

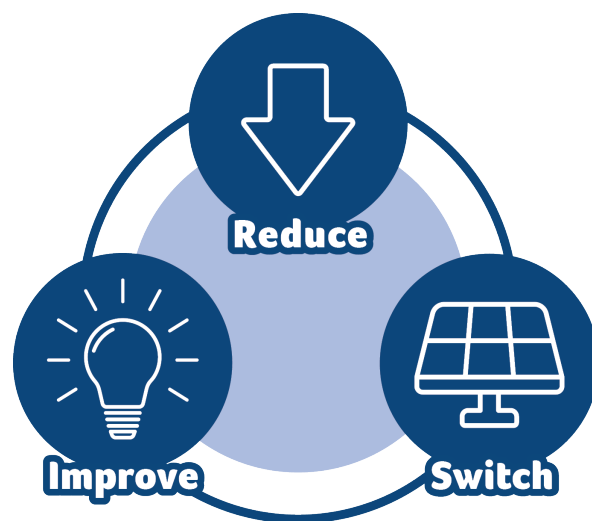
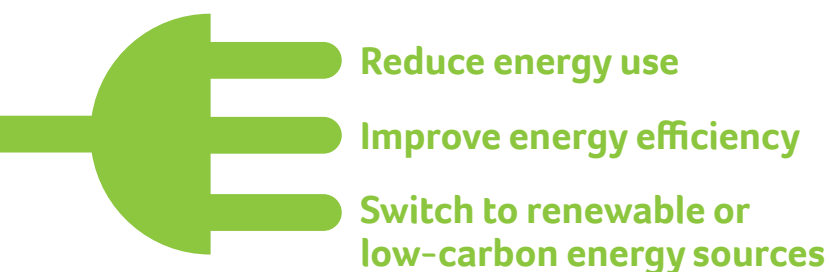
Regina's 2024 Energy and Emissions Inventory

Moving Toward a Renewable Regina

Renewable Regina is Regina's community plan to help slow climate change and create a more resilient, healthy and wealthy community for current and future generations.

The plan outlines the pathway to achieve our community-wide goal of net-zero carbon emissions and sourcing net-zero energy from renewable sources by 2050.

To meet this target, we need to reduce our community's greenhouse gas (GHG) emissions by 52 per cent by 2030 through a three-pronged approach:



Currently, most energy used involves burning fossil fuels. This means that energy consumption and GHG emissions are closely related and that generally, reducing energy use will reduce GHG emissions. Reducing energy use is also important for enabling the switch to renewable energy.

However, some fuel sources produce more emissions than others, and some activities or processes use more energy than others. This is why tracking both energy and GHG emissions is important.

Net zero
renewable
community

=

Greenhouse Gas (GHG)
removed from air &
Renewable Energy Used

≥

GHG Emissions &
Non-Renewable
Energy Used

Background

Measurement and reporting of energy consumption and GHG emissions is important for assessing progress towards our community and corporate GHG and energy reduction targets.

Corporate Energy and Emissions Inventory

Corporate energy use and GHG emissions are generated or consumed directly through the operations of the City of Regina as a corporation, such as:



Fuel used to operate Transit buses and City vehicles



Heating and cooling City-owned buildings like recreation centers and office buildings



Operating major City facilities like the Wastewater Treatment Plant and Asphalt Plant

Community Energy and Emissions Inventory

The community inventory includes all the energy and emissions consumed and generated within Regina's city limits, such as:



Residential, commercial or industrial transportation



Heating and cooling of all houses, apartments and businesses



Industrial operations that take place within city limits

Disclaimer:

The Energy and Emissions inventory is a snapshot of energy use and GHG emissions. Wherever possible, actual data is used. In some cases where data is not available, estimations or assumptions have been made based on other data sources or previous trends.

While corporate emissions have been directly measured and reported for several years, 2023 was the first time the City measured community energy use and emissions since the baseline measurement completed for the Energy and Sustainability Framework.

2024 was the second time community-wide energy and emissions were measured, which provided an opportunity to improve data collection and accuracy for the community inventory.

Acronyms

RPS	Regina Police Service
RPL	Regina Public Library
WWTP	Wastewater Treatment Plant
BPWTP	Buffalo Pound Water Treatment Plant
GHG	Greenhouse Gas
LFG	Landfill gas (methane)
LFGTE	Landfill Gas to Energy



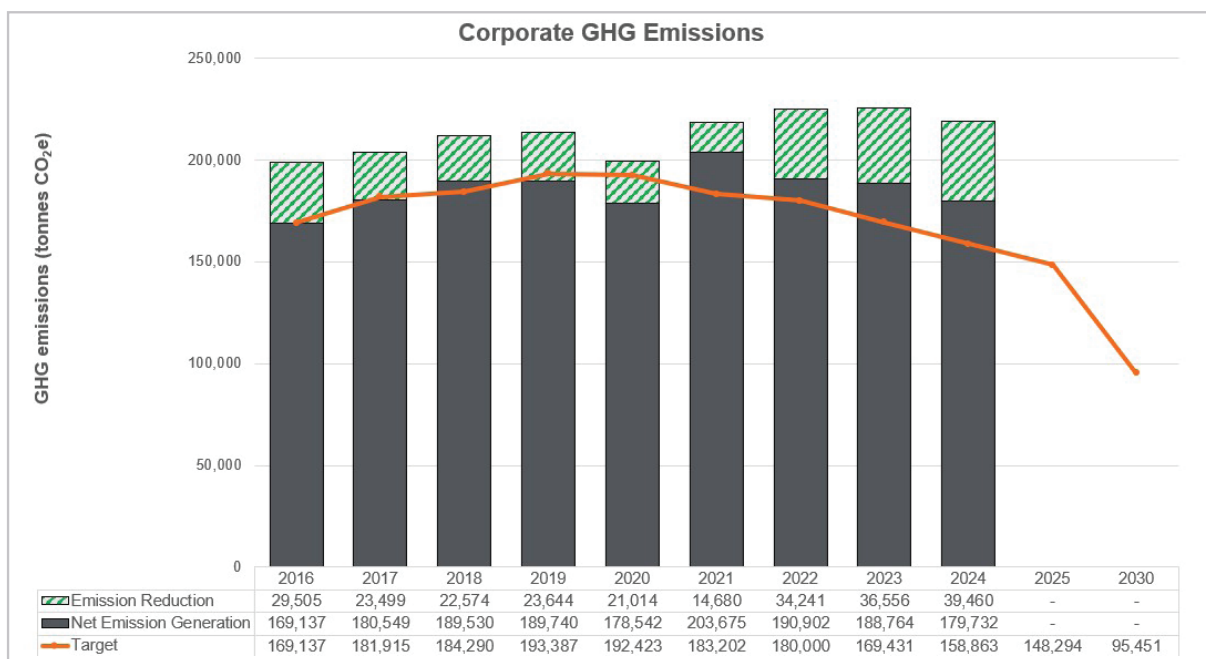
Corporate Energy and GHG Emissions

In 2024, Regina’s corporate energy and emissions inventory was expanded to include more historic data between 2016 (baseline year) and 2020. Incorporating this data improves the accuracy of annual comparisons and aligns with the 2016 community inventory baseline in the Energy & Sustainability Framework. Ultimately, this creates a more comprehensive and consistent dataset to both understand long-term trends and help the City reach its energy and emissions targets.

Corporate Emissions

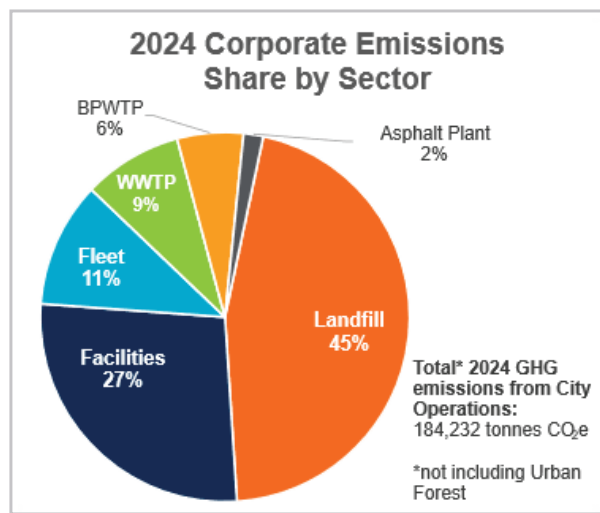
Meeting Our GHG Reduction Target

Setting a target for corporate GHG emissions is important for the City to be able to measure the progress of emission reduction efforts and show accountability when it comes to communicating the success of these efforts.



Corporate emissions in 2024 were 5 per cent lower than in 2023, reflecting the City’s commitment to sustainability. Despite this reduction and a general downward trend in emissions, the gap between the 2024 target and actual emissions was 12 per cent. While the target was exceeded in 2020, emissions reductions between 2021 and 2024 fell short of the target by an average of 10 per cent annually.

Overall, meeting future targets is possible with increased efforts. However, addressing historic emissions gaps may require increasing interim targets, making them more challenging to achieve.



2024 Emission Reductions Highlights



Regina's Urban Forest plays a critical role in climate action by absorbing and storing carbon. In 2024, it helped reduce GHG emissions by 4,501 tonnes, or 2.5 per cent, of the City's total corporate emissions.



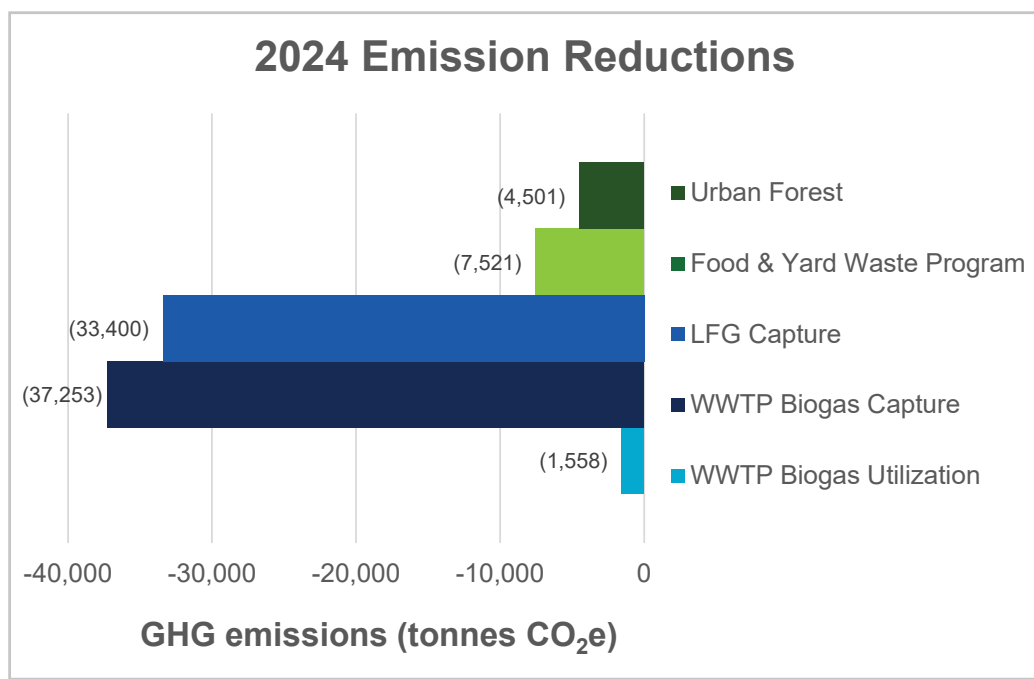
The Food and Yard Waste Pilot expanded to a full program in fall 2023. In its first full year of operation in 2024, the program reduced 7,521 tonnes of GHG emissions and diverted 16,900 tonnes of organic waste from the Landfill.



The Landfill Gas Capture system reduced 33,400 tonnes of GHG emissions, an increase of 10 per cent compared to 2023. This improvement was largely due to longer runtimes of both the gas flare and the engine that creates electricity from captured landfill gas. Together, these systems increase the reduction of methane, a potent GHG



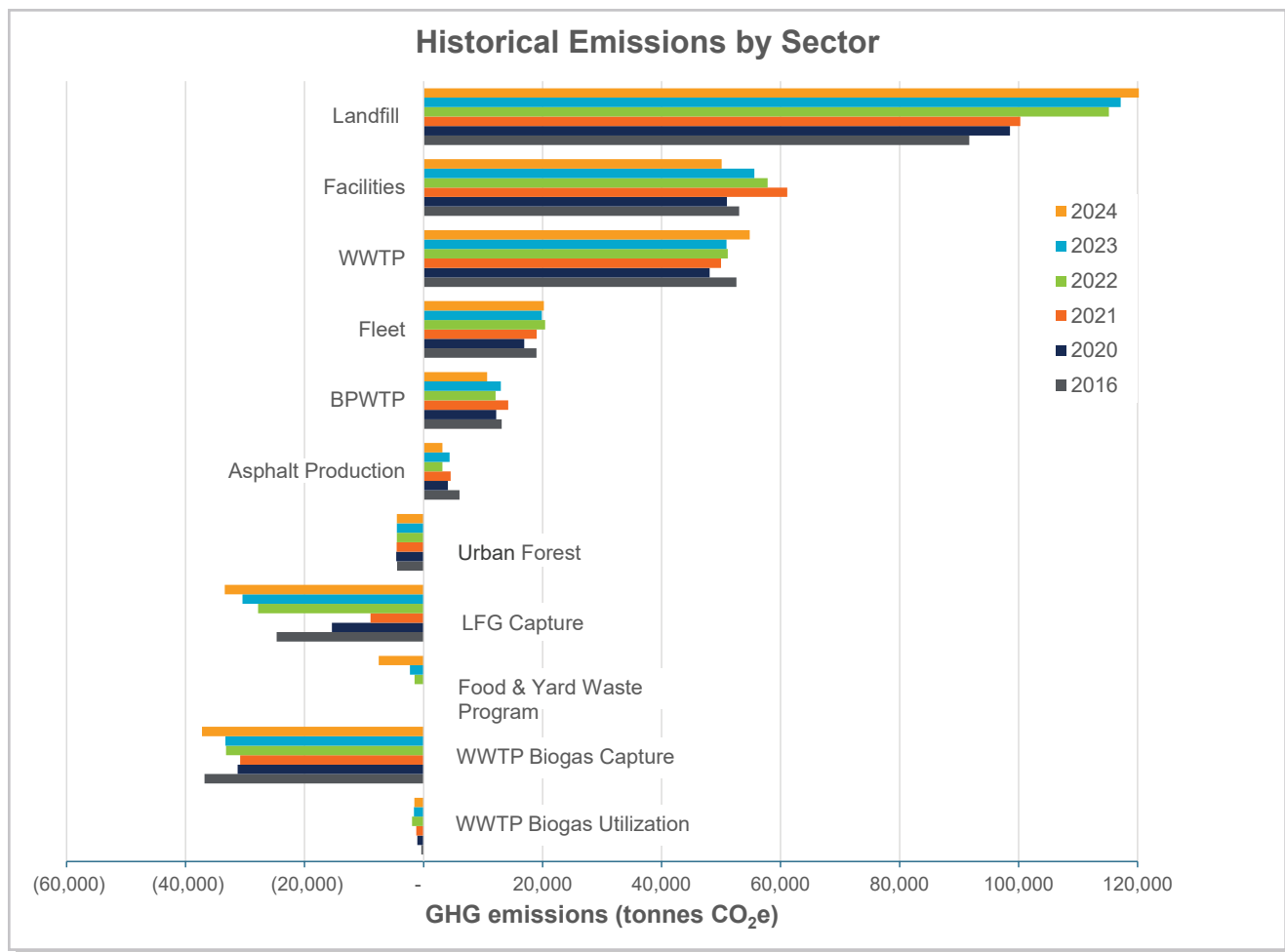
The Wastewater Treatment Plant (WWTP) reduced 37,253 tonnes of emissions through the capture of biogas. An additional 1,558 tonnes were avoided by using captured biogas on site to heat the facility, thereby reducing the need to burn natural gas.



Breakdown by Sector

The City tracks and reports emissions by sector, with most emissions being generated by the Regina Landfill, municipal buildings and facilities, and fleet vehicles. Progress towards achieving the City's corporate emission target requires reduction strategies for these key areas.

Historical GHG emissions trends are displayed by each sector along with the results of major emission reduction projects like the WWTP biogas boiler system and landfill gas capture and utilization projects.



Note: The significant increase in landfill emissions in 2022 is attributed to Environment and Climate Change Canada's (ECCC)'s adjustment in methane's global warming potential (GWP) by 12 per cent. This increase highlights the necessity for ongoing and enhanced emission reduction strategies across all sectors to meet future emissions reduction targets.

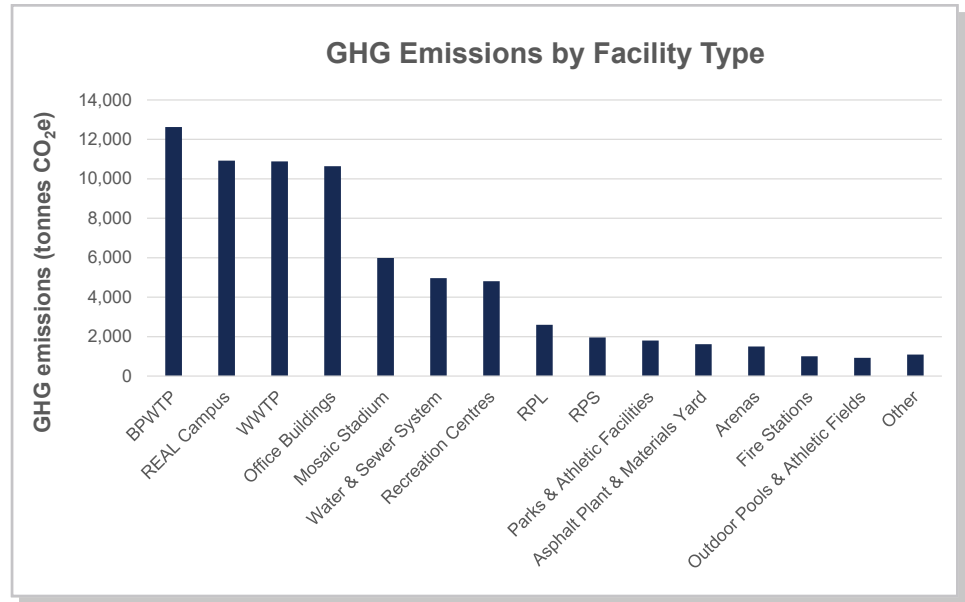


Emissions from City Facilities



Building emissions result from the use of energy (e.g. electricity, natural gas, and propane) to heat, cool, light and power municipal buildings. The City is planning on adopting improved standards for both new facilities and building retrofits to help improve their energy efficiency.

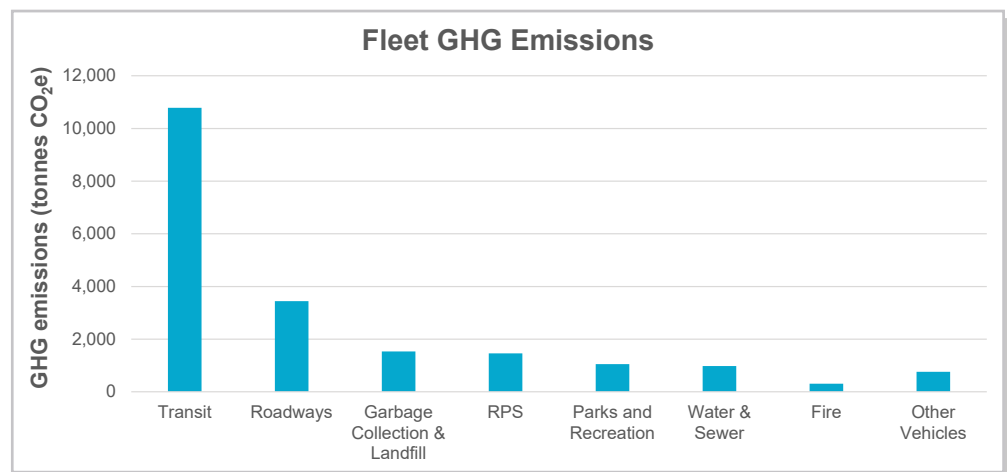
Emissions associated with water and wastewater treatment, water distribution and wastewater and stormwater collection systems are also included in this category because these processes use significant energy, therefore, producing significant emissions.



Emissions from Vehicle Fleet



Fleet emissions result from the combustion of fossil fuels used to power the City's buses, vehicles and mobile equipment. The City is making investments in fleet electrification and anti-idling programs to reduce emissions from the municipal fleet.

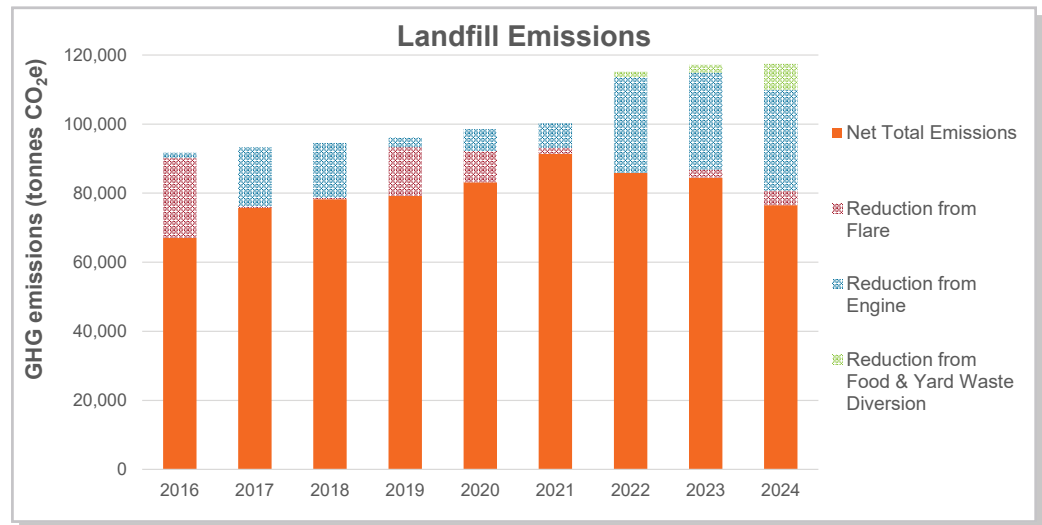


Emissions from Landfill



The City's Landfill is the biggest emitter of GHGs from corporate operations. As biodegradable waste breaks down in landfills, gases (primarily methane and carbon dioxide) are released. This process spans many years, meaning that the GHGs emitted from the Landfill today are the result of decades of disposing biodegradable waste.

The City is actively working to reduce GHG emissions associated with the Landfill, such as, by operating a landfill gas recovery system and expanding the residential food and yard waste pilot to a full program.

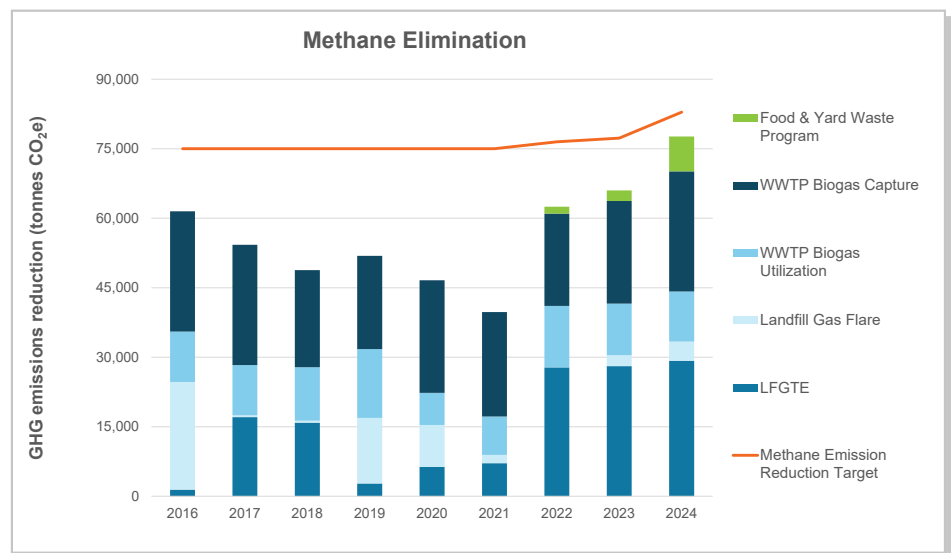


Methane Elimination

Methane is generated at both the Landfill and the WWTP. Methane is a GHG that is 28 times more potent than carbon dioxide and is produced when organic matter breaks down in the absence of oxygen.

One of the biggest opportunities to reduce corporate GHG emissions is through the elimination of methane. This can be achieved by either preventing its creation or burning (flaring) it off. The City can also convert this gas into electricity or use it to replace natural gas.

In anticipation of methane reduction regulations, the

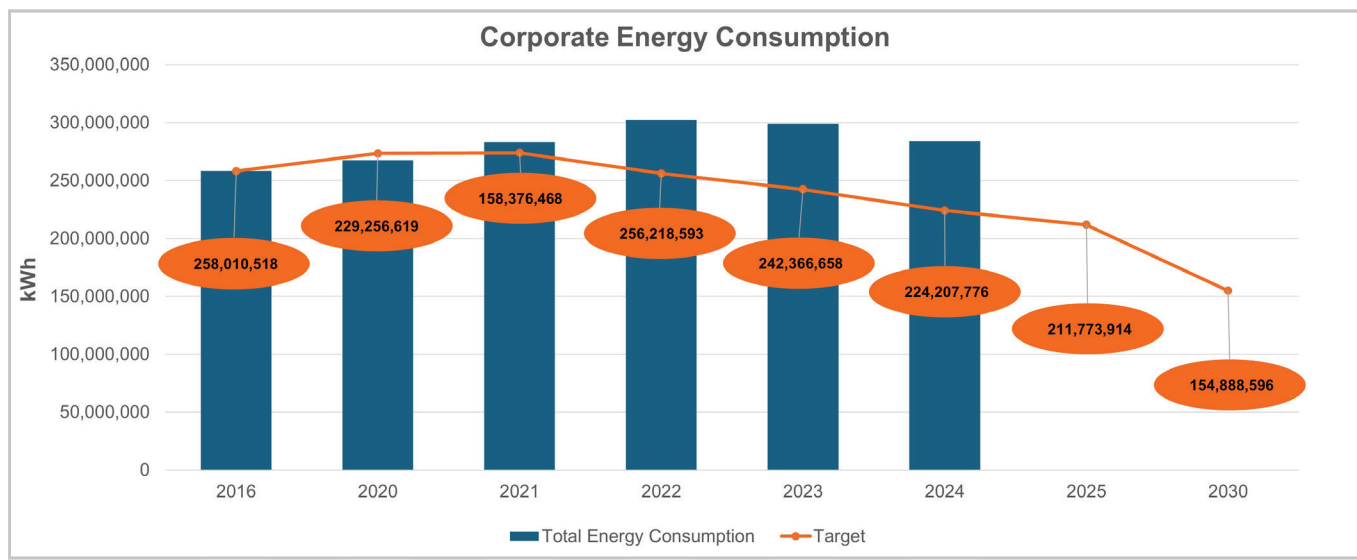


City continues to increase methane targets as new programs and technologies are adopted. This approach supports continuous improvement and ensures we can measure the effectiveness of current initiatives. For example, when the Food & Yard Waste Program was fully operational in 2024, the target was updated to reflect this capacity.

Corporate Energy Consumption

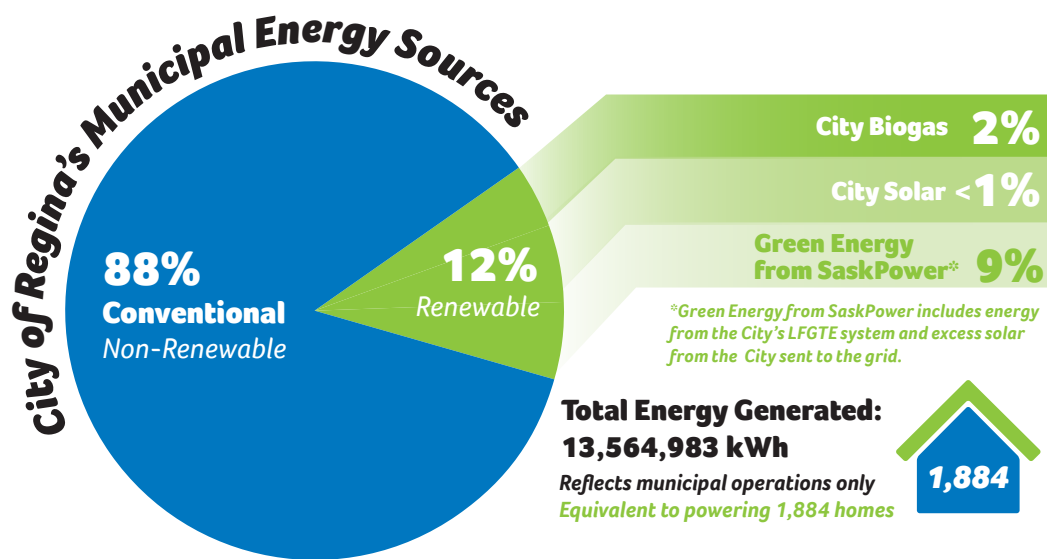
Meeting Our Energy Reduction Target

Setting a target for corporate energy use is important for measuring progress towards our corporate and community objectives. Measuring energy use also helps identify opportunities for improving energy efficiency in different operational areas and for switching to renewable sources and fuels.



Meeting Our Renewable Energy Target

Achieving the Renewable Regina target of a net-zero, renewable community means transitioning to 100 per cent renewable energy sources by 2050 or earlier. The City can accelerate this transition by producing its own renewable energy when possible.

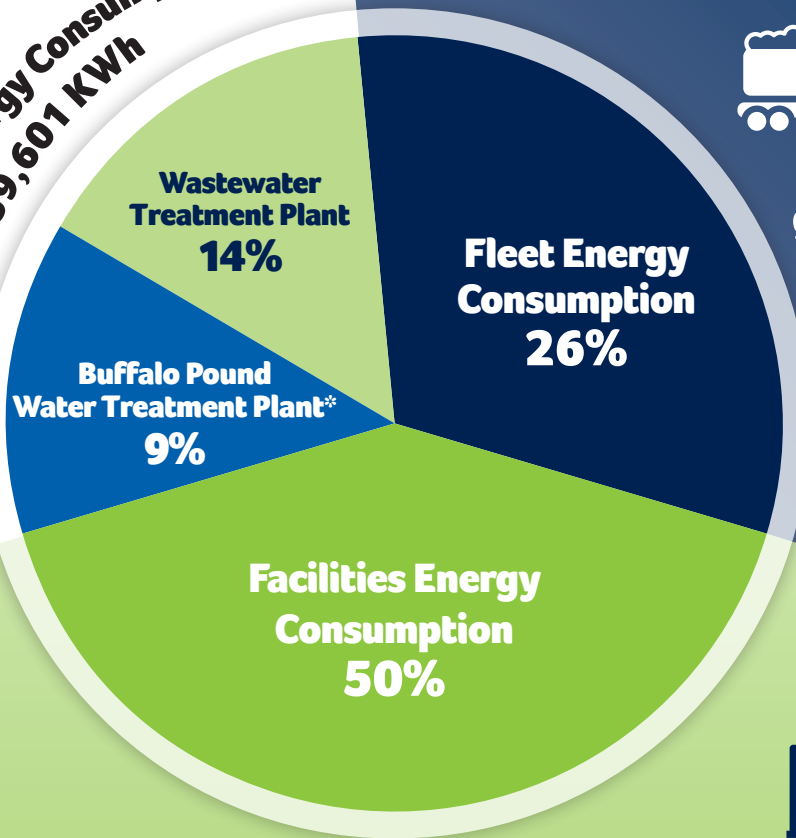


In 2024, 88 per cent of the energy used by the City of Regina was generated from non-renewable sources such as coal, natural gas and oil. The remaining 12 per cent came from renewable sources including solar, wind, biogas and hydroelectric power.

2024 Energy Consumption at a Glance

Most energy used by the City comes from the operation of facilities, including City office buildings, recreation centres, community facilities, such as REAL, and major facilities like the BPWTP and the WWTP.

**TOTAL Municipal Energy Consumption:
284,059,601 KWh**



Transit
53%



Police
7%



Asphalt & Concrete
5%



Water & Sewer
5%



Parks & Recreation
5%



Landfill Operations
5%



Sweeping and Alleys
2%



Garbage Collection
3%



Winter Maintenance
6%



Fleet Services
4%



Fire
2%



Other Light Vehicles
4%



Cemeteries
<1%



Fire Stations
1%



Golf Courses
1%



Traffic Lights/
Street Lights
<1%



Outdoor Pools/
Athletic Fields
1%



Arenas
2%



Sport Parks/
Parks
2%



Regina Police
Service
3%



Asphalt
Plant
3%



Rec
Centres
7%



Offices
17%



Regina
Public
Library
3%



City Water &
Sewer System
37%



REAL
Campus
13%



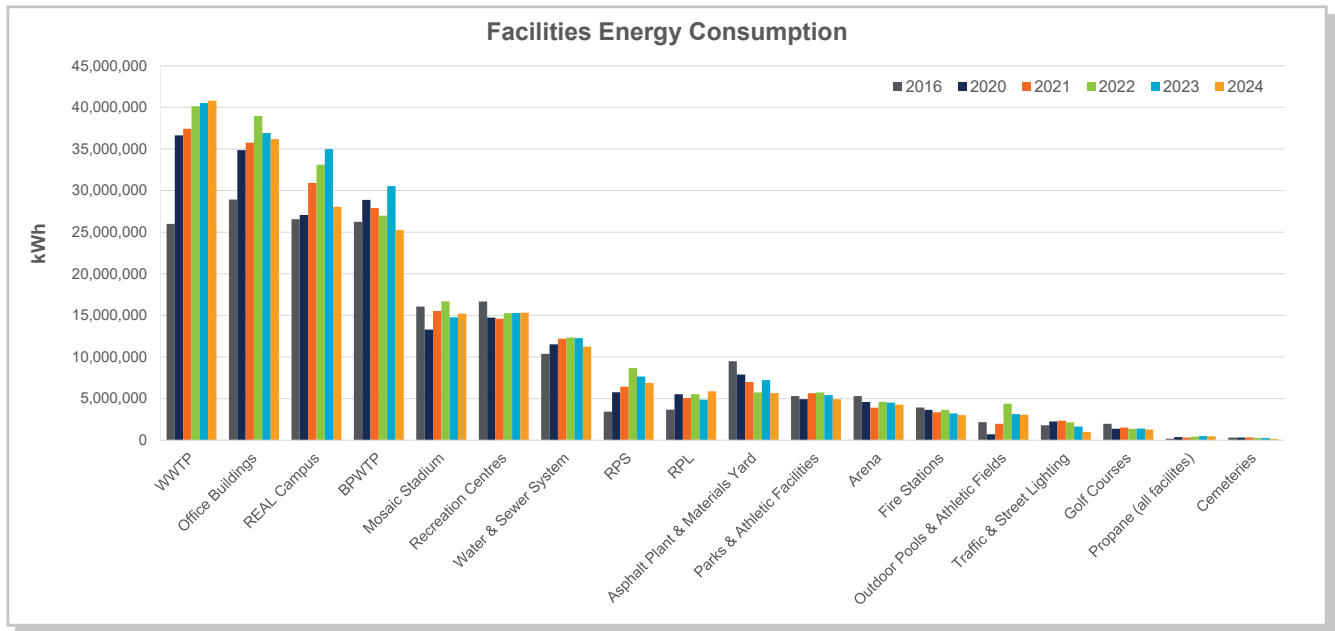
Mosaic
Stadium
7%

* We account for 85% of the Buffalo Pound Water Treatment Plant's energy consumption to reflect Regina's share of the plant's water distribution.

Facility Energy Consumption Trends

The WWTP and City office buildings have consistently been top energy consumers. Other major energy consumers in the City’s portfolio include the REAL Campus and BPWTP.

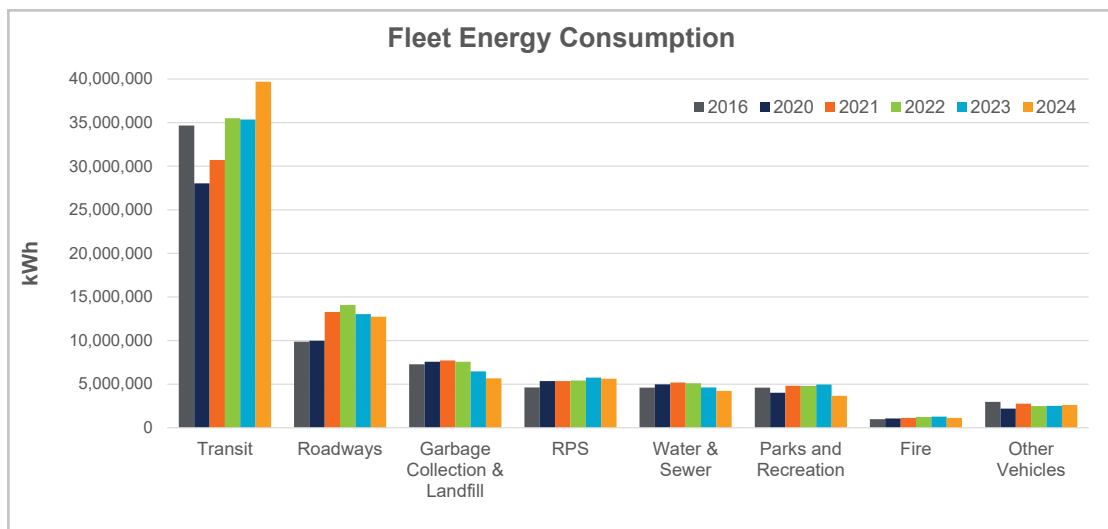
Initiatives to improve energy efficiency in these sectors are underway and can help demonstrate how other building and facility operators in Regina can adopt their own energy efficiency measures and net-zero building standard.



Fleet Energy Consumption Trends

The municipal vehicle fleet primarily uses fossil fuels like gasoline and diesel. Transit has consistently been the largest fuel consumer, followed by Roadways, Waste Collection and Landfill and RPS.

Electrifying transit will have a major impact on supporting the City’s energy transition.

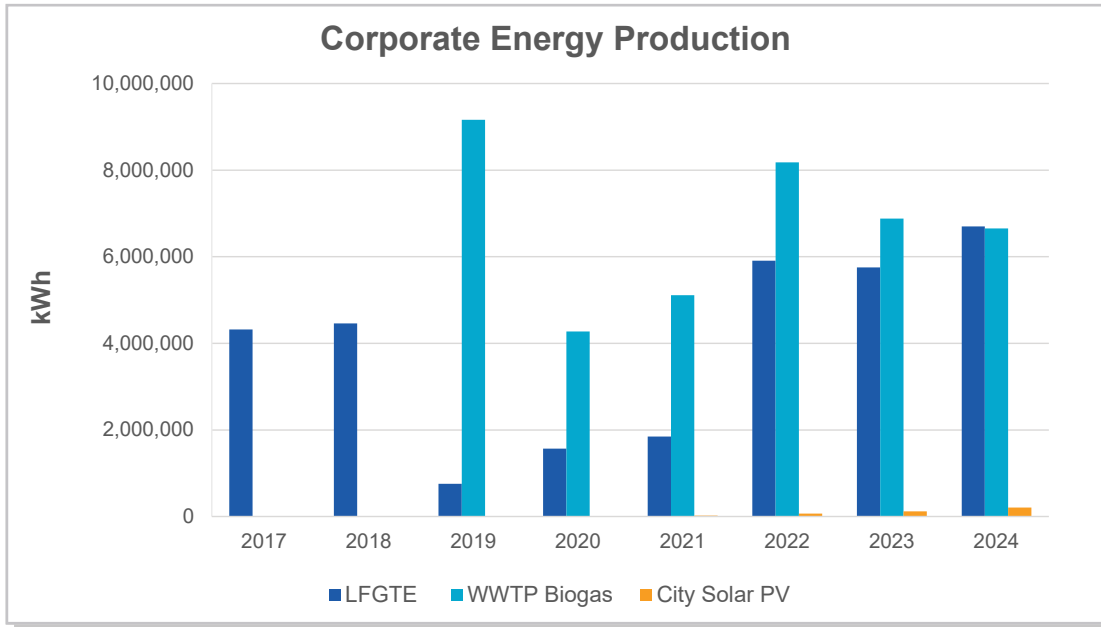


Note: Transit energy consumption in the baseline year of 2016 is consistent with data from 2017–2019 (which is excluded from the graph). The significant drop in 2020 and 2021 is due to the COVID-19 pandemic, contributing to a misleading energy consumption trend.

City of Regina Renewable Energy Production

The City also produces renewable energy on-site, which is used directly through City operations or sold to SaskPower for use in the electricity grid. In 2024, the City generated 13,564,983 kWh of renewable energy, representing a 6 per cent increase compared to 2023. This is equivalent to the energy needed to power 1,884 homes.

The City has significantly increased renewable energy generation over the last seven years, primarily by improving methane capture and utilization through the LFGTE system at the Landfill and biogas heating system at the WWTP.



2022 saw the City's highest energy production levels to date. Although still representing a smaller portion compared to LFGTE and WWTP Biogas, solar energy production is increasing as the City invests in more solar generation capacity.

Looking ahead, the City aims to increase the proportion of renewable energy coming from solar power, aligning with our goal of diversifying and expanding the City's renewable energy sources.

Further opportunities for improving biogas capture and utilization at the Landfill and WWTP are being explored and will be advanced wherever possible.



Community Energy and GHG Emissions

Currently, most energy used involves burning fossil fuels, making energy use a major source of GHG emissions. Therefore, reducing energy consumption generally leads to lower GHG emissions. Moreover, reducing overall energy demand is crucial to support a successful transition to renewable energy sources.

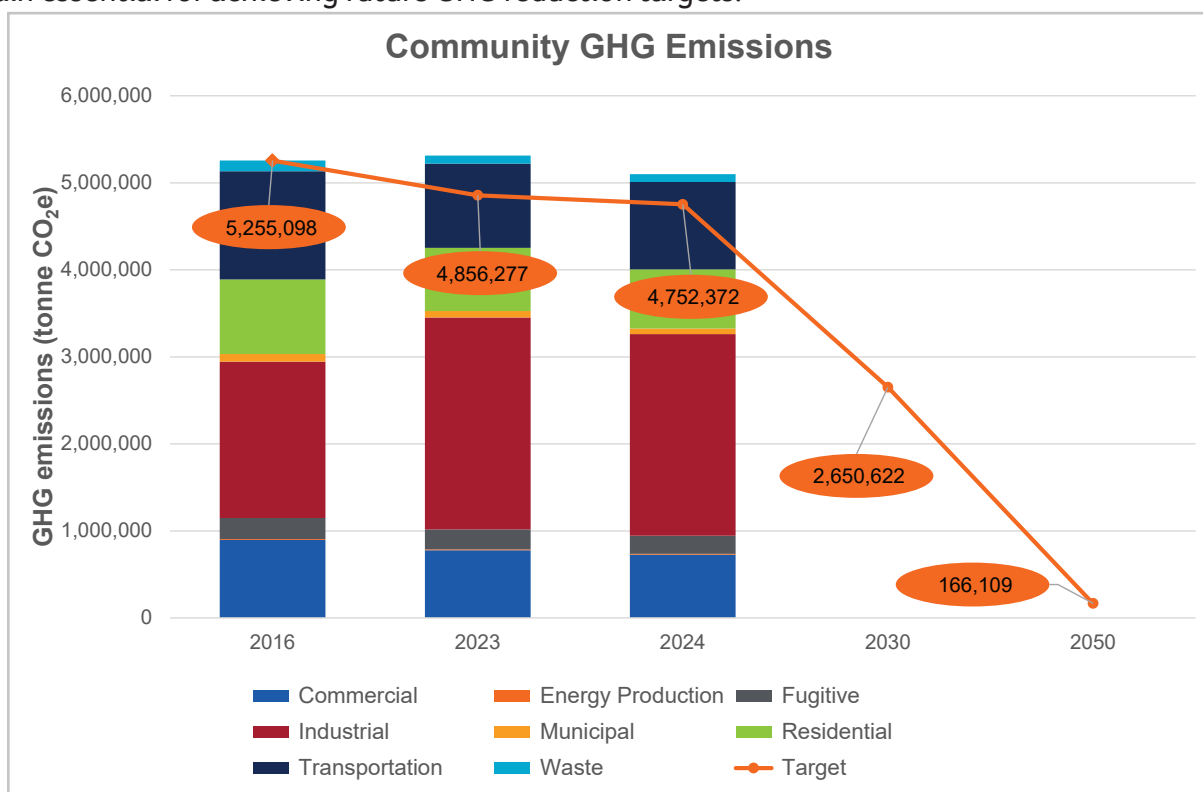
However, some fuel sources, activities and processes produce more emissions than others. This is why tracking both energy and GHG emissions is important.

Community Emissions

The community emissions inventory shows GHG emissions for the city (community), comparing the 2016 baseline year from the Energy and Sustainability Framework with actual estimated emissions in 2024.

In 2024, a total of 5,100,092 tonnes of GHG emissions were generated within the community, falling short of the target of 4,752,372 tonnes by 7 per cent. However, with a 3 per cent decrease from the 2016 baseline and a 4 per cent decrease from 2023, we are seeing a downward trend. This overall decline reflects reductions across most sectors, including commercial, residential, municipal, fugitive (small emissions during transport), waste and energy production. However, industrial emissions increased compared to 2016 while transportation emissions rose slightly compared to 2023.

Continued efforts in industrial emissions control, energy efficiency and renewable energy adoption remain essential for achieving future GHG reduction targets.



Community Energy Consumption

The following graph illustrates community energy consumption. In 2024, there was a 10 per cent decrease in total community energy consumption compared to the 2016 baseline, slightly exceeding the 2024 energy reduction target by 6 per cent. This change represents a 3 per cent decrease from 2023. The commercial, residential and municipal sectors contributed the most to this decline from 2023, while industrial and transportation energy consumption remained relatively high.

This decrease could result from a variety of factors including temporary changes in activity levels or processes, or more permanent improvements such as increased energy efficiency or reduced energy use. However, long-lasting adjustments are crucial for reducing emissions and making the switch to renewable energy.

