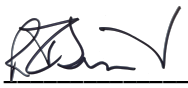
June 2024

Sinai Health System 2024-2029 Energy Conservation and Demand Management Plan

Management sign-off

I confirm that Sinai Health System's senior management has reviewed and approved this 2024-2029 Energy Conservation and Demand Management Plan.

Signature: 

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Date: 28/09/2026

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Under Ontario Regulation 25/23, Ontario's broader public sector organizations are required to develop and publish an Energy Conservation and Demand Management (ECDM) Plan by July 1, 2024. Technical advice and analysis for this ECDM Plan were provided by Enerlife Consulting Inc.

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Table of Contents

Management sign-off 1

Part 1: Introduction 3

1. About Sinai Health 3
2. Planning horizon and scope 3
3. Leadership in sustainability 3

Part 2: Results from the past 5 years (2019-2023) 4

1. Energy and water progress compared to targets 4
2. Measures implemented in 2019-2023 12
3. Project successes and lessons learned 13

Part 3: The plan for the next 5 years (2024-2029) 14

1. 2023 energy and water use 14
2. Energy and water intensity benchmarks and targets 15
3. Energy efficiency measures 17

4 Organization role and impact 24

Part 1: Introduction

1. About Sinai Health

Sinai Health is committed to a sustainable future and has made significant efforts towards reducing the environmental impact of its hospitals, while ensuring occupant comfort and efficiently delivering high quality healthcare services to the community we serve. Sinai Health has undertaken projects aimed at lowering energy use and improving facility operations. Hospital staff work diligently to operate and maintain building systems as efficiently as possible with the available resources.

This Energy Conservation and Demand Management (ECDM) plan addresses Mount Sinai Hospital, Hennick Bridgepoint Hospital, a state-of-the art research facility at 25 Orde Street, and 60 Murray which together form Sinai Health System (Sinai Health).

Table 1 Sinai Health sites

Site	Address	Building Area (ft^2)	Description
Mount Sinai Hospital	600 University Avenue Toronto, ON M5G 1X5	1,243,000	Acute care facility
Hennick Bridgepoint Hospital	1 Bridgepoint Drive Toronto, ON M4M 2B5	824,000	Continuing care facility
25 Orde Street	25 Orde Street Toronto, ON M5T 3H7	151,300	Research facility
60 Murray Street	60 Murray Street Toronto, ON M5T 3L9	145,450	Administrative offices

2. Planning horizon and scope

The horizon for this plan is the 5-year period from 2024 to 2029, prioritizing projects and organizational improvements which are manageable within this period.

3. Leadership in sustainability

In 2006, Sinai Health joined Greening Health Care, a program that helps hospitals work together to lower energy costs, raise their environmental performance and contribute to health and well-being of communities.

The hospitals have received multiple awards through the program, recognizing the steady improvements in efficiency at the sites. These include the 5% Greening Health Care Energy Savings Awards for Mount Sinai Hospital and 25 Orde in 2018, 60 Murray in 2019, 25 Orde and Bridgepoint in 2020 and Bridgepoint again in 2021.

Part 2: Results from the past 5 years (2019-2023)

1. Energy and water progress compared to targets

In the previous ECDM plan posted July 1, 2019, Sinai Health aimed to reduce energy consumption, energy demand, operating costs and greenhouse gas emissions without impacting the high standard of patient care. The plan focused on reducing electricity, steam, and chilled water usage through capital projects and improved employee awareness and training.

Hennick Bridgepoint Hospital, 25 Orde Street, and 60 Murray showed savings over the past 5 years, however Mount Sinai Hospital showed increases in consumption of all its utilities.

1.1 Mount Sinai Hospital

Table 2 presents both the original target savings put forward in the 2019 ECDM plan and actual, weather-normalized performance results from the 2023 calendar year as compared to the 2018 baseline, which resulted in net utility cost increase of $2,399,976. This increase in utility costs was not unexpected, as the Hospital has been undergoing a major redevelopment for the past 7 – 10 years that includes, among other improvements, 19 additional operating rooms and new ICU areas, kitchen, emergency, offices, departments, etc.

Table 2 MSH: Energy and water savings vs 2018 baseline

	2019 Plan Target savings				Actual savings (2023 vs 2018 baseline)[1]			
	Units	**%**	**$**	**GHG (tonnes eCO_2)**	**Units**	**%**	**$**	**GHG (tonnes eCO_2)**
Electricity (kWh)	4,876,662	16.0%	$181,987	195	-7,715,403	-26.0%	-$1,234,464	-231
Chilled water (Th)	603,289	11.6%	$62,587	2	-3,274,169	-66.2%	-$527,141	-53
Steam (Klbs)	5,459	4.9%	$137,310	411	-72,954	-75.6%	-$633,240	-5,435
Total Energy	**-**	**13.5%**	**$381,884**	**608**	**-**	**-51.4%**	**-$2,394,845**	**-285**
Water (m^3)	-	-	-	-	-1,193	-0.9%	-$5,131	-0.2
Total			**$381,884**	**608**			**-$2,399,976**	**-285**

[1] Using 2024 utility rates: Electricity $0.16/kWh, chilled water $0.16/Th, steam $8.68/Klb, water $4.30/$m^3$.

Monthly savings graphs help identify the periods of recorded savings or increases. On the graphs in Figure 1 through Figure 11, the blue points are actual monthly energy use, and the red points are the comparative, weather-normalized 2018 baselines. If the blue dots are below the red dots, this represents real savings.

The electricity consumption trend over the last 5 years in Figure 1 demonstrates increases in each of the 5 years. The 5-year cumulative increase was 23,727,208 kWh valued at $3,796,353.

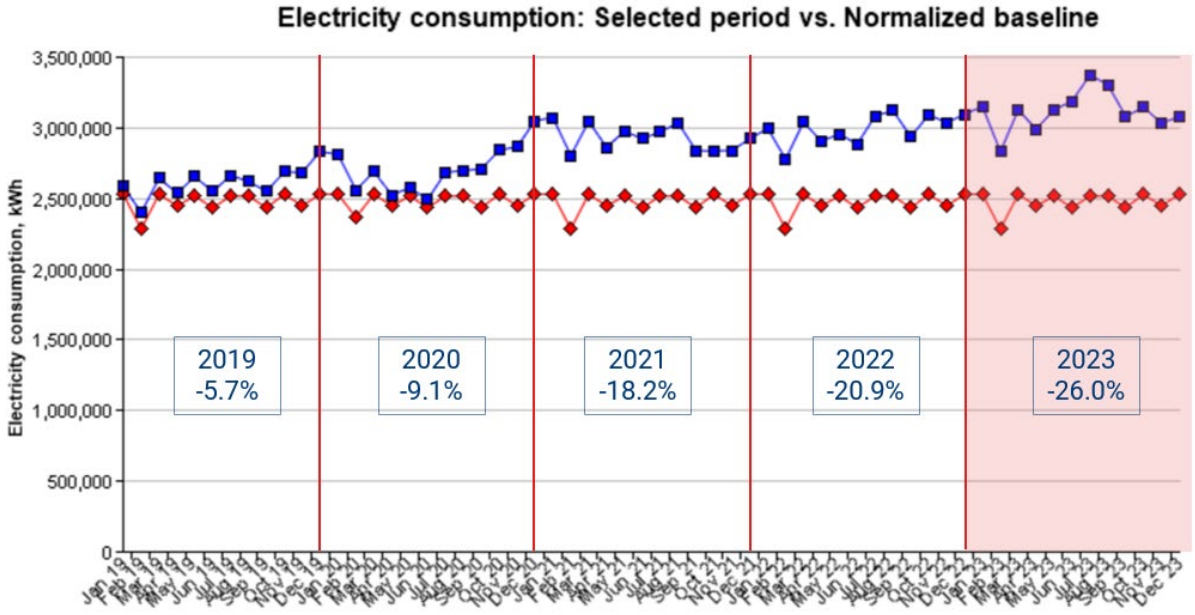

Figure 1 MSH: Electricity consumption (kWh) in 2019-2023 vs 2018 baseline

The chilled water use trend in Figure 2 also indicates increases through each of the five previous years. The 5-year cumulative increase was 11,669,280 Th valued at $1,867,085.

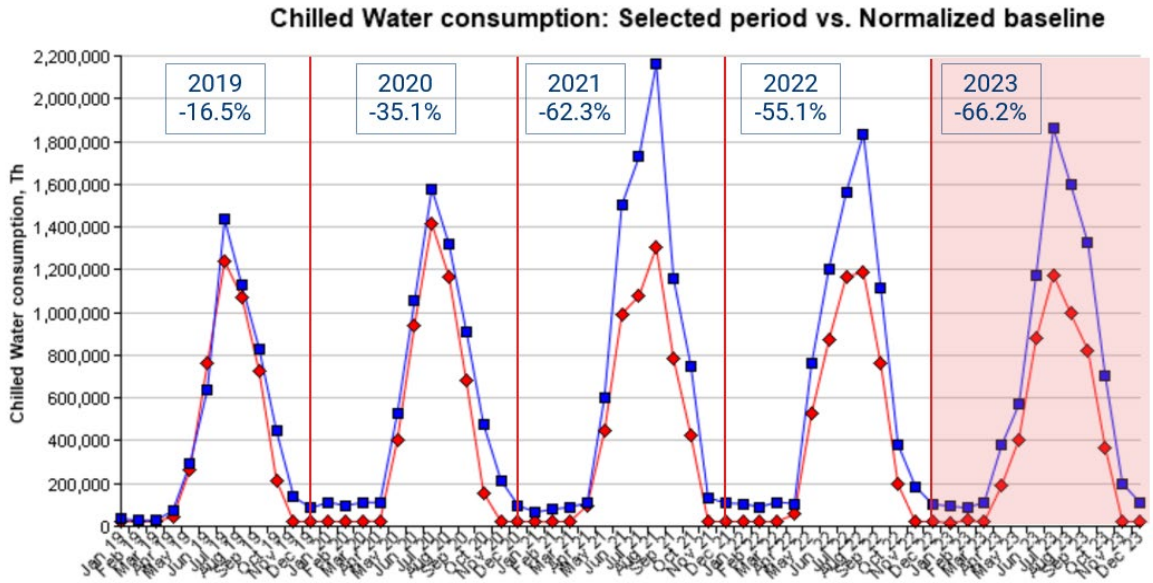

Figure 2 MSH: Chilled water consumption (Th) in 2019-2023 vs 2018 baseline

The steam use trend in Figure 3 shows significant increases across all five years. The 5-year cumulative increase was 232,243 Klbs valued at $2,015,869.

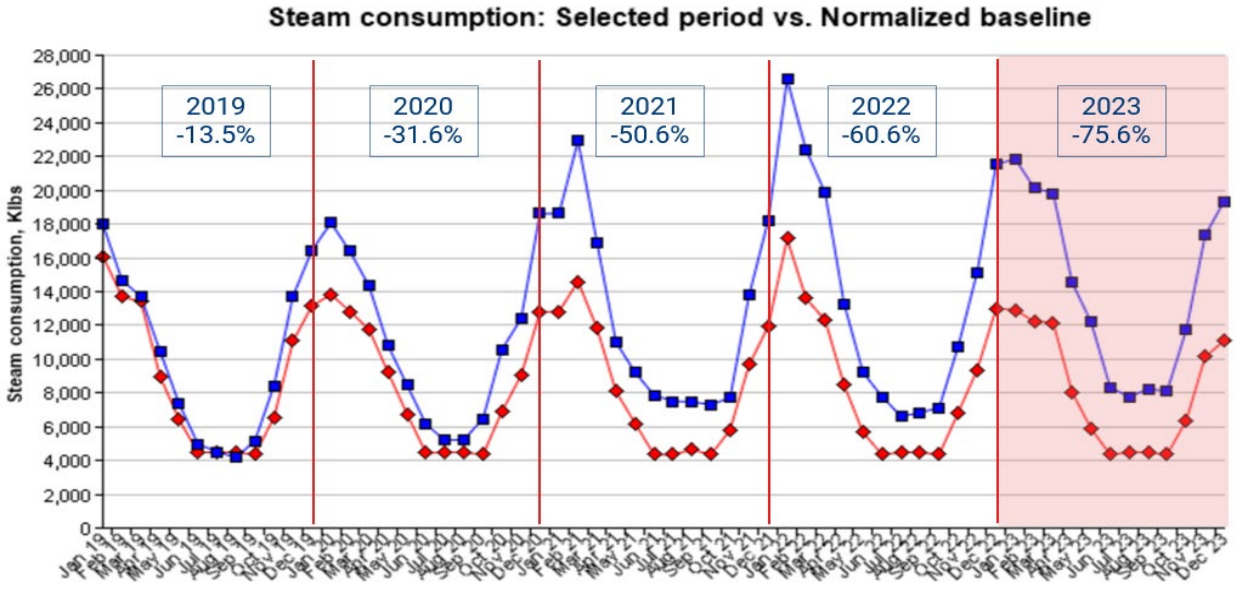

Figure 3 MSH: Steam consumption (Klbs) in 2019-2023 vs 2018 baseline

The water use trend in Figure 4 shows increases in all five years. The 5-year cumulative increase was 126,757 m³ valued at $545,055.

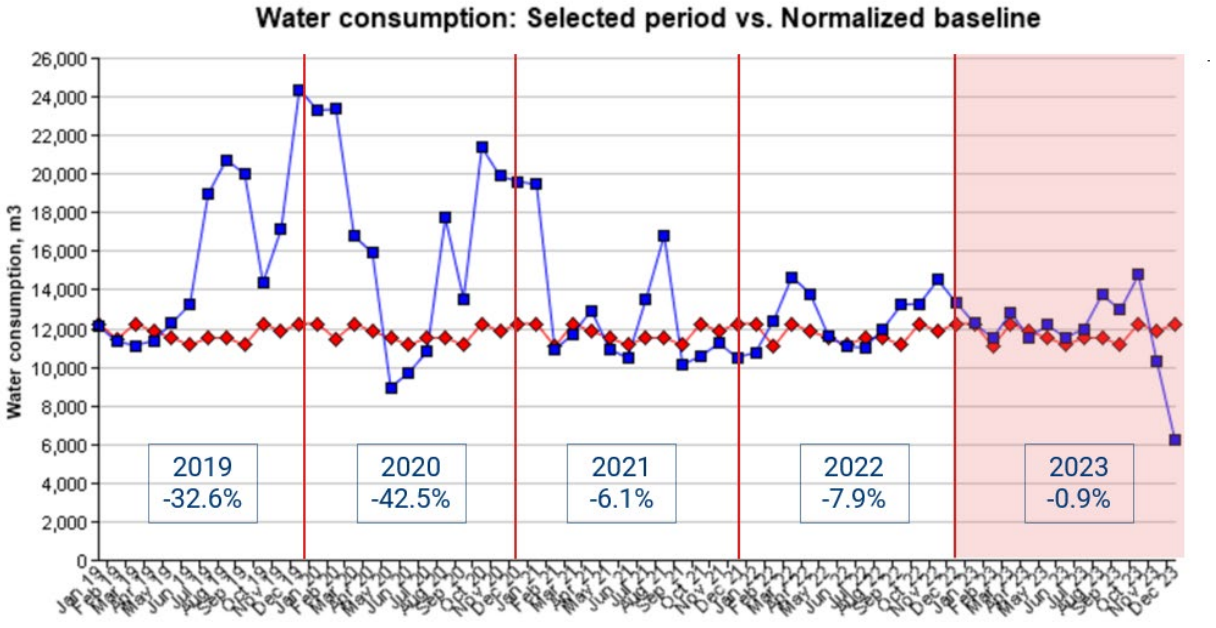

Figure 4 MSH: Water consumption (m^3) in 2019-2023 vs 2018 baseline

1.2 Hennick Bridgepoint Hospital

Table 3 presents the energy savings targeted in the 2019 ECDM report and HBH energy savings in the 2023 calendar year compared to the 2018 baseline, which resulted in net utility cost savings of $354,353.

Table 3 HBH: Energy and water savings vs 2018 baseline

	2019 Plan Target savings				Actual savings (2023 vs 2018 baseline)[2]			
	Units	**%**	**$**	**GHG (tonnes eCO_2)**	**Units**	**%**	**$**	**GHG (tonnes eCO_2)**
Electricity (kWh)	3,013,786	19%	$146,586	121	1,377,991	9%	$220,479	41
Natural Gas (m^3)	385,745	13%	$79,460	728	405,680	14%	$133,874	777
Total Energy (ekWh)	**-**	**15%**	**$226,046**	**849**	**-**	**12%**	**$354,353**	**819**
Water (m^3)	-	-	-	-	-	-	-	-
Total			**$226,046**	**849**			**$354,353**	**819**

As shown in Figure 5 electricity consumption between 2019 to 2023 showed significant savings each year. This is likely to be due to the LED retrofits and scheduling improvements completed during this period. The 5-year cumulative savings were 5,918,088 kWh worth $946,894.

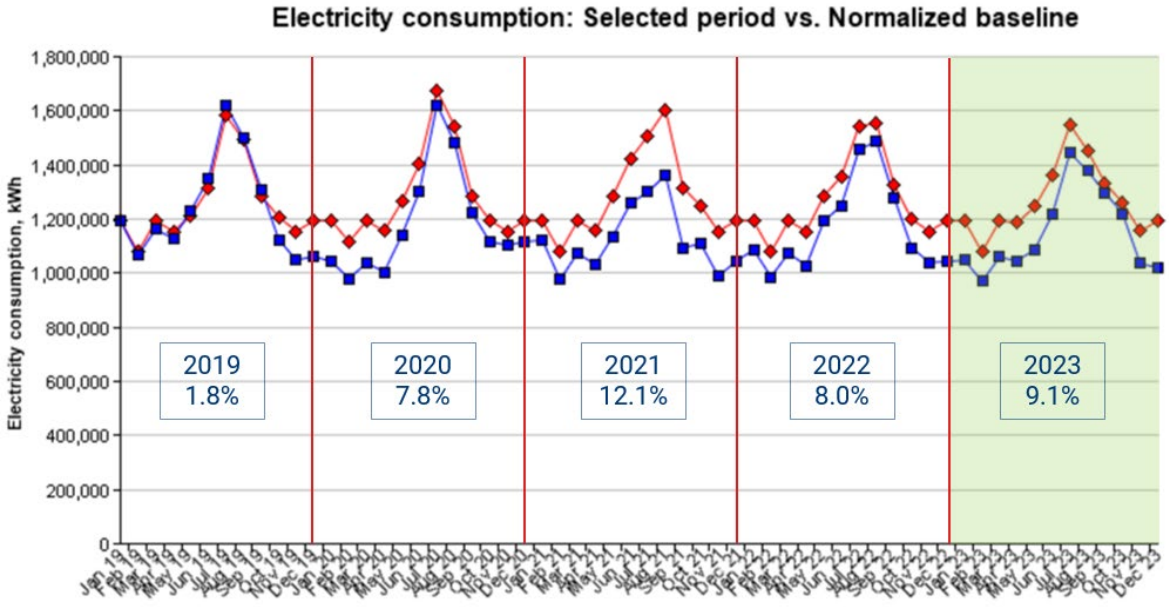

Figure 5 HBH: Electricity consumption (kWh) in 2019-2023 vs 2018 baseline

[2] Using 2024 utility rates: Electricity $0.16/kWh, gas $0.33/$m^3$, water $4.30/$m^3$.

Natural gas consumption presented in Figure 6 also showed significant savings throughout the 5-year period. Some of the savings may be due to adjustments for lower occupancy during COVID. Also, as indicated above, scheduling improvements may have contributed to the savings as well. The 5-year cumulative savings were 1,707,840 m³ valued at $563,587.

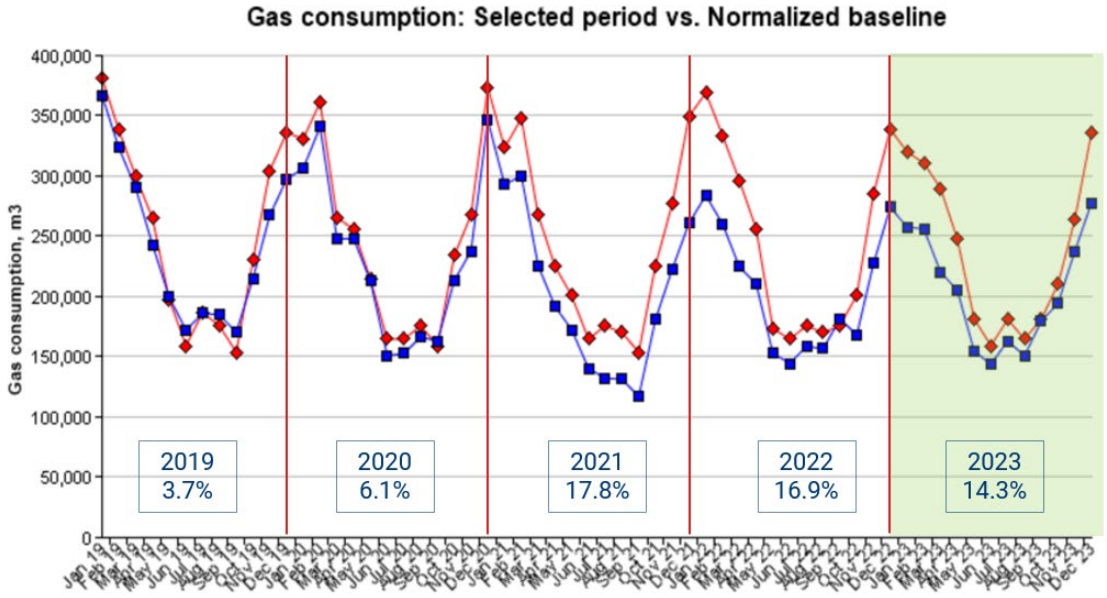

Figure 6 HBH: Natural gas consumption (m³) in 2019-2023 vs 2018 baseline

1.3 25 Orde Street

Table 4 presents the energy targets from the 2019 ECDM plan and lists 25 Orde Street energy savings in the 2023 calendar year compared to the 2018 baseline, which resulted in net utility cost savings of $49,987.

Table 4 25 Orde Street: Energy and water savings vs 2018 baseline

	2019 Plan Target savings				Actual savings (2023 vs 2018 baseline)[3]			
	Units	**%**	**$**	**GHG (tonnes eCO_2)**	**Units**	**%**	**$**	**GHG (tonnes eCO_2)**
Electricity (kWh)	1,806,667	19.0%	$153,632	72	186,780	2.0%	$29,885	6
Steam (Klbs)	5,459	13.7%	$76,114	411	2,316	6.5%	$20,102	177
Total Energy (ekWh)		**15.8%**	**$229,746**	**483**		**4.5%**	**$49,987**	**183**
Water (m³)	-	-	-	-	-	-	-	-
Total			**$229,746**	**483**			**$49,987**	**183**

[3] Using 2024 utility rates: Electricity $0.16/kWh, steam $8.68/klb, water $4.30/m³.

In Figure 7 electricity consumption remained fairly constant with the baseline indicating little minor savings each year. The 5-year cumulative savings were 1,060,770 kWh worth $169,723.

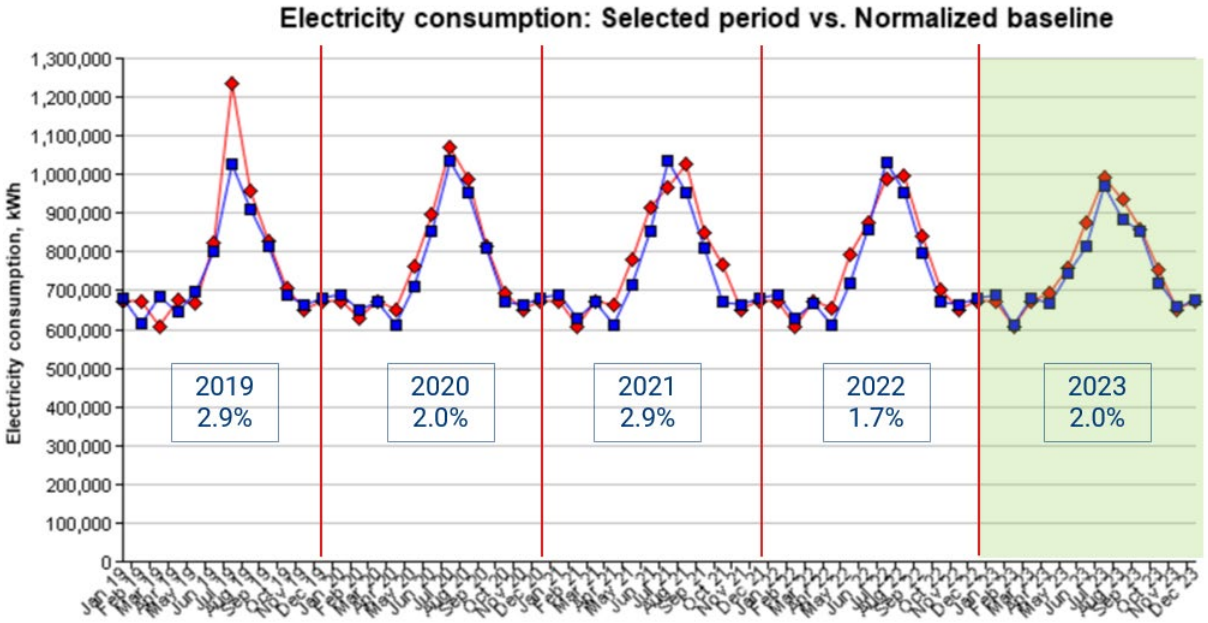

Figure 7 25 Orde Street: Electricity consumption (kWh) in 2019-2023 vs 2018 baseline

Steam consumption presented in Figure 8 shows savings across all 5 years. The 5-year cumulative savings were 11,645 Klbs valued at $101,079.

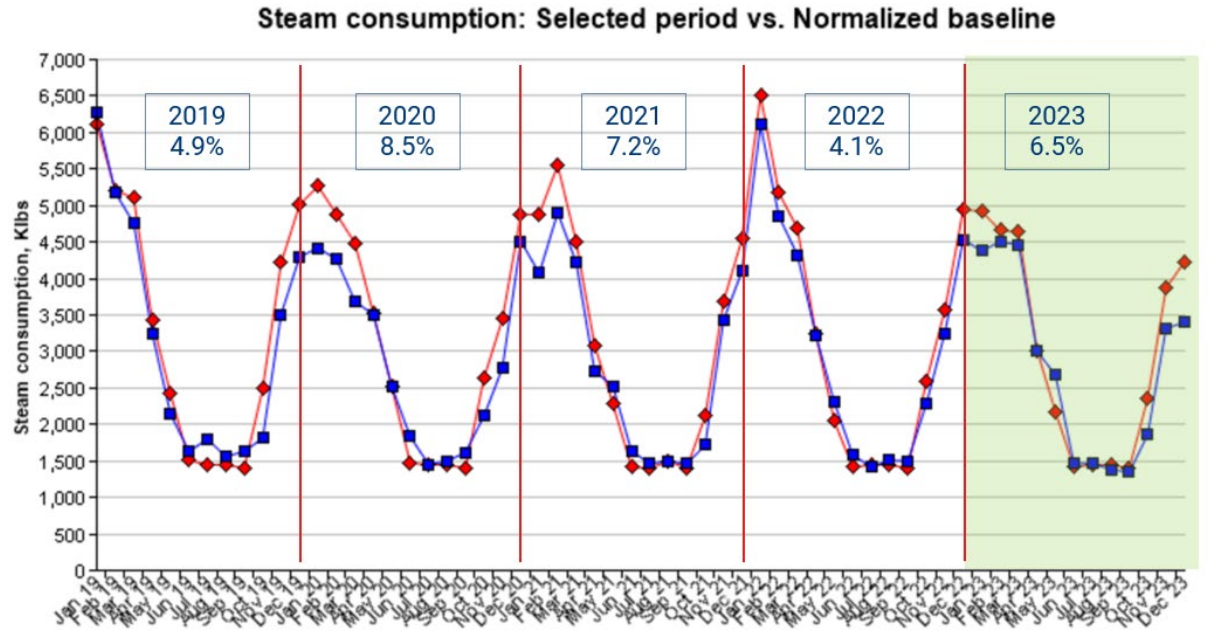

Figure 8 25 Orde Street: Steam consumption (Klbs) in 2019-2023 vs 2018 baseline

1.4 60 Murray Street

Table 5 presents the energy targets from the 2019 ECDM plan and lists 60 Murray Street energy savings in the 2023 calendar year compared to the 2018 baseline, which resulted in net utility cost savings of $46,860.

Table 5 60 Murray Street: Energy and water savings vs 2018 baseline

	2019 Plan Target savings				Actual savings (2023 vs 2018 baseline)[4]			
	Units	**%**	**$**	**GHG (tonnes eCO_2)**	**Units**	**%**	**$**	**GHG (tonnes eCO_2)**
Electricity (kWh)	458,377	14.4%	$45,249	18	157,817	5.1%	$25,251	5
Natural Gas (m^3)	59,070	17.8%	$16,306	112	45,031	15.1%	$14,860	86
Total Energy (ekWh)	**1,069,752**	**16.2%**	**$61,555**	**130**	**623,889**	**10.1%**	**$40,111**	**91**
Water (m^3)	-	-	-	-	1,570	26.3%	$6,749	0
Total			**$61,555**	**130**			**$46,860**	**91**

Electricity consumption shown in Figure 9 demonstrates consumption savings in each of the 5 years. The 5-year cumulative savings were 1,003,485 kWh worth $160,558.

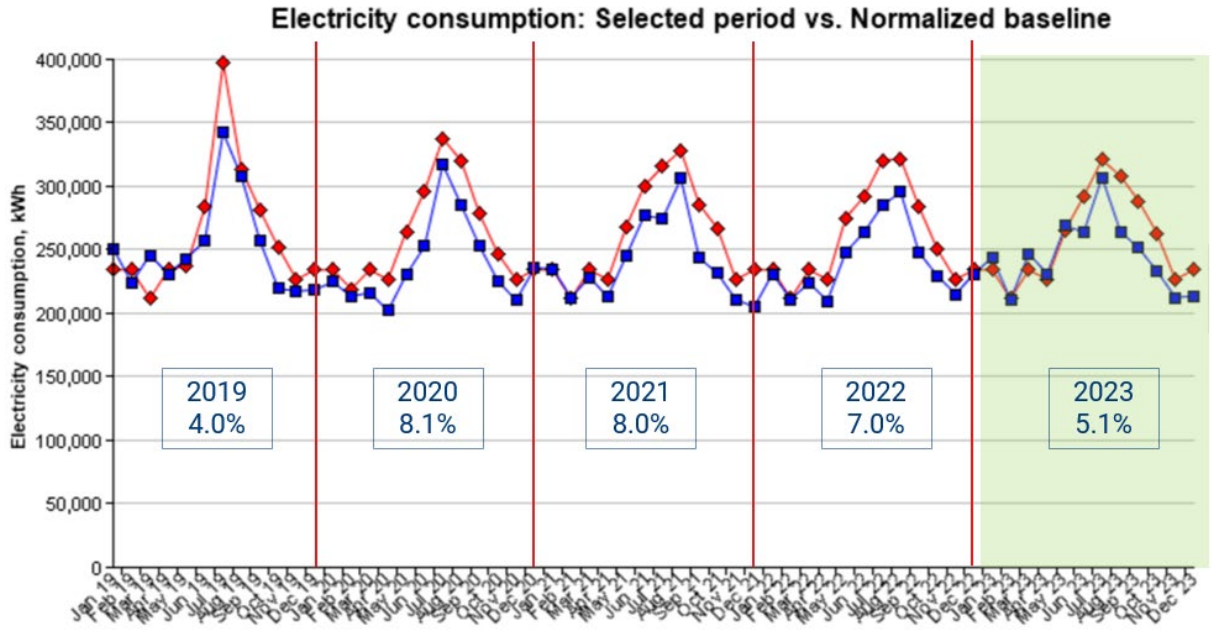

Figure 9 60 Murray Street: Electricity consumption (kWh) in 2019-2023 vs 2018 baseline

[4] Using 2024 utility rates: Electricity $0.16/kWh, gas $0.33/$m^3$, water $4.30/$m^3$.

Natural gas consumption presented in Figure 10 shows major consistent savings between 2019 and 2023. The 5-year cumulative savings were 349,249 m³ valued at $115,252.

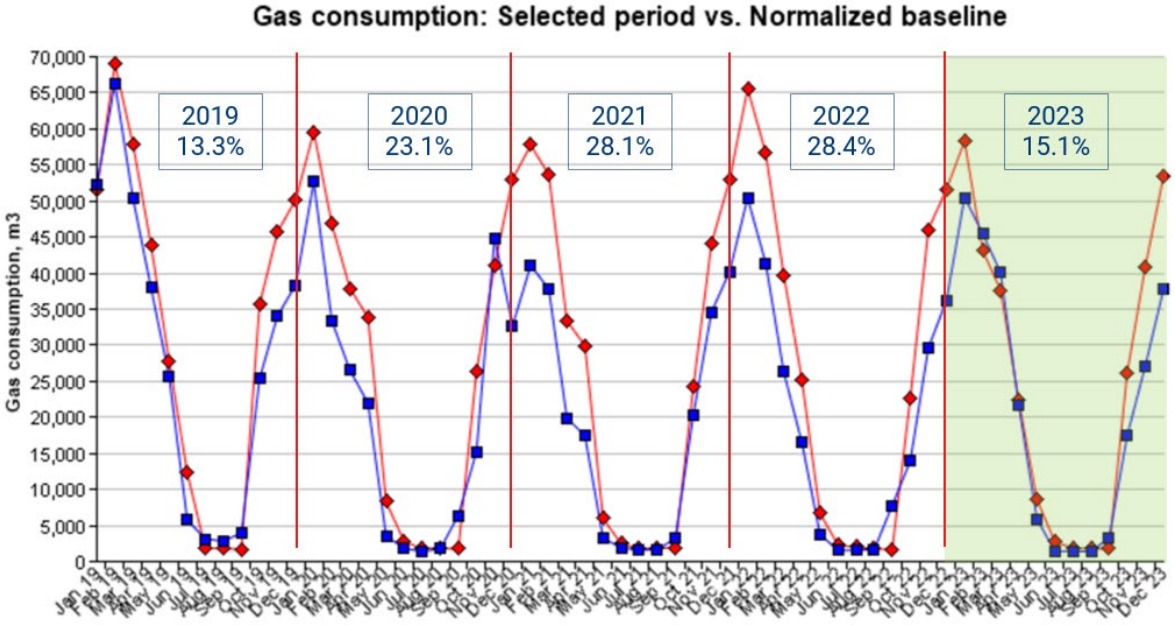

Figure 10 60 Murray Street: Natural gas consumption (m³) in 2019-2023 vs 2018 baseline

Water use shown in Figure 11 demonstrates an increase in 2019. The 5-year cumulative savings were 8,208 m³ valued at $35,294.

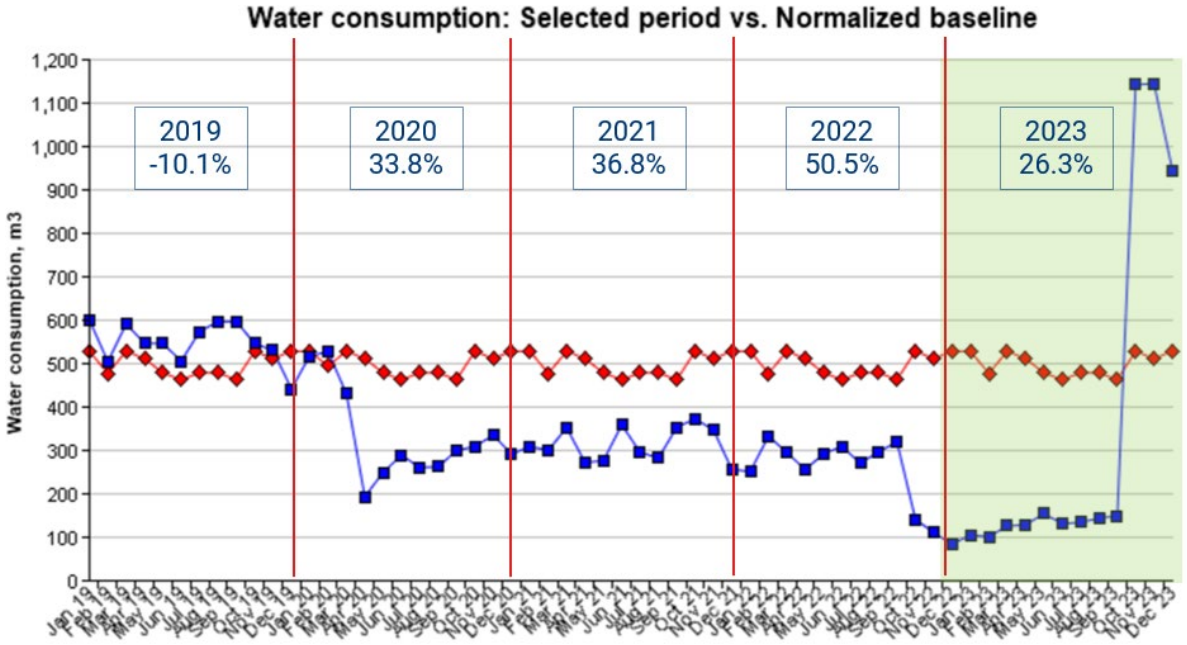

Figure 11 60 Murray Street: Water consumption (m³) in 2019-2023 vs 2018 baseline

2. Measures implemented in 2019-2023

A number of measures were proposed for the sites in the 2019 ECDM plan, as follows:

Mount Sinai Hospital:

- Lighting LED retrofits
- Lighting controls upgrade
- Air handling unit setback
- Air handling unit heat reclaim

25 Orde Street:

- Global adjustment Class-A opt-in
- Lighting LED retrofits
- Lighting controls upgrade
- Variable speed air compressor upgrade
- AHU 01 & 02 setback
- AHU03 & 04 nighttime setback
- Air handling unit heat reclaim improvement

60 Murray Street:

- Lighting LED retrofits
- Lighting controls upgrade
- AHU 601 & 602 nighttime setback
- Fully condensing boiler upgrade

The planned energy efficiency improvements that were implemented from 2019 to 2023, are as follows:

Hennick Bridgepoint Hospital

- LED retrofit of administration building, including the rotunda lighting and pot lights in 2022.
- Steam boiler economizer in January 2022.
- Small chiller operating range has no set schedule as it operates depending on the cooling requirement for the building.
- AHU set back schedule was implemented in January 2021. The Pool AHU GR-01 was removed from this program due to too much condensation. Recently the AHU serving the kitchen space on the lower level was also removed from this reduction program
- Parking Garage AHU temp setting adjusts on an annual basis, before and after February 1st every year.

Mount Sinai Hospital:

- All planned energy efficiency measures were put on hold with the focus on major redevelopment of the hospital.

3. Project successes and lessons learned

Over the past five years, there have been successes, along with lessons learned, which will help make future progress and have informed the Plan.

Some of the lessons learned include:

- COVID-19 affect prioritization of energy efficiency projects, impacting operations and implementation of projects.
- Scheduling and operational changes are a lower cost, low impact way to reduce energy and emissions.
- Staff engagement on projects is important to ensure success.

Part 3: The plan for the next 5 years (2024-2029)

Sinai Health has the potential to significantly improve the energy efficiency of its hospitals and is working towards top-quartile positioning in the Greening Health Care energy efficiency benchmark charts. The targeted energy use reduction is 5%, 14%, 4% and 12%, for MSH, HBH, 25 Orde Street and 60 Murray Street respectively, by 2029 compared with the 2023 baseline. The projects and organizational measures described below are designed to achieve this goal along with utility cost savings worth approximately $1,201,884/year at 2024 rates and GHG emissions reduction of 2,584 tonnes eCO_2/year.

1. 2023 energy and water use

Table 6 below presents the 2023 baseline energy and water use, costs, and emissions for all four of Sinai Health's facilities.

Table 6 Sinai Health's 2023 energy and water use

Site	Energy Type	2023 Use	2023 Costs ($)	Greenhouse Gas Emissions (tonnes eCO_2)
Mount Sinai Hospital	Electricity	40,586,423 kWh	$6,087,963	2,876
	Chilled Water	8,260,037 Th	$1,329,866	
	Thermal	169,462 Klbs	$1,470,930	12,981
	Water	139,627 m³	$628,323	2
Hennick Bridgepoint Hospital	Electricity	13,822,084 kWh	$2,073,313	904
	Thermal	2,464,417 m³	$814,043	4,734
	Water	103,936 m³	$467,710	1
25 Orde Street	Electricity	8,964,781 kWh	$1,344,717	586
	Thermal	33,226 Klbs	$288,402	2,545
	Water	33,105 m³	$148,973	0
60 Murray Street	Electricity	2,955,717 kWh	$443,358	193
	Thermal	250,828 m³	$82,853	482
	Water	4,483 m³	$20,172	0
Total	**Electricity**	**66,329,005 kWh**	**$9,949,351**	**4,559**
	Chilled Water	**8,260,037 Th**	**$1,329,866**	
	Thermal	**9,561,666 m³**	**$2,656,228**	**20,742**
	Water	**281,151 m³**	**$1,265,178**	**3**

2. Energy and water intensity benchmarks and targets

Greening Health Care sets energy and water intensity targets for its 69 member hospitals based on the average of top-quartile performance of comparable buildings in the Greening Health Care database and adjusted for weather and material site specific variables. Top-quartile is considered good practice, requiring no special technology, just consistent application of good design and operational practices which are already in wide use. Figure 12 shows the relative energy intensity of the Mount Sinai Hospital and Hennick Bridgepoint Hospital sites in 2018, 2023 and at the target 2029 performance level which is the goal for the Plan. There are no benchmark charts available for 25 Orde Street or 60 Murray Street, as insufficient data is available for comparable buildings.

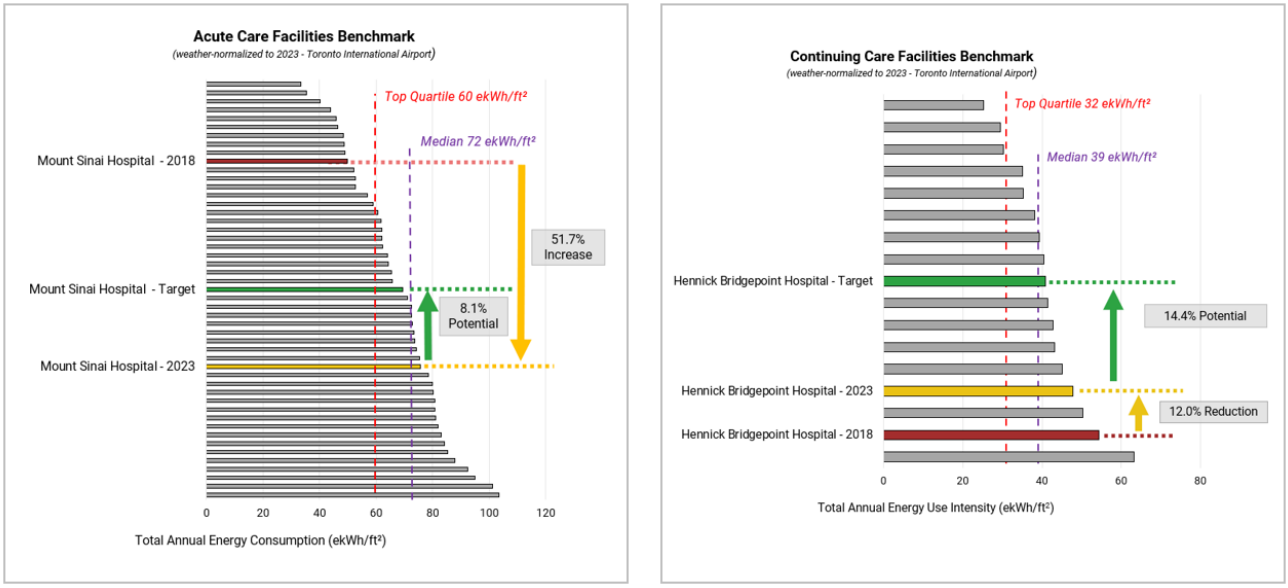

Figure 12 Annual energy intensity benchmarks for 2018, 2023, and 2029 target for MSH and HBH

Table 7 below presents Sinai Health's current and target energy intensities once the measures included in this Plan are implemented. The energy intensities are broken down by energy components, which indicates where the greatest savings are to be found and helps direct efforts to the building systems with the biggest opportunities. The energy components and associated potential opportunities for savings are as follows:

- Base electricity systems consist of fans, pumps, equipment, and lighting. The savings potential lies mostly in fans and pumps.
- Electric cooling is air conditioning plant and equipment, with significant further savings potential in how the equipment is controlled.
- Base thermal energy is primarily used for reheat in ventilation systems, along with domestic hot water and kitchens and heating distribution losses. Isolating the radiation loop and other optimization measures will help reduce base thermal energy use.

- Heating thermal systems are space and ventilation heating and humidification, with further targeted savings potential through improved control of ventilation and scheduling optimization.

Table 7 Energy and water targets for Sinai Health's sites

Site	Energy Component	Energy Usage Intensity (ekWh/ft²)		Annual Savings Potential	
		Actual	Target	%	$
Mount Sinai Hospital	Base Electricity	29.9	27.5	8.0%	$475,563
	Electric Cooling	2.7	1.7	37.5%	$204,386
	Base Thermal	24.5	24.5	0.1%	$15,268
	Heating Thermal	18.4	18.4	0.3%	$49,702
	Total Energy	**75.6**	**72.1**	**4.6%**	**-**
	Water (liters/ft²)	112.3	112.3	0.0%	$0
	Total				**$744,919**
Hennick Bridgepoint Hospital	Base Electricity	15.1	14.5	3.8%	$75,194
	Electric Cooling	1.7	1.5	10.3%	$23,312
	Base Thermal	23.4	17.6	25.1%	$154,223
	Heating Thermal	7.6	7.3	3.4%	$6,728
	Total Energy	**47.8**	**40.9**	**14.4%**	**-**
	Water (liters/ft²)	126.1	126.1	0.0%	$0
	Total				**$259,457**
25 Orde Street	Base Electricity	52.9	48.1	9.2%	$118,088
	Electric Cooling	6.3	6.0	5.6%	$8,634
	Base Thermal	35.0	35.0	0.1%	$238
	Heating Thermal	34.1	33.9	0.5%	$865
	Total Energy	**128.4**	**122.9**	**4.3%**	**-**
	Water (liters/ft²)	218.8	218.8	0.0%	$0
	Total				**$127,825**
60 Murray Street	Base Electricity	18.8	16.7	11.1%	$48,853
	Electric Cooling	1.5	0.9	36.6%	$12,586
	Base Thermal	1.2	1.1	9.8%	$542
	Heating Thermal	16.7	15.0	10.0%	$7,702
	Total Energy	**38.2**	**33.8**	**11.6%**	**-**
	Water (liters/ft²)	30.8	30.8	0.0%	$0
	Total				**$69,683**

3. Energy efficiency measures

Table 8 through Table 9 summarize the proposed energy efficiency measures for each site together with their estimated costs, savings, and payback. No water efficiency measures are recommended at this time, as the sites have seen water savings and are meeting the water target. The energy efficiency measures are described in more detail in the following section.

Table 8 Energy efficiency projects summary – Mount Sinai Hospital

Measures	New Funding Required		Savings				Incentives	Payback (with incentives)	GHG emissions reductions (tonnes eCO_2/year)
Ventilation									
Schedule air handling units	$840,000	$1,470,000	2,331,194 kWh	244,130 Th	4,165 Klbs	$448,449	$253,653	2.7	478
Canadian Standards Association's air change rates validation	$165,000								
Testing and Re-balancing	$195,000								
Outside air % Control and Optimization	$150,000								
Optimize control sequence of operations	$120,000								
Building Automation and Lighting Controls									
System Upgrade/Expansion	$75,000	$125,000	116,560 kWh	0 Th	0 Klbs	$18,650	$11,656	6.1	8
Re-programming	$50,000								
Heating plant									
Field Investigate and test differential pressure sensors setpoints	$67,500	$350,500	349,679 kWh	97,652 Th	2,962 Klbs	$97,381	$46,456	3.1	252
Pump Testing and Upgrades	$45,000								
Add new variable frequency drives on heating pumps	$108,000								
Implement new programming	$90,000								
Pumps triple-duty valve optimization	$40,000								
Cooling Plant									
Testing chilled water pumps flow requirements	$160,000	$346,000	0 kWh	878,869 Th	0 Klbs	$141,498	$36,034	2.2	24

Add new variable frequency drives on chilled water distribution pumps	$61,200								
Optimize Chiller plant sequence of operations	$79,800								
Pumps triple-duty valve optimization	$45,000								
Building Envelope									
Thermographic Analysis	$45,000	$105,000	0 kWh	48,826 Th	358 Klbs	$10,967	$2,906	9.3	29
Air Sealing, Re-insulation	$60,000								
Lighting									
Retrofit existing lighting with LED	$200,000		174,840 kWh	0 Th	0 Klbs	$27,974	$17,484	6.5	11
Total	**$2,596,500**		**2,972,272 kWh**	**1,269,477 Th**	**7,485 Klbs**	**$744,919**	**$368,189**	**3.0**	**802**

Table 9 Energy efficiency projects summary – Hennick Bridgepoint Hospital

Measures	Costs		Savings			Incentives	Payback (with incentives)	GHG emissions reductions (tonnes eCO_2/year)
Ventilation								
Schedule air handling units (where practical) and use variable air volume boxes to schedule unoccupied rooms	$40,000	$141,250	133,475 kWh	153,913 m³	$72,147	$51,826	1.2	304
Canadian Standards Association's air change rates validation	$17,250							
Percentage of outdoor air control and optimization	$49,000							
Optimize sequence of operations, including reheat programming	$20,000							
Enthalpy wheel optimization	$15,000							
Heating plant								
Turn off radiation loops in summer	$35,000	$104,000	47,939 kWh	267,052 m³	$95,797	$71,557	0.3	516
Reset supply water temperature based on outside air temperature	$25,000							
Optimize sequence of operations	$24,000							
Pumps triple-duty valve optimization	$20,000							
Cooling Plant								
Pumps triple-duty valve optimization	$15,000	$39,000	58,280 kWh	0 m³	$9,325	$5,828	3.6	4
Review cooling tower operation in winter and optimize sequence of operation	$24,000							
Lighting								
Upgrade to LED	$375,000	$415,000	375,972 kWh	0 m³	$60,155	$37,597	6.3	25
Review space lighting levels and optimize	$40,000							
Parking Garage								
Investigate and reset garage temperature to a lower value	$25,000		0 kWh	66,763 m³	$22,032	$16,691	0	128
Total	**$724,250**		**615,666 kWh**	**487,728 m³**	**$259,457**	**$183,499**	**2.1**	**977**

Table 10 Energy efficiency projects summary – 25 Orde Street

Measures	Costs		Savings			Incentives	Payback (with incentives)	GHG emissions reductions (tonnes eCO_2/year)
Ventilation								
Schedule air handling units	$36,000	$351,000	316,604 kWh	1,212 Klbs	$61,174	$41,634	5.1	114
Canadian Standards Association's air change rates validation	$60,000							
Testing and re-balancing	$54,000							
Percentage of outdoor air control and optimization	$45,000							
Fume hood exhaust air optimization & control	$156,000							
Heating plant								
Field Investigate and test differential pressure sensors setpoints	$39,000	$154,100	80,571 kWh	1,938 Klbs	$29,712	$24,008	4.4	154
Pump testing and upgrades	$18,000							
Implement new programming	$15,000							
Summer humidification control and optimization	$24,500							
Investigate summer steam load	$27,600							
Pump triple-duty valve investigation and optimization	$30,000							
Cooling Plant								
Testing chilled water pumps flow requirements	$12,000	$29,500	45,443 kWh	0 Klbs	$7,271	$4,544	3.4	3
Install setpoint sensor and field investigation	$10,000							
Optimize chiller plant sequence of operations	$7,500							
Building Envelope								
Thermographic analysis	$20,000	$50,000	0 kWh	194 Klbs	$1,686	$1,599	28.7	15
Air sealing, re-insulation	$30,000							
Lighting								
LED retrofit and updated controls	$296,450		349,393 kWh	0 Klbs	$55,903	$34,939	4.7	23
Total	**$881,050**		**792,011 kWh**	**3,344 Klbs**	**$155,746**	**$106,725**	**5.0**	**308**

Table 11 Energy efficiency projects summary – 60 Murray Street

Measures	Costs		Savings			Incentives	Payback (with incentives)	GHG emissions reductions (tonnes eCO_2/year)
Ventilation								
Schedule air handling units	$66,000	$166,500	278,270 kWh	8,054 m³	$47,181	$29,841	2.9	34
Canadian Standards Association's air change rates validation	$25,500							
Testing and re-balancing	$39,000							
Percentage of outdoor air control and optimization	$19,500							
Optimize control sequence of operations	$16,500							
Heating plant								
Field investigate and install differential pressure sensors setpoints	$13,000	$59,000	47,758 kWh	13,039 m³	$11,944	$8,036	4.3	28
Pump testing and upgrades	$4,000							
Add new variable frequency drive on heating pumps	$36,000							
Implement new programming	$6,000							
Cooling Plant								
Testing chilled water pumps flow requirements	$7,500	$47,500	49,681 kWh	0 m³	$7,949	$4,968	5.4	3
Add new variable frequency drives on chilled water distribution pumps	$36,000							
Optimize chiller plant sequence of operations	$4,000							
Building Envelope								
Thermographic analysis	$20,000	$50,000	8,280 kWh	3,890 m³	$2,609	$1,801	18.5	8.0
Air sealing, re-insulation	$30,000							
Total		**$323,000**	**383,990 kWh**	**24,983 m³**	**$69,683**	**$44,645**	**4.0**	**73**

3.1 Ventilation system

- All sites
    - Optimize air handling unit (AHU) scheduling to align operating hours with departmental hours. For AHUs serving 24/7 zones, schedule variable air volume boxes in unoccupied zones to match space occupancy and adjust the AHU fan based on static pressure sensor feedback. Ensure AHU variable frequency drive (VFD) speed aligns with expected unoccupied turn-down levels during off-hours.
    - Test space air change rates to ensure compliance with Canadian Standards Association's (CSA) recommended levels. Reduce air change rates in areas where over-ventilation is identified.
    - Test AHU outside air percentages, comparing them against CSA Z317.2 requirements. Then, adjust damper positions and/or balance return and supply air to ensure airflow aligns with CSA Z317.2 recommendations.
- Mount Sinai Hospital and 60 Murray
    - Test and rebalance air handling unit airflows, refurbishing ductwork and dampers as necessary to enhance system performance and resiliency.
    - Investigate economizer, supply air temperature, mixed air temperature control and implement new sequences to optimize operations.
- Hennick Bridgepoint Hospital
    - Optimize sequence of operations, including reheat programming eliminating simultaneous heating and cooling.
    - Enthalpy wheel optimization including pre-heat setpoints and sequence of operations.
- 25 Orde Street
    - Test and rebalance air handling unit airflows, refurbishing ductwork and dampers as necessary to enhance system performance and resiliency.
    - Fume hood exhaust air optimization and control. Reduce ventilation ACH to match with space use.

3.2 Building Automation System and Lighting Controls

- Mount Sinai Hospital
    - System upgrade/expansion – retrofit control devices including actuators, control valves and sensors as needed to achieve savings.
    - Re-programming – update building automation system programming to implement new optimized sequences of operations.

3.3 Heating Plant

- Mount Sinai, 25 Orde and 60 Murray

    - Field investigate and test differential pressure sensors setpoints
    - Pump testing and upgrades
    - Implement new programming
- Mount Sinai Hospital
    - Add new VFD on heating pumps
    - Pumps triple-duty valve (TDV) optimization
- Hennick Bridgepoint Hospital
    - Turn off radiation loops in summer
    - Reset supply water temperature based on outside air temperature
    - Optimize sequence of operations
    - Pumps TDV optimization
- 25 Orde Street
    - Summer humidification control and optimization
    - Investigate summer steam load
    - Pump TDV investigation and optimization
- 60 Murray Street
    - Add new VFD on heating pumps

3.4 Cooling Plant

- Mount Sinai, 25 Orde and 60 Murray
    - Optimize chiller plant sequence of operations
    - Testing chilled water (CHW) pumps flow requirements
- Mount Sinai Hospital
    - Pumps triple-duty valve optimization
    - Add new VFDs on CHW distribution pumps
- Hennick Bridgepoint Hospital
    - Pumps TDV optimization
    - Review cooling tower operation in winter and optimize sequence of operations
- 25 Orde Street
    - Install differential pressure sensor and confirm setpoint through field investigation
- 60 Murray Street

- Add new VFDs on CHW distribution pumps and modulate using differential pressure sensor.

3.5 Building Envelope

- Mount Sinai Hospital, 25 Orde Street and 60 Murray Street
  - Thermographic analysis: Technical review of the thermographic analysis of roof and exterior walls.
  - Air sealing, re-insulation: Implement local air sealing and re-insulation, as needed.

3.6 Lighting

- Mount Sinai Hospital, Hennick Bridgepoint Hospital and 25 Orde Street
  - Upgrade the existing fluorescent fixtures to energy-efficient LED fixtures and add lighting controls where possible. This includes installing occupancy sensors to automatically turn lights on or off based on room occupancy, implementing daylight sensors to adjust lighting levels based on the amount of natural light available, integrating dimming capabilities for adjustable lighting levels, and utilizing networked control systems for centralized management and automation of the lighting (where applicable).

3.7 Parking Garage

- Hennick Bridgepoint Hospital
  - Investigate and reset garage temperature to a lower value.

4 Organization role and impact

Sinai Health has multiple facilities with different operations and needs. Mount Sinai Hospital is undergoing a multi-year renovation, in phases, which was been a focus for the Board, senior management, facility and capital staff. As facility staff capacity is limited, the plan primarily focuses on straightforward retrofits and operational improvements. This approach provides the greatest likelihood of successful implementation and reduced energy and emissions.

Sinai Health_2024-2029 ECDM plan_2026-09-28

Final Audit Report 2026-09-28

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