City of Winnipeg Corporate Greenhouse Gas Emissions

2025

INTRODUCTION

This report provides an update on the City's Corporate Greenhouse Gas (GHG) Inventory for 2025. The tracking and measurement of greenhouse gas (GHG) emissions is called for in OurWinnipeg 2045:

- Good Governance Objective 1: Establish and implement priority actions through evidence-informed decision-making processes.
- Environmental Objective 1: Prioritize the transition to a resilient, low-carbon future through demonstrated organizational and community leadership, and collaborative actions that mitigate and adapt to a changing climate.

The Corporate GHG Inventory follows the Partners for Climate Protection (PCP) protocol for municipal GHG accounting. The PCP Inventory protocol focuses on municipal operations and is consistent with Corporate GHG inventories produced to date. The scope of data collected has increased since the first inventory in 1998. The collection process has been refined over the years to improve the accuracy and completeness of the inventory.

Each year's inventory uses the most current information available, including for previous years. The grouping, categorization, and source of information may change from year to year. This means that emissions or energy use reported in previous inventories may been updated with more current information.

Energy used for operations comes in different forms including litres of vehicle fuel, kilowatt hours of electricity, and cubic meters of natural gas. To allow comparisons between these energy sources, the volume of each is converted to the amount of work each unit of fuel does. This translates these different fuel types into gigajoules (GJ) of energy. With this, 30 litres of gasoline, 26 litres of diesel, 26 m^3 of natural gas, and 278 kilowatt hours (kWh) of electricity all contain the same amount of energy: 1 GJ.

Similarly, there are the three most significant GHGs related to climate change, with different strengths of impacts. These are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (NO_2). For the purposes of GHG accounting, methane is considered 25 times more potent than carbon dioxide as a GHG, and nitrous oxide is 298 times more. The impacts of these two GHGs are expressed in equivalent CO_2 levels, and the sum of the three is expressed in "CO_2 equivalent", or CO_2e.

Each of these energy sources has different associated emissions levels . Using, or 'consuming' 1 GJ of electricity emits just over one kilogram of CO_2e, 1 GJ of diesel or gasoline emits over 68 kilograms of CO_2e, and 1 GJ of natural gas emits almost 50 kilograms.

2025 Inventory

In 2025, total energy use and emissions both increased by 2% compared to 2024. Energy use increased in all sectors. Emissions increased in Buildings, Vehicle Fleet, and Corporate Waste sectors, while decreasing in the Water & Wastewater sector. The Water & Wastewater sector comprises all infrastructure used to provide potable water and wastewater services, to the city. The Streetlights sector comprises energy used by traffic lights and streetlights. The Buildings sector comprises all building accounts not used directly in delivering water or wastewater services. Corporate waste covers the emissions from materials originating in Winnipeg that end up at Brady Road Resource Management Facility.

The Buildings sector has the largest change from 2024, increasing energy use by 4% and emissions by 6%. Water and Wastewater decreased energy use by over 2% but increased emissions by 3%. The Vehicle Fleet sector increased both energy use and emissions by almost 2%. The Corporate Waste sector increased the tonnage of landfilled waste and consequent emissions by 1%.

By fuel source, the use of natural gas increased 5% while diesel increased a little over 2%. Consumption in both electricity and gasoline decreased, by 2% and just over 0.2%, respectively. Aviation fuel use decreased 23%, but the net impact to the City inventory is less than 0.02%.

CORPORATE GHG INVENTORY (2025)

Source	2025			
	Energy (GJ)	% change from 2024	Total CO2e (tonnes)	% change from 2024
Buildings	906,270	4.1%	26,856	6.0%
Vehicle Fleet	1,081,031	1.7%	72,538	1.7%
Streetlights	110,042	0.0%	56	5.1%
Water & Wastewater	596,840	-2.4%	11,107	3.1%
Corporate Waste	-	-	214,080	1.0%
TOTAL	2,694,183	1.5%	324,638	1.6%

Figure 1 - Energy Use and GHG Emissions for City Operations

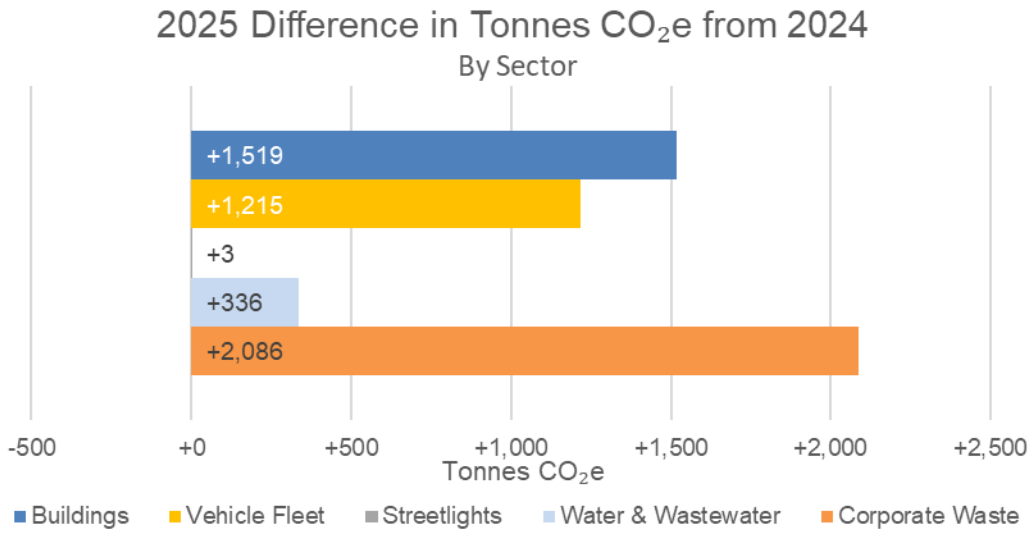


Figure 2 – Difference in GHG emissions tonnages from 2024 to 2025

Source	2025			
	Energy (GJ)	% change from 2024	Total CO_2e (tonnes)	% change from 2024
Electricity	851,842	-1.9%	433	3.1%
Natural Gas	761,311	5.2%	37,587	5.2%
Ethanol Blend (E10)	198,624	-0.2%	12,323	-0.2%
Biodiesel Blend (B5)	877,862	2.2%	59,901	2.2%
Aviation Fuel	4,545	-23.2%	314	-19.3%
Waste	-		214,080	1.0%
Total		1.5%		1.6%

Table 1 - Energy consumption and emissions by type source

MAIN INFLUENCING FACTORS

There are many factors that influence the level of emissions at the City of Winnipeg.

Factors like colder weather, more precipitation, or more waste being generated in the community, have associated changes in reported energy use and emissions, but it's City policies that determine energy consumption and emissions. While cold weather appears to be driving the need for more natural gas and its associated emissions, it's more accurate to say our heating demand drives the need for heating energy. If the City decreases its heating needs through insulation, systems improvements, better design, then the amount of heating energy

needed goes down. If the heating energy can be changed from carbon intensive natural gas to electricity then emissions go down even further.

The Community Energy Investment Roadmap (CEIR) outlines actions that can reduce the impacts of these external factors. For example, greater insulation and more efficient systems can reduce the energy needed during extreme weather. Electrification of the vehicle fleet will have permanent annual impacts on emissions. Expanding and accelerating waste diversion programs reduces associated emissions of the volume of waste being delivered to the landfill.

Higher heating demand of natural gas use increased substantially (by 5%), leading to 1,500 additional tonnes of CO_2e.

Electricity generation in Manitoba was estimated to be more carbon intensive than in 2024, resulting in an additional 21 tonnes of emissions. This is because of Manitoba Hydro operating in the second of two low water years, requiring the import of more electricity from more carbon intensive generators. More volatility in the carbon intensity of electricity will come as climate change intensifies.

Buildings used more electricity (1.4 million GJ more), while Water and Wastewater used much less (5.9 million GJ less), resulting in eight more net tonnes of CO_2e between the two categories.

An increase in diesel use resulted in over 1,300 tonnes of additional emissions, while the change to increase in-office days to the Flexible Workplace Program resulted in an additional 287 tonnes of emissions. The majority of the increase in diesel came from Transit (almost 900 tonnes), but waste contractor fuel use also increased (150 tonnes). Leachate hauling also uses diesel fuel, and in 2025 emissions for hauling decreased 10 tonnes.

Helicopter use for the City emitted 75 tonnes less than in 2024. Air1 emitted 28 tonnes more, but this was overtaken by Insect control emitting much less (102 tonnes less). . Less precipitation decreased the need for insect control helicopter flights for mosquito control. Reduced precipitation also meant that less water made its way to the water treatment plants, requiring less energy for treatment, though more of that energy came from natural gas, leading to higher emissions. This combined resulted in an additional 142 tonnes of CO_2e.

The average fuel efficiency of vehicles improved in 2025, which avoided 156 tonnes of CO_2e. Fewer kilometers were driven for City Operations, resulting in over 360 fewer tonnes of CO_2e emitted**.**

Factor	In Tonnes CO_2e
Carbon intensity of electricity	20.8
Change in fuel efficiency of vehicles	-156.0
Colder weather (increased NG usage in Buildings)	1507.7
Change in Waste tonnage	2085.6
More precipitation	141.6
Change to FWP	286.8
Change in diesel consumption	1313.4
Change in gasoline consumption (excluding efficiency)	-363.3
Change in electricity consumption	-8.2
Change in helicopter use	-27.6

Table 2 - Impacts of external and internal factors on City emission

TOTAL ENERGY USE AND GHG EMISSIONS IN 2025 BY SECTOR

Energy use and emissions both increased 1.6% between 2024 and 2025. Energy use increased in the Buildings sector (4%), and Vehicle Fleet sector (2%) more than offsetting a decrease in the Water & Wastewater sector (-2%). Total emissions grew in all sectors, with a significant increase to Buildings (6%) and small changes in the Waste sector (+1%) and Vehicle Fleet sector (+2%). Emissions from the Water & Wastewater sector increased by 3%, and in Streetlights by 5.1%.

ENERGY USE BY SOURCE

The Corporate Waste sector is excluded from this section. Waste emissions do not come from the consumption of energy but from the decomposition of waste in landfills.

In 2025, diesel was the largest energy source at 33% of total energy used and 54% of energy use related GHGs, or 18% of total emissions. This is due to diesel's relatively high carbon content, and its critical role in powering heavy machinery.

Electricity was the second largest energy source at 32% of energy used and, owing to its low carbon content, was just 0.1% of energy-related emissions and 0.4% of total emissions.

Natural gas use accounted for 28% of total energy use and 34% of energy use related GHGs, or 12% of total emissions.

Gasoline (in an ethanol blend) accounted for 7% of energy use and 11% of energy use related emissions, or 4% of total emissions.

Aviation fuel impacts were negligible (0.2% of energy use, and 0.1% of total emissions).

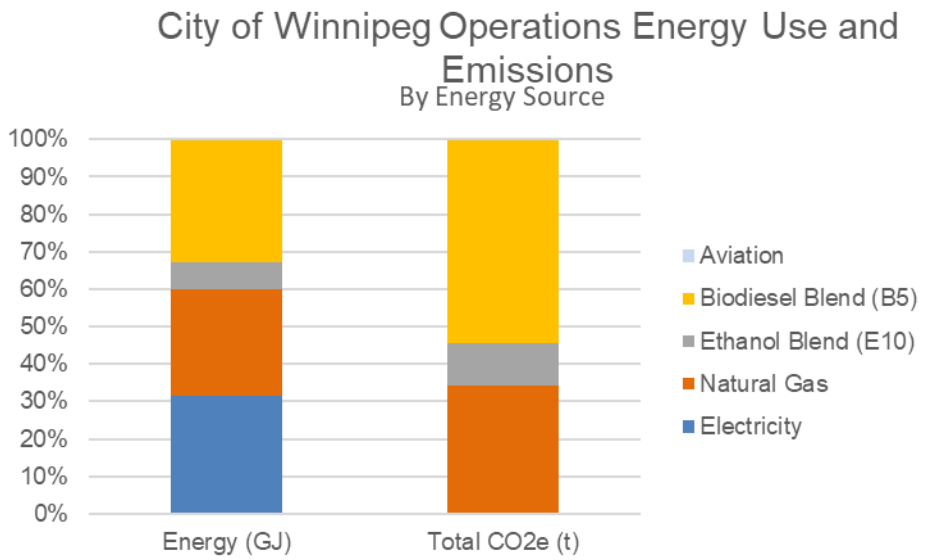


Figure 3 – Energy sources proportion of total energy use and total emissions – excludes Corporate Waste emissions

EMISSIONS AND ENERGY USE BY SECTOR

Energy use and emissions in City operations are usually linked. While the Corporate Waste sector reports emissions from waste that gets landfilled, the rest of the Corporate inventory of emissions arises from the use of energy. The Buildings sector uses electricity to power lights and computers, and primarily natural gas for space and water heating. The Water and Wastewater sector uses electricity to drive pumps and equipment, and natural gas to keep some generators, pumps, and biological processes running. The Vehicle Fleet sector uses fuels of all types to keep equipment and vehicles running. All these energy sources produce GHG emissions, even electricity. The difference is the amount of emissions per unit of work.

The Corporate Waste sector is the source of 66% of total emissions in 2024. This waste, which includes all material taken to the Brady Road Resource Management Facility, has a significant impact on reported emissions percentages in the inventory. Small changes in landfilled waste can mask real shifts in emissions from Buildings and Fleet sectors, two sectors where the City has more direct control.

Vehicle and equipment fuel use was the largest energy user and second largest CO_2e emitter in 2025 at 40% of total energy use and 22% of total emissions.

Buildings (excluding those involved in providing water & wastewater services) were the second largest user of energy, using 34% of all energy, and producing 8% of emissions.

Water and Wastewater infrastructure was the third largest user of energy. In 2025 it used 22% of total energy and had the fourth highest GHG emissions at 4% of total.

The Streetlights and Traffic Signals sector used the least energy at 4.0% of total consumption and 0.02% of total emissions.

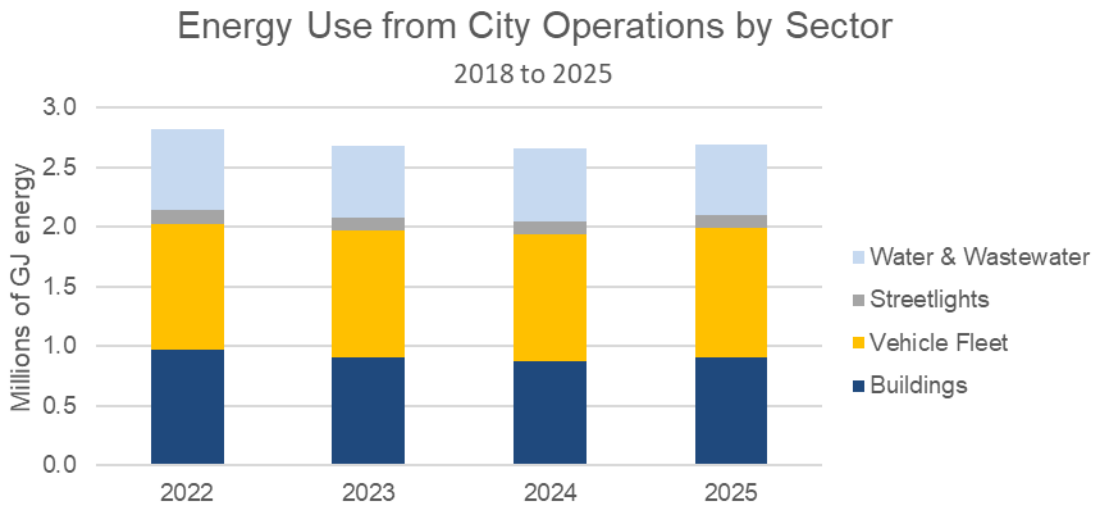


Figure 4 - Emissions Use for Corporate Operations 2022 – 2025

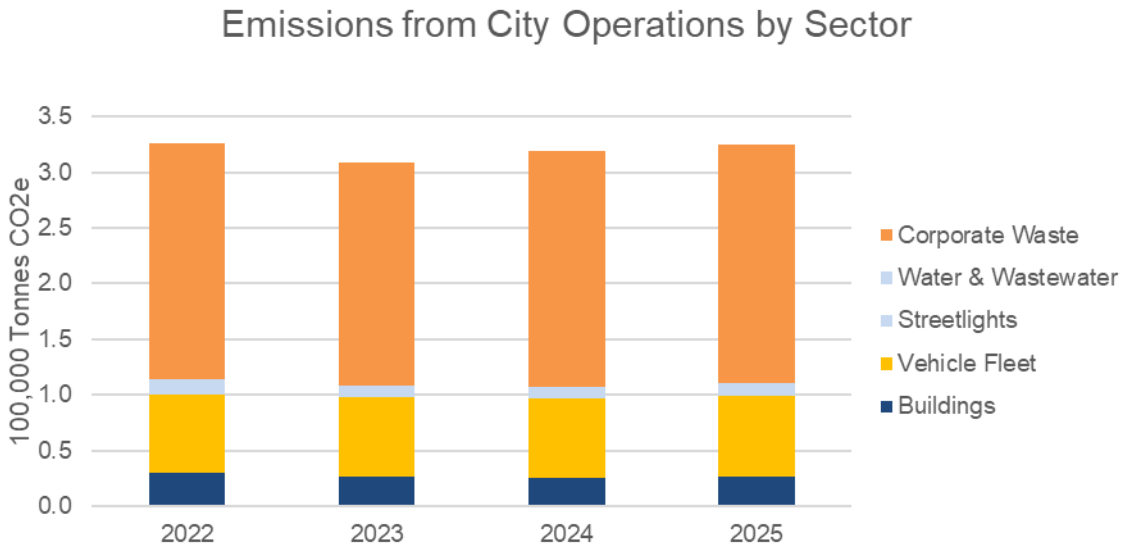


Figure 5 – Energy Use for Corporate Operations 2022 – 2025

For energy use over time the graphs below show relatively stable levels of energy use and emissions, but with energy per tonne of carbon emitted dropping in 2024 and 2025. Figure 6 shows a general improvement with lower emissions for each unit of energy consumed from 2018 to 2024, with a slight reduction in 2025. This improvement is approximately 6% over the

period, or about 1% every year. This period saw the improvement of fuel standards increasing the proportions of ethanol in fuels (up 1.5% to 10% total in gasoline and up 2.5% to 5% total in diesel), against an increase in heating demands in 2025.

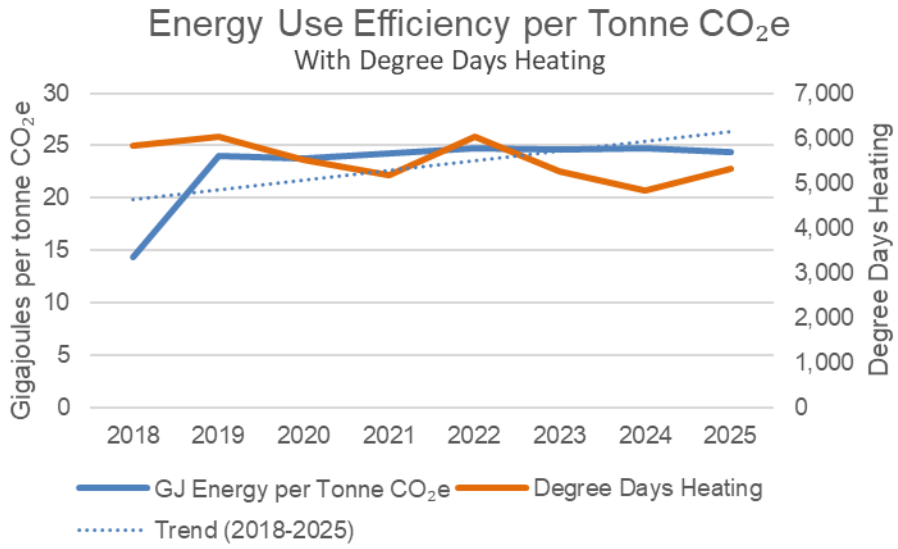


Figure 6 – Energy units per tonne of carbon emitted for Corporate Operations 2018 – 2025

BUILDINGS

Energy in the Buildings sector is primarily used for heating and is heavily influenced by heating demands. Other energy consumption come from lighting, appliances, and computers.

This sector has shown a small decrease in efficiency over the last three years. Since 2023 energy use relative to degree days heating (DDH) has increased. 2024 was the first year that energy use relative to DDH became more intensive, and this continued in 2025. Emissions increased faster relative to DDH, though this is likely influenced by Winnipeg experiencing a colder winter.

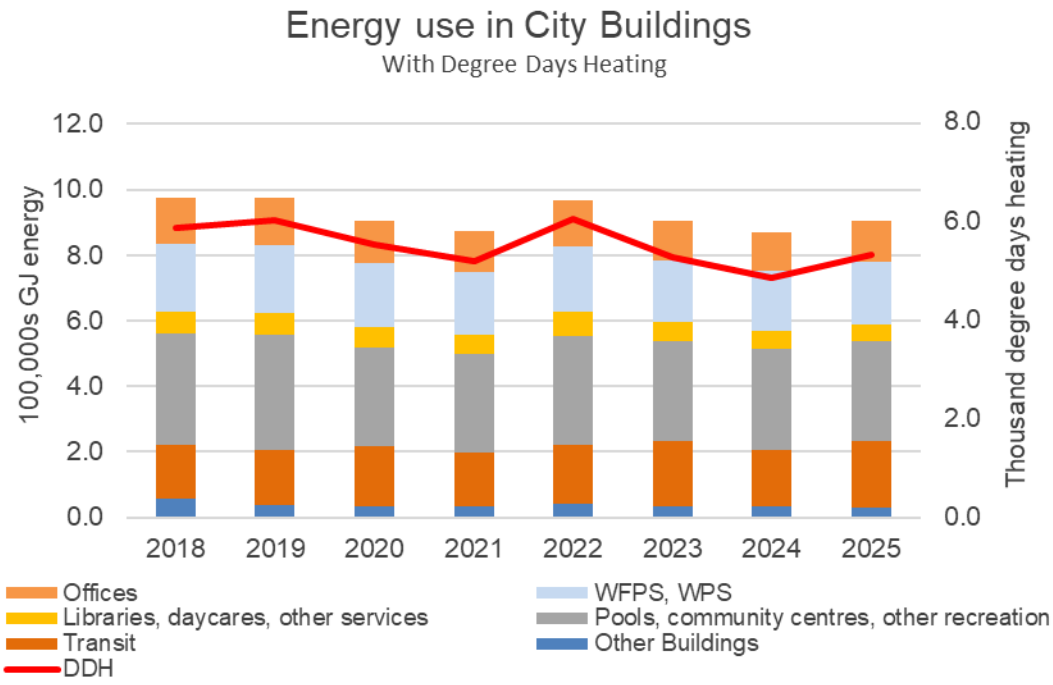


Figure 7 - Influence of Heating Requirements on Buildings Sector Energy Use

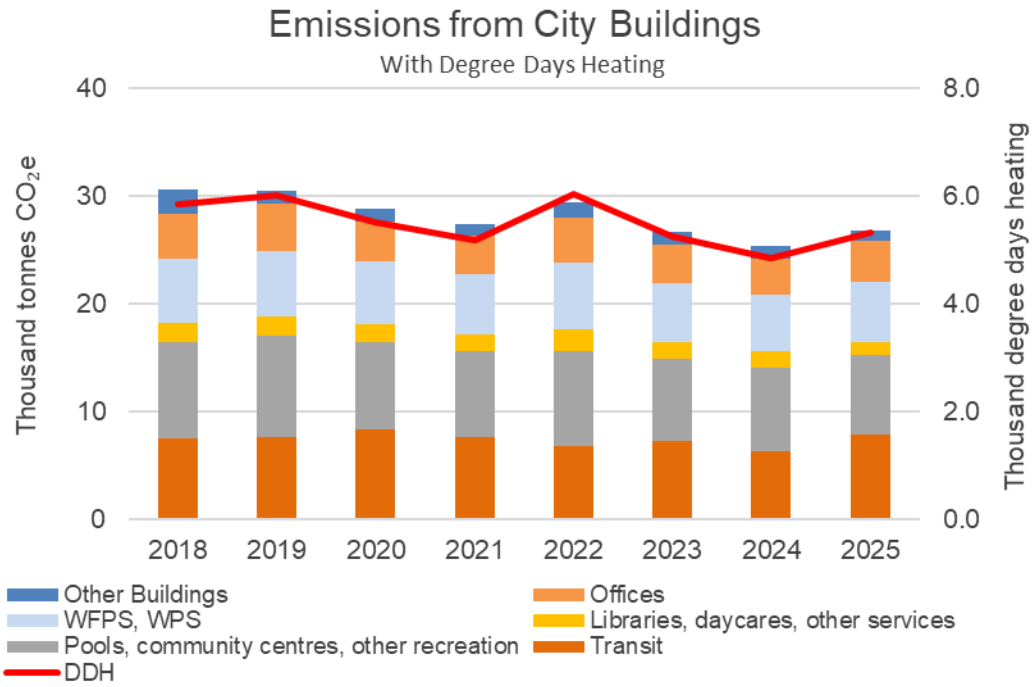


Figure 8 - Influence of Heating Requirements on Buildings Sector Emissions

VEHICLE FLEET & TRANSPORTATION

The Vehicle Fleet sector includes energy and emissions from vehicles and heavy equipment used in City operations but does not include all contracted vehicle usage at this time.

2025's Vehicle Fleet energy use increased 1.7% over 2024 levels, but with emissions increasing 1.3%. This was primarily driven by Transit, which used about 2.0% more fuel than in 2024. Commuting related emissions increased by 3.3%. Waste Contractor emissions increased 1.7%, while the rest of the City road fleet increased emissions 0.7%. Other vehicles emissions, which includes the helicopters used by WPS and Insect Control, and reimbursements for personal vehicles used on City Business, decreased 13%.

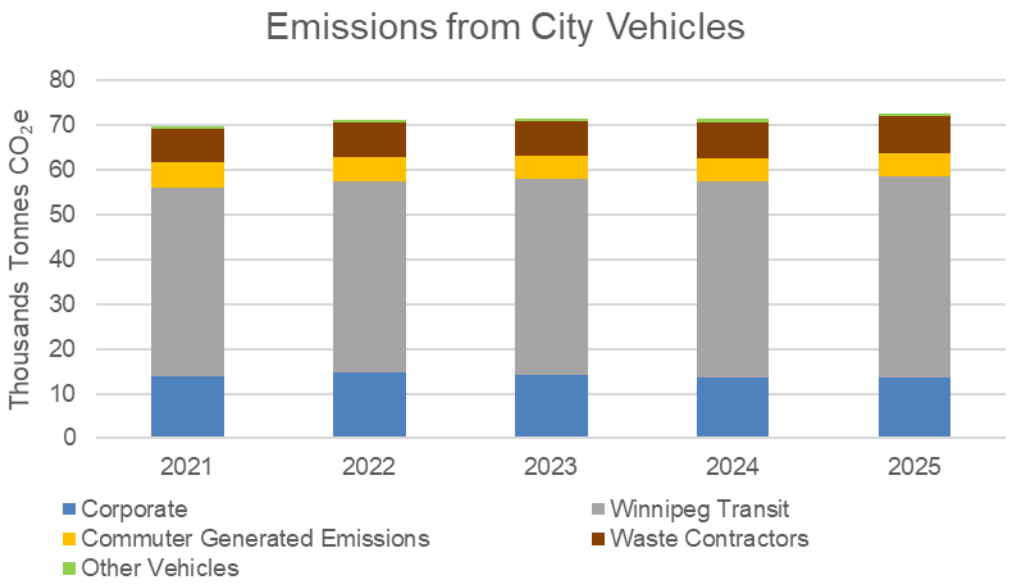


Figure 8 - Fleet Emissions Profile, 2021 to 2025

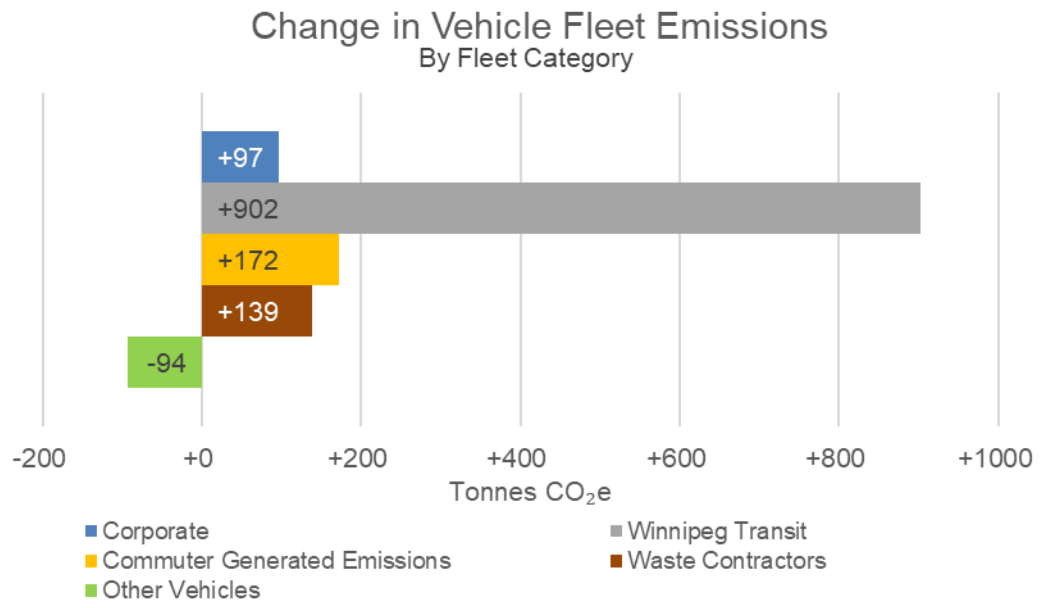


Figure 9 - Tonnage Difference from 2024 by Fleet Category

Employee commuting impacts have been included in Winnipeg's inventories since 2018. 2025 saw the third year of the Flexible Workplace Program. An increase in in-office time to three days per week program has increased commuting kilometres (km) by 1.4 million kilometers annually. This represents an increase in emissions from commuting of 172 tonnes CO_2e, or 3% from 2024. The program still saved 16,167 commuting trips per month and avoided an estimated 809 tonnes of CO_2e.

External factors have also reduced emissions from commuting. Fuel standards updating combined with improvements in average vehicle efficiency resulted in 1,212 tonnes CO_2e less than would have otherwise happened in 2025.

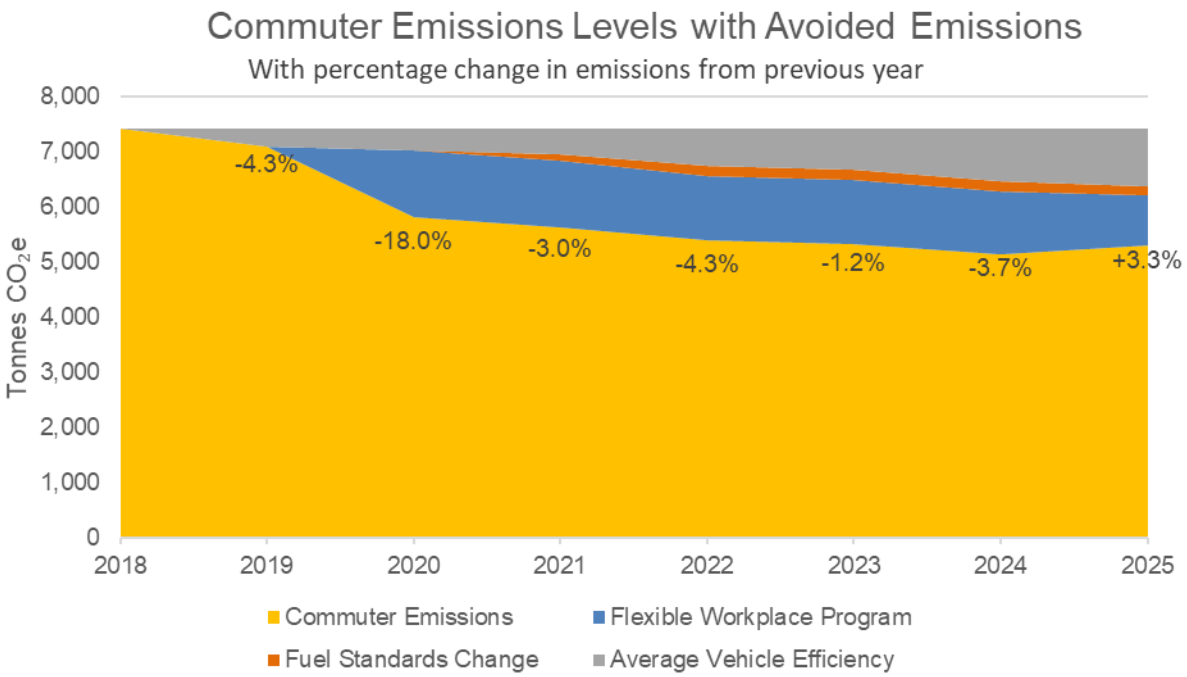


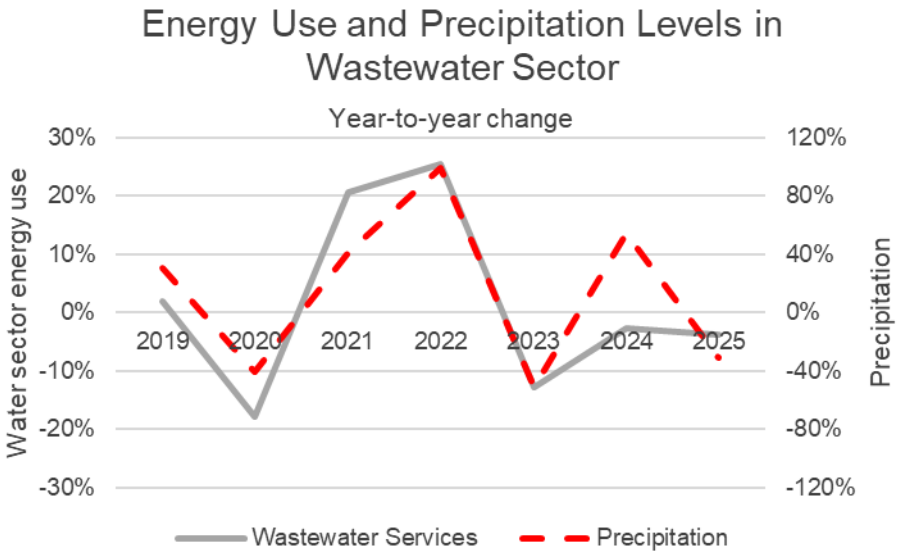
Figure 10 - Emissions from employee commuting and mitigating factors

STREETLIGHTS

Streetlights only use electricity. In Manitoba this is a relatively clean energy source, so this sector produces negligible emissions. Most Winnipeg streetlights have been switched to LED lights. This has decreased energy use substantially.

WATER AND WASTEWATER

Water & Wastewater infrastructure energy use decreased in 2025 by 2.4%, and emissions increased by 3.1%. The Wastewater sector is significantly impacted by precipitation entering the sewer system and needing to be processed by the wastewater treatment plants. The charts below shows the link between precipitation and energy use by water and wastewater infrastructure from 2019 to 2025. In general, changes in precipitation levels had corresponding but proportionally smaller impacts on energy use in the wastewater sector. The water sector also showed a link with precipitation levels, but a much more muted one.



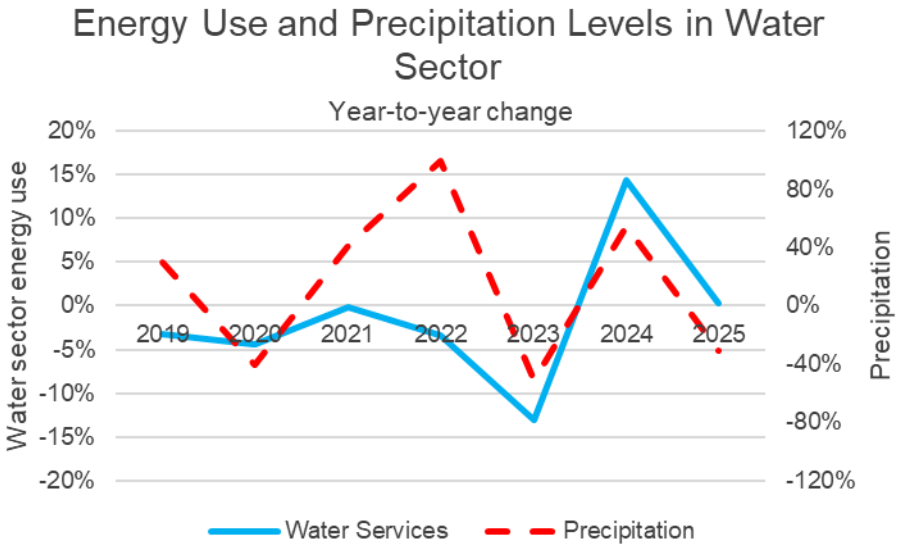


Figure 10 – Comparisons of Wastewater sector energy use, Water sector energy use and Precipitation levels year-to-year changes

CORPORATE WASTE

Waste emissions are based on tonnage of waste delivered to the Brady Road Resource Management Facility. Emissions from this sector are a result of methane generation from landfilled refuse, as opposed to the combustion of fossil fuels. Methane generation from

decomposition of waste can peak several years after landfilling and can continue for more than 50 years.

Starting with the 2023 inventory, emissions from the Waste sector have included projected emissions from all waste landfilled by the City and/or landfilled at Brady Road Resource Management Facility, not just waste from City operations. This change to the accounting process has increased the reported amount of waste for the sector by a factor of between 17 and 18 times, with corresponding increases in the GHG emissions associated with the sector. This is reflected in a total of 214,080 tonnes CO_2e for 2025. Since 2020, biosolids diversion has avoided landfilling almost 300,000 tonnes of biosolids, which would have produced over 260,000 tonnes of CO_2e. In 2025, it accounted for 57,407 tonnes of CO_2e avoided, or 27% of the total Corporate Waste streams emissions.

There has been a trend towards a decrease in waste landfilled overall over the last five years. A peak in the amount of waste landfilled was last seen in 2020, with over 344,000 tonnes of waste generating approximately 230,657 tonnes of CO_2e. The amount of waste landfilled in 2025 was over 318,953 tonnes; 2,086 tonnes (1.0%) more than 2024, but 16,576 tonnes (-7.2%) less than the peak year of 2020.



Figure 11 - Change in Corporate Waste Emissions, 2020-2025

IMPACT ON OURWINNIPEG 2045 COMMITMENTS

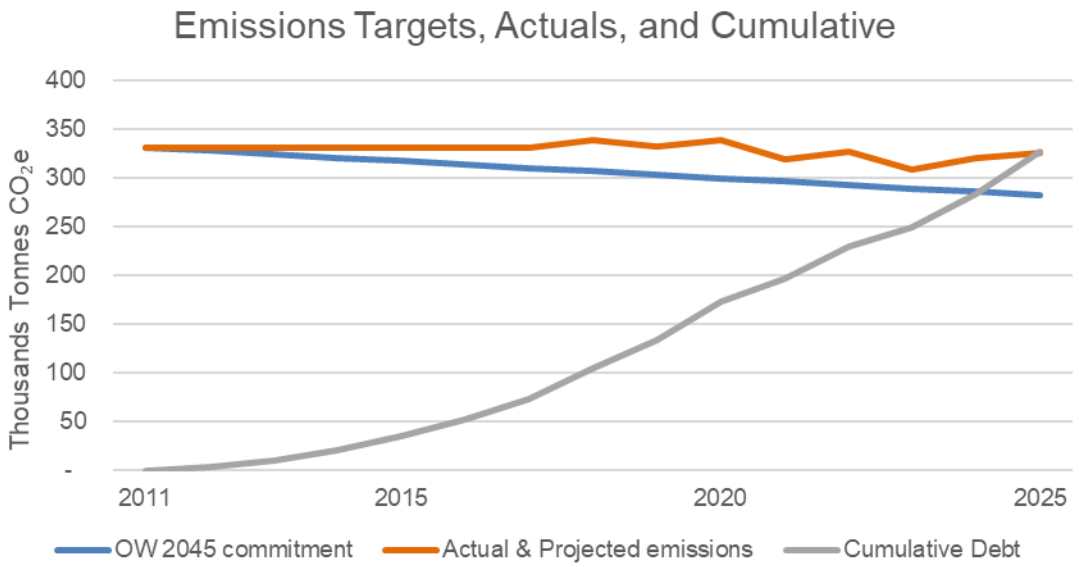
CITY OF WINNIPEG CARBON BUDGET

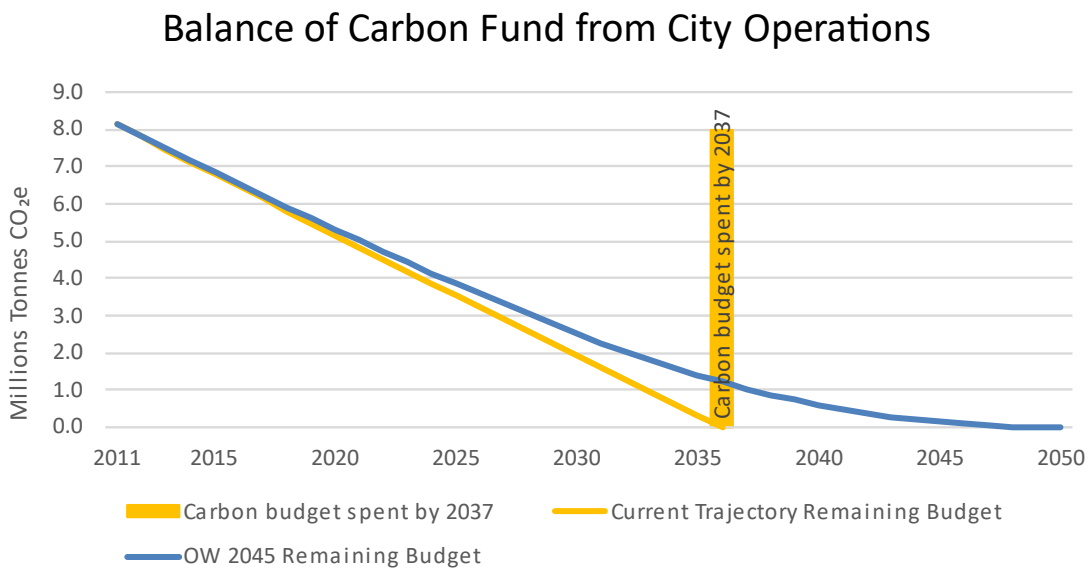
With Council's adoption of OurWinnipeg 2045, the City of Winnipeg committed to reduce emissions 20% by 2030, and to get to net zero emissions by 2050. Assuming equal emissions decreases in all the in-between years, that amounts to a reduction of 1.1% per year (from 2011 levels) to 2030, and a reduction of 5.0% per year (from 2030 levels) from 2030 to 2050. This allows the calculation of a total carbon budget of 8.47 million tonnes CO_2e between 2011 and 2050.

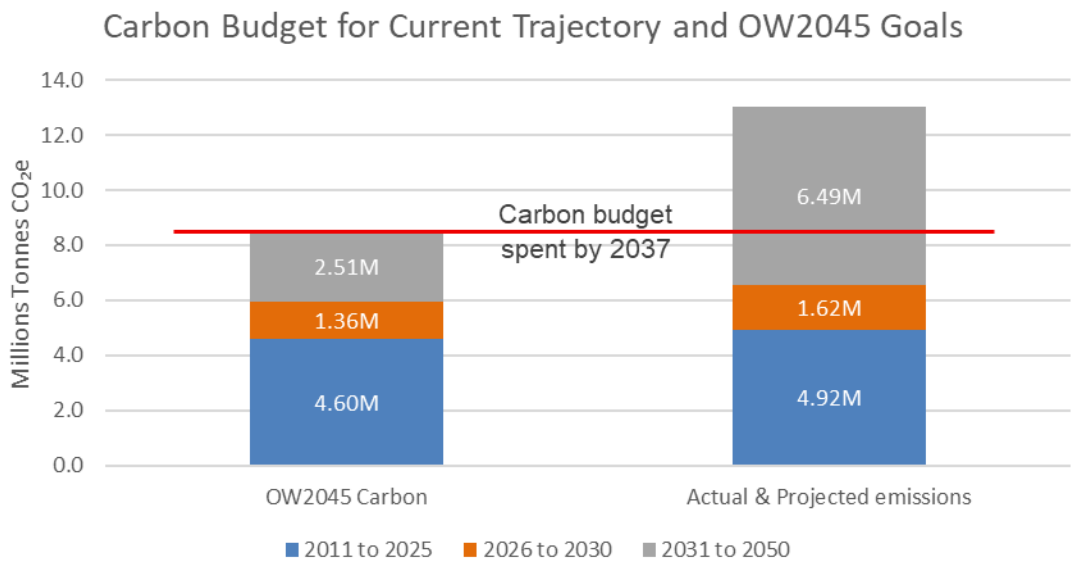
The City's operational emissions has trended down since 2018, the most recent year of full data in this analysis. To meet the OW 2045 commitments the City's emissions must be reduced by approximately 3,480 tonnes annually, on average. In the period between 2018 and 2025 the City reduced emissions by approximately 2,800 tonnes annually.

EMISSIONS TO DATE

2024 was the year that the City's accumulated carbon debt surpassed a full year's budget. This is a result of falling short of the emissions reductions targets committed to in OurWinnipeg 2045. If this continues at this rate then the City will have surpassed its total carbon budget by 2037, thirteen years early. By 2050 it will have emitted an additional 4.5 million tonnes of CO_2e, 53% over the OW2045 budget.




Balance of Carbon Fund from City Operations
Millions Tonnes CO_2e
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2011
2015
2020
2025
2030
2035
2040
2045
2050
Carbon budget spent by 2037
Carbon budget spent by 2037
Current Trajectory Remaining Budget
OW 2045 Remaining Budget


Carbon Budget for Current Trajectory and OW2045 Goals
Millions Tonnes CO_2e
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Carbon budget spent by 2037
2.51M
1.36M
4.60M
6.49M
1.62M
4.92M
OW2045 Carbon
Actual & Projected emissions
2011 to 2025
2026 to 2030
2031 to 2050

INVENTORY ANALYSIS NOTES

This inventory is made using the most up-to-date information available for each of its component indicators.

Where possible, newly available data is used to back-cast previously made inventories so that all analysis is performed on comparable data sets.

Data Updates:

- Building data has been improved
- Water and Wastewater infrastructure data outside of the WPCCs has been improved
- Commuting data has been applied back to 2018
- Fuel efficiency of average light-duty vehicles has been applied back to 2018
- Carbon intensity of electricity has been updated
- Error found and fixed with 2024 electricity
- Net Zero pathway and carbon budget updated with these changes