Energy Conservation & Demand Management Plan 2024

Executive Summary

This Energy Conservation and Demand Management (ECDM) Plan is written in accordance with Ontario Regulation 25/23: BROADER PUBLIC SECTOR: ENERGY REPORTING AND CONSERVATION AND DEMAND MANAGEMENT PLANS. This ECDM, in concert with the Integrated Energy and Water Master Plan (IEWMP), currently under development, provide the framework for the next phase of sustainable operations across all campuses. This mindful approach is in support of the current George Brown College (GBC) Strategy 2026 objectives and represents our commitment to sustainability while expanding our campuses, improving the quality of our student experience, and strengthening our educational programming.

Environmental sustainability is one of the priorities within GBC's Strategy 2026. In order to fulfil this priority, the college has set out a number of objectives, including the following:

> *"[To] Develop an ambitious long-term Environmental Sustainability Plan that focuses on increased energy efficiency and reduced emissions to reverse the impacts of climate change, and recognizes the interdependence between our campuses, the cities and communities that surround us and the learners that we influence."*

This ECDM Plan presents an overview of the current utility consumption at GBC, followed by a breakdown of the utility consumption at each of the three main campuses: Casa Loma, St. James and Waterfront.

In the last year of typical operations prior to COVID-19 shutdowns (2019), GBC's energy use intensity (EUI) was 30.44 ekWh/ft^2, and for the most recent full year of utility data (2023), the College's EUI was 26.82 ekWh/ft^2. When compared to the median EUI of between 26.84 ekWft^2 – 35.36 ekWh/ft^2 for the average, Canadian College, Technology institute and CEGEP, in 2019[1] as well as the Energy Star Canadian Energy Use Intensity by Property Type 2023 Technical Reference[2], we reveal that GBC is currently performing at the median EUI for this building category.

For calendar year 2023, GBC had a GHG intensity of 2.53 kgCO_2e/ft^2 which compares favorably to the Ontario college/university median GHG intensity of 3.14 kgCO_2e/ft^2 as referenced in the Energy Star Canadian Regional Median Greenhouse Gas Emissions Intensity 2022 Technical Reference[3].

In the later sections of this report a synopsis of recent GBC energy management projects will be presented. As well, ongoing energy management initiatives including the College's commitment to completing a comprehensive IEWMP by the end of calendar year 2024, will be discussed.

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[1] (Source: https://www150.statcan.gc.ca/n1/daily-quotidien/220805/t001d-eng.htm)

[2] (Source: https://portfoliomanager.energystar.gov/pdf/reference/Canadian%20National%20Median%20Table.pdf)

[3] (Source: https://natural-resources.canada.ca/sites/nrcan/files/energy/pdf/2GHGI_-_English19_0(1).pdf)

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Regulatory Update

O. Reg 507/18 under the Electricity Act, 1998, titled Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans, was revoked and replaced with the new reporting regulation O. Reg 25/23 for Broader Public Sector (BPS) organizations in Ontario. This new regulation aims to streamline reporting, simplify language, as well as eliminate duplicative reporting and unclear reporting requirements. O. Reg 25/23 retains many of the provisions brought forth in the former regulation and does not change the policy intent of the former BPS energy reporting regulation.

Introduction

The purpose of the GBC 2024 ECDM Plan is to fulfill the regulatory requirements as set forth by the Province of Ontario in O. Reg 25/23. as well as promoting sustainable stewardship of our environment and communities. In keeping with the GBC Strategy 2026 goal of achieving environmental sustainability, this energy management plan aims to be the catalyst initiating the next phase in sustainable operations across all campuses at GBC.

GBC is guided by its ***mission, vision, mandate, and values***.

***Mission*:** We turn learning into opportunity.

***Vision*:** To be a college renowned for its inclusion, excellence, relevance, impact, and leadership.

***Mandate*:** "To offer a comprehensive program of career-oriented, post-secondary education and training to assist individuals in finding and keeping employment, to meet the needs of employers and the changing work environment and to support the economic and social development of [their] local and diverse communities." *Source: Ontario Colleges of Applied Arts and Technology Act, 2002*

At George Brown, we deliver this mandate through our focus on outstanding student experiences, inclusive career-oriented educational programs, excellence in research, and community engagement. The realization of our mission and vision facilitates the achievement of our mandate consistent with our values. Our values guide how we work, how we teach and how we conduct research.

***Values*:**

Learner Focused: We focus on the needs, success, and well-being of our learners always.

Excellence: We honour our commitments, act ethically and with integrity, and deliver superior performance.

Accountability: We hold ourselves responsible for environmental, social and resource sustainability.

Diversity, Equity, and Inclusion: We show mutual respect in all of our behaviour to create a sense of belonging both within the community of George Brown and with all of our stakeholders.

George Brown College Energy and Water Consumption

Established in 1967, the George Brown College of Applied Arts and Technology is a public, fully accredited college of applied arts and technology with three campuses located in downtown Toronto.

GBC offers more than 170 full-time programs in art and design, business, community services, early childhood education, construction and engineering technologies, health sciences, hospitality and culinary arts, preparatory studies, as well as specialized programs and services for recent immigrants and international students.

GBC currently owns approximately 2.0 million square feet of property spanning over three main campuses: Casa Loma, St. James, and Waterfront. The newest addition to this portfolio is Limberlost Place, a 10-storey, net-zero, mass timber building opening in 2025, adding an additional 203,315 ft^2 to our Waterfront Campus.

Table 1 provides a summary of overall energy consumption, EUI, GHG intensity, as well as annual water consumption for the past six calendar years. In the following sections, we will delve deeper into the utility consumption patterns for each of the three GBC campuses.

Table 1. Utility Consumption and Energy Intensity 2018-2023

ECDM Program Summary	2018	2019	2020	2021	2022	2023
Electricity Consumption (kWh)	29,613,937	30,765,504	26,310,552	26,531,964	26,412,947	27,837,042
Natural Gas Consumption (ekWh)	24,640,029	24,885,410	20,695,658	21,582,338	21,062,996	21,356,786
Facility Size (ft^2)	1,892,539	1,834,158	1,834,158	1,834,158	1,834,158	1,834,158
Energy Use Intensity - EUI (ekWh/ft^2)	28.67	30.44	25.63	26.23	25.88	26.82
GHG Intensity (kgCO2e/ft^2)	2.92	2.96	2.44	2.53	2.48	2.53
Water Consumption (m^3)	113,688	115,961	70,165	63,214	72,145	83,443

Figure 1 below depicts the percentage of overall energy and water consumption broken down by campus. Variations between the campuses consist of the total number of buildings per campus as well as building age, size, envelope construction, fenestration systems, HVAC equipment, and a myriad of site-specific educational programming. Therefore, this comparison depicts the energy consumption breakdown as a percentage of total energy use and is not intended as a direct campus to campus EUI comparison. As can be seen below, St. James Campus uses the highest percentage of electricity and natural gas as compared

to the other two campuses at 37% and 44% respectively, whereas Waterfront Campus consumes the greatest amount of water at 42% of the aggregated consumption of the entire college.

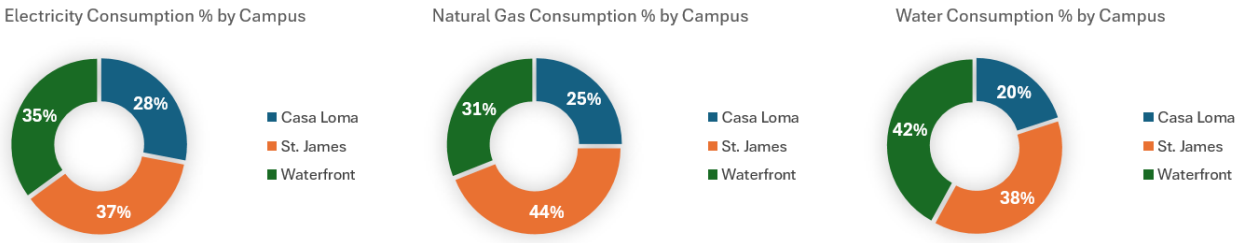

Figure 1. Utility Consumption Breakdown by Campus

Figures 2 thru 4 below examine GBC's overall historical energy and water use. In *Figure 2*, we can see that natural gas consumption as a total percentage of annual energy use has remained fairly constant. The marked decrease in energy and water in years 2020 thru 2022 can be attributed to the global COVID-19 pandemic shutdowns, as well as the temporary closure of 200 King until fall 2023, due to fire (see *Figures 2 and 3*).

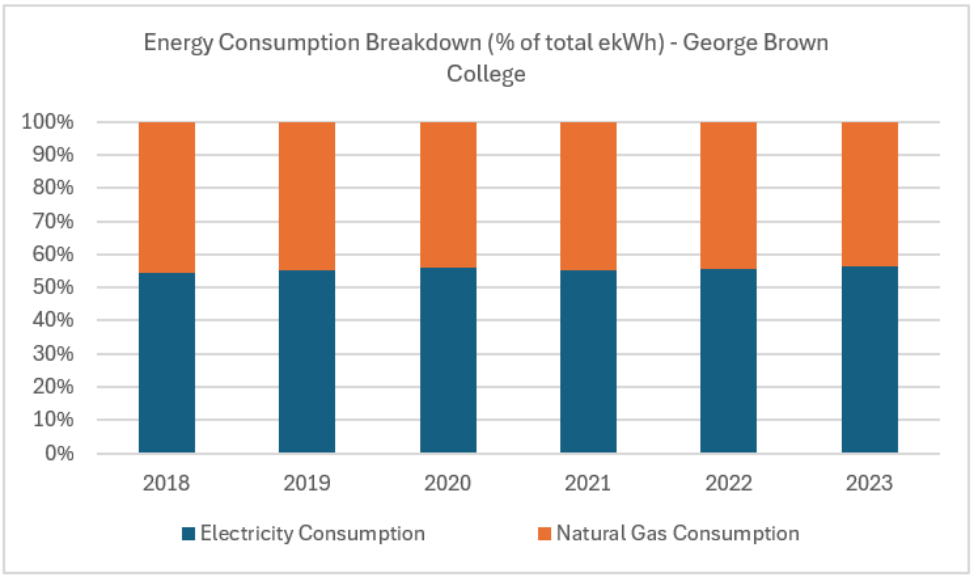

Figure 2 – GBC Energy Consumption Breakdown % by Utility 2018 – 2024

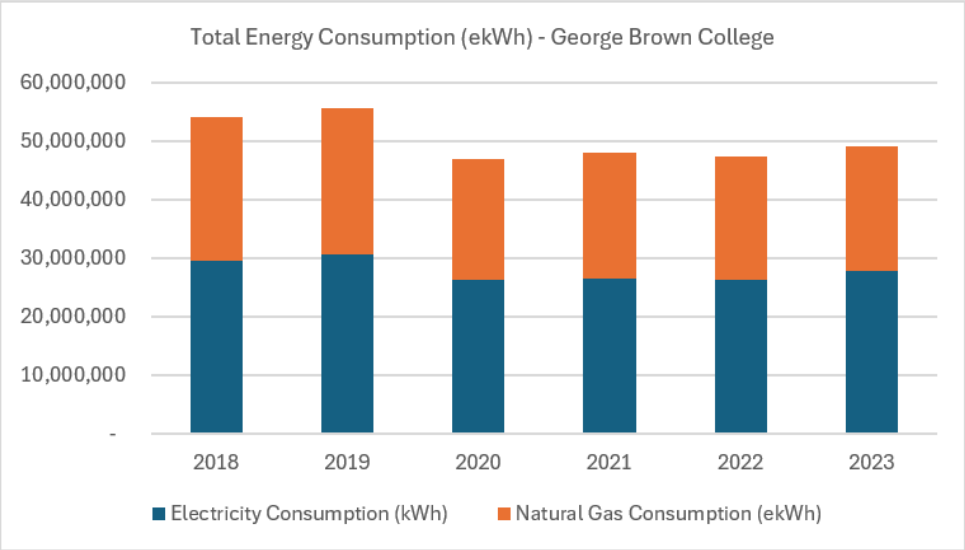

Figure 3 – GBC Energy Consumption Breakdown Total ekWh 2018 – 2024

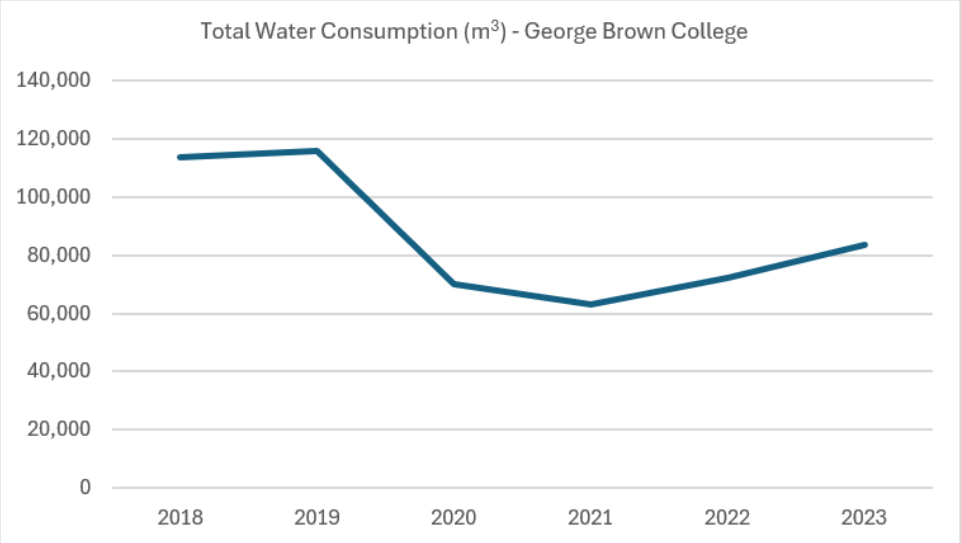

Figure 4 – GBC Water Consumption 2018 – 2024

Figure 4 shows the overall water consumption in cubic meters for GBC. For the reasons mentioned previously (i.e. COVID-19 global pandemic and 200 King closure due to fire), there is a noticeable reduction in water consumption beginning in 2020 and continuing until mid-2023. It must also be noted that hybrid work and learning arrangements equate to fewer employees and students on-site on any given day compared to pre-pandemic levels which is another potential contributing factor to the overall decrease in water consumption observed throughout the college.

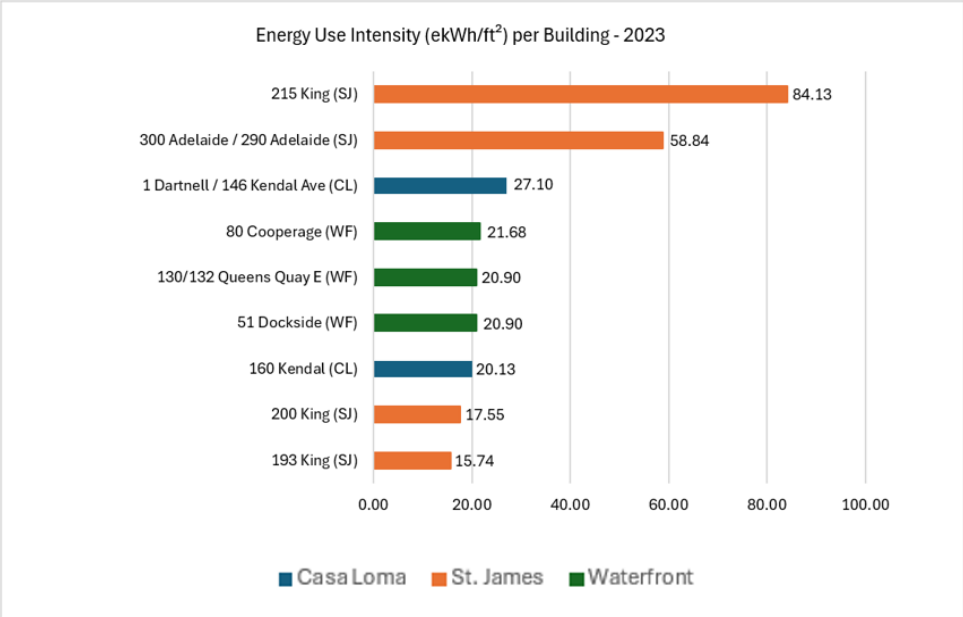

Figure 5 - GBC EUI by Building 2023

As part of the college-wide energy analysis, we will examine the energy use intensity (EUI) and overall Greenhouse Gas (GHG) emission for each building. *Figures 5 and 6* provide building by building EUI and total GHG emission comparisons for the 2023 calendar year. As can be seen, due to the nature of academic programming delivered in these buildings (i.e. culinary arts), 215 King and 300/290 Adelaide at St. James Campus have the highest energy intensity by a large margin. Overall, 290/300 Adelaide produces the most GHG of any other building, due to the high consumption of natural associated with the culinary arts program.

For the last year of typical operations before COVID-19 pandemic shutdowns (2019), GBC's average energy use intensity (EUI) was 30.44 ekWh/ft^2, and for the most recent full year of utility data (2023), the College's average EUI was 26.82 ekWh/ft^2. These numbers compare favorably to the median energy intensity of 35.35 ekWh/ft^2 for the average, Canadian College, Technology institute and CEGEP, in 2019[4]. GBC's current EUI also sits essentially at the median site EUI of 26.84 ekWh/ft^2 as referenced in the Energy Star Canadian Energy Use Intensity by Property Type 2023 Technical Reference[5] for this building type.

[4] (Source: https://www150.statcan.gc.ca/n1/daily-quotidien/220805/t001d-eng.htm)

[5] (Source: https://portfoliomanager.energystar.gov/pdf/reference/Canadian%20National%20Median%20Table.pdf)

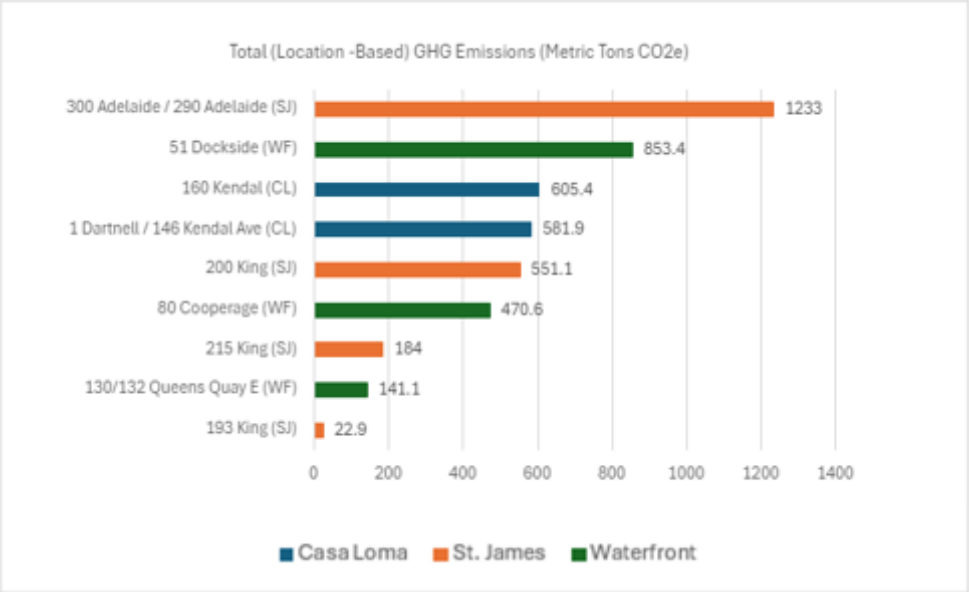

Figure 6 – GBC GHG Emissions by Building

For calendar year 2023, GBC had combined greenhouse gas emissions totaling 4,643.4 metric tons of CO_2e and had a GHG intensity of 2.53 $kgCO_2e/ft^2$. which compares favorably to the Ontario median GHG intensity of 3.14 $kgCO_2e/ft^2$ from the Energy Star Canadian Regional Median Greenhouse Gas Emissions Intensity 2022 Technical Reference[6]. Unsurprisingly, our largest emitters are our largest buildings associated with space and domestic water heating as the majority of our central plants still utilize natural gas as a primary energy source. 300/290 Adelaide has the greatest GHG emissions of any building within the college's portfolio. This is due primarily to the large gross floor area of this building and the culinary programming taking place at this location which utilizes natural gas for much of the commercial grade cooking equipment installed within the labs throughout the building.

[6] (Source: https://natural-resources.canada.ca/sites/nrcan/files/energy/pdf/2GHGI_-_English19_0(1).pdf)

Casa Loma Campus

Located at the Northwest part of the City of Toronto, the Casa Loma Campus is comprised of three main buildings (1 Dartnell, 146 Kendal and 160 Kendal) encompassing a total gross floor area of 578,870 ft^2. Within the section below, we will have a closer look at the energy and water consumption patterns for this campus.

Utility Consumption

Table 2 displays the energy and water consumption trends for Casa Loma Campus over the past six years. Within *Figures 6 thru 9* we will look at the energy and water consumption patterns for this campus.

Annual Consumption (Table 2. Casa Loma Campus Utility Consumption 2018-2023)

Utility	2018	2019	2020	2021	2022	2023
Electricity (kWh)	8,174,848	8,237,530	6,940,274	6,980,603	7,367,813	7,691,435
Natural Gas (ekWh)	5,399,701	5,786,640	5,490,004	6,027,979	6,138,235	5,370,000
Water (m^3)	19,970	20,809	10,674	9,341	13,137	16,439

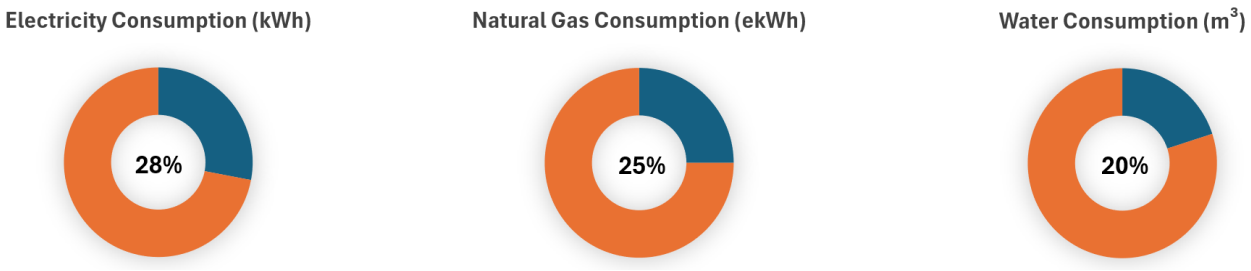

Figure 7. Casa Loma Campus % of total GBC Energy and Water Consumption – 2023

The ring charts above (*Figure 7*), provide a breakdown of the utility consumption for Casa Loma Campus in 2023 as compared to the total amalgamated consumption for GBC as a whole, for each respective utility.

Of the three campuses Casa Loma consumes the least utilities in all respects, 27%, 24%, and 20% for electricity, natural gas, and water respectively. This campus is primarily focused on deliverig trades and fashion based programming and has had recent boiler plant upgrades.

As can be seen in *Figure 8* below, the utility consumption breakdown shows that this campus consumes electricity for roughly 60% of its total energy consumption with this trend remaining consistent throughout the past six years. The site has an average energy consumption of between 12,000 and 15,000 equivalent mega watt hours (eMWh). It must also be noted that the 2023 calendar year presented with lower consumption levels than were noted pre-pandemic circa 2019 and before.

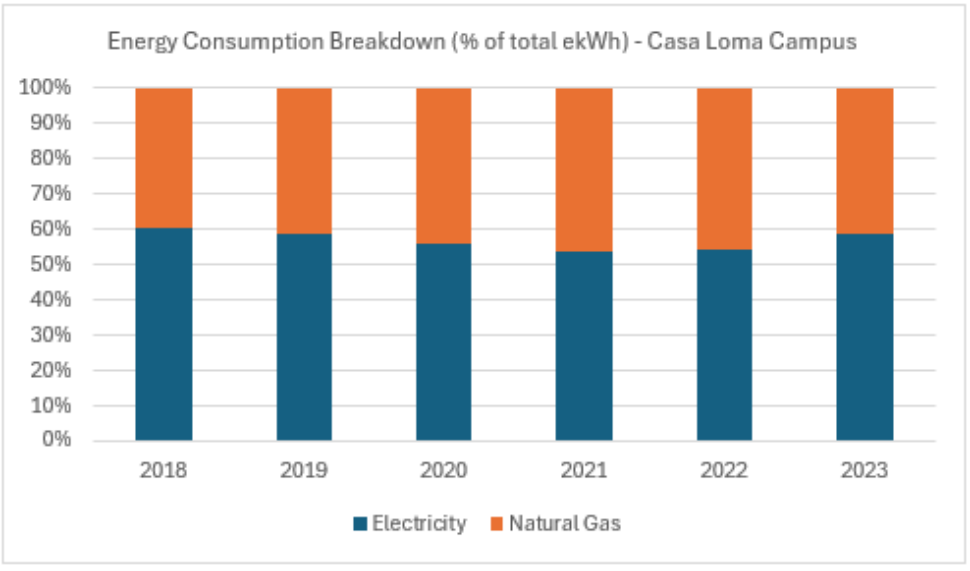

Figure 8 – Casa Loma Campus Energy Consumption Breakdown % by Utility 2018 – 2024

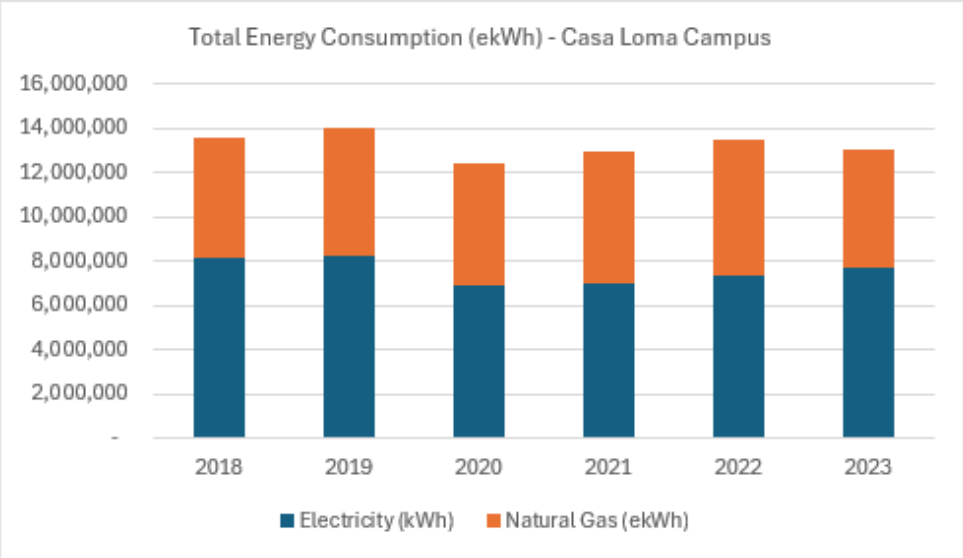

Figure 9 – Casa Loma Campus Energy Consumption Breakdown Total ekWh 2018 – 2024

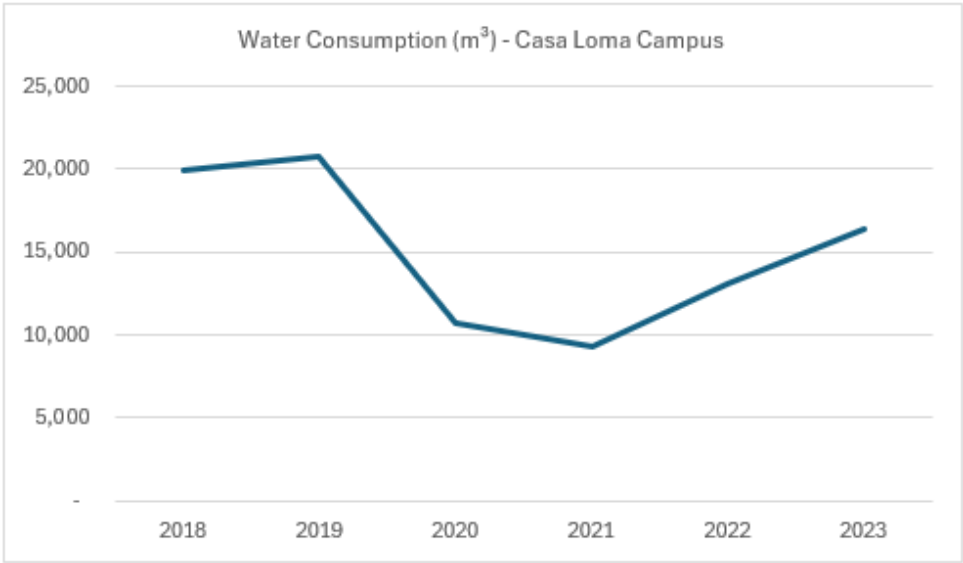

Figure 10 – Casa Loma Campus Water Consumption 2018 – 2024

The Casa Loma Campus consumes the least amount of water when compared to the other campuses but exibits the same decrease in utility consumption as witnessed at other campuses associated with pandemic shutdowns.

St. James Campus

Located in the heart of Old Town Toronto, St. James Campus is comprised of five core buildings, totalling 634,251 ft^2, that are owned and maintained by GBC. These buildings are comprised of the following addresses: 193 King St. E., 200 King St. E., 215 King St. E., 290 Adelaide St. E., and 300 Adelaide St. E.

Within this campus GBC also leases a number of other buildings. The College has limited operational control over utility consumption in these buildings. For the majority of these sites, utilities are metered and paid through the landlord and therefore, the college does not have reporting requirements for these properties or control over building operations. For this reason, leased sites have been omitted from the scope of this report.

Utility Consumption

Table 3 depicts the energy consumption trend for the Casa Loma Campus over the past six years. The data is represented graphically in *Figures 7 – 9* below.

Annual Consumption (*Table 3. St. James Campus Energy consumption 2018-2023)*

Utility	2018	2019	2020	2021	2022	2023
Electricity (kWh)	13,778,647	13,571,553	11,412,339	10,701,662	9,418,667	10,369,180
Natural Gas (ekWh)	12,360,259	12,144,153	9,793,340	9,498,289	8,711,723	9,395,638
Water (m^3)	55,087	56,666	37,744	31,313	28,998	31,810

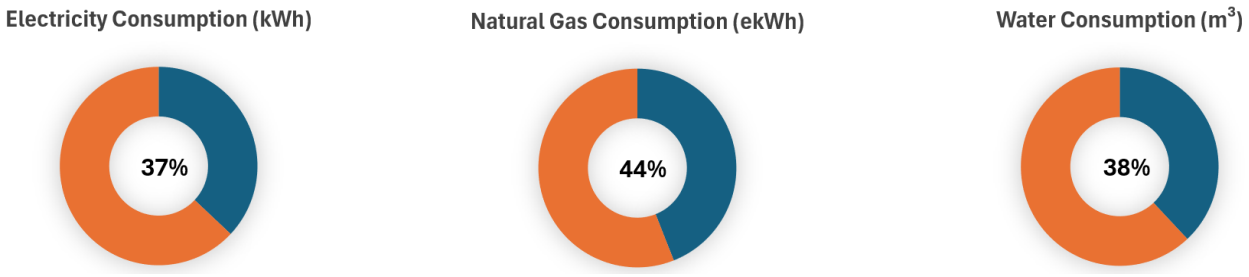

Figure 11 – St. James Campus % of total GBC Energy and Water Consumption – 2023

When compared with the other campuses, the St. James Campus consumes the greatest portion of the overall electricity and natural gas for GBC as a whole and the second most water of all the campuses. While comparing *Figures 8, 12, & 16,* we can see that natural gas consumption represents a higher ratio of energy consumption for St. James Campus than it does for Casa Loma or the Waterfront. This is primarily due to the nature of the academic programming at this campus, which is focused around delivering culinary arts and hospitality programs.

With regards to the overall energy consumption trend for this campus, we see a marked decline starting in year 2020 and continuing until 2022. This decline is primarily due to the closure of 200 King building due to COVID-19 pandemic and later due to a fire which occurred in August 2021. 200 King remained closed until August 2023 for remediation and repair.

As can be seen in *Figure 12* below, the utility consumption breakdown shows that this campus consumes electricity for roughly 55% of its total energy consumption with this trend remaining consistent throughout the past six years. The site has an average energy consumption of between 18,000 and 26,000 eMWh.

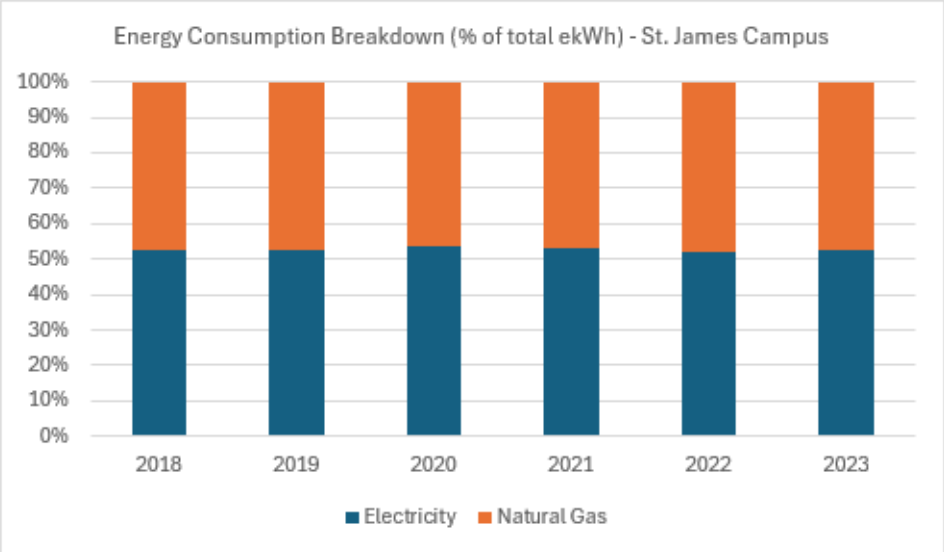

Figure 12 – St. James Campus Energy Consumption Breakdown % by Utility 2018 – 2024

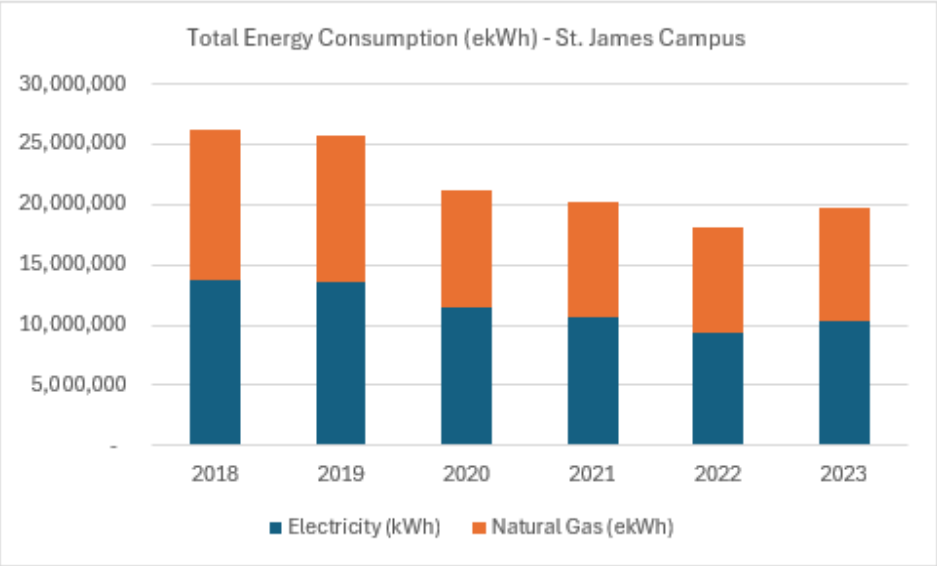

Figure 13 – St. James Campus Energy Consumption Breakdown Total ekWh 2018 – 2024

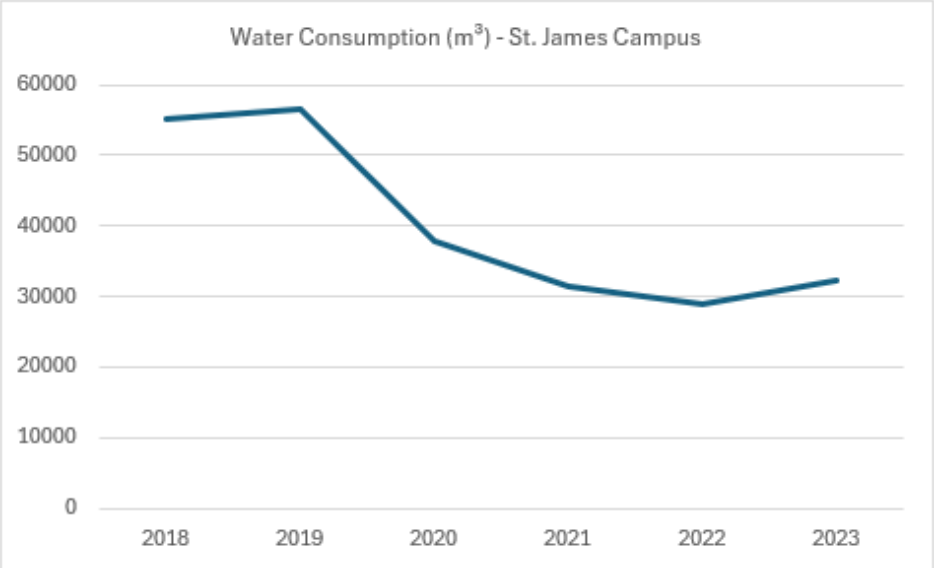

Figure 14 – St. James Campus Water Consumption 2018 – 2024

With regards to water consumption, we note a marked decline in overall consumption associated with the timeframe affected by reduced pandemic operations and the temporary closure of 200 King St. E. It is also assumed that the reduction in water use throughout 2023 can be associated with the replacement of the once-through, water cooled condensers that were previously utilized on-site.

Waterfront Campus

Located at Toronto's harbourfront, the Waterfront Campus is the newest of the three George Brown Campuses. With the addition of the Limberlost building, to be inaugurated in 2025 and the acquisition of the Corus Building, this campus is experiencing significant growth. The campus features the flagship building for the campus, 51 Dockside, and a section of a multi-tenant building in 3 Lower Jarvis, all totalling 581,576 ft^2. In addition, the campus features a 201,802 ft^2 student residence within 80 Cooperage.

Utility Consumption

Table 4 depicts the energy consumption trend for the Waterfront campus over the past six years. The data is represented graphically in *Figures 16 – 18* below.

Annual Consumption (*Table 4. Waterfront Campus Utility Consumption 2018-2023*)

Utility	2018	2019	2020	2021	2022	2023
Electricity (kWh)	7,660,441	8,956,421	7,957,939	8,959,810	8,428,724	10,221,978
Natural Gas (ekWh)	6,574,922	6,677,394	5,871,227	6,694,422	6,282,338	7,398,089
Water (m^3)	38,729	39,168	22,152	22,985	30,496	35,791

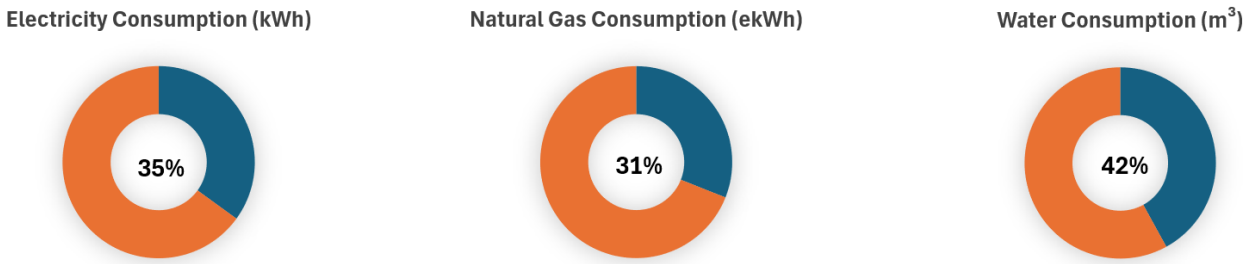

Figure 15 – Waterfront Campus % of total GBC Energy and Water Consumption – 2023

The Waterfront Campus has a slightly lower total GFA of all the Campuses, currently 621,033 ft^2. This is set to increase by approximately as the Waterfront campus is also our most rapidly expanding of the three campuses. Limberlost Place, our 203,315 ft^2, 10-storey mass-timber, net-zero carbon building is poised to open in 2025 at 185 Queens Quay E.

The Waterfront Campus consumes the second most electricity and natural gas of the three campuses at 35% and 31% respectively but consumes the greatest amount of water at 42% of the total aggregated consumption of the entire college. This is primarily attributed to the nature of the programming at this location, which is heavily focused on nursing and dental programs which utilize a great deal of water but can also be attributed to the residence building at 80 Cooperage which also has one of the highest water use intensities of any building within the GBC portfolio.

As can be seen in *Figure 16* below, the utility consumption breakdown shows that this campus consumes electricity for roughly 55% of its total energy consumption with this trend remaining consistent throughout the past six years. The site has an average energy consumption of between 14,000 and 18,000 eMWh which has increased compared to pre-pandemic levels. We are currently investigating this phenomenon and looking into our building automation systems on-site to identify opportunities for greater operational efficiency.

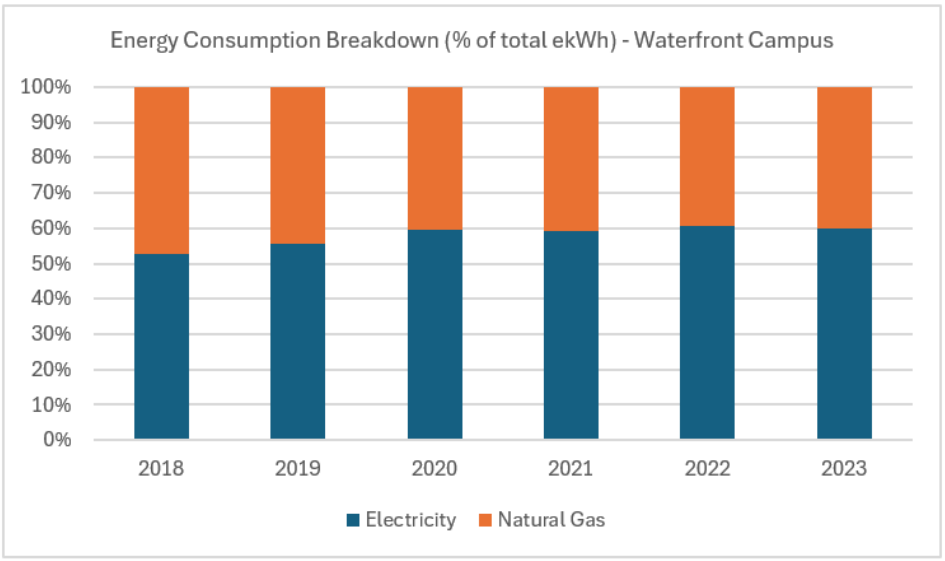

Figure 16 – Waterfront Campus Energy Consumption Breakdown % by Utility 2018 – 2024

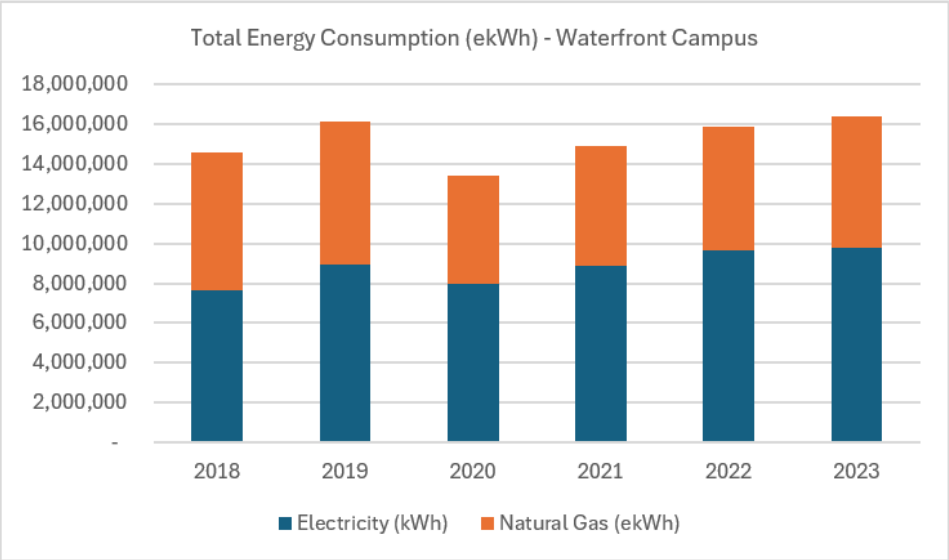

Figure 17 – Waterfront Campus Energy Consumption Breakdown Total ekWh 2018 – 2024

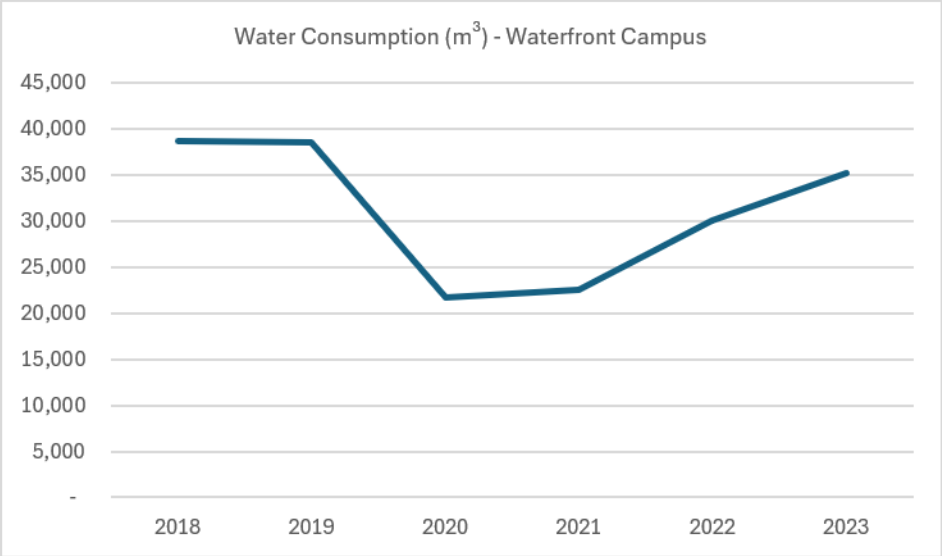

Figure 18 – Waterfront Campus Water Consumption 2018 – 2024

Water use at this campus mirrors that witnessed at the other two campuses with a marked decrease in consumption throughout the period of reduced pandemic operations. During 2023 water use on-site rebounded to nearly pre-pandemic levels. This is believed to be associated with the increased presence of both students and staff in person on campus, as well as the public attending the medical facilities that were reopened at this location.

Recent Energy Conservation Projects

Estimated Annual Energy Savings

Table 5 below depicts the estimated annual energy savings associated with recent energy efficiency projects across all campuses over the past five years.

Measure	Building	Year Implemented	Electricity* (kWh)	Natural Gas* (m^3)	Water* (m^3)	Comments
Heat Recovery System	51 Dockside	2019	0	TBD	0	Energy recovery system was install, whereby energy rejected from electrical room cooling systems is recovered. Domestic hot water is preheated using recovered heat.
Solar Panel Installation	51 Dockside	2020	90,000	0	0	In 2020, a total of 271 solar panels were installed on the rooftop of 51 Dockside building
Heating & DHW Boiler Replacement	1 Dartnel	2021	0	35,000	0	Four heating boilers (two Raytherm model E2500 and two Raytherm model E1468) were replaced with four Enerpro model EPA 2080. Efficiency was increased from 83% to 94.5%.
Boiler Replacement	300 Adelaide	2022	0	75,000	0	Two Unilux model 1000W boilers (85% efficiency) were replaced with six high efficiency Enerpro model EPA2080 (94% efficiency)
LED Lighting Retrofit	300 Adelaide	2022	300,000	0	0	Approximately 2,000, strip florescent, compact florescent and halogen lights were upgraded to LED.
Once-Through Water Cooled Compressor Replacement	300/290 Adelaide	2023	0	0	4,800	Three once-through water cooled compressors were replaced with air cooled compressors to eliminate the water use associated with this equipment.

* Estimated Annual Savings

Project Descriptions

IT Heat Recovery System – 51 Dockside Dr.

This heat recovery system implemented in 2019 utilizes excess heat from the electrical rooms on-site to pre-condition incoming water for building domestic hot water. This system is comprised of evaporators located in the electrical rooms and heat exchangers and condensing units located in the main penthouse mechanical room and on the main roof respectively. The meter for this system has failed and is in the process of being replaced therefore, at this time no savings information can be provided for this measure.

Renewable Energy Generation – 51 Dockside Dr.

In 2020, a total of 271 solar panels were installed on the rooftop of the 51 Dockside building at the Waterfront Campus. These panels comprise two separate solar arrays and feed directly through four 20 kW inverters for a maximum generating capacity of 80 kW which is utilized directly on-site. Based on the metering information on hand; this system produces an average of 90,000 kWh annually.

Condensing Boiler Upgrade – 1 Dartnell Ave.

In summer 2021, the existing heating (two water and two glycol) and DHW boilers at 1 Dartnell were replaced with high efficiency boilers. The existing heating boilers at the time were rated for an efficiency of 83% and the existing DHW boilers were rated for an efficiency of 80%. The replacement heating boilers have a rated efficiency of 94.5% and the replacement DHW boilers have a rated efficiency of 95%. This boiler replacement project is saving approximately 35,000 m^3 of natural gas annually.

Condensing Boiler Upgrade – 300 Adelaide St. E.

During the summer of 2022, the existing heating boilers consisting of two “Unilux” boilers rated for 85% efficiency were replaced with six high-efficiency “Enerpro” boilers rated for 94.5% efficiency. This boiler replacement project is saving approximately 75,000 m^3 of natural gas annually.

Lighting Retrofit – 300 Adelaide St. E.

In 2022, a lighting retrofit was performed converting the existing halogen and florescent lighting systems to LED lighting. This resulted in a total reduction in lighting electricity demand on-site from 122 kW to 65 kW, equating to 57 kW, or 47% of the previous annual electricity consumption associated with lighting.

Creation of Facilities Sustainability Team

In 2023 GBC formalized its commitment to energy, water, and waste reduction as well as overall campus sustainability through the creation of the Facilities Sustainability Team. This new division of the facilities department is tasked with aiding in the creation of the updated CMP as well as spearheading the IEWMP and Sustainability Plan for the entire college while engaging in all aspects of energy, water, and waste management across all campuses.

Energy Performance Monitoring

GBC is currently engaged in the process of installing and commissioning a sub-metering system to better track and manage energy and water consumption in real time throughout all college assets. The college has also recently updated all benchmarking information across all sites and is using this information to locate and focus on areas where greater efficiencies can be realized.

VAV System Upgrade – 200 King St. E.

During the previously mentioned fire at 200 King St. E., five of the building's main Air Handling Units (AHUs) were damaged which resulted in these systems being upgraded to Variable Air Volume (VAV) systems incorporating Variable Frequency Drives (VFDs). Throughout the remainder of 2024 the VAV systems at this location are being commissioned and air balanced.

Energy savings for this measure are not yet being realized as the system is still being calibrated. Further, the current sub-metering system is not operating at the level of individual pieces of equipment, and it is not currently possible to isolate the consumption specifically associated with this equipment.

Bullfrog Power Renewable Energy Certificates

Since 2010 GBC has been purchasing Renewable Energy Certificates (RECs) from Bullfrog Power. In total these RECs offset a total of 436.08 MWh of power purchased from the grid annually, equating to an average GHG emissions offset of 71.92 tonnes of CO_2e each year.

Water-Cooled Compressor Replacement – 300/290 Adelaide St. E.

In 2023 three once-through water cooled compressors serving various refrigeration equipment on-site were replaced with air cooled compressors. The original water-cooled compressors were utilizing constant flow from ½" water lines provided to each unit. This retrofit has resulted in an estimated annual water savings of 4,800 m^3.

Limberlost Place

GBC's commitment to the development of Toronto's East Bayfront community continues with Limberlost Place, a 203,315 ft^2, 10-storey mass-timber, net-zero carbon building currently under construction and slated to open in January 2025.

Once complete, Limberlost Place will be the first institutional building of its kind in Ontario. Its construction will contribute to significant revisions of the national and provincial building codes to allow for mass-timber buildings over six-storeys.

The building will harness green energy from the surrounding environment, including Lake Ontario. Two solar chimneys, the engines of the passive ventilation system, will draw air up and through the building from operable windows. The design features a 40% window-to-wall ratio, and the building will be outfitted with smart daylight sensors and dimming controls.

Limberlost Place will be able to operate passively 50% of the year, will run with no fuel-fired systems, and will include a roof-mounted solar array that will generate 24% of the building's energy consumption to offset GHG emissions generated in the electricity grid.

Future Conservation Measures

Campus Master Plan, Integrated Energy and Water Master Plan, & Sustainability Plan

GBC is currently engaged in a process to update our Campus Master Plan (CMP) and to implement an Integrated Energy and Water Master Plan (IEWMP) across all campuses scheduled to be completed by the end of calendar year 2024. These are the two central guiding documents that will create the framework that will initiate the next phase of our transition towards net-zero. Additionally, GBC is undertaking the creation of a college-wide Sustainability Plan which will address waste streams, behavioral efficiencies, cleaning/maintenance practices and eco procurement policies across all sites.

Building Level Metering and Selected Sub-Metering Across All Sites

This is an ongoing initiative that GBC is actively engaged in. It is our goal to upgrade the sub-metering system over time to include a greater number of systems and specific equipment across all sites to refine our monitoring capabilities and better manage energy and water use across all sites. This measure will allow building operators to have better visualizations of real time energy use and can illuminate areas to focus our efforts where greater efficiencies may be realized. These systems will also allow us to better measure and verify the savings associated with future energy efficiency projects.

Improving Building Automation Systems Capabilities

Through the process of creating the CMP and the IEWMP GBC is also recommissioning and upgrading our building automation systems (BAS). This will improve our scheduling and sequence of operations for existing systems and illuminate the gaps and areas where energy management opportunities lie, and future control upgrades and BAS capabilities can be introduced. This will generate operational efficiencies which will result in significant energy savings.

Sustainability Communication & Engagement

GBC is currently in the process of hiring a Sustainability Coordinator who will become the newest member of the Sustainability Team and will be charged with communicating sustainable initiatives as well as progress updates on our path to reaching our net-zero targets throughout the college and to the general public through releases and publications on our website.