



BUILDING ENERGY DISCLOSURE PROJECT

Annual Report 2020

City of Winnipeg

Acknowledgment

The City of Winnipeg would like to thank all the organizations that contributed to the design and implementation of Winnipeg's Building Energy Disclosure Project. The City acknowledges the time and input many organizations and individuals have put towards the first year of the program.

Specifically, we would like to thank our advisory group members:

St. Boniface Hospital
Assiniboine Credit Union
Health Sciences Centre
University of Manitoba
University of Winnipeg
Manitoba Hydro
BOMA Manitoba
Artis REIT
Winnipeg Fire Paramedic Service

Manitoba Finance
Public School Finance Board
Province of Manitoba
Manitoba Liquor and Lotteries
Sustainable Building Manitoba
Colliers International
Red River College
Natural Resources Canada
Manitoba Race to Reduce

Program Team



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Canada*

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Ressources naturelles
Canada*



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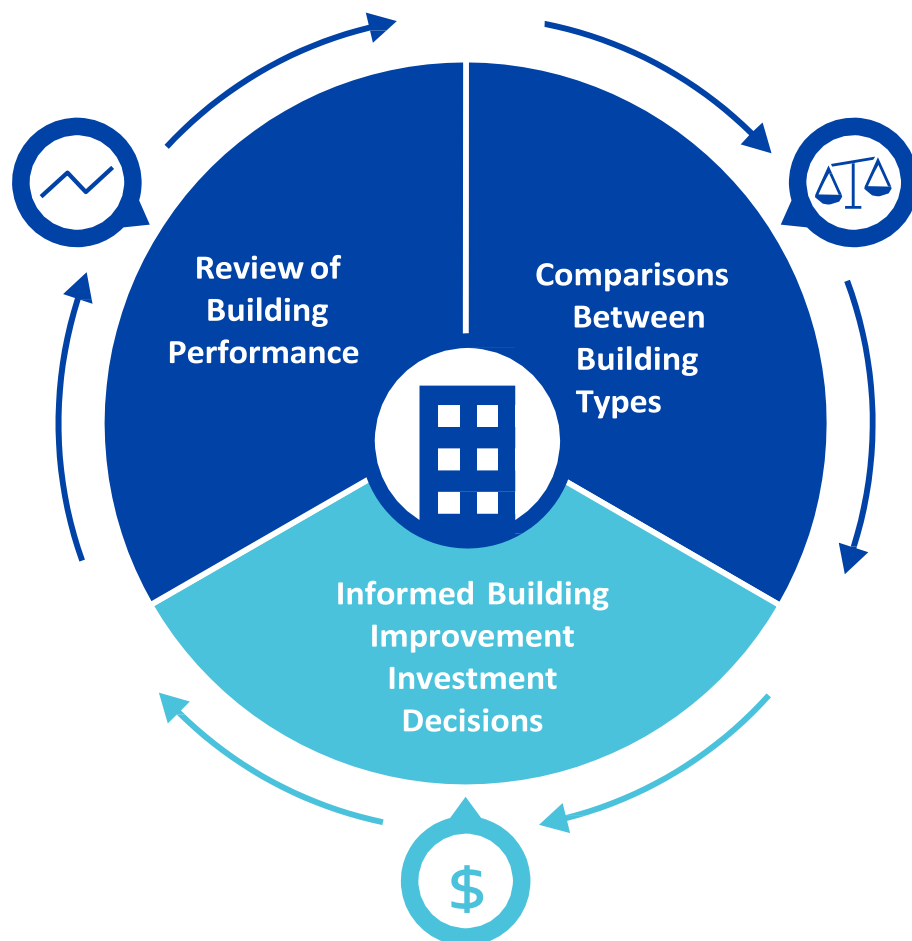
1 Overview

As buildings account for the second largest source of greenhouse gas (GHG) emissions in the City of Winnipeg (at 35 per cent of the total emissions¹), improving the energy efficiency of existing buildings is a crucial step in helping the City meet its GHG emissions reduction targets and climate action goals. Supporting energy benchmarking and disclosure is one way that jurisdictions such as the City, can help organizations identify, develop, and implement energy efficiency improvement opportunities in their buildings and reduce their GHG emissions.

BUILDING BENCHMARKING OVERVIEW AND BENEFITS

Building energy benchmarking is the process through which a building's energy performance is tracked to assess changes over time, and to allow for comparisons to be made within a portfolio or building type.

The need for energy benchmarking relates to the fundamental principle that to effectively reduce energy use and GHG emissions associated with the built environment, we must first be able to measure it.



Winnipeg Climate Action Plan Report, May 2018
(<https://winnipeg.ca/sustainability/PublicEngagement/ClimateActionPlan/default.stm#tab-documents>).

Once a benchmarking program has been implemented, its data is typically made publicly available through various means. **When information on building energy performance is collected and publicly disclosed, it becomes a powerful tool that can help stakeholders in three main ways:**

1



It allows owners and operators to set a baseline of actual performance in comparison to industry best performance, which in turn helps them to identify operational efficiency and improvements, reduce GHG emissions, and meet environmental targets.

2



It enables policy-makers and regulators to monitor how buildings across their jurisdictions are performing, assess the impacts of energy and emissions policies, identify effective ways to promote building performance improvements, and help to determine the levels of performance that are achievable for different building types.

3



Disclosure programs can also improve energy use literacy for the public. Having access to building performance data allows community members to make more informed choices about where to buy or lease based on energy use and emissions efficiencies, and expected energy costs, allowing them to select a building or space that aligns with their environmental values and cost expectations.

BENCHMARKING NEEDED TO SUPPORT IMPROVEMENTS

Implementing benchmarking and disclosure programs in jurisdictions across the country can improve building performance data transparency and lead to GHG emissions reductions.

As requirements for benchmarking and disclosure become common place this project demonstrates leadership, prepares for future requirements, and helps inform regulations as they are developed.

EXISTING ACTIVITIES AND PROGRAMS

Many cities and states across Europe and the United States have had building energy benchmarking and disclosure requirements for years. These requirements have been a great success, helping building owners, managers, and tenants improve their energy efficiency and lower costs. At present, these programs and policies are not common in Canada, even though they are a crucial step in the pursuit of energy and GHG emission reductions. Currently, only Ontario has a Mandatory, province wide, energy benchmarking requirement, with many jurisdictions having implemented voluntary programs (see figure below).



Through its Office of Sustainability and in partnership with National Resources Canada (NRCAN), the City launched the BEPD initiative in 2020 for commercial and institutional buildings in Winnipeg. **The main objectives of the project include:**

1



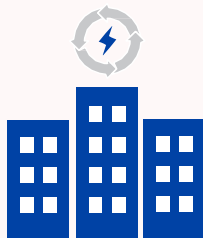
Demonstrating and showcasing industry and institutional support for improved building data transparency in Winnipeg, and for a centralized, publicly available database.

2



Supporting the further development of industry disclosure and benchmarking knowledge and capacity to help prepare organizations and building owners for likely future disclosure requirements.

3



Providing building owners and organizations with further insight into their building's performance to support energy efficiency improvement actions and GHG emissions reductions.

The target buildings for this initiative are commercial buildings over 20,000 ft²/1,858 m² in size (although smaller sizes were accepted) and various institutional building types of all sizes. The initiative relied on the sharing of building profile, energy use intensity and GHG emissions intensity information through the ENERGY STAR® Portfolio Manager data management platform.

2 Activities and Participation Summary

In Year 1, the City conducted industry outreach to refine the program design, facilitated educational workshops on building benchmarking, and hosted a Year 1 wrap-up event to discuss program successes and next steps. These activities helped develop the BEDP initiative and encouraged participation among commercial and institutional organizations in Winnipeg.

The participants in the BEDP included Winnipeg commercial and institutional organizations with various building types.

Participating Organizations	
Assiniboine Credit Union	Manitoba Liquor and Lotteries
Cushman Wakefield Stevenson	Manitoba Theatre for Young People
City of Winnipeg	Pembina Trails School Division
Canadian Museum for Human Rights	Bronx Park Community Centre
Great West Life Realty	Lindenwood Community Centre
Louis Riel School Division	University of Winnipeg
Manitoba Hydro	Sinclair Park Community Centre

During Year 1, the BEDP attracted 15 organizations. These organizations shared profile and performance information including year built, energy use intensity, and GHG emissions use intensity from a total of 161 individual buildings of various types (see table below), encompassing 680,000m² of floor space.

Participating Building Types (number of buildings – total floor space)	
Aquatic Centre (8 – 45,300 m ²)	Museum (1 – 27,000 m ²)
Bank Branch (9 – 4,175 m ²)	Office (17 – 196,800 m ²)
Casino (2 – 39,000 m ²)	Recreation Complex (3 – 38,700 m ²)
Community Centre (3 – 5,700 m ²)	Retail-Convenience Store (28 – 22,100 m ²)
Fire-Paramedic Station (30 – 21,000 m ²)	Theatre (1 – 2,600 m ²)
Ice Arena (8 – 22,900 m ²)	University (4 – 31,500 m ²)
K-12 School (37 – 186,900 m ²)	Warehouse (2 – 27,100 m ²)
Library (8 – 9,200 m ²)	



Energy Performance Scorecard

Mandarin Building

Registered by: City of Winnipeg

Address: 185 King Street / 223 James Street

Building Type: Office Properties

Gross Floor Area: 7646 m²

EJ

This **Energy Performance Scorecard** is based on the reported energy use information for 2017-2019, and shows how your building compares to similar buildings in Winnipeg.

Energy Performance

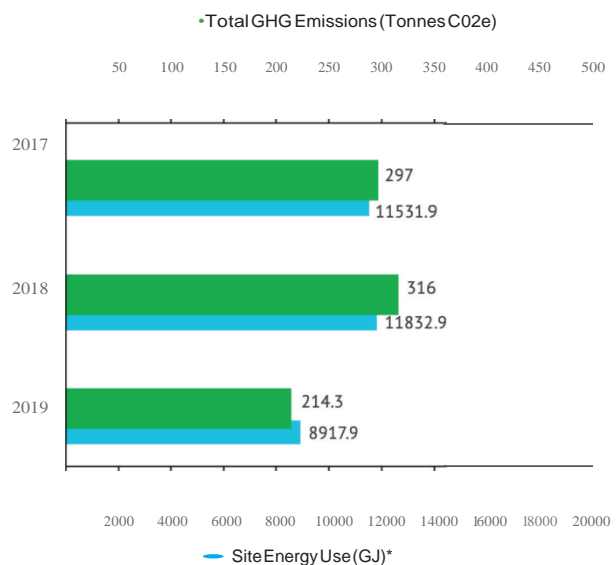
Your ENERGYSTAR score

58

How your building ranks against other office buildings

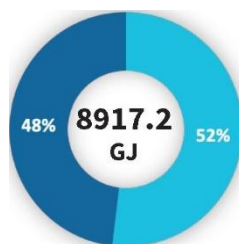


Site energy use and greenhouse gas (GHG) emissions



* Site Energy Use and Site Energy Use Intensities (EUI) have been weather-normalized. Weather normalized energy is the energy your building would have used under average conditions. The weather in a given year may be much hotter or colder than your building's normal climate; weather normalized energy accounts for this difference.

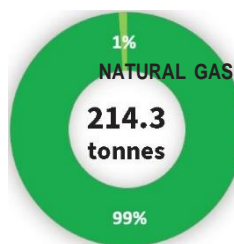
Site Energy Use** (% GJ)



For the year 2019

d;) • NATURAL GAS
f • ELECTRIC - GRID

Site Emissions (% tonnes)



f • ELECTRIC - GRID

Savings

By performing **10%** better than 2019, your building could save **\$12702** on utility bills and reduce **21** tonnes CO2 equivalent.



**21 tonnes CO2e =
Carbon offsetted
by 974 trees**

Calculated 22Kg/year as the average absorption per tree

For more detail on your property's energy and GHG profile, contact the City of Winnipeg's Office of Sustainability.

As part of the BEDP, and to help participants better understand their buildings' performance, each building received a customized energy performance scorecard with their energy use and GHG emissions intensity values in comparison to similar building types. The scorecard also highlighted a specific building's energy and GHG performance between 2017 and 2019, as well as energy cost performance for 2019 (where available). The prospective impact from completing energy efficiency improvements was also highlighted as part of the reporting.

Further resources and supporting information were provided on the second page of the scorecard, including information on completing energy audits, tips and tricks on improving building performance, incentive

opportunities, and further pathways that can provide best practice management recognition and/or certification.

Public disclosure and increasing access to building performance data for all building stakeholders was key as these insights can better enable performance improvements in the future.

Each building in the BEDP was located on a web-based map with profile and performance information viewable through the City's Open Data Portal (linked [here](#)). The visualization tool allows for the displayed buildings to be filtered based on building type, age, and size. It also provides performance and benchmarking insights that all stakeholders could obtain if public disclosure of this information was required.

Map

Filter by:

Building category:

All

Property type:

All

Building size (sq. m):

Minimum size Maximum size

0

64,000

Year built:

Minimum year Maximum year

Year from

Year to

To further support the adoption of data transparency and benchmarking activities in the community, a tool such as this could be leveraged to support the development and standardization of an energy efficiency and GHG emission intensity labelling program.

3 BEDP Tools and Participant On-Boarding

For its data management platform (to complete data collection, reconciliation, and reporting) this initiative used ENERGY STAR® Portfolio Manager. ENERGY STAR® Portfolio Manager is the industry standard for building energy data management and is currently used by most of the North American jurisdictions with benchmarking and disclosure requirements, including Ontario. It is also the preferred platform for well-known sustainable building standards. More than 19,000 buildings in Canada, representing over 216 million square feet of commercial floor space, are using the tool. This free tool is simple to access and provides the necessary data fields and reporting to support decision-making amongst building stakeholders. Building data can be manually uploaded by building owners and managers, or automatically and directly uploaded by utility providers where available.

ENERGY STAR® SCORING AND CERTIFICATION

Through this program, some building types can be benchmarked or rated in comparison to peers. For applicable types, a building's overall energy efficiency is provided through an ENERGY STAR® score from 1-100, which accounts for some building specific factors, such as climate and occupancy, to normalize energy use and to provide a baseline to judge overall efficiency performance and improvements.

A score of 50 indicates median energy efficiency performance, while 75 or higher indicates a top-performing building that is eligible to receive ENERGY STAR® certification. An energy performance score does not, by itself, explain why a building performs a certain way or how to change the building's performance.

While ENERGY STAR® scores/benchmarking comparisons are not yet available for all Canadian building types through this system, ENERGY STAR® Portfolio Manager is constantly undergoing expansions to include new building types. The collection of the required and optional data as outlined by ENERGY STAR® Portfolio Manager helps improve stakeholder understanding of building energy and water performance and will be able to provide that vital data collection consistency as benchmarking and transparency programs are implemented across the country.

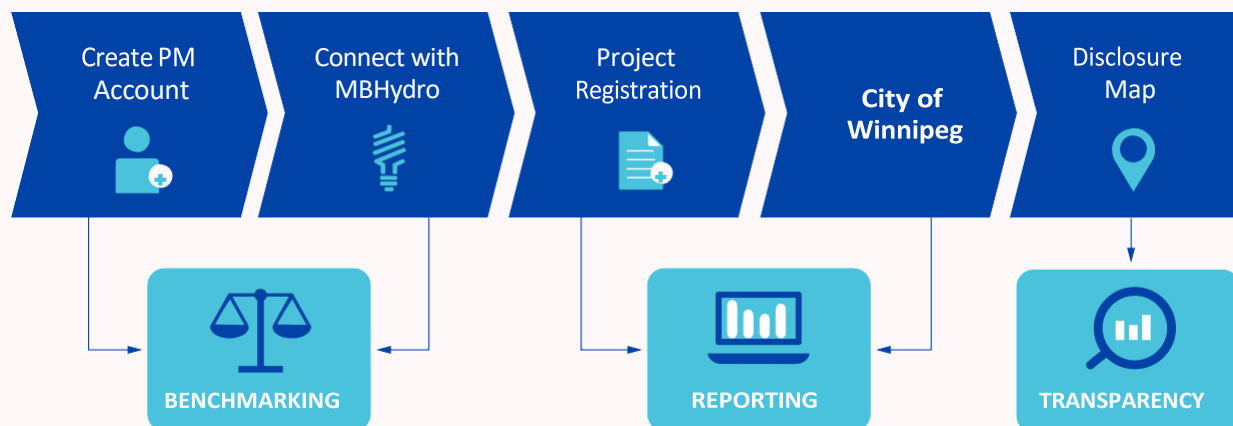
For building owners in Manitoba, Manitoba Hydro, offers a free service that automatically uploads electricity and natural gas consumption data directly to ENERGY STAR® Portfolio Manager accounts. All that is required is that building owners/managers establish an ENERGY STAR® Portfolio Manager account and complete the necessary Manitoba Hydro account connection and access requirements.

3.1 BEDP Tools and Participant On-Boarding

For the City's BEDP initiative, participants were able to share their building profile and performance data in one of two ways:

- Sharing their ENERGY STAR® Portfolio Manager profile and building information, to allow the City to complete data collection and reporting; and,
- Submit data through online forms and allow the City to create an ENERGY STAR® Portfolio building profile on the participant's behalf.

PROCESS OUTLINE



The BEDP required participating building owners/managers to publicly disclose portfolio-wide data on environmental performance for all available buildings regardless of their overall efficiency. The two main project requirements included:

- Disclosure of all available data from buildings in the participant's portfolio (see table below).
- Access to historical full year data through the ENERGY STAR® Portfolio Manager data management system.

More specifically, participants agreed to disclose the following information:

Building Profile Information	Main Performance Indicators
Property/building name and location	Site Energy Use Intensity (EUI) (GJ/m ² /year)
Year of construction	Source EUI (GJ/m ² /year)
Primary use type	Greenhouse gas intensity (kgCO ₂ e/m ² /year)
Gross floor area (GFA) or lease area if GFA is not available	ENERGY STAR® score (where applicable)
	Any building certifications achieved (e.g. LEED, BOMA Best, Passive House, etc.)

Collecting this type of profile and performance information forms the basis of a benchmarking program and allows for effective and comprehensive analysis to be conducted. Ensuring that the information is accurate with minimal errors is a crucial component of any benchmarking program and ensures that the disclosed data is reliable.

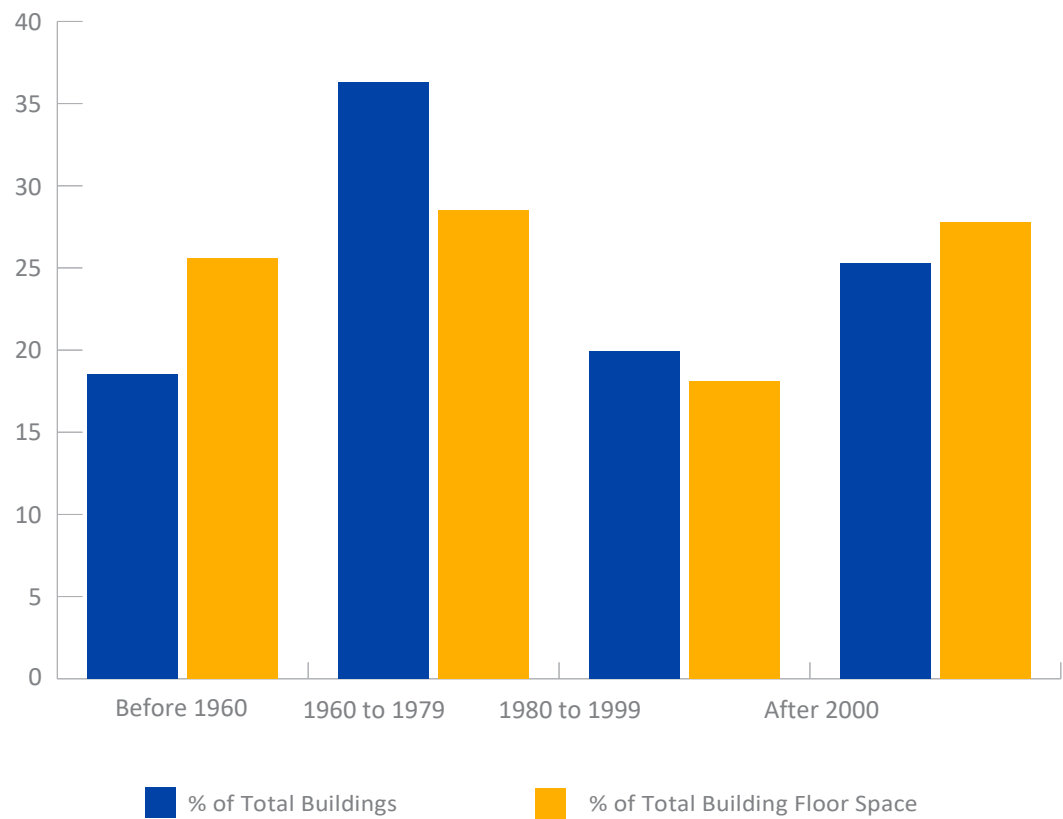
4 Results Summary

Various types of buildings across Winnipeg, such as offices, arenas and retail establishments, participated in the BEDP. The following summarizes key findings of the BEDP project.

Key Initiative Statistics	
Individual Buildings	161 (146 with year built info)
Total Floor Area	680,000 m ²
Site Energy Use Intensity Ranges	0.38 to 3.74 GJ/m ²
GHG Emissions Intensity Ranges	15.3 to 67.6 kg CO ₂ e/m ²
Buildings Built Pre 1990	93
Buildings Built Post 1990	53

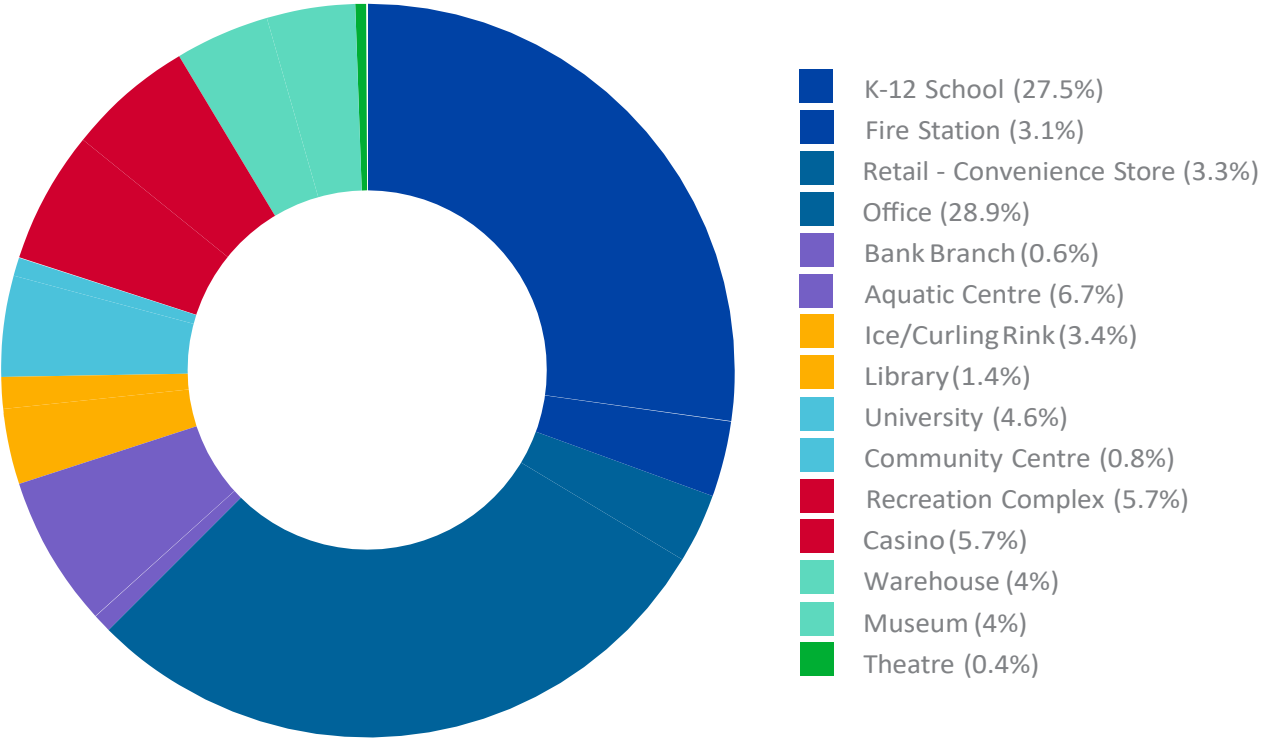
As indicated in the following figure, a slight majority of total buildings and overall floor space disclosed in the initiative were from buildings older than 1979.

Initiative Properties and Floor Space Area by Age

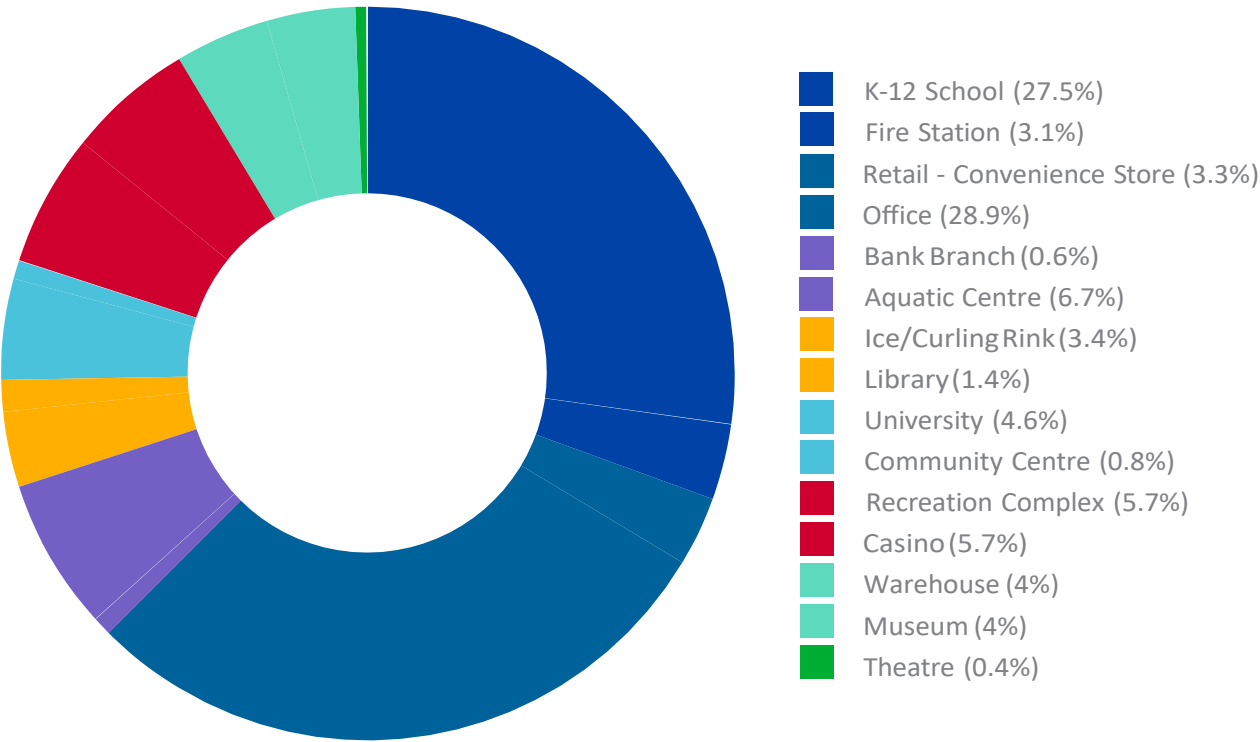


The building types with the greatest number of buildings included K-12 schools, fire-paramedic stations, retail, and offices. From a total floor space standpoint, some of the building types with a smaller number of buildings (less than five) still made up a significant portion of the overall total floor space as compared to smaller building types, such as office, aquatic centres, university and recreation complexes.

Building Types

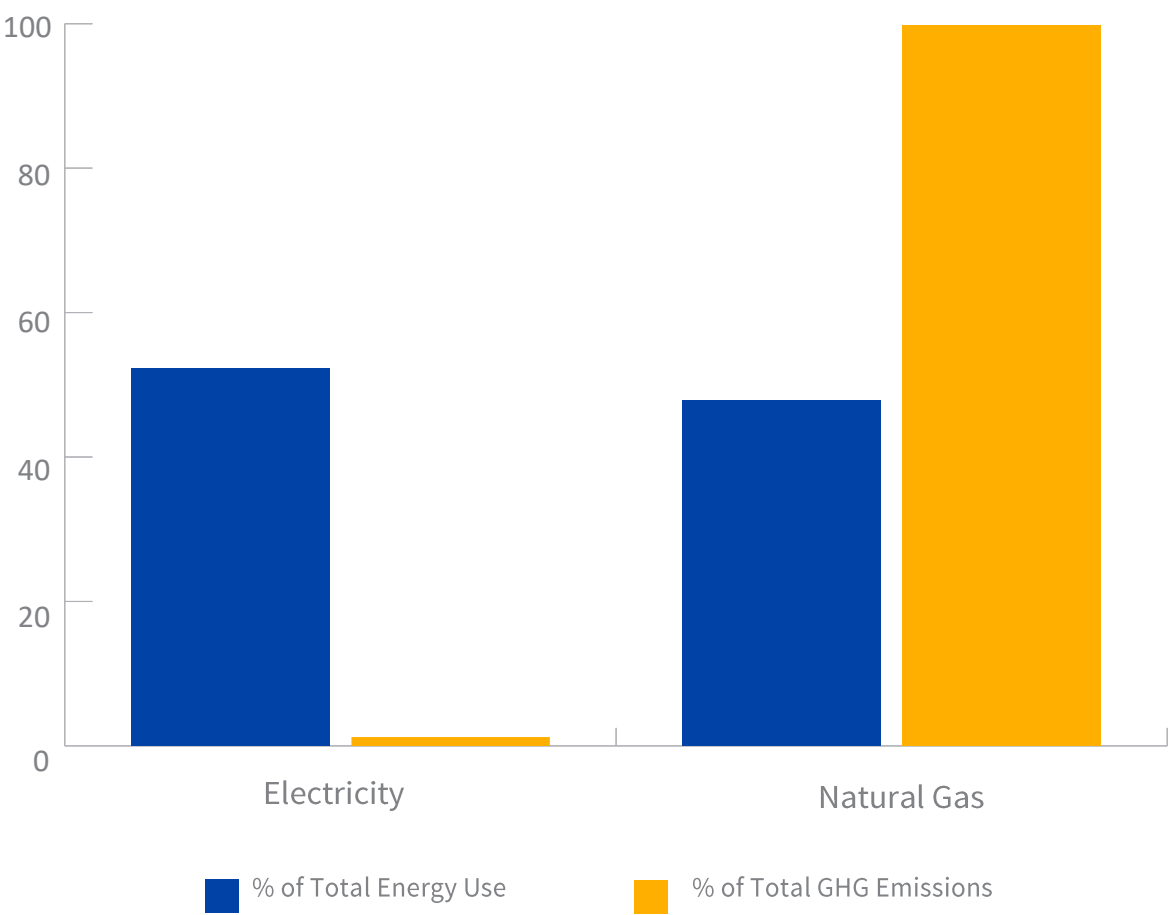


Building Type Floor Space %



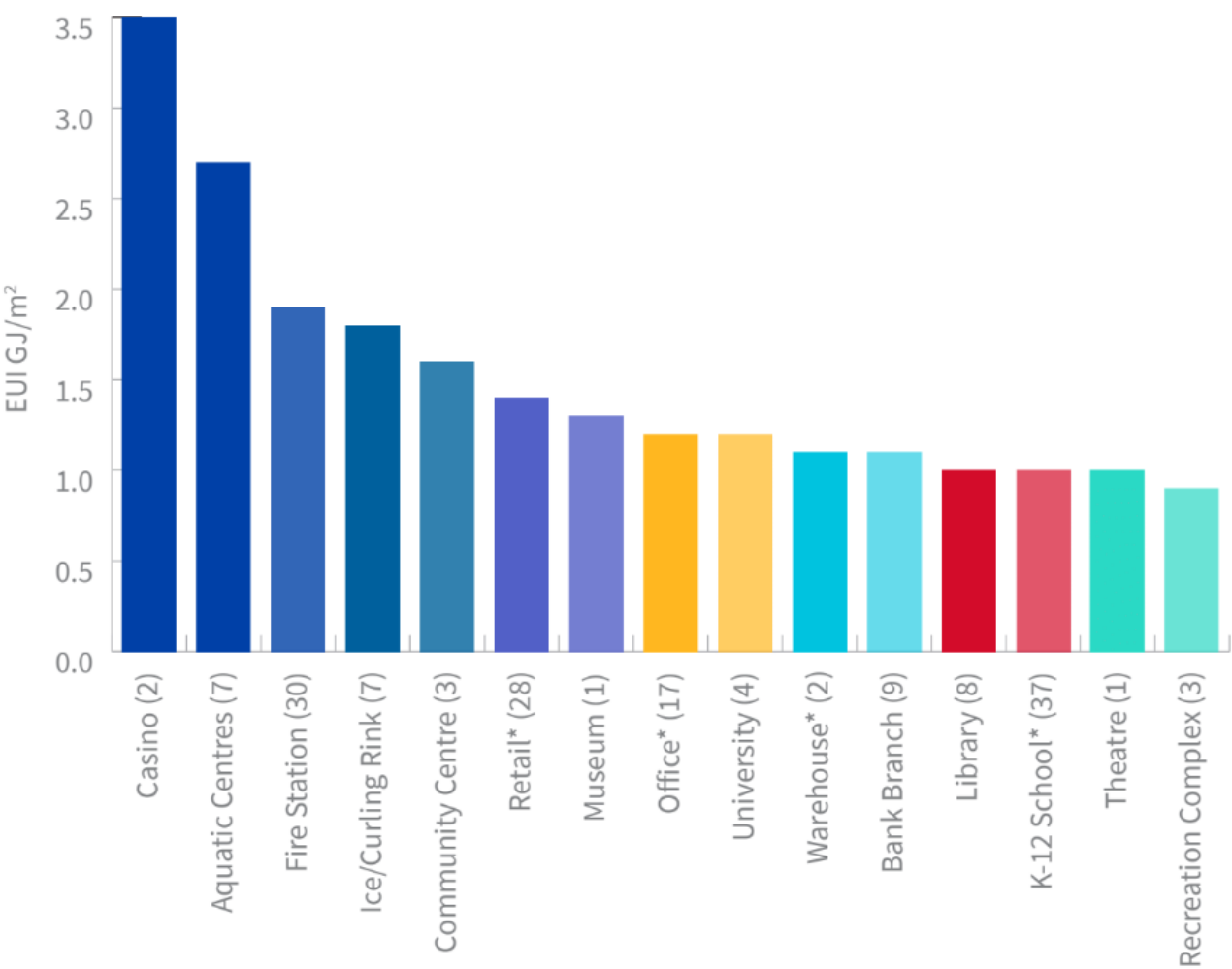
In total, the energy use from all buildings was fairly evenly split between electricity and natural gas, with emissions almost completely weighted towards natural gas use. This is a result of Manitoba Hydro providing customers very low carbon intensity electricity.

BEPD Energy Use and GHG Emissions Sources

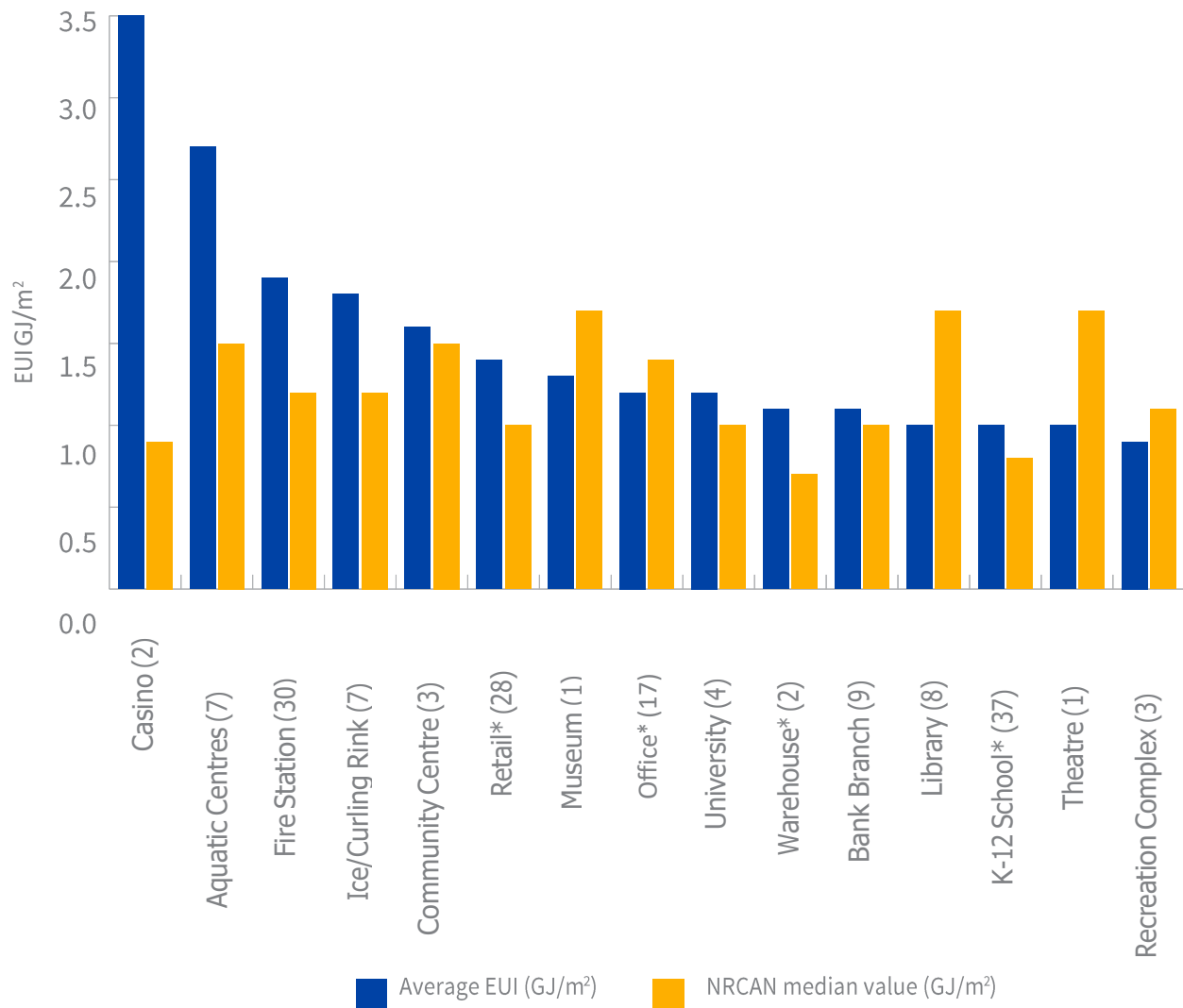


As shown in the following figures, the range in site energy use intensity (EUI) averages for building types were between 3.5 GJ/m² for casinos and 0.9 GJ/m² for recreation complexes, with comparisons to national NRCAN median values demonstrating strong performance of specific building types (types with available ENERGY STAR[®] score shown with an *). The numbers in brackets indicate the total number of buildings of this type in the initiative.

Building Type EUI Comparison

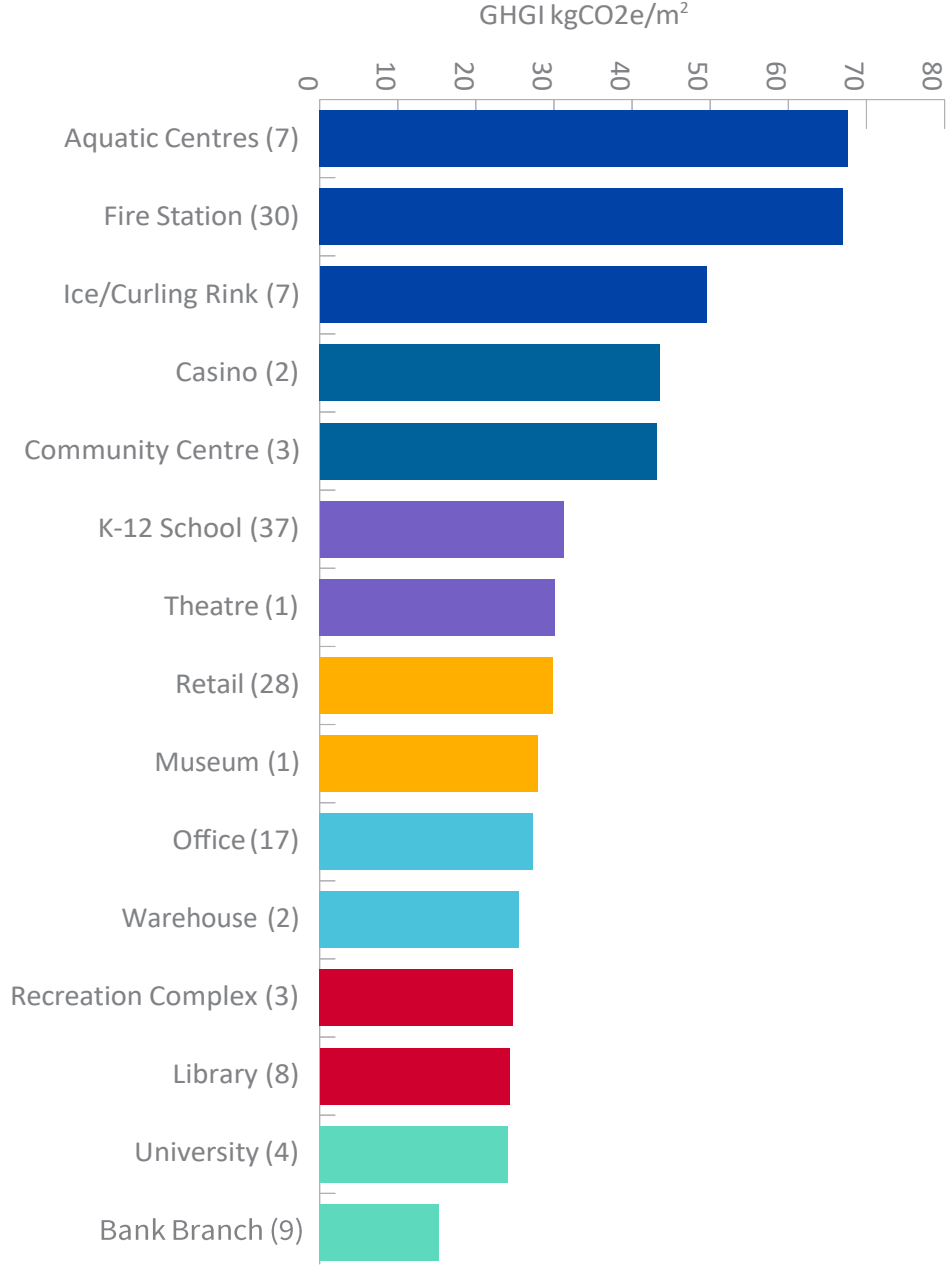


Building Type EUI Comparison vs NRCAN National or Regional Median Values

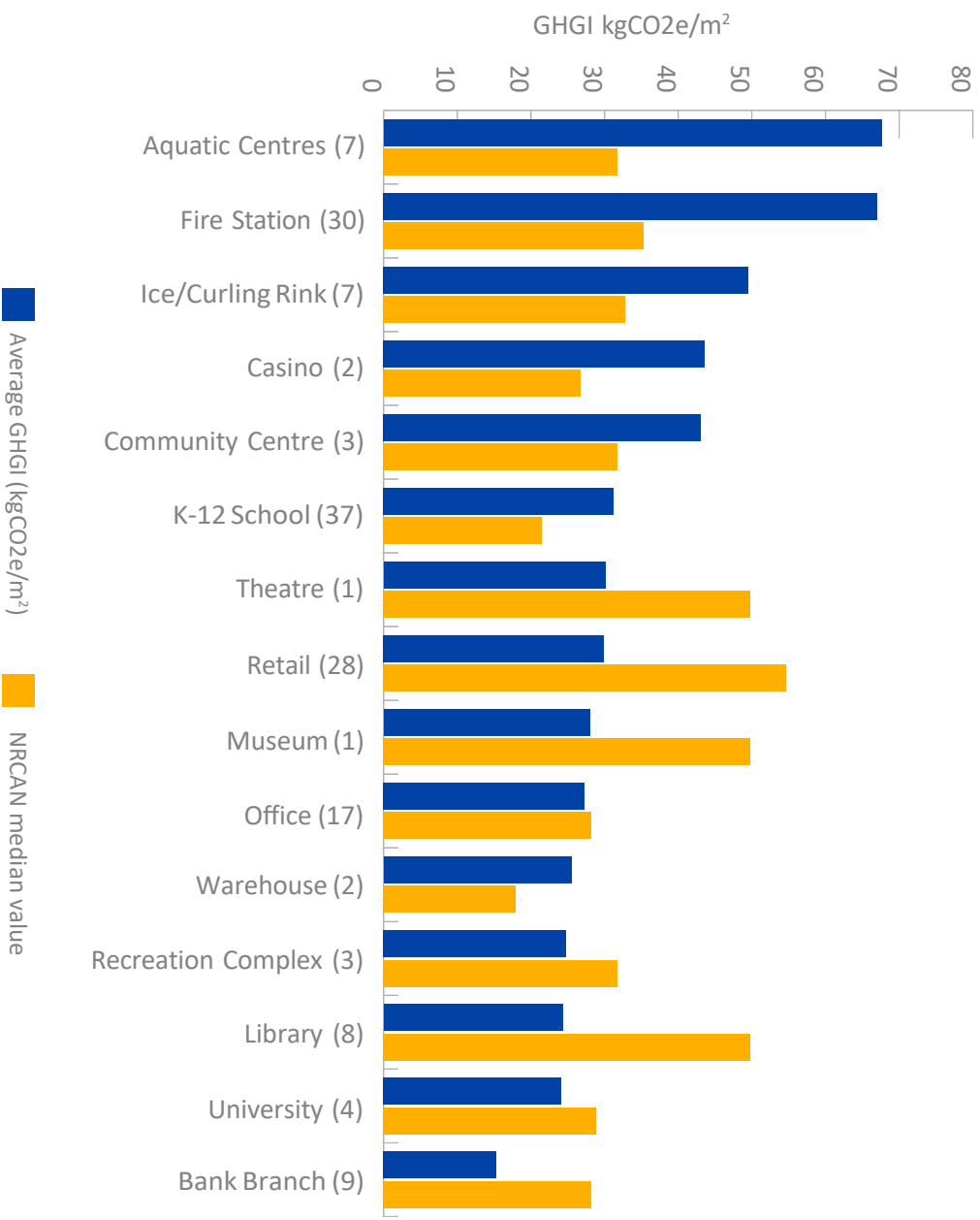


For building types that utilized natural gas for space heating and other high-demand needs such as water heating (i.e., aquatic centres, arenas, and fire-paramedic stations), GHG emissions intensity was greater on average than for other building types. For building types that did not have high demand needs, like bank branches having the lowest GHG emissions intensities on average. As compared to NRCAN median values, some Winnipeg buildings performed very well, with low GHG emissions intensity values.

Building Type GHG Intensity Comparison

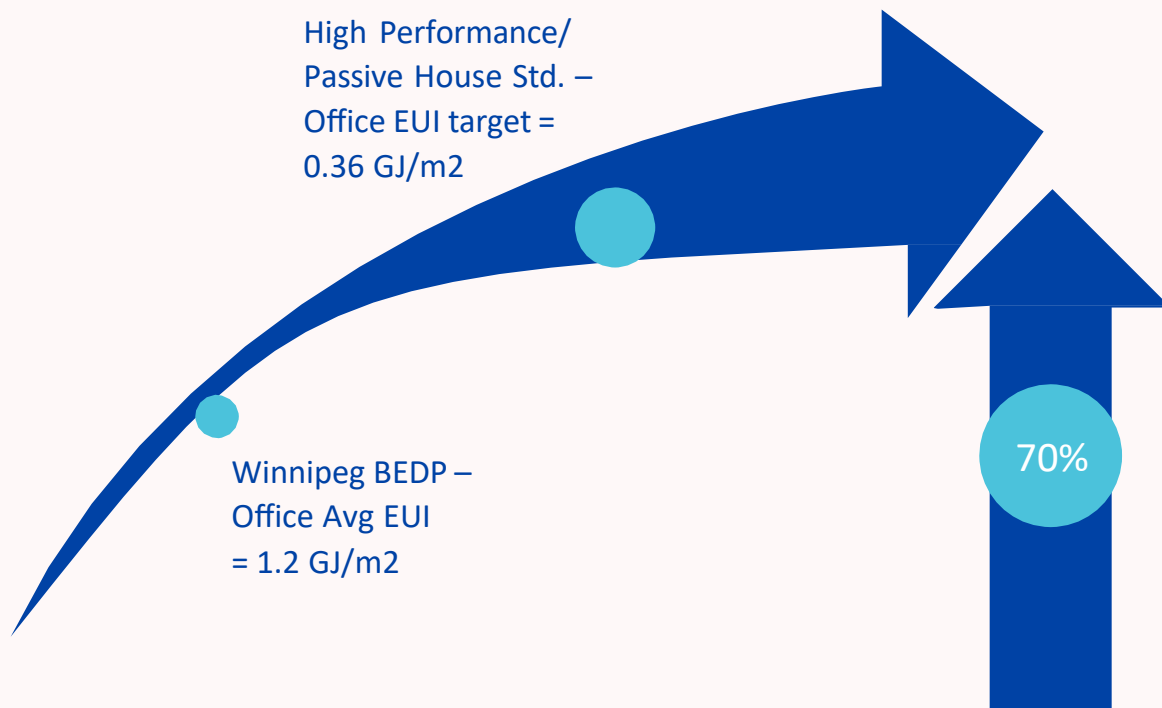


Building Type GHGI Comparison vs NRCAN Median Values



To provide some existing performance context, the Energy Step Code in British Columbia and the Zero Emissions Framework in the City of Toronto propose 0.36 GJ/m² as an EUI standard to use for new high-performance office buildings within their phased approaches. As compared to the existing office buildings included in this BEDP initiative, this performance level

represents a reduction of approximately 70 percent in EUI. For existing office buildings to achieve those levels of performance, deep energy efficiency retrofits will need to be completed and significant investments will need to be made. However, weather normalization for Winnipeg's extreme climate would also need to be factored in to set local EUI targets.





5 Case Studies

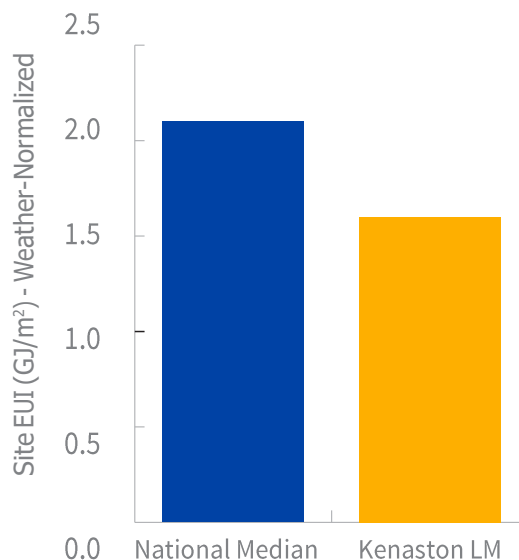


Kenaston Liquor Mart | Manitoba Liquor and Lotteries

The Kenaston Liquor Mart is an 11,487 square foot retail operation in the portfolio of the Manitoba Liquor and Lotteries crown corporation. Built in 2009, this location was extensively renovated and expanded in 2013/2014, nearly tripling its footprint. Improved energy efficiency was a central goal of the project, which voluntarily aligned with the Manitoba Green Building Policy. Upgrades included new LED lighting and HVAC systems, improved insulation and new water efficient fixtures. By using ENERGY STAR® Portfolio Manager to benchmark building performance, it was easy to measure and demonstrate a 30 percent reduction in site energy use intensity and energy cost intensity, with no increase in total greenhouse gas emissions despite the significantly larger floor area.

By using ENERGY STAR® Portfolio Manager... it was easy to measure and demonstrate a 30 percent reduction in site energy use intensity.

Manitoba Liquor and Lotteries continue to benchmark the property annually, allowing them to continue monitoring performance, catching and correcting system issues and assessing and validating energy efficiency measures.



Before renovations, the Kenaston Liquor Mart was approximately 30 percent less efficient than the national median for convenience stores. After renovations, this store performs 20-25 percent better than the national median.



Canadian Museum for Human Rights

The Canadian Museum for Human Rights is one of Canada's premier cultural facilities. Opened in 2014, the facility immediately began benchmarking building performance to establish a baseline and enable comparisons to national median energy use intensity values. As a result of obtaining detailed baseline energy performance data, key operational challenges were identified.

CMHR was able to reduce its total Energy Use Intensity by over 11 percent compared to the baseline and 25 percent better than the national median.

First, peak electrical demand was found to be higher than expected. Secondly, the building was using higher amounts of natural gas than expected outside of normal heating demand periods (e.g., in June), as unnecessary reheating due to the dehumidification process was occurring during warmer months.

Based on the baseline and operational data obtained through benchmarking, measures were taken to reduce energy use and costs including:

- Optimizing the museum's lighting system by adjusting start and overall lighting run times. These changes helped reduce average monthly peak demand by 11.4 percent, reducing electricity charges.
- Isolating the building's dehumidification system from the main heating unit, helping to cut summer monthly gas use by over 35 percent, while still maintaining the building's desired relative humidity levels.
- Completing a LED lighting retrofit project throughout the building, significantly reduced lighting operating costs from over \$16,400 to \$3,600 per year, providing a return on investment in less than a year.

By implementing the operational efficiency strategies along with the LED lighting upgrades, CMHR was able to reduce its total Energy Use Intensity by over 11 percent compared to the baseline and 25 per cent better than the national median.



Sir William Stephenson Library

As part of the City of Winnipeg's goal to reduce energy costs and greenhouse gas emission in City-owned buildings, the Retro-Commissioning Team regularly analyzes the performance data of the City's building portfolio, while also identifying sites with known comfort issues and/or control and lighting upgrade opportunities.

By implementing these well-designed measures, Sir Williams Stephenson Library was able to achieve a 41.7 percent reduction in site energy use intensity, a 70 percent reduction in greenhouse gas intensity, and a 14.9 percent reduction in energy cost.

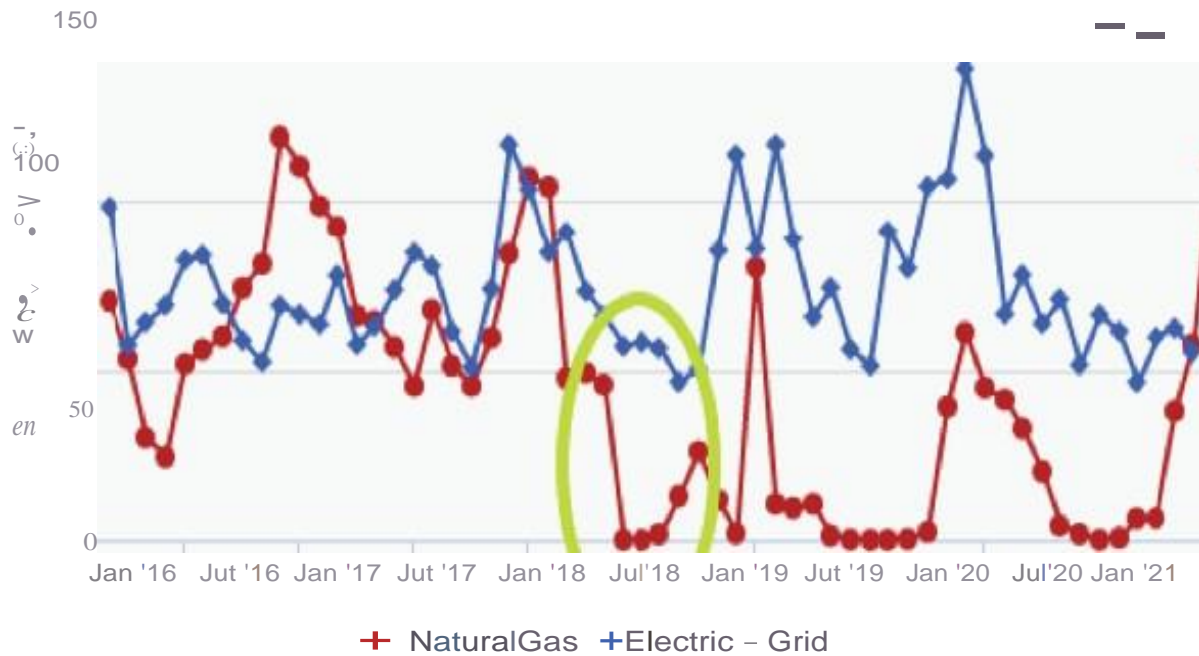
Sir William Stephenson Library, which was built in 1997, was such a building. By assessing monthly energy use, it was determined that both the gas and electricity

use remained higher than expected throughout the cooling season. This suggested that simultaneous heating and cooling was occurring. As a result of this assessment, the team implemented several efficiency measures in 2018 to improve comfort and reduce energy use and costs (see figure below).

These measures included installing new automated building controls that allowed for optimized scheduling of daily startups and night setbacks, and enabled demand shedding capabilities. Smart LED lighting with occupancy controls were also installed, and modifications to the electric reheat coils stopped the heating and cooling systems from operating simultaneously.

By implementing these well-designed measures, Sir Williams Stephenson Library was able to achieve a 41.7 percent reduction in site energy use intensity, a 70 percent reduction in greenhouse gas intensity, and a 14.9 percent reduction in energy cost.

Sir William Stephenson Library Energy Use by Calendar Month (Not Weather Normalized)



This graphic shows the gas and electricity changes at Sir William Stephenson Library after implementing efficiency measures in 2018.

6 Key Findings and Lessons Learned

In partnership with industry stakeholders and advisors, this voluntary benchmarking and disclosure project was developed to support greater awareness among City building owners regarding the benefits of energy monitoring and benchmarking. In addition, it showcased some of the leading organizations utilizing benchmarking to support their building management practices, and will ultimately support energy and emissions reductions at existing Winnipeg buildings. Throughout the data collection and reconciliation process, the City worked with participants to ensure that the data collected was accurate and representative.

Over the course of the initiative, some key program- related findings included the following:

Leveraging the direct connection data management capacity of Manitoba Hydro is essential.

With the support of Manitoba Hydro, data collection is a fairly straightforward process through the ENERGY STAR® Portfolio Manager data platform as utility information can be automatically uploaded to the tool. Participants were able to share data through platform directly with the City, which helped reduce any transcription errors. As a starting point, this helped to significantly reduce the level of resources required on both sides of the data collection effort (building owner and City).

Complete performance data enables easier building to building comparisons.

Given the direct connection between Manitoba Hydro utility data (for both electricity and natural gas) and ENERGY STAR® Portfolio Manager, complete performance data was obtained for each of the buildings profiled in the initiative. Having this information readily available allows for streamlined comparisons of performance and helps to better identify key sectors of focus and

opportunities. In conjunction with performance data, having accurate building profile information is also crucial. It was noted that some owners did not have complete profile information, including the year built and correct meter or account numbers, which can add challenges to completing accurate comparisons. As the initiative continues to work with all participants, these data anomalies will be corrected to improve the overall data set and the number of buildings participating.

Manitoba residents are fortunate to have an electricity generation system that is nearly free of GHG-emissions.

Building types with higher EUI values typically have higher GHG emissions intensity values – except for buildings that are fully electric.

Manitoba is fortunate to have an electricity generation system that is almost completely GHG-emissions free. Buildings with higher site energy use intensity values typically had higher GHG emissions intensity values. The exceptions to this were some specific buildings, including schools, an aquatic centre, an arena, a fire station, a library and multiple bank branches and schools that do not use any natural gas use for their operations. For these specific buildings, emissions intensities were very low regardless of overall energy efficiency performance.

To encourage participation, administrative and resource support for participants is critical

A key part of the program was to support improved performance monitoring and benchmarking capacity amongst building owners. Some organizations in the initiative were not as familiar or experienced as others with the performance monitoring and benchmarking capabilities through the ENERGY STAR® Portfolio Manager data management platform. As part of the BEDP an internal City resource was provided to support Participant on-boarding and data

reconciliation through the ENERGY STAR® Portfolio Manager data platform.

In order to be successful and achieve high levels of participation, benchmarking and disclosure programs in general need to provide some level of administration assistance to participants to help ensure reporting compliance and data accuracy are achieved. To ensure that any large-scale benchmarking program within the city is successful, internal personnel and key building owner contacts will need to be supported in a way that facilitates the participation of all building owners and managers regardless of their level of data management sophistication.



7 Next Steps and Continued Benchmarking Activities

The value that building performance disclosure requirements and benchmarking programs provide industry stakeholders is well documented and aligns well with the City's energy efficiency retrofit market transformation goals. Data transparency is a crucial requirement for a well-developed building retrofit economy that helps to inform building owners, tenants, and policymakers of the actual performance of buildings. Benchmarking allows for comparisons between similar buildings and across regions, and it provides insight into what constitutes a "high performance" building.

Jurisdictions that implement programs that collect and share data on their building stock, have shown improved resource use efficiency, reduced costs, and greater economic activity in the energy efficiency retrofit sector.

The Planned next steps as part of the BEDP initiative include the following key elements:

Program will continue for another year

This initiative will be open to participation for Year 2 starting April 1, 2021, with the anticipated deadline for participation and data submissions on February 28, 2022. Support will continue to be provided through the City for onboarding and data reconciliation, and the initiative will strive to enable streamlined participation.

Year 2 will focus on expanding program participation of all building types, as well as adding new building types to the initiative including multi-unit residential and hotel buildings.



Additional initiative outreach and engagement to be conducted, including enhanced partnerships with industry associations and government organizations

1. Leveraging partnerships with local organizations such as Sustainable Buildings Manitoba and Climate Change Connection for wider outreach in the city.
2. Continued discussions with the Province of Manitoba and industry organizations, e.g., BOMA, to further refine the project and increase participation rate.
3. Strategic communications and outreach to building and operation managers of various organizations, to promote the initiative and its objectives and the overall community benefits.
4. Updates to the initiative public outreach tools and resources including the web page, initiative guidance documents and project video, to ensure that the information stays current and provides clarity for interested participants.

Leveraging the direct data connection capabilities of Manitoba Hydro and ENERGY STAR® Portfolio Manager for new participants

To support the inclusion of other building types that were not covered in Year 1 of the initiative, the City, in partnership with Manitoba Hydro, will explore adding an auto utility data upload feature for multi-tenanted buildings. The continued use of ENERGY STAR® Portfolio Manager and its direct connection to utility data will help to minimize the transcription errors and reduce data reconciliation efforts overall.

Continued support and alignment with City's overall sustainability plans and goals, and Provincial goals and regulation

The City of Winnipeg's Climate Action Plan aims to increase the energy performance of existing buildings by developing and supporting energy performance and labeling programs. BEDP is a first step towards achieving these goals for the building sector.

Ongoing benchmarking and disclosure will help collect data for future building related policies e.g., carbon pollution limits from buildings and support for the City's and Province's energy efficiency objectives.

The Province of Manitoba's Climate and Green Plan vision is for Manitoba to become the cleanest, greenest and most climate resilient province in the country. The plan includes a commitment to reduce emissions and to transition to a low carbon economy. Efficiency Manitoba has a mandate to develop and support energy efficiency initiatives reducing provincial consumption of electricity by 1.5 percent and natural gas by 0.75 percent annually. Buildings that benchmark their energy use on a regular basis tend to reduce their energy consumption by 2.4 percent per year, on average. An ongoing BEDP program will help Winnipeg contribute towards the provincial targets.

The City of Winnipeg's Climate Action Plan aims to increase the energy performance of existing buildings by developing and supporting energy performance and labeling programs. BEDP is a first step towards achieving these goals for the building sector.

8 Detailed Results by Building Type

8.1 K-12 School Results

A total of 37 individual schools participated in this initiative. Overall ENERGY STAR® scores were relatively favourable for most buildings, with four schools performing at or above the ENERGY STAR® certification score of 75, and a total of 15 with ENERGY STAR® scores

greater than median of 50. Buildings ranged in vintage from 1929 to 2018, with additions done to many older buildings over the years. Numerous buildings had very low GHG emissions intensities given they did not use natural gas.

Median Age	1964
Median Size (m ²)	4,231.1
% Energy Use - Elec	39.2%
% Energy Use - Nat Gas	60.8%
Median Site EUI (GJ/m ²)	0.97
Median Site GHG Intensity (kgCO ₂ e/m ²)	33.5
Median ENERGY STAR® Score	41

Top Performers

ENERGY STAR® Score

Ecole Provencher	90
Marion School	82
Ecole Henri-Bergeron	78
Ecole Sage Creek School	75
South Pointe School	74

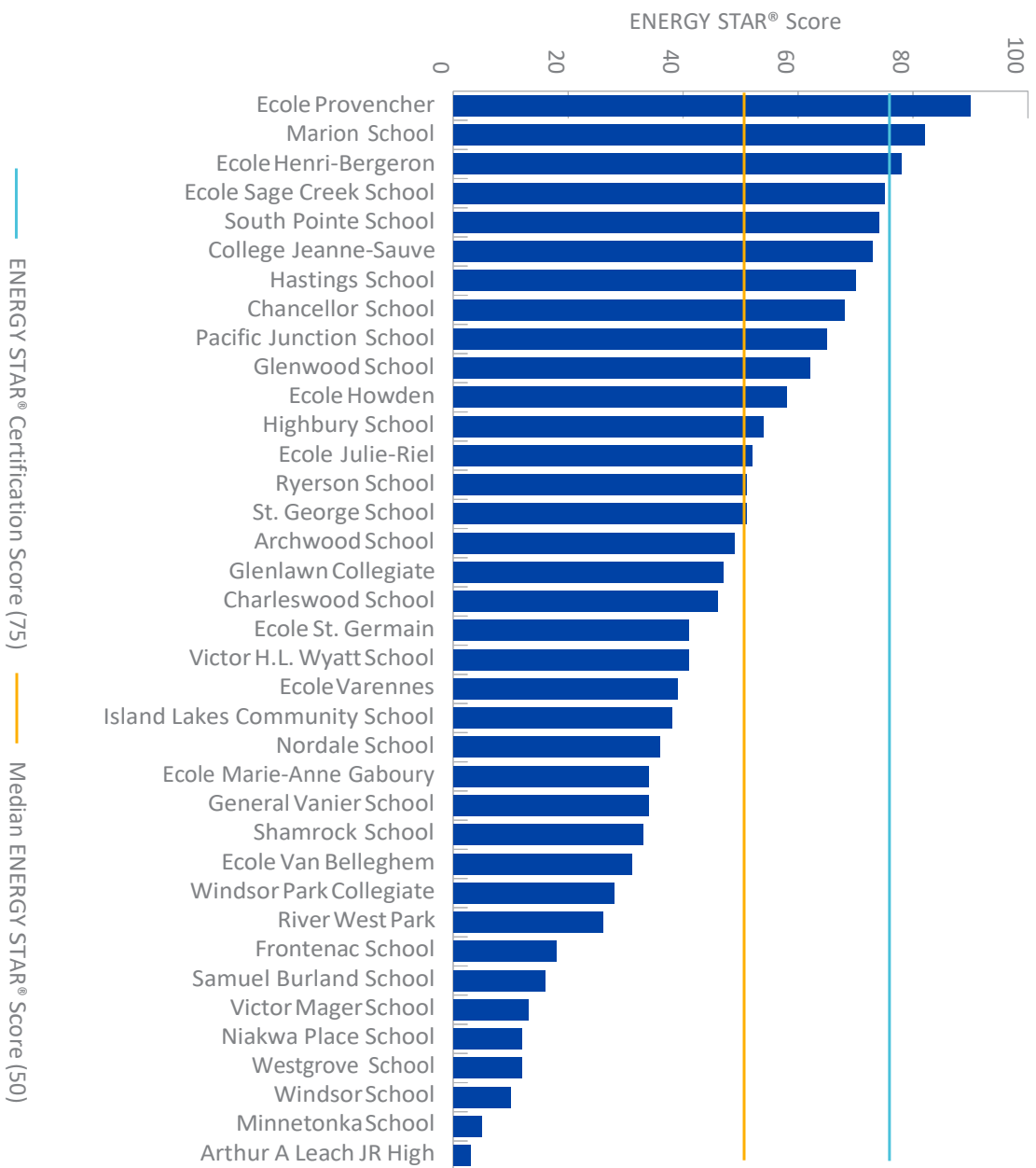
Site EUI (GJ/m²)

Ecole Sage Creek School	0.55
South Pointe School	0.57
Chancellor School	0.63
Ryerson School	0.7
Ecole Provencher	0.75

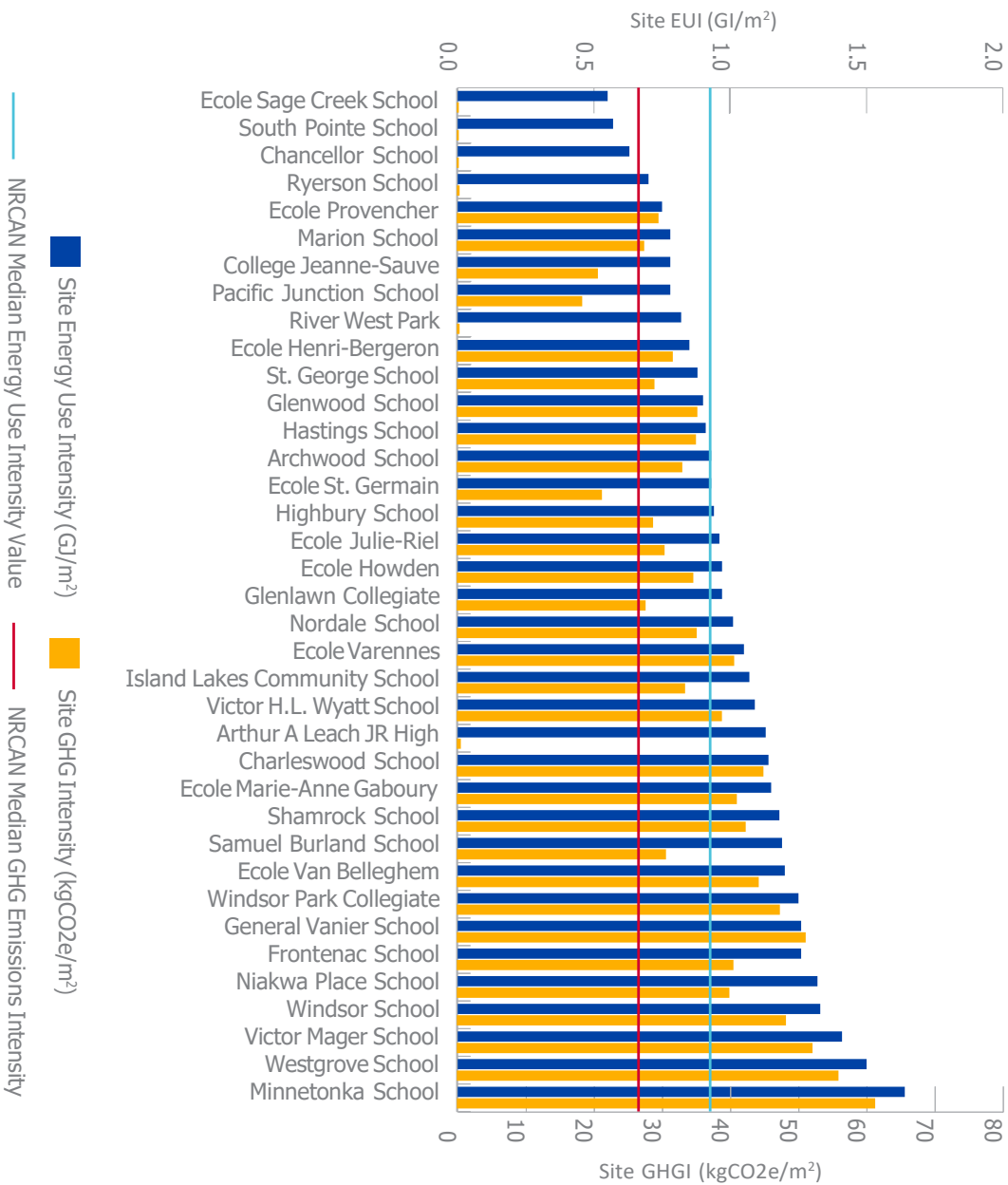
Site GHGI (kgCO₂e/m²)

Ecole Sage Creek School	0.3
South Pointe School	0.3
Chancellor School	0.3
Ryerson School	0.4
River West Park	0.4

ENERGY STAR® Score Comparison



Site EUI and GHG Intensity Distribution



8.2 Fire-Paramedic Buildings Results

A total of 30 individual fire-paramedic buildings participated in this initiative. Buildings ranged in vintage from 1915 to 2013, with site EUIs ranging from 1.03 to 3.26 GJ/m². Numerous buildings had very low GHG emissions intensities given low or no use of

natural gas, while others had higher proportions of natural gas use compared with other building types. There is currently no ENERGY STAR® score ratings available for fire-paramedic stations in Canada.

Median Age	1972
Median Size (m²)	658
% Energy Use - Elec	28.3
% Energy Use - Nat Gas	71.7
Median Site EUI (GJ/m²)	1.64
Median Site GHG Intensity (kgCO₂e/m²)	60.0

Top Performers

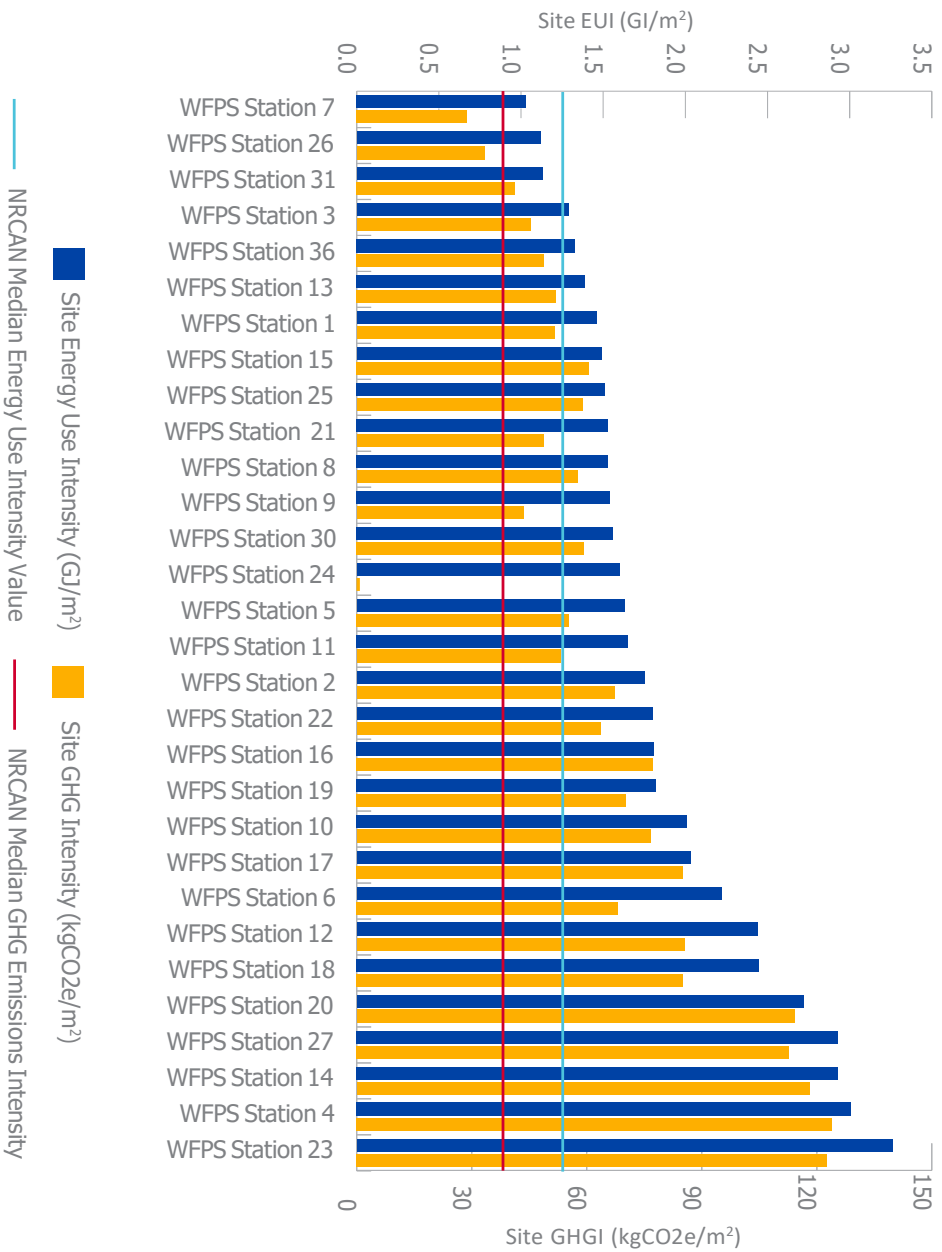
Site EUI (GJ/m²)

WFPS Station 7 - 10 Allan Byle Dr	1.03
WFPS Station 26 - 1525 Dakota St	1.12
WFPS Station 31 - 726 Furby St	1.13
WFPS Station 3 - 337 Des Meurons St	1.29
WFPS Station 36 - 2490 Portage Ave	1.33

Site GHGI (kgCO₂e/m²)

WFPS Station 24 - 1665 Rothesay Street	0.8
WFPS Station 7 - 10 Allan Byle Dr	28.8
WFPS Station 26 - 1525 Dakota St	33.4
WFPS Station 31 - 726 Furby St	41.3
WFPS Station 9 - 864 Marion St	43.5

Site EUI and GHG Intensity Distribution



8.3 Retail Results

A total of 27 individual retail-convenience store buildings (Manitoba Liquor and Lotteries) participated in this initiative. Buildings ranged in vintage from 2005 to 2019, with multiple buildings that did not have year-built information available. Overall ENERGY STAR® ratings were very favourable for most buildings in

this type, with 20 buildings performing at or above the ENERGY STAR® certification score of 75, and every building except one with an ENERGY STAR® score greater than median value of 50. Numerous buildings had very low GHG emissions intensities given low use of natural gas per building area.

Median Age	2009
Median Size (m²)	754.3
% Energy Use - Elec	58.6
% Energy Use - Nat Gas	41.4

Median Site EUI (GJ/m²)	1.32
Median Site GHG Intensity (kgCO₂e/m²)	25
Median ENERGY STAR® Score	86

Top Performers

ENERGY STAR® Score

Transcona Liquor Mart	97
Portage & Burnell Liquor Mart	96
Southdale Liquor Mart	94
Main & Jefferson Liquor Mart	93
Eastwinds Shopping Centre Liquor Mart	92

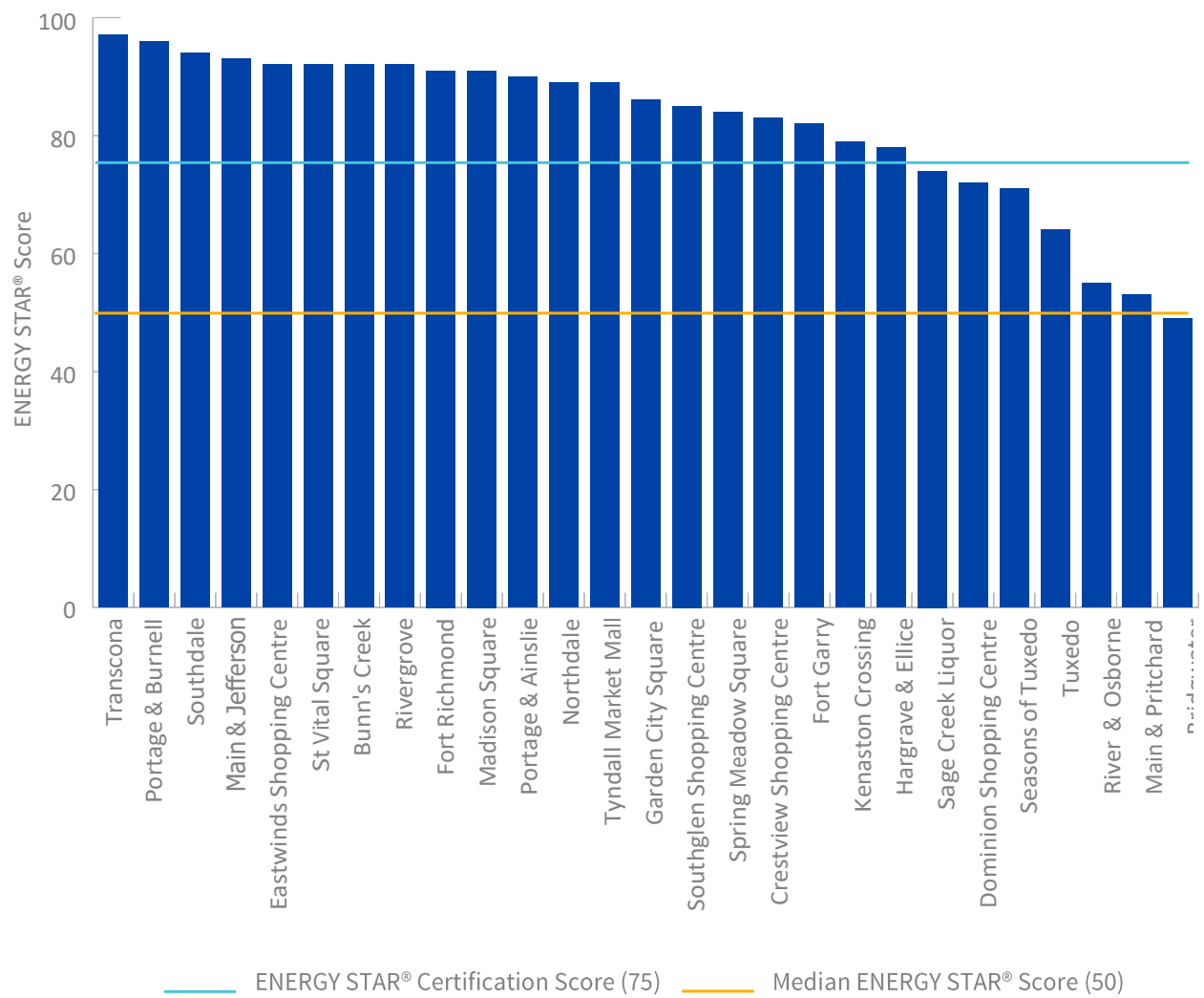
Site EUI (GJ/m²)

Transcona Liquor Mart	0.9
Portage & Burnell Liquor Mart	1.04
Southdale Liquor Mart	1.07
Main & Jefferson Liquor Mart	1.1
Eastwinds Shopping Centre Liquor Mart	1.11

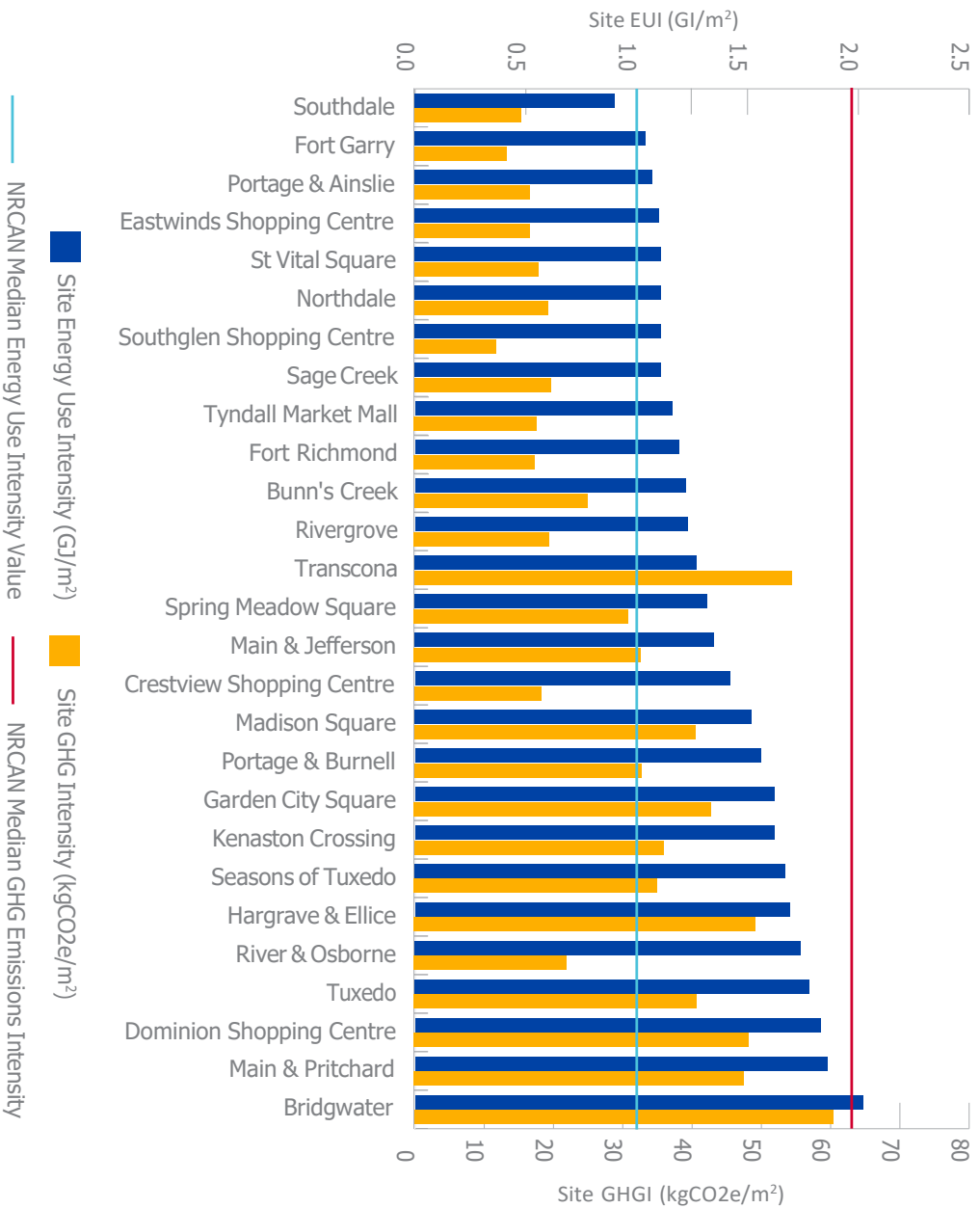
Site GHGI (kgCO2e/m²)

Southglen Shopping Centre Liquor Mart	11.8
Fort Garry Liquor Mart	13.3
Southdale Liquor Mart	15.4
Portage & Ainslie Liquor Mart	16.7
Eastwinds Shopping Centre Liquor Mart	16.7

ENERGY STAR® Score Comparison



Site EUI and GHG Intensity Distribution



8.4 Office Building Results

A total of 17 individual office buildings participated in this initiative. Buildings ranged in vintage from 1905 to 2009. Overall ENERGY STAR® ratings were favourable for most buildings in this type, with three buildings performing at or above the ENERGY STAR®

certification score of 75, and every building except two with an ENERGY STAR® score greater than median of 50. Most site EUI values were less than 1.25 GJ/m² and ranged from 0.64 to 2.32 GJ/m².

Median Age	1970
Median Size (m²)	3,607
% Energy Use - Elec	55.3
% Energy Use - Nat Gas	44.7
Median Site EUI (GJ/m²)	1.17
Median Site GHG Intensity (kgCO₂e/m²)	26
Median ENERGY STAR® Score	56

Top Performers

ENERGY STAR® Score

141 Bannatyne	94
Manitoba Hydro Place - 360 Portage	94
Animal Services Bldg - 1057 Logan Ave	70
Public Works and Water Waste - 1155 & 1199 Pacific Ave	75
WFMA - 770 Ross Ave	72

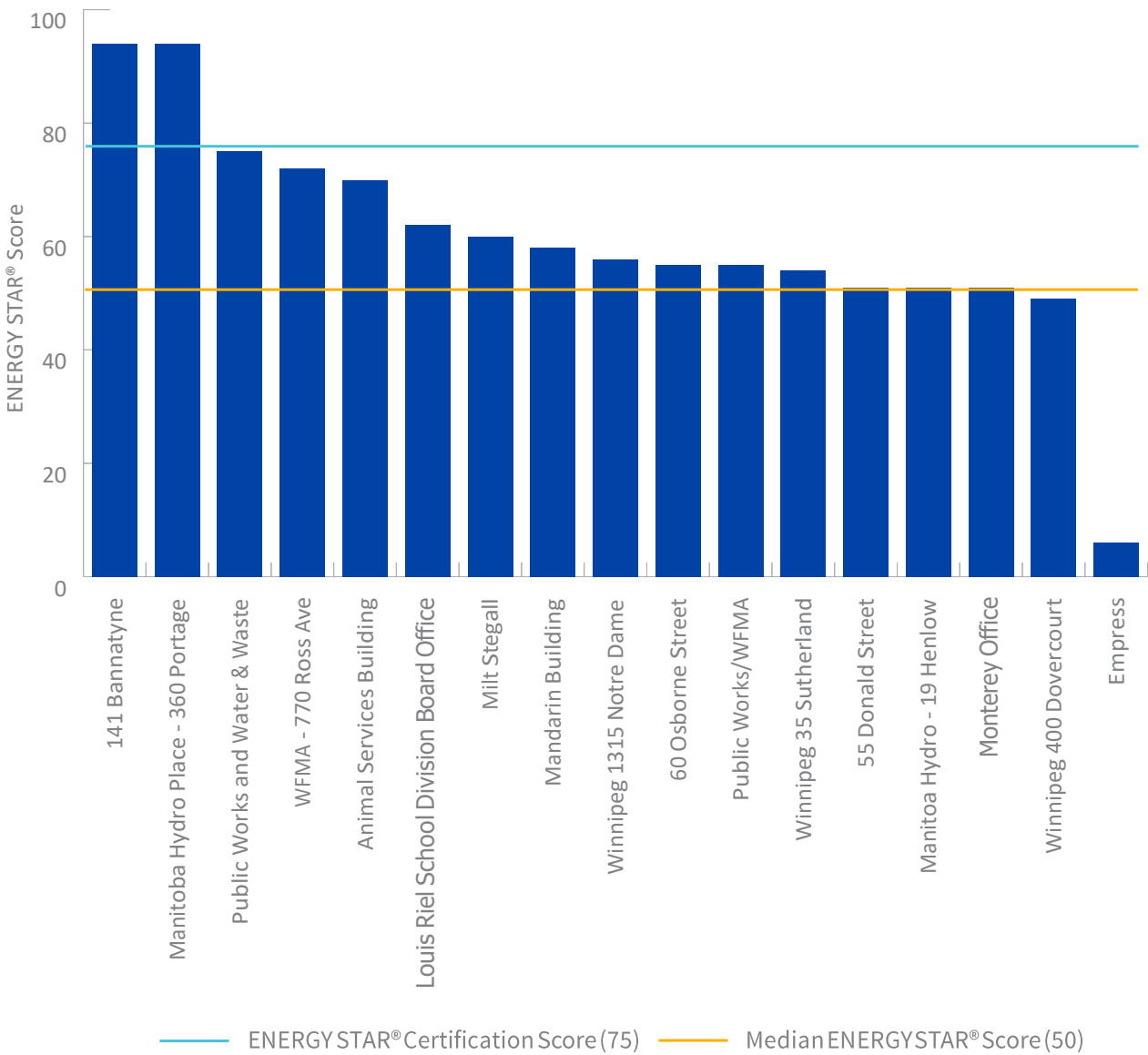
Site EUI (GJ/m²)

141 Bannatyne	0.64
Manitoba Hydro Place - 360 Portage	0.72
Animal Services Bldg - 1057 Logan Ave	0.92
Public Works and Water Waste - 1155 & 1199 Pacific Ave	0.95
WFMA - 770 Ross Ave	0.97

SiteGHGI(kgCO2e/m²)

Manitoba Hydro Place - 360 Portage	8.7
Manitoba Hydro - 19 Henlow	13.4
141 Bannatyne	13.7
WFMA - 770 Ross Ave	15
Public Works and Water Waste - 1155 & 1199 Pacific Ave	17.2

ENERGY STAR® Score Comparison



8.5 Bank Branch Results

A total of nine Assiniboine Credit Union branch buildings participated in this initiative. Buildings ranged in vintage from 1960 to 2014, with site EUIs ranging from 0.75 to 1.67 GJ/m². Numerous buildings had very low GHG emissions intensities given that they did not

utilize natural gas, with most buildings relying primarily on ground source heat pumps and electricity for their energy use. There is currently no ENERGY STAR® score ratings available for bank branch buildings in Canada.

Median Age	2006
Median Size (m²)	474.4
% Energy Use - Elec	77.3
% Energy Use - Nat Gas	22.7
Median Site GHG Intensity (kgCO₂e/m²)	1.04
Median ENERGY STAR® Score	9.4

Top Performers

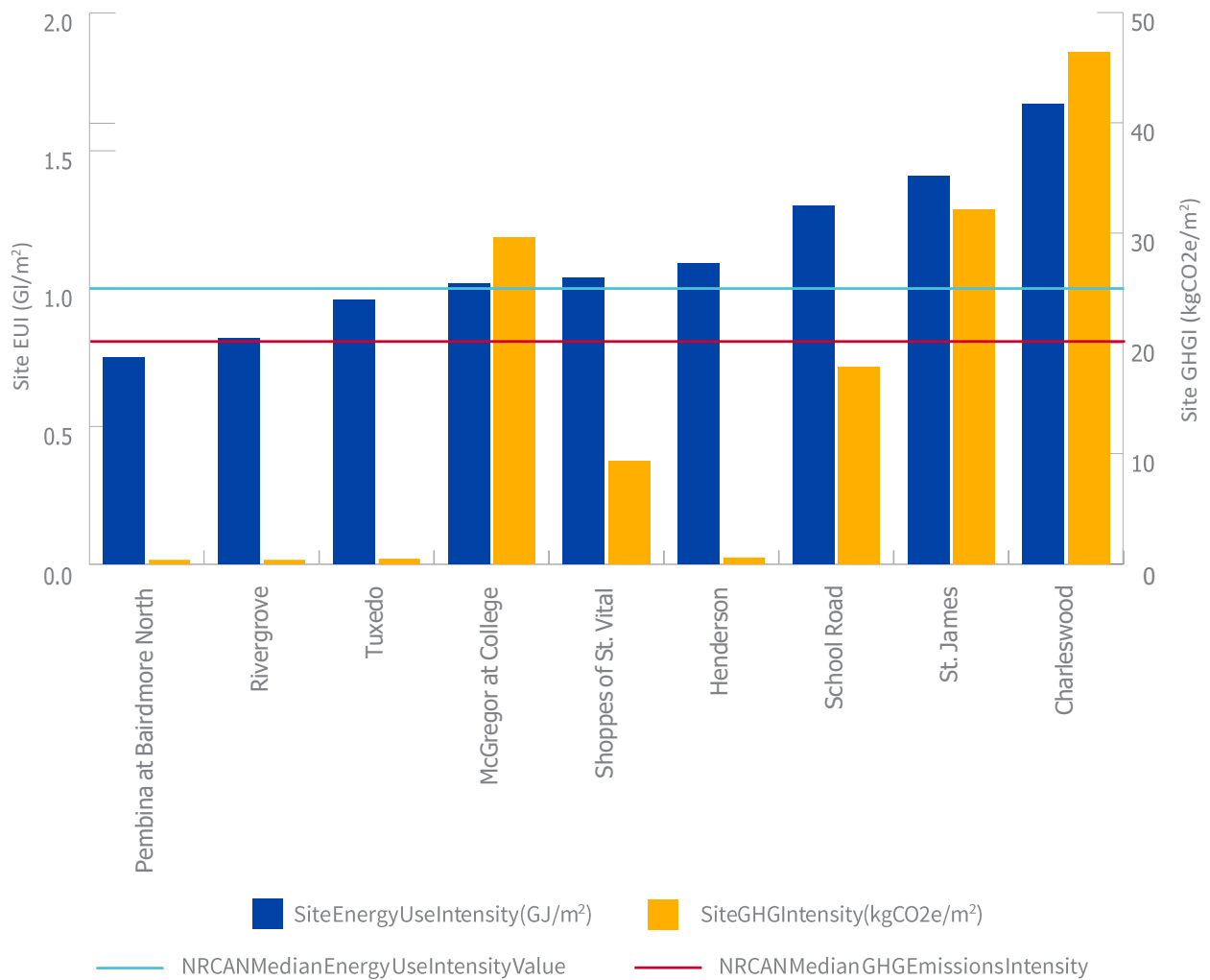
Site EU (GJ/m²)

Pembina at Bairdmore North	0.75
Rivergrove	0.82
Tuxedo	0.96

Site GHGI (kgCO₂e/m²)

Pembina at Bairdmore North	0.4
Rivergrove	0.4
Tuxedo	0.5

Site EUI and GHG Intensity Distribution



8.6 Aquatic Centre Results

A total of eight individual aquatic centre buildings participated in this initiative. Buildings ranged in vintage from 1930 to 1975. Given the greater need for heating and hot water, as well as lighting, aquatic centre buildings had on average higher EUI values than other types, with site EUIs ranging from

2.02 to 3.74 GJ/m². Interestingly, one aquatic centre facility (Elmwood Kildonans Pool) had a very low GHG emissions intensity value, as a result of solely relying on electricity for its operations. Other facilities typically used more natural gas than electricity for their systems.

Median Age	1972
Median Size (m²)	4,266
% Energy Use - Elec	43.7
% Energy Use - Nat Gas	56.3
Median Site GHG Intensity (kgCO₂e/m²)	1.04
Median ENERGY STAR® Score	9.4

Top Performers

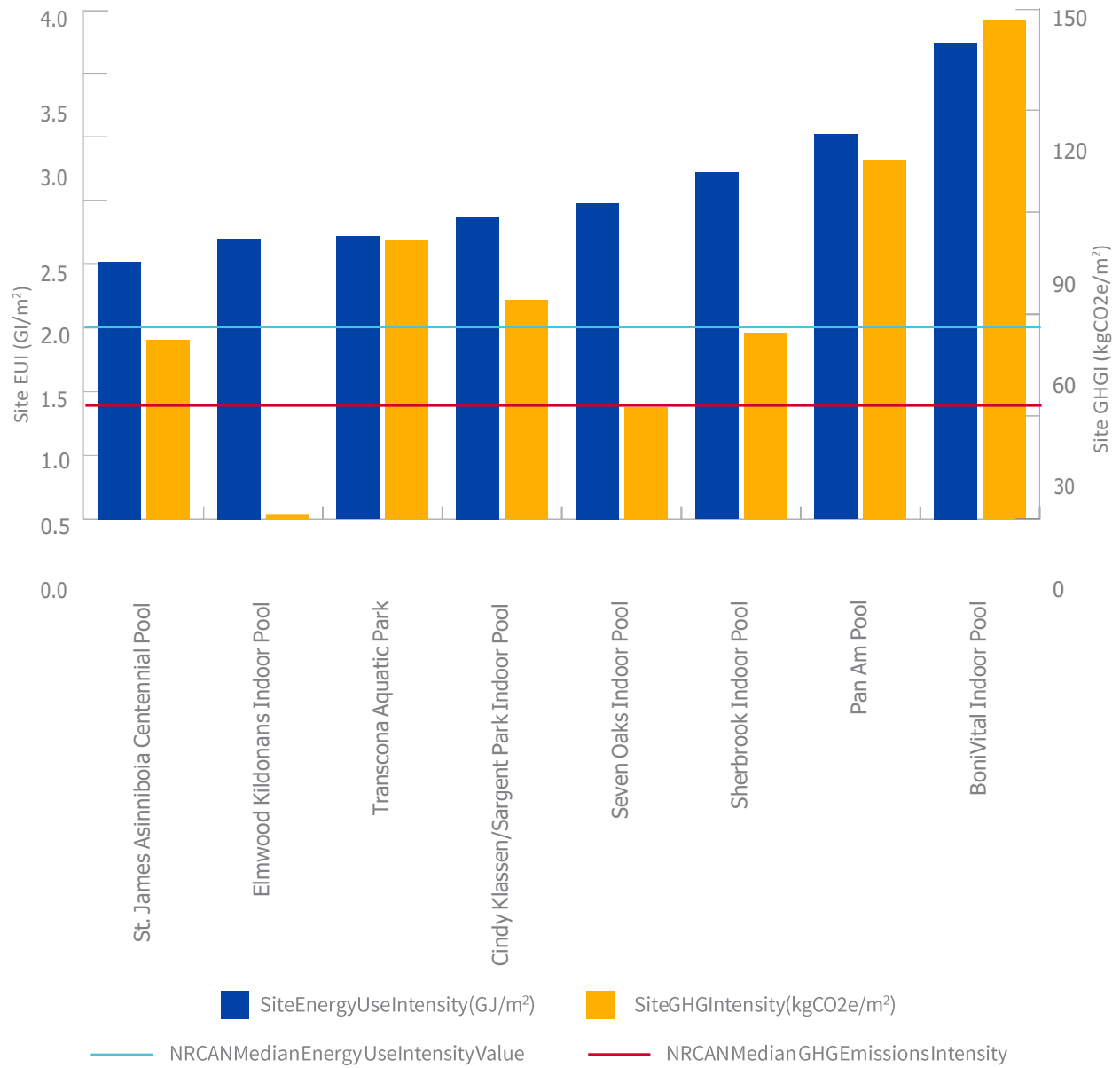
Site EUI

St. James Asinniboia Centennial Pool - 644 Parkdale St	2.02
Elmwood Kildonans Pool - 909 Concordia Ave	2.20
Transcona Aquatic Park (Centennial Indoor Pool) - 1101 Wabasha St	2.22

Site GHGI (kgCO₂e/m²)

Elmwood Kildonans Pool - 909 Concordia Ave	5
Transcona Kinsmen Centennial Pool - 1101 Wabasha St	127.9
Sherbrook Indoor Pool - 381 Sherbrook	137.6

Site EUI and GHG Intensity Distribution



8.7 Ice Arena Results

A total of eight individual ice arena buildings participated in this initiative. Buildings ranged in vintage from 1963 to 1975. Given the typical greater use of natural gas for its operations, ice arena buildings had on average higher GHG emissions intensity values than other buildings. However, one ice arena facility (Pioneer

Arena) had a very low GHG emissions intensity value, as operations at that facility rely solely on electricity. Recently, ENERGY STAR® score ratings became available for ice arena buildings in Canada, and buildings in the initiative had ENERGY STAR® scores that ranged between 51 and 17.

Median Age	1967
Median Size (m²)	2,818
% Energy Use - Elec	42.2
% Energy Use - Nat Gas	57.8
Median Site GHG Intensity (kgCO₂e/m²)	1.71
Median ENERGY STAR® Score	54.9

Top Performers

ENERGY STAR® Score

Terry Sawchuk Memorial Arena - 901 Kimberly Ave	55
Charles A. Barbour Arena - 500 Nathaniel	50
Sargent Park Arena - 1111 Wall Street	45

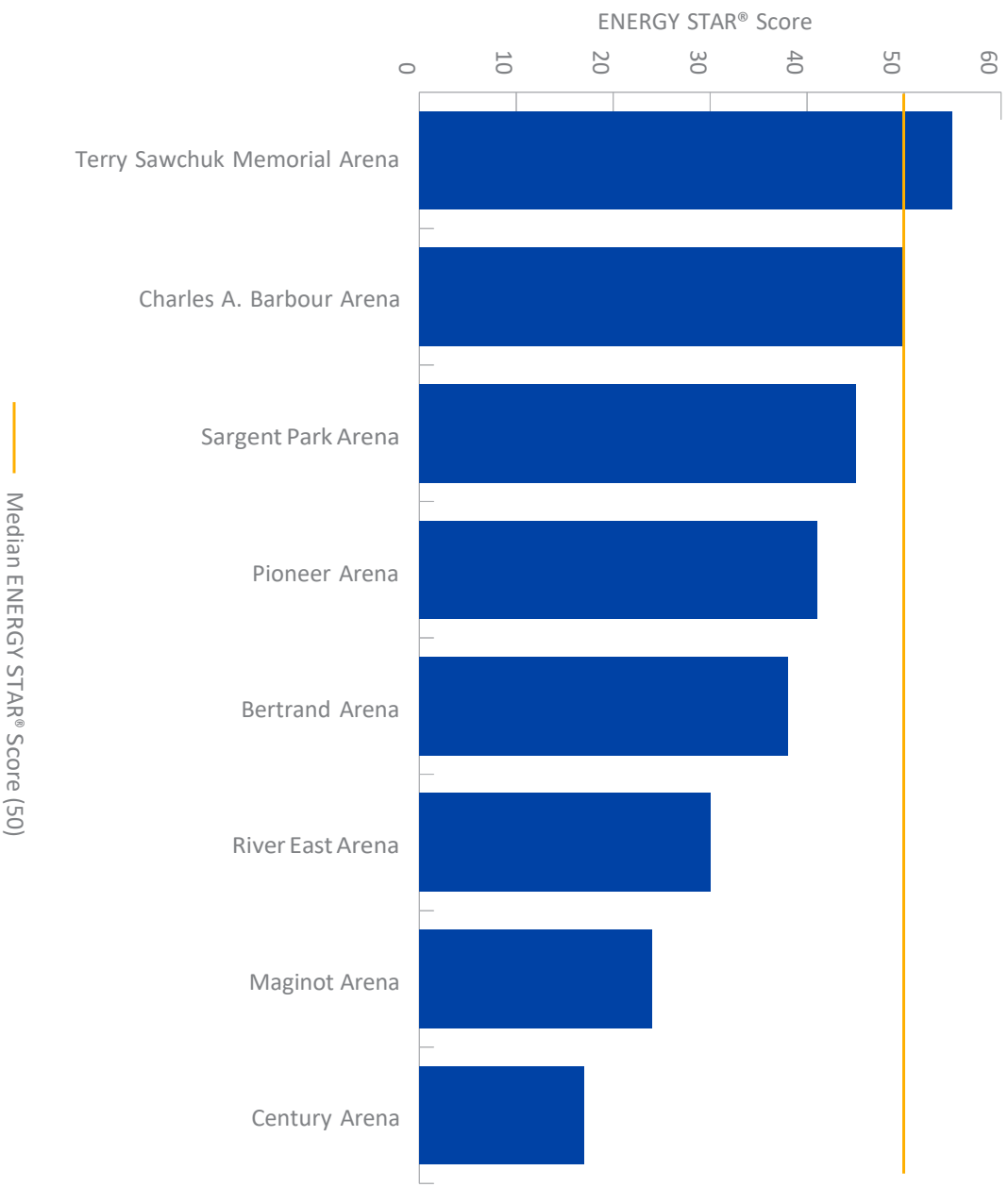
Site EUI (GJ/m²)

Pioneer Arena - 799 Logan Ave	1.15
Sargent Park Arena - 1111 Wall Street	1.6
Charles A. Barbour Arena - 500 Nathaniel	1.63

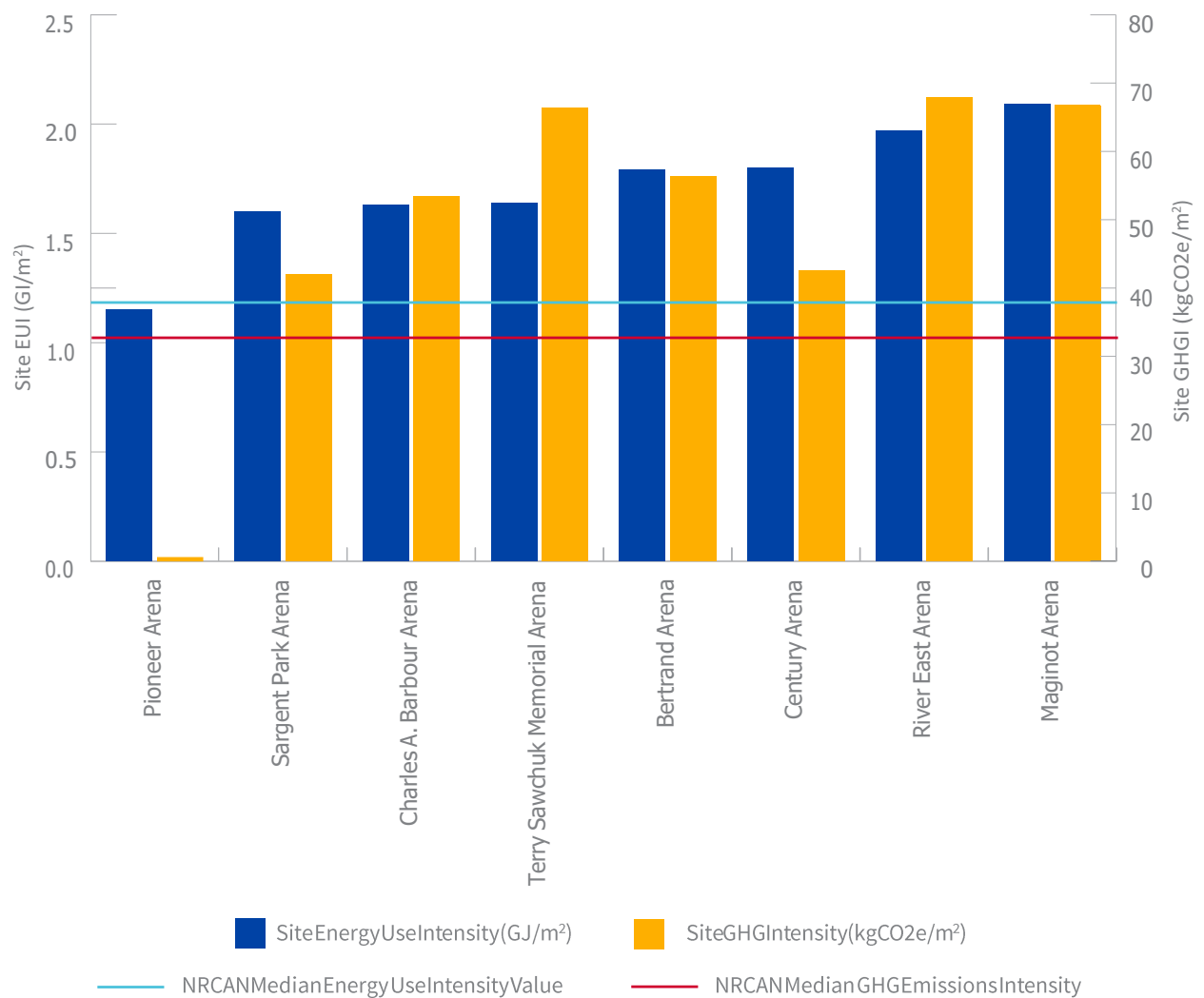
Site GHGI (kgCO₂e/m²)

Pioneer Arena - 799 Logan Ave	1.8
Sargent Park Arena - 1111 Wall Street	97.5
Charles A. Barbour Arena - 500 Nathaniel	132.5

ENERGY STAR® Score Comparison



Site EUI and GHG Intensity Distribution



8.8 Library Results

A total of eight individual library buildings participated in this initiative. Buildings ranged in vintage from 1965 to 2018, with site EUIs ranging from 0.77 to 1.90 GJ/m². As compared to the NRCAN median site EUI value

across the country for this building type (1.70 GJ/m²), almost all of the library buildings in this initiative were more energy efficiency. There is currently no ENERGY STAR® score ratings available for library buildings in Canada.

Median Age	1967
Median Size (m²)	1,040
% Energy Use - Elec	52.6
% Energy Use - Nat Gas	47.4
Median Site EUI (GJ/m²)	0.93
Median Site GHG Intensity (kgCO₂e/m²)	26

Top Performers

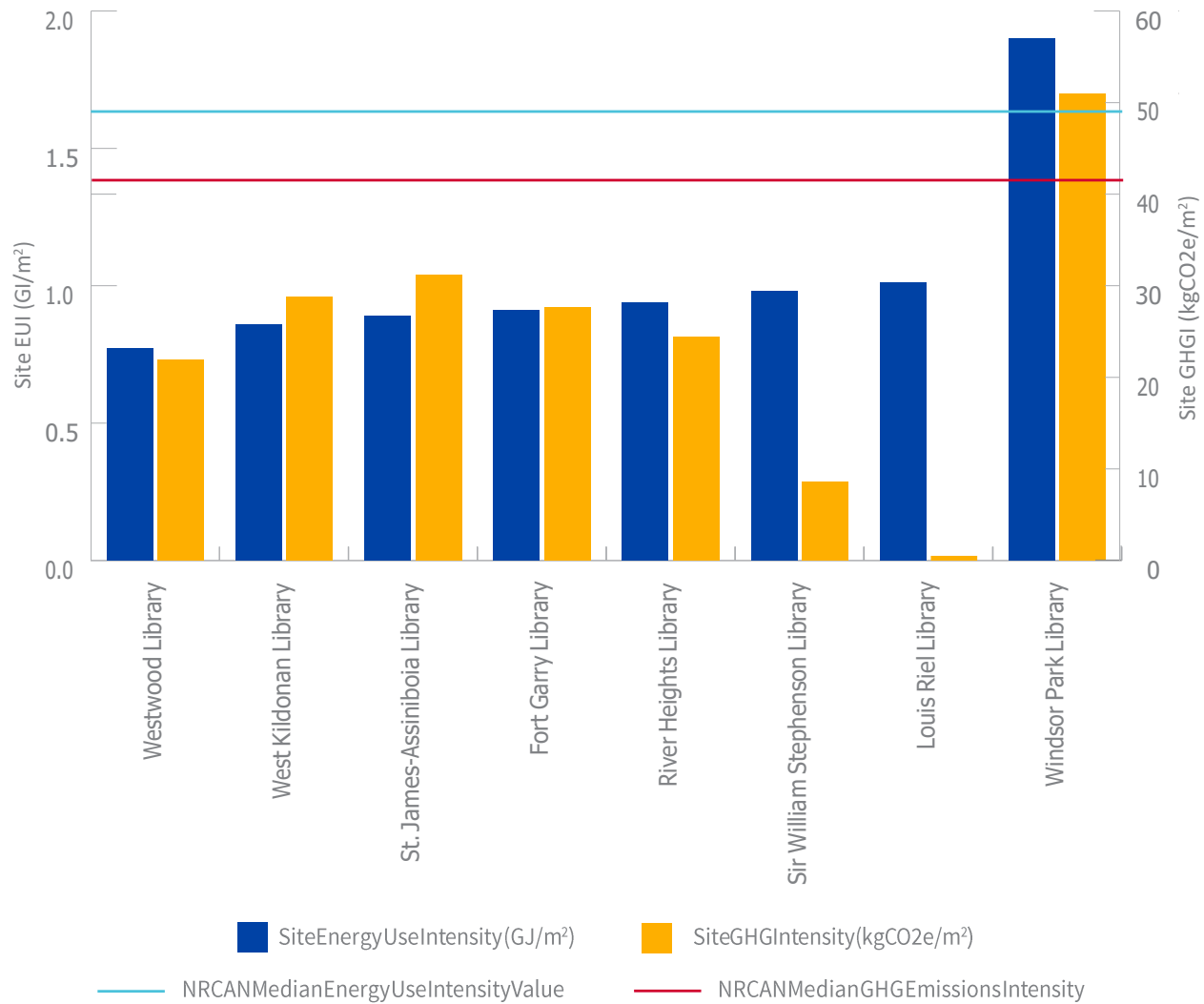
Site EUI (GJ/m²)

Westwood Library - 66 Allard Ave	0.77
West Kildonan Library - 365 Jefferson	0.86
St. James-Assiniboia Library - 1910 Portage Ave	0.89

Site GHGI (kgCO₂e/m²)

Louis Riel Library - 1168 Dakota St.	0.6
Sir William Stephenson Library - 765 Keewatin St	11.2
Westwood Library - 66 Allard Ave	15.5

Site EUI and GHG Intensity Distribution



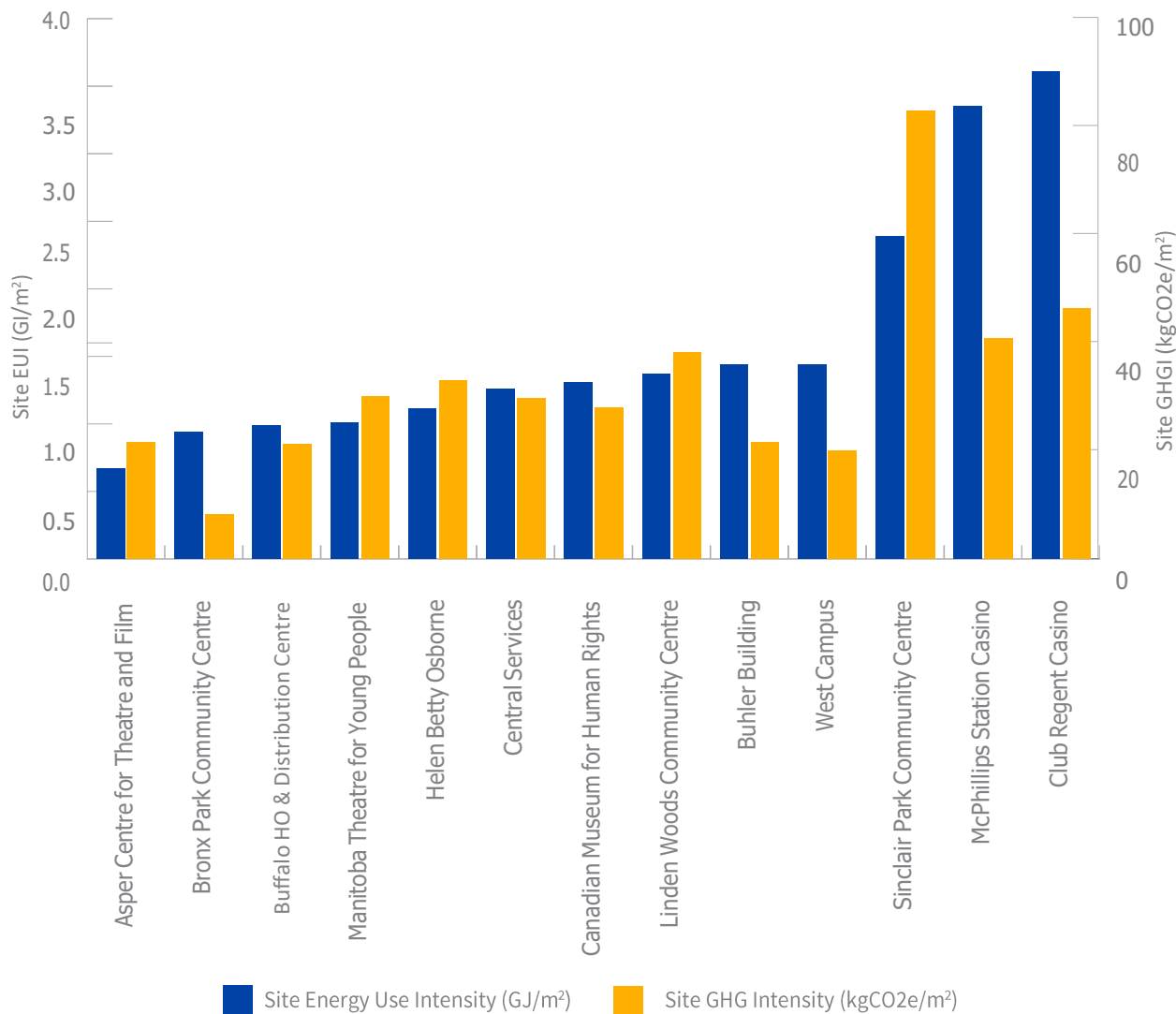
8.9 Other Buildings

A total of 13 remaining individual buildings of varying types participated in this initiative, including the Canadian Museum for Human Rights, community centre buildings, university-related buildings, casinos and a theatre. These buildings ranged in vintage from 1959 to 2013, with site EUIs ranging from 0.67 to 3.61 GJ/m². A university and a community centre building were on the low end of the overall site EUI values, with the

two casino buildings on the higher end of the site EUI range in this category. Most buildings in this category are not able to receive an ENERGY STAR® score rating yet, with the exception of warehouse buildings.

Note: this graph represents individual building performance and is not meant for comparison as properties in the graph have different building use types.

Site EUI and GHG Intensity Distribution





Canadian Museum of Human Rights

Support and Resources

Similar to Year 1, Year 2 support and recruitment efforts will include industry engagement and awareness sessions. These events will describe the value of the benchmarking pilot to prospective participants, and will provide them support in collecting and entering data into ENERGY STAR® Portfolio Manager.

Through its marketing and communications channels, the City of Winnipeg will provide regular updates to the buildings sector on the project.

City staff will continue to be available to assist in benchmarking and ENERGY STAR® Portfolio Manager support in Year 2. For buildings eligible for ENERGY STAR® certification, the City will provide assistance in completing and reviewing the application.

The City will update the Energy Performance Scorecards with the latest incentives, energy audit resources, tips and tricks on improving building performance, and management recognition and/or certification.

For more information, visit winnipeg.ca/BEDP



