Hospital	71	1953-01-01	Group B Division 2	Class C <100 beds	2	63,283	5.76
6	Wiarton Hospital	30	1994-01-01	Group B Division 2	Class C <100 beds	2	64,090	11.92
6.1	Allied Health Building	30	1994-01-01	Group B Division 2		2	13,100	
6.2	Ambulance Building	30	1994-01-01	Group B Division 2		1	2,928	
7	Lion's Head Hospital	48	1976-01-01	Group B Division 2	Class C <100 beds	2	12,680	1.58
Totals:							**718,474**	**83.32**

Through past conservation and demand initiatives, 2018-2022, Brightshores Health System decreased its electrical usage by **1,899,765** kWh, and increased natural gas usage by **205,181** m^3. (Refer to section **7. Energy Performance 2019- 2023** on page 12).

The revised 2024-2029 CDM plan is anticipating to develop and implement infrastructure renewal updates:

- A total anticipated budget of $27,000,000 for implementation.

Brightshores Health System acknowledges that the key to reach and maintain the sustainability goals requires continuous improvement. One of the strategic pillars of the Corporate Strategic Plan includes this CDM plan in support of Excellence in Care, A Great Place to Work, Innovation and System Leadership, and Intentional Partnerships. To support this objective, Brightshores Health System will continue to strive toward operational excellence and enhance our skill sets about operational best practices and lessons learned.

3. Brightshores History

Rebranded in 2023 from Grey Bruce Health Services to become **Brightshores Health System**.

Over time, the current corporation was an amalgamation of various smaller corporations:

- Owen Sound Regional Health Centre;
- Meaford General Hospital;
- Centre Grey (Markdale);
- South Bruce Peninsula (Wiarton);
- Saugeen Shores Memorial (Southampton); and
- North Bruce Peninsula (Lions Head).

Owen Sound – 173 beds

Southampton – 20 beds

Markdale - 8 beds

Meaford = 15 beds

Wiarton – 22 beds

Lions Head – 4 beds

4. Objective: Energy Management Plan

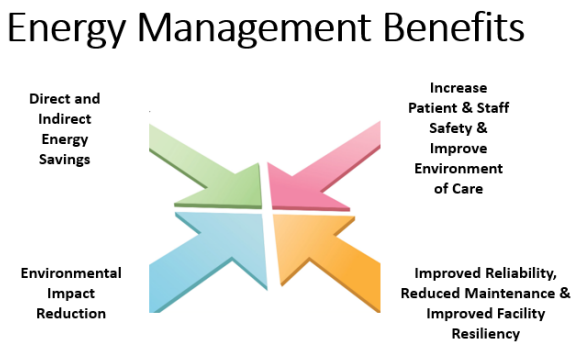
The purpose of Brightshores Health System energy management plan is to provide a safe, secure and comfortable environment for our patients and health care providers by:

- Encouraging support for improvement in energy efficiency.
- Make continuous process improvements, innovations and promote community awareness.
- Reducing energy waste.
- Reduce our energy consumption, make more effective use of our resources, and enable our infrastructure to last longer.
- Ensure new construction meet require standard of energy performance excellence.
- Improve energy awareness and education to nurture an environmentally sustainable culture.

Vision Statement: The Strategic Energy Management Plan will promote good stewardship of our utility usage, be a component of facility infrastructure renewal process, and encourage programs that reduce our carbon footprint and waste streams. In keeping with our Corporate Mission to ensure the most effective delivery of comprehensive healthcare, the Strategic Energy Management Plan will have goals to reduce operating costs, lengthen the lifetime of infrastructure components, and promote energy conservation in the workplace and at home. As in any healthcare organization, utility and energy related costs are a significant part of the Brightshores Health System's Operating & Maintenance budget. Brightshores Health System will employ the following principles in energy conservation initiatives:

Informed Decision Making: Energy will be monitored and tracked through an established baseline. All measures must be developed, understood and key metrics communicated to allow informed decisions to be made in regards to energy efficiency, which includes:

- Assessment of the lifecycle cost analysis.
- Evaluation of the return on the investment.
- Capital requirements.
- Impacts on Hospital services.



Procurement: Purchase utilities and equipment strategically to ensure that the lowest lifetime cost is achieved. The Procurement program at Brightshores Health System will include an energy evaluation of any new equipment acquisition:

- HealthPro member and HealthPro Energy Advisory Committee member.
- SSW, Kinetic and Mohawk MedBuy participant.

Partnerships: Partner with industry and the public to improve energy conservation.

- Enbridge, Hydro One.
- Engineering Consultants such as CBCL, DEI and Siemens.

5. Annual Consumption Reporting - Greenhouse Gas Emissions

Brightshores Health System is composed of six hospitals and a clinic located in Owen Sound, Lion's Head, Wiarton, Southampton, Meaford, and Markdale. Owen Sound provides regional specialty services across Grey and Bruce counties. Our rural sites offer a wide range of primary and ambulatory care services to their communities and to our many seasonal visitors. The facilities range in age from 1 to 71 years old. As per current program, we are required to report our 2021 calendar year this year, and the program is moving toward Portfolio Manager to submit information on a more up to date basis. Next year we will be submitting two years of information.

The sizes and energy use of all of our facilities is reported annually in the Ministry of Energy template below:

Energy Consumption and Greenhouse Gas Emissions Reporting - for 2021

Time Reported	January - 2021 to December - 2021
Type of Public Agency:	Public Hospital
Agency Sub-sector	Acute/Chronic
Organization Name	Grey Bruce Health Services

Operation Name	Operation Type	Total Floor Area of the Indoor Space	Average Hrs Per Week	Energy Type and Amount Purchased			Total	
				Electricity	Natural Gas	Fuel Oil 1 & 2	GHG Emissions (kg)	Energy Intensity ($kBtu/ft^2$)
GBHS - Lions Head	Facilities used for hospital purposes	1178 m^2	168	220,907 kWh		18,781 Litre	58,300	1.29
GBHS - Markdale	Facilities used for hospital purposes	3419 m^2	168	727,744 kWh	100,013 m^3		214,300	1.89
GBHS - Meaford	Facilities used for hospital purposes	5879 m^2	168	1,343,471 kWh	228,451 m^3		480,400	2.32
GBHS - Owen Sound	Facilities used for hospital purposes	43317 m^2	168	10,154,390 kWh	1,685,369 m^3		3,550,900	2.34
GBHS - Southampton	Facilities used for hospital purposes	6589 m^2	168	1,102,516 kWh	162,783 m^3		346,500	1.83
GBHS - Wiarton	Facilities used for hospital purposes	7443 m^2	168	2,814,266 kWh	173,302 m^3		416,500	2.26

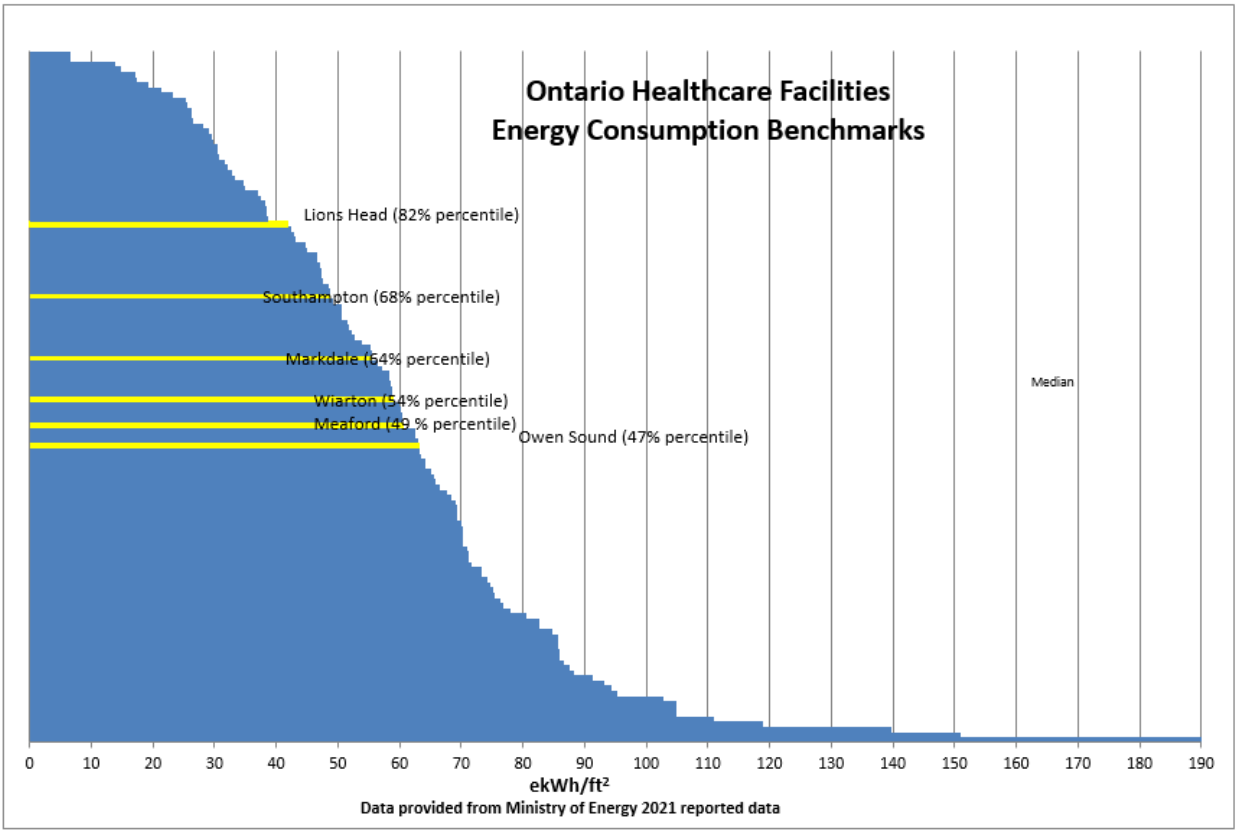
6. Performance Benchmarking

The chart below illustrates the energy consumption per square foot of 264 healthcare facilities in Ontario using 2021 normalized data,as available from the Ontario Data Catalog. Facilities are listed from the highest use per square foot at the bottom of the chart rising to the least usage per square foot at the top. Brightshores Health System facilities are generally close to or significantly above the provincial median.

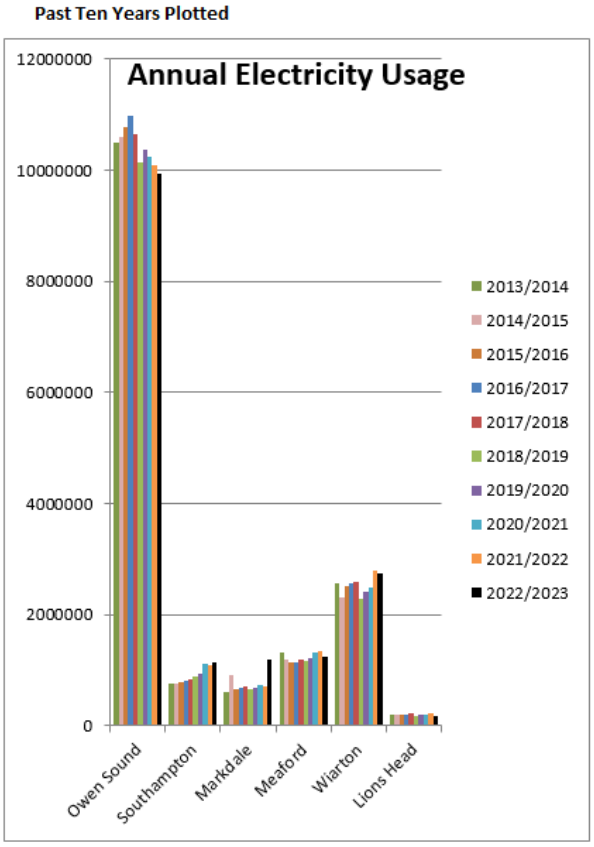
Wiarton and Owen Sound have fully conditioned spaces using chillers for cooling – hence their higher placement. This graph differs year to year on account of different HDD profiles.

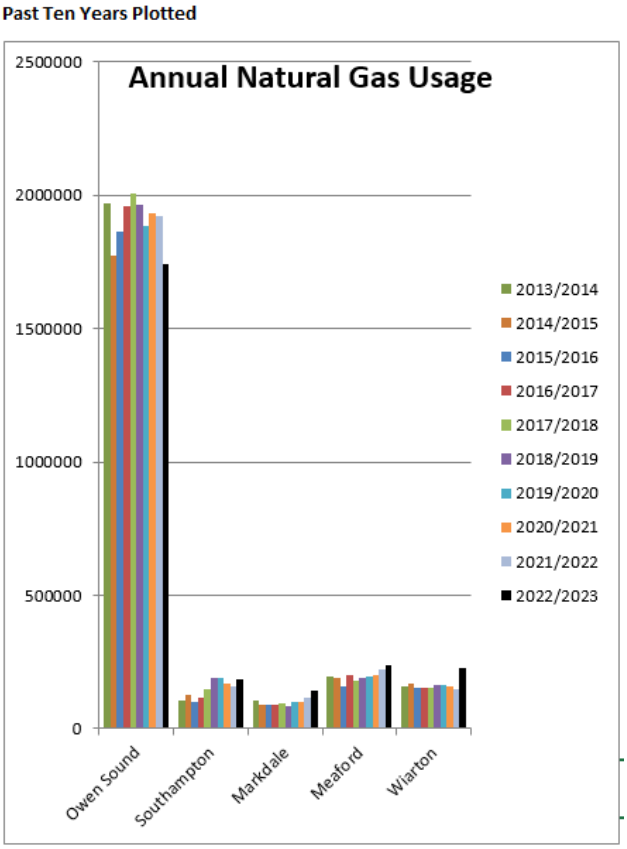
Note that Markdale information pertains to the earlier facility, decommissioned in 2023.

2021 Energy Usage Intensity (EUI) Consumption



7. Energy Performance 2019- 2023





The most significant contributor to natural gas usage is Heating Degree Days (HDD) in the winter. Electricity is driven primarily by Cooling Degree Days (CDD) and impacted by program services and patient throughput.

Southampton has undergone a 25% increase in building space in 2019/2020, and the increases in conditioned space were offset with the savings made by the installation of energy efficient boilers, and the addition of advanced building automation control.

Note:

- Lions Head is supplied by #2 fuel oil (similar to diesel fuel), as there is no natural gas service available.
- Markdale Hospital was constructed and began operation in 2023. Information reported here was from the earlier facility, and it is now dispositioned.
- In 2020, the COVID pandemic did require changes to the building operations which included running AHU's longer than their original schedules.
- Owen Sound and Wiarton also have other buildings on campus whose consumption is also aggregated in the above number.

8. Electricity and Natural Gas Consumption From 2019 - 2023

2022/2023

Site	Area	Electricity Actual	Gas Actual	Electricity	Gas
	ft^2	kwh	m3	kwh/ft^2	m^3/ft^2
Owen Sound	442906	9941263	1739969	22.45	3.93
Southampton	60347.5	1140888	185779	18.91	3.08
Markdale	36807	1189540	141774	32.32	3.85
Meaford	63283	1231692	238054	19.46	3.76
Wiarton	77190	2750449	227024	35.63	2.94
Lions Head	12680	187501		14.79	

2021/2022

Site	Area	Electricity Actual	Gas Actual	Electricity	Gas
	ft^2	kwh	m3	kwh/ft^2	m^3/ft^2
Owen Sound	442906	10076760	1920424	22.75	4.34
Southampton	60347.5	1085033	156096	17.98	2.59
Markdale	36807	698654	115741	18.98	3.14
Meaford	63283	1353695	222622	21.39	3.52
Wiarton	77190	2783772	148097	36.06	1.92
Lions Head	12680	224185		17.68	

2020/2021

Site	Area	Electricity Actual	Gas Actual	Electricity	Gas
	ft^2	kwh	m^3	kwh/ft^2	m^3/ft^2
Owen Sound	442906	10234431	1931872	23.11	4.36
Southampton	60347.5	1123751	171099	18.62	2.84
Markdale	36807	722115	100137	19.62	2.72
Meaford	63283	1313842	203034	20.76	3.21
Wiarton	77190	2475973	155986	32.08	2.02
Lions Head	12680	210319		16.59	

2019/2020

Site	Area	Electricity Actual	Gas Actual	Electricity	Gas
	ft^2	kwh	m^3	kwh/ft^2	m^3/ft^2
Owen Sound	442906	10360811	1885603	23.39	4.26
Southampton	60347.5	947565	189834	15.70	3.15
Markdale	36807	693906	101837	18.85	2.77
Meaford	63283	1207025	195257	19.07	3.09
Wiarton	77190	2411871	165605	31.25	2.15
Lions Head	12680	212296		16.74	

Note: Owen Sound and Wiarton also have other buildings on campus whose consumption values is also aggregated in the above consumption. This data reported uses our fiscal year time period.

9. Decarbonization, and the Path to Net Zero

Definitions Of Programs: Though similar sounding, each term listed below does have different meaning, and in order of impact:

Carbon Neutral

- Focus on Scope 1 & Scope 2 emissions (Direct contributions, indirect contributions).
- Does not require annual reduction in emissions.
- Focus on offsets.

Science Based Targets

- Target scope 1, 2 & 3 emissions.
- Up to 55% reduction in emissions to achieve targets.

Net-Zero

- Science Based Targets plus removal/mitigation of remaining emissions.

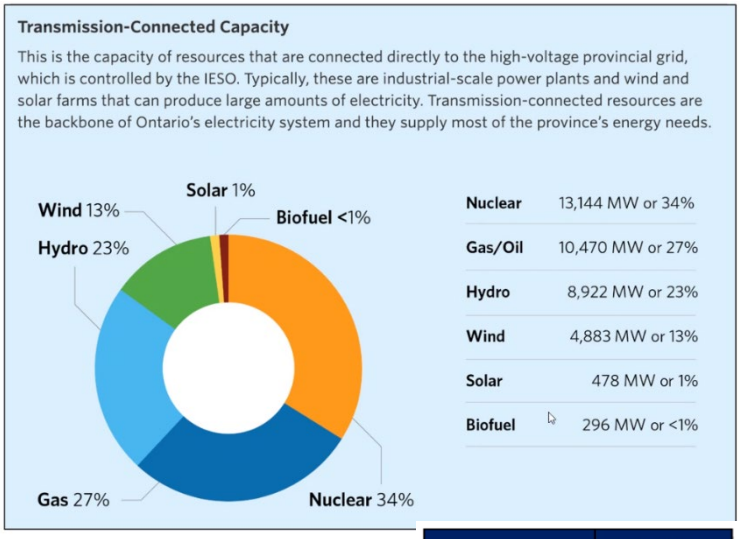
Brightshores first priority is working toward a Carbon Neutral position, which then leads to support a Net Zero position by 2050 Federal goals.

Energy Type Breakdown

- Markdale facility is not yet reported –as we are beginning a new history on this facility.
- Lions Head is not reported, as it uses #2 fuel oil (similar to diesel) for heating, and has no natural gas supply in the area.

Drivers:
The Provincial power grid is striving to be cleaner by the removal of coal and oil based generation. The natural gas generation component at about 25% still makes that portion of electrical generation our Scope 2 target for reduction.

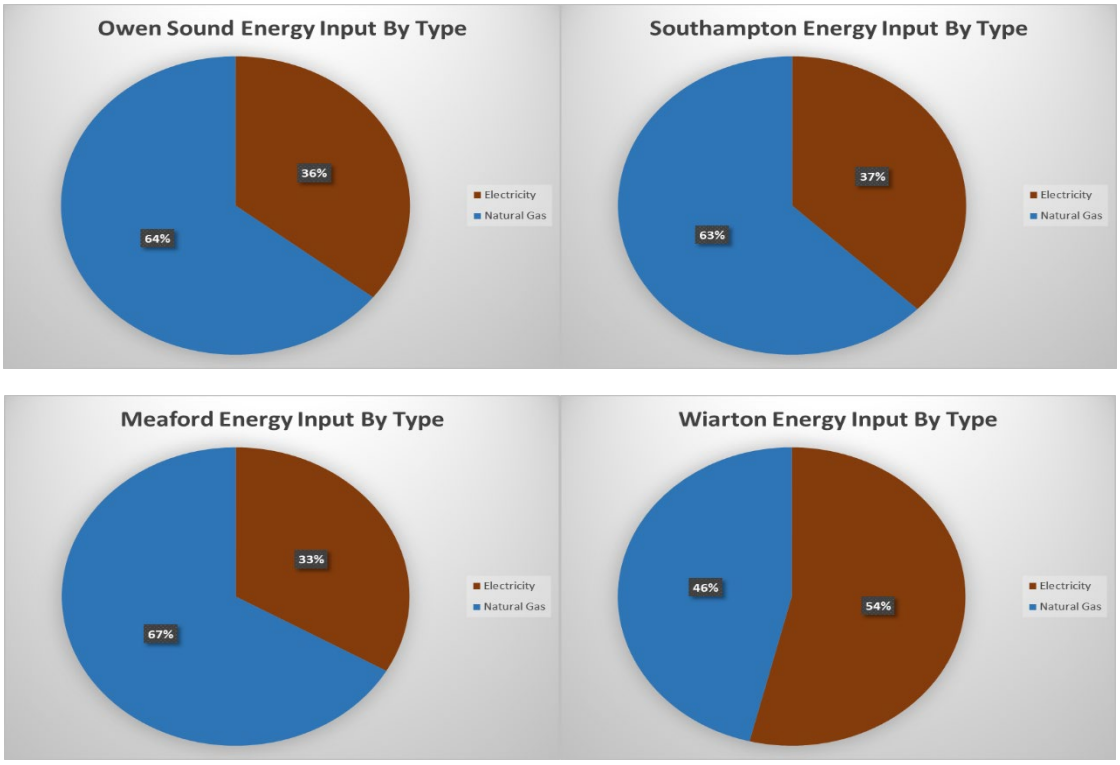
In understanding the components that create Green House Gas – (GHG), it is important to note that removal of oil/gasoline will have more of an effect to our emission reduction, on account of the GHG contribution that the fuel type makes. This makes any improvements at our Lions Head facility a priority on account it is heated by #2 fuel oil (similar weight to diesel fuel).



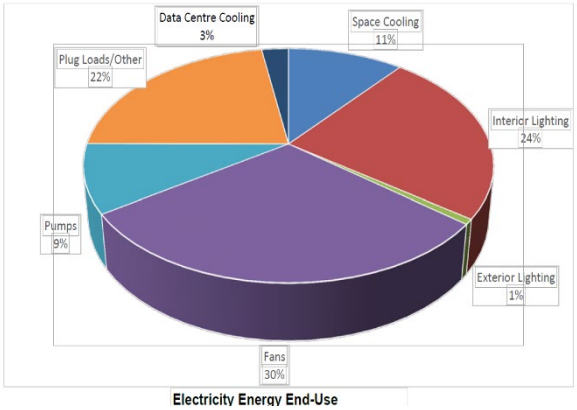
Each facility is unique for the percentage of fossil fuel used in relation to electricity. As noted, many of the facilities uses natural gas fired boilers as the primary means of heating and adding humidification in the heating season. To move toward net zero, these systems will need to be assessed for transition to other solutions – with heat pump or other similar technologies being preferred – and straight electrification being the last option.

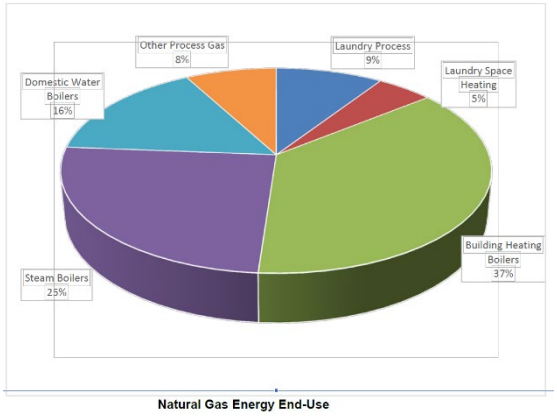
Fuel Type	CO2e Kg/GJ
Natural gas	50.43
Electricity	8.61
Propane	58.38
Diesel	74.32

Facility – Energy Type



Where the Energy Is Consumed





As infrastructure renewal upgrades are performed, the goal of reducing the fossil fuel inputs are paramount to support the ideal of being Net Zero Carbon, to align with federal and provincial objectives. Many new installations have already adopted electric humidification in favour of traditional natural gas fired humidification sources.

10. Energy Conservation Measures Undertaken: 2019-2024

Approach

In July 2019, Brightshores Health Systems developed goals and devised energy savings initiatives structured to reduce the annual energy consumption and resulting Green House Gases (GHG) emissions at their facilities. The activities completed between 2019 and 2024 were associated with managing overall energy consumption and lowering annual operating costs – which resulted in reducing GHG emissions annually.

Brightshores Health System took a strategic top down approach to realize energy savings by using two streams, Capital Renewal Projects and Operations & Maintenance Review. These two streams together had a significant impact on the building energy consumption that helped realize both immediate efficiency gains and taking a step forward towards their long-term sustainability goals:

1. Capital Renewal Projects (Implemented through HIRF/Available Ministry funding and internal capital funds).
2. Operational Review (Implemented through Plant Operations & Maintenance).
    a. Sequence of operation (equipment start up, shutdown, scheduling, and utilization).
    b. Temperature and humidity set points, BAS alarm monitoring.

It is important to note that the biggest contribution to consistent improvements in overall energy performance has been the active and considered operation of building systems in spite of recent facility demands with COVID or infrastructure changes. Management and staff have adjusted operating schedules and set points, shut down unused equipment, and upgraded control systems as opportunities presented. This allowed Brightshores Health System to progressively reduce their energy consumption on an annual basis.

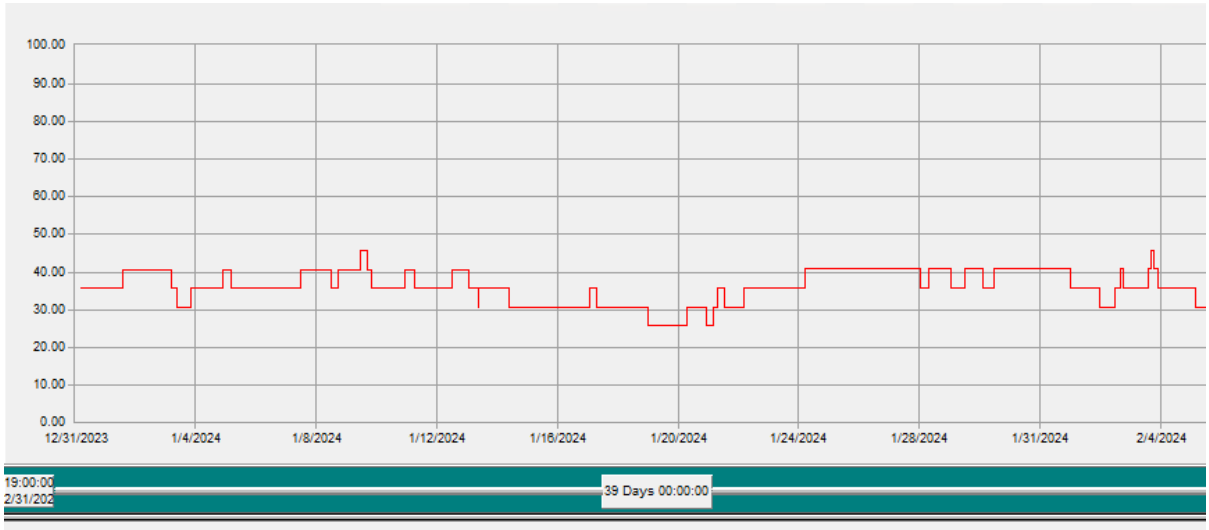
Capital Projects Completed 2019-2024

- The Markdale facility was constructed, and commenced operation in September 2023.

  Markdale Hospital construction includes:
    - Energy modeling analysis to optimize HVAC system cost, future operating cost and GHG emissions.
    - Predicted energy use intensity is 27.22 ekWh/ft2, which represents a 50% improvement over the average EUI for Ontario Healthcare facilities (57.04 ekWh/ft2).
    - Design Features:
        - Low flow plumbing fixtures to reduce potable water consumption.
        - The orientation and geometry of the building is designed to respond effectively for future installation of solar energy panels, and optimize the location and extent of exterior glazing.
        - Building envelope meets performance metrics of OBC SB-10.
        - Air to air energy recovery on ventilation units c/w set back for unoccupied hours.

- LED lighting c/w controls for occupancy and daylight efficiency.
- Dedicated heat recovery chiller to meet simultaneous heating and cooling.
- High efficiency condensing heating water boilers.
- High efficiency condensing domestic water storage heaters.
- Roof structural design capacity for future renewable energy.
- Energy metering with real time reporting and graphics capability.

- The Owen Sound steam plant upgrade was completed in 2022 with replacement of two aged Vapor 100BHP units by three Thermogenics 100 BHP units, deaerator, hot well, steam manifolds and controls, now providing n+1 redundancy and can supply future MDRD growth.
- Meaford had the first 3 of 11 air handling units replaced, (Phase 1) - now incorporating heat wheel recovery for 100% fresh air operation, and using heat pump technology to reduce the natural gas input for heating season performed fall of 2023. The remaining units are anticipated to be replaced in immediate future (next two to five years).
- Owen Sound roofs – All phased roof replacements completed– reuse/replace insulation and roof ballast and increased R value to meet current building code.
- Wiarton roofing replacements – Completion of phased replacements (3 of 6) - R value increased to current building code.
- Owen Sound 8-3 air handler return air system integration and control:
    - RetScreen calculations show each cfm of conditioned air costs 3$ annually at Owen Sound to add heat or cool the air. Any opportunities to reduce from 100% fresh air when standards allow - maximizing return air flow - will reduce the cost needed to condition the makeup air.
    - The Air Handler now achieves better than 30% Fresh/70% Return air mix.



Cost at 100% Fresh Air	Cost at 30% Fresh/70% Return	Projected Annual Savings

$24,375.81	$9,973.08	**$14,402.73**

- Baseline data has been developed for Owen Sound air handler schedules.
    - Opportunity evaluation and quantification is in process. The Building Automation system (BAS) continues to be upgraded and opportunities to convert systems to DDC control with advanced damper control is in progress and improved programming updates.
- Owen Sound 8 Unit right sizing of the domestic hot water storage and converting to instantaneous steam to hot water production.
- All Sites - continued Building Automation System (BAS) Upgrades – to extended panel network to newer and faster processors, improving logic, fine tuning control loops to maintain humidity, temperature, and required air changes per CSA and Hospital standards.
- Annual fuel efficiency testing – all steam and hot water boilers.
- Energy efficiency audit conducted to identify building energy efficiency opportunities.
- Steam trap survey and upgrades continues.
- Used battery and fluorescent tube recycling continues.
- Through Ministry of Health Capital Branch funding, Health Infrastructure Renewal Fund (HIRF) program funding and our own financial resources, we were able to accomplish the above list of items.
- Exterior lighting at all sites, including parking lots, was upgraded to LED at all sites, as well as building exterior wall packs in 2022.
- Exterior signage at all sites was upgraded to LED at time of our corporate rebranding in 2023.
- Owen Sound Patient Food Services (PFS) kitchen had the refrigeration compressors upgraded to eliminate city water cooling single pass to drain in 2023. A 5% water reduction target was initially forecasted and achieved with energy efficient air cooled units was performed.
- Owen Sound building enclosure has had an assessment performed to quantify immediate items for repair (<15 years), medium term (<30 years) and long term (>50 years) items for future planning. All building envelope repairs will improve the facility energy profile by eliminating energy waste.
- A research study was completed by a third party consultant at the Owen Sound facility for climate resiliency, of which the output was presented at the 2023 National CHES conference, and shall be used as a baseline for all other healthcare facilities in Canada to address climate change impact.
- Business Travel has been reduced greatly since the onset of COVID by making use of virtual meeting versus in-person meetings.

Owen Sound Patient Food Services Refrigeration Compressors

Owen Sound Steam Plant Replacement

Meaford Air Handling Replacement – Phase 1

11. Building On Success – 5 Year Infrastructure Renewal Plan

The revised 2024-2029 CDM plan is anticipating to develop and implement infrastructure renewal updates:

- A total budget of $27,000,000 for implementation.

Infrastructure renewal projects considered with an energy conservation element in our next 5 years include:

- Corporate master programming and planning is under way, to provide downstream information on the next generation of Brightshores Health System Facilities.
- Replacement of back up generators at Wiarton and Meaford facilities.
- Update of the building automation system at all sites to most current software.
- Southampton is currently replacing the inpatient air handling unit, again incorporating heat wheel recovery for fresh 100% air, and using heat pump technology to reduce the natural gas input for heating season. Ducting is being added to serve the in-patient rooms in addition to supplying air to the corridor spaces. This project is in tandem with the Southampton inpatient sprinkler installation.
- Window replacement and upgrade at the Lions Head Hospital.
- Meaford handling remaining units (8 of 11 units total in several phases).
- LED lighting retrofits and over bed task lighting throughout at all the sites to replace aged lighting. A lighting audit found 90% yet to be updated to LED:
    - Owen Sound (Phase 1) is predicted to save 892,173 kWh and reduce demand by 101.8 kW over its lifetime.
    - Owen Sound (Phase 2) is predicted to save 182,208 kWh and reduce demand by 20.8 kW over its lifetime.
    - Meaford is predicted to save 71,307 kWh and reduce demand by 8.2 kW over its lifetime.
    - Lions Head is predicted to save 45,019 kWh and reduce demand by 5.1 kW over its lifetime.
- Lions Head AHU replacement with heat pump energy recovery:
    - Projected to save $4,648 annually and save 8 tonnes of GHG annually for its lifetime of 27 years
- Air handling replacements at the Owen Sound kitchen, MDRD/morgue, pharmacy, as well as the laundry facility in an adjacent building:
    - Replacement of air handling unit with higher efficiency heat reclamation from exhaust stream and VFD drive.
    - Right sizing the air handling units and incorporating VFD drives and VAV control to reduce conditioned air to minimum levels in areas not operating after hours. Savings of $3 per cfm/annually is typical.

- Owen Sound replacement of one aged chiller with a heat recovery chiller system, with added capacity so as to provide n+1 chiller redundancy, as well as provide facility cooling throughout the shoulder season.
- Building envelope sealing and window replacements on the Owen Sound hospital.
- Owen Sound OR HVAC updates to provide individual suite pressurization and temperature/humidity control.
- Owen Sound computer room cooling replacement:
    - Installation of a new energy efficient cooling system for the main data center to replace aged DX and water cooled units.
- Meaford gas fired steam boiler replacement options – as it is only used for seasonal humidification now.
- Continued phased roofing replacements at all sites while replacing comprised insulation and adding insulation. Generally, the intent is to bring the effective R value over 30 when practical/cost feasible.
- To support decarbonization, the replacement of electric humidification with efficient NG fired humidifiers was reversed, with electric humidification now employed on new project builds.
- Building entrances redesigned to minimize wind from blowing directly into building by adding or redesigning vestibules to face differently.
- Opportunities are taken to improve energy efficency through component replacements such as energy efficent motors and lighting, variable speed drives on pumps and fans, water conservation measures, building envelope components.
- Review facility benchmark data and scorecards from available sources, such as Siemens Building Controls, Ontario Data Catalog, Canadian Healthcare Engineering Society, etc.
- Building commissioning and recommissioning as required to ensure systems are operating correctly, as designed.
- EV charging feasibility at various Brightshores Facilities:
    - Identify where facilities are most effective and available to the broadest audience, including patients, visitors and staff.
    - Investigate the power infrastructure available to provide a number of Class 3 chargers.
    - Apply for incentives, as they present themselves.

12. Organizational Commitment and Implementation

The Energy Conservation Measures (ECM) listed above require capital expenditures and will be targeted for implementation over the duration of this plan. Some of these are already approved and allocated in the upcoming Brightshores Health System fiscal year capital budgets.
The next stage of work involves a review of the existing systems to create a detailed scope of work and develop an in-depth project cost estimate and savings potential. Approved projects will then be designed, tendered and managed to ensure the efficiency gains are achieved. The implementation budget will also factor in project administration, contract administration, measure & verification of savings and report on savings performance.

Brightshores Healthsystem continuously monitors energy performance through select sub metering systems, utility bill analysis, RetScreen and CUSUM modelling tools to:

- Identify and rectify anomalies in energy consumption.
- Ensure continuous operational excellence relative to other healthcare facilities.
- Enhance their knowledge about operational best practices and lessons learned.

On all projects undertaken, there is a large emphasis on team collaboration and workshops between Brightshores Health System Facilities Engineering staff and the external vendors to allow for smooth transitions and handover of equipment. Additionally, the new lighting retrofits, along with I.T. equipment and other plug loads by other clinical departments account for a significant portion of electricity use and costs. Broader department engagement in switching lights off and equipment when not in use also contributes to energy and cost savings. This awareness will help reinforce the Brightshores Health Services conservation culture, and make everyone part of energy improvement initiatives and buy in to operational efficiency.

Facilities Maintenance

- Brightshores Health Facilities Management staff perform over 25,000 work orders annually in the care and maintenance of hospital buildings and equipment.
- Opportunities are taken to improve energy efficency through component replacements such as energy efficent motors and lighting, variable speed drives on pumps and fans, water conservation measures, building envelope components.
- PM program is applied on all building HVAC, boilers, chillers, electrical and building envelope. The PM program is monitored and reviewed for effectiveness.
- Adjust HVAC operation to meet hospital air quality requirements and codes.
- Lighting upgrades to LED are performed as lighting fixtures fail.
- Exterior parking lot and road lighting has been replaced with LED lighting.
- Utility usage is reviewed and shared with Engineering staff to monitor trends and identify issues for investigation or potiential opportunities for improvement in building operation.
- Measure, trend and review all utility utilization and performing corrective action as required to optimize usage.
- Engineering infrastructure audits are performed to ensure systems are working effectively and

identify the preferred renewal options.

- Partnerships with external service providers and utilities leverage expertise.

Organization

- Encourage the use of virtual meetings and reduce business travel using cars.
- Promote energy saving as a behaviour to shut off lighting and devices when not needed.
- Procurement to continue to specify Green Star rated appliances to reduce energy consumption.