

Greenhouse Gas Emissions Update

The City of Edmonton monitors greenhouse gas (GHG) emission trends primarily in two ways: 1) emissions from the community; and 2) emissions from the City of Edmonton corporation. A Greenhouse Gas Inventory is prepared for each of these categories annually. The City of Edmonton's corporate emissions make up approximately two per cent of the total emissions within the community.

The City does not measure greenhouse gas emissions with sensors or monitoring equipment. Instead, Administration uses a standardized calculation and different data sources, such as utility providers, to calculate the amount of greenhouse gas emissions in the community. Edmonton does not currently have real-time emissions information. For example, the 2022 inventories were not finalized until the second quarter of 2023. Greenhouse gas emission monitoring, modeling and tools are continuously improving. There are significant advancements with satellite measurement, advanced telematics, and artificial intelligence that could provide Administration with better GHG emission tools.

Targets

There are two types of carbon neutrality targets: 1) targets for the community and; 2) targets for the corporation. The timing for these targets differ. The Energy Transition Strategy calls for a carbon neutral community by 2050 and a carbon neutral corporation by 2040. The target of becoming a carbon neutral corporation is a decade ahead of the community's target, as a way for the City of Edmonton to demonstrate climate solution leadership.

Community Emission Trends

Edmonton has targets to reduce community emissions 35 per cent by 2025, 50 per cent by 2030 and to become a carbon neutral community by 2050. Edmonton measures progress against a 2005 baseline year of 18.2 million tonnes of carbon dioxide equivalent (tCO₂e). Annual targets have also been established.

- Based on annual emission reduction targets to reach the 2025 goal, Edmonton's community emissions were targeted to be 14.2 million tonnes of carbon dioxide equivalent (CO₂e) or less in 2022 (see Chart 1). This target was not met, as 2022 community emissions in Edmonton were calculated to be 16.1 million tCO₂e (14.8 tonnes per person).
- Overall, Edmonton's total greenhouse gas emissions have reduced by 11.5 per cent from Edmonton's 2005 baseline year, and per capita emissions have decreased by 42 per cent from the 2005 baseline.

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- 2020 and 2021 emissions appear to be outliers, due to the COVID pandemic, and are not reflective of a sustained emission reduction trend. Edmonton's 2022 emissions were 6.6 per cent above 2021 emissions. It is important to note that the increases observed in 2022 are primarily due to increases in energy use in buildings, industrial, and transportation sectors (see Chart 2). These sectors were impacted by the COVID-19 pandemic, and their emissions have increased while pandemic recovery continues. 2022 emissions remain below pre-pandemic levels, with an eight per cent reduction from 2019. The largest decrease is due to decarbonization of the electricity grid, and higher energy efficiency in buildings. Transportation emissions have increased since 2019, as assumed by an increase in province-wide fuel sales.

Edmonton's 2022 emissions results are not trending to meet the annual emission reduction targets, nor the 2025 interim reduction target. Offsetting the residual emissions above the annual emissions targets would cost Edmonton over \$100 million. To get back on track to meet the 2025 target through direct reductions, in 2023 Edmonton's emissions need to be reduced to 13.4 million tonnes (or less), equal to 19 per cent below 2005 emissions or nine per cent below 2022 emissions. While continued and accelerated action will be required to establish an ongoing emissions reduction trend, current City of Edmonton programs and actions are providing the public with options to reduce emissions. This includes the extension of the LRT network; expansion of the active transportation network; Blatchford redevelopment, the launch of the full-scale Clean Energy Improvement Program; the solar rebate incentive program and more.

Chart 1: Edmonton Community Net GHG Emissions and Targets

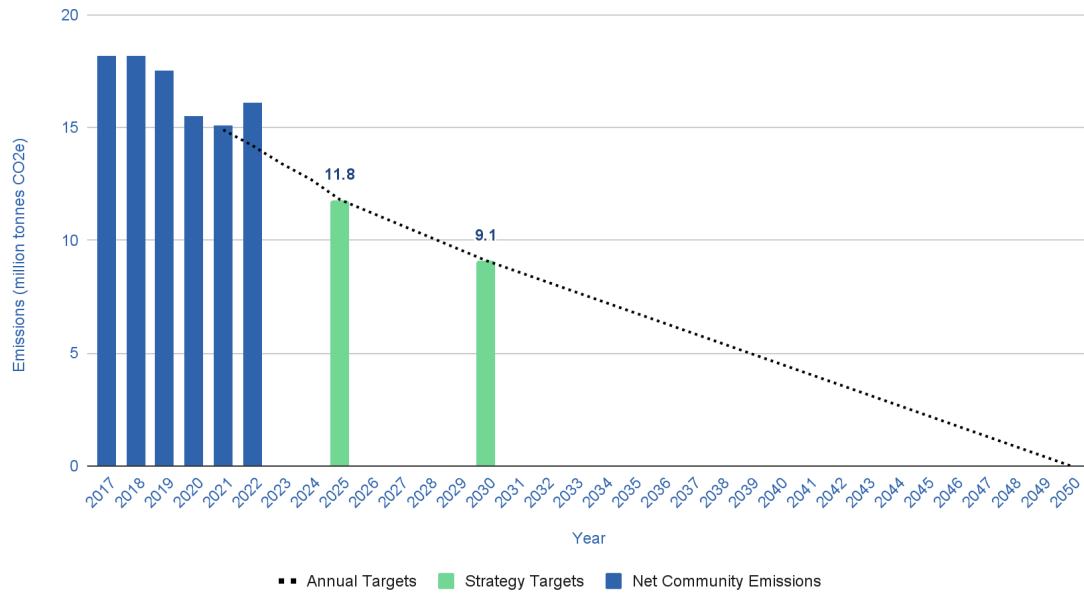
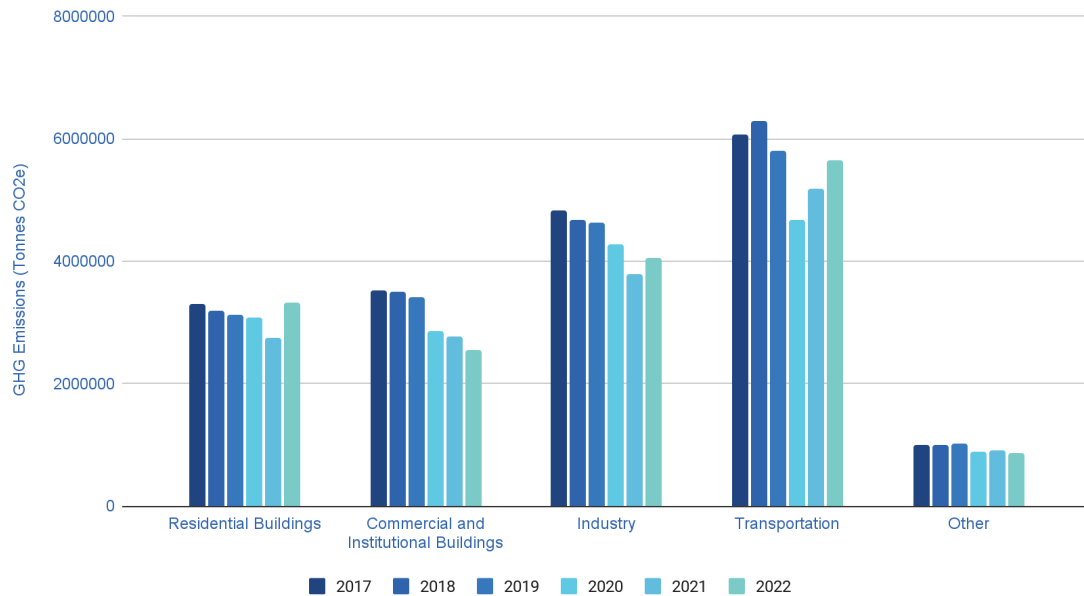


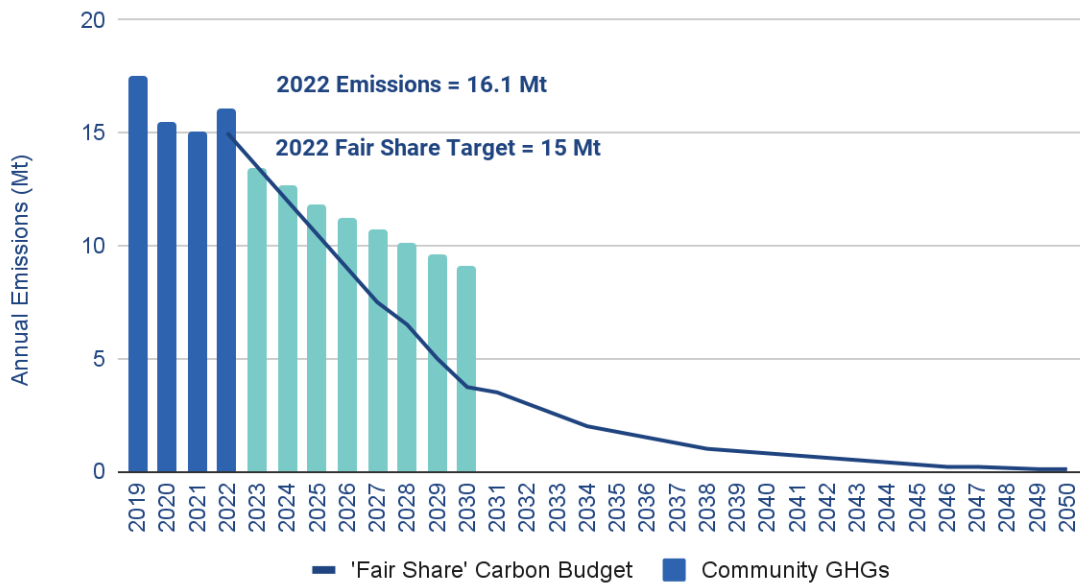
Chart 2: Edmonton Community GHG Emissions by Reporting Sector



“Negative Emissions”

Administration has also identified “negative emissions” needed to stay within the community “fair share” carbon budget (see Chart 3). Achieving Edmonton’s “fair share” (i.e. going further due to Edmonton’s high per capita GDP and to compensate for historic and current high emissions) local carbon budget requires going further than reduction targets and finding ways to also remove emissions from the atmosphere (i.e. negative emissions). Emission reduction targets were established to align with the Paris Agreement, whereas the fair share Carbon Budget is aligned with achieving a fair share of climate action. The fair share carbon budget was based on the theory that cities with above average greenhouse gas emissions and with high per capita GDP need to reduce emissions on a steep decline. In order to stay within the local fair share carbon budget, an additional 22 megatonnes (Mt) of negative emissions are needed from 2022-2030.

Chart 3: Negative Emissions



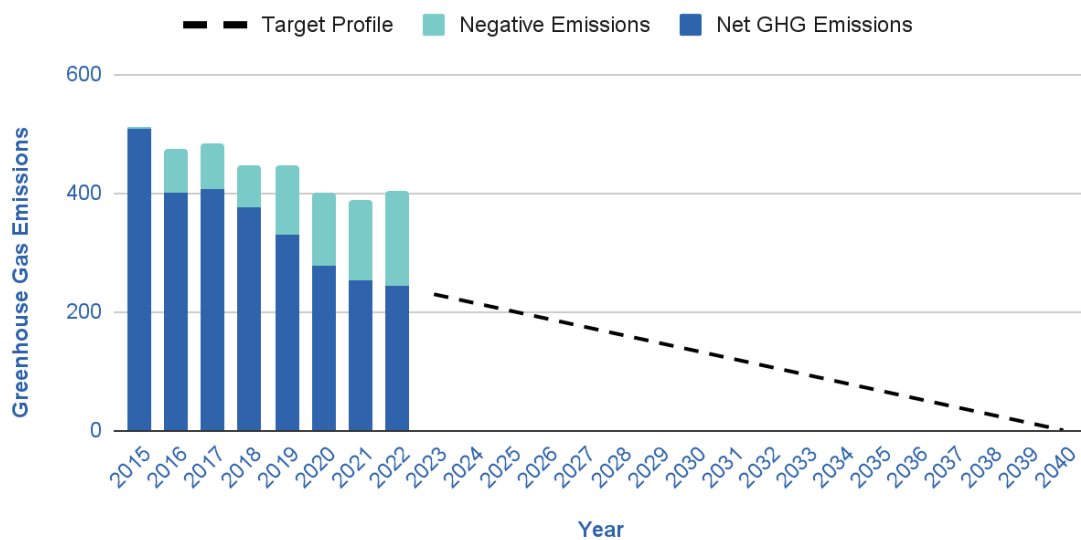
Carbon Neutral Corporation Progress

The City of Edmonton has a goal of becoming a carbon neutral corporation by 2040. The four transformative pathways outlined in the Energy Transition Strategy stand on a foundation where the City of Edmonton demonstrates Climate Solution

Leadership in decision making, actions and advocacy. City of Edmonton corporate emissions measures the amount of GHG emissions from the services provided and infrastructure maintained including City buildings and other facilities (46.9 per cent of total emissions), transit fleet (19.3 per cent of total emissions), waste management facilities and landfills (16.8 per cent of total emissions) streetlights and traffic signals (7.9 per cent of total emissions), and vehicle fleet (9.2 per cent of total emissions). The measure also includes an estimate of the reduction in GHG emissions generated by trees the City plants and maintains and the emissions saved by the City's purchase of renewable energy credits. The City of Edmonton's corporate emissions make up about two per cent of the total emissions within the community.

Chart 4: Annual Corporate Emissions

1,000 Tonnes (carbon dioxide equivalent)



In 2022, the City's total corporate GHG emissions were 405 thousand tonnes of carbon dioxide equivalent (tCO₂e) and net GHG emissions were 243 thousand tCO₂e. Net GHG emissions is the overall balance of emissions produced and emissions removed from the atmosphere (through carbon storage from the urban forest) or emissions avoided by purchasing renewable energy certificates. In 2022, net corporate emissions were 42 per cent below Edmonton's 2005 baseline year and a 3.4 per cent reduction from 2021 levels.

The City's net GHG emissions have been decreasing over the last five years. These reductions have come from various areas. Emissions from City of Edmonton

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buildings, Transit fleet and streetlights have decreased, while emissions from the light duty fleet have remained relatively unchanged (see Chart 5). Additionally, corporate emissions have been offset by the purchase of renewable energy certificates, resulting in the offset of all corporate electricity use emissions in 2022 and equating to a reduction of 39 per cent of the 2022 emissions. Further emissions offsetting from corporate tree planting reduced another one per cent of 2022 emissions. To reach the 2040 target for net zero corporate operations requires another 243,000 tonnes of annual emissions reductions, which equates to 58 per cent of the 2005 emissions baseline.

Chart 5: Edmonton Corporate GHG Emissions by Reporting Sector

