

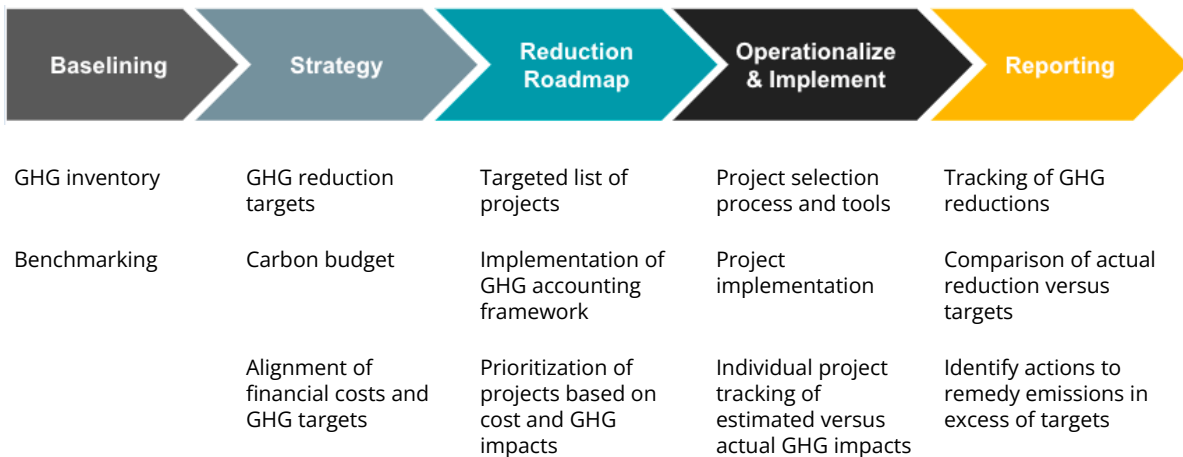
Carbon Budgeting and Accounting Framework Update

On April 19, 2021 the revised Community Energy Transition Strategy and Action Plan was approved by Council. The Energy Transition Strategy outlines how we achieve transformational change to a low carbon city as outlined in ConnectEdmonton and The City Plan and sets targets for Community and Corporate greenhouse gas (GHG) emissions.

To remain informed and assess progress towards a low carbon future, the City needs to implement a Carbon Accounting Framework to integrate greenhouse gas reductions into the City budgeting and prioritization processes. Administration committed to return in fall 2021 with a report that provides current state information in terms of the corporate and community carbon budget, and estimated projections in various climate investment scenarios.

The Greenhouse Gas Reduction Pathway

The implementation of a carbon accounting framework and integrating planned actions to achieve GHG reductions into existing financial processes will help inform decision makers and allow us to report on the progress we are making. As the graphic below shows, this is an iterative process that evolves through assessment of results, strategy realignment, operational enhancements and evaluation and reporting to move towards a net zero GHG emissions future.



Carbon Accounting Framework

The information provided below establishes the community and corporate carbon budgets based on the targets set in the Community Energy Transition Strategy and compares them to a current state baseline emission levels to show the gap (the carbon deficit) between where we are today and where we want our GHG emissions to be.

Carbon accounting is a new field of work, and as such many assumptions were made in the establishment of the budgets and emissions trajectories. The information presented in this attachment is preliminary, based on various assumptions, and is subject to change. The intention is to provide Council with a sense of what a carbon budget for the City and larger community may look like, and more importantly demonstrate the extent of investment that is required to meet our carbon goals. The Carbon Accounting Framework will allow us to track and report on progress made towards reducing our GHG emissions.

Targets and Assumptions

The Community and Corporate Carbon Target Budgets reflect target reductions from 2005 emission levels aimed at achieving a 1.5 degree global average temperature increase as outlined by the Paris agreement and adopted by the City of Edmonton in the Community Energy Transition Strategy. Both the community and corporate emissions trajectories presented here will change as the City begins to make decisions on investments and understands their impacts on GHG emissions.

Key Terminology:

Emission Targets - Desired levels of maximum annual GHG emissions based on a percentage reduction from the 2005 baseline year to achieve GHG emission goals.

Community Carbon Budget - The amount of GHG emissions permitted for the municipality of Edmonton based on emission targets over a period of time.

Community Carbon Fair Share Budget - The amount of GHG emissions permitted for the municipality of Edmonton, over a period of time, based on C40's methodology to assign a "fair" proportion of the global carbon budgets to C40 cities.

Corporate Carbon Budget - The amount of GHG emissions permitted from City owned and operated assets and operations based on emission targets over a period of time.

Current State Baseline Emissions - The amount of GHG emissions inventory (emissions actuals for the years 2015 to 2020) plus the long term emission forecast amounts (for the years 2021 through to 2050). The current state baseline is reflected as current state emissions in the tables below and as we are in the early stages of developing our Carbon Accounting Framework and tool and determining specific actions, the future forecasts do not include impacts of investment or actions towards energy transition.

Carbon Deficit/Surplus - The gap between GHG emissions and the emission targets. A deficit implies that the current state emissions are greater than the target emissions. For future forecast purposes the deficit/(surplus) is measured against the forecasted emissions.

Assumptions:

Carbon Accounting and the related processes are a new field of focus not only for the City of Edmonton but municipalities across Canada as well. As such, assumptions have been applied to this information as we begin to develop the components required to deliver a comprehensive Carbon Accounting Framework.

Attachment 3

- Current state inventories, emissions and resulting targets are based on information we know today. Methodologies used to quantify inventories and emissions forecasts are continually evolving as this field of work matures and knowledge increases. As such, metrics related to targets, forecasts and inventories are retroactively updated to reflect current and best practices in methodology or changes in municipal boundaries and are not fixed in nature. Corporate GHG emissions currently contribute to approximately 2.4 per cent of the total annual community carbon emissions (based on emissions data from 2015 - 2020).
- The emissions targets presented here are aligned to the reductions necessary to limit the increase of global temperature to 1.5 degrees Celsius, as called for in the Paris Agreement. Edmonton's (community) target reductions are set based on the city's 2005 emissions levels to be achieved in the years: 2025, 2030 and 2050 (see targets below for details specific to Edmonton GHG emissions).
- Current state baseline forecast is based on the best information available at this time. More detailed forecasts will be informed by strategic investment decisions.
- The target emissions trajectory was calculated by applying a declining balance percent reduction between target years to achieve the required emissions reduction. This does not include any planned actions, grid factor changes or additional inputs. Future changes to emissions targets based on future investments and carbon budget methodologies may be reflected in a revised emissions trajectory.

Current Net GHG Emissions Targets to Inform the Carbon Budget

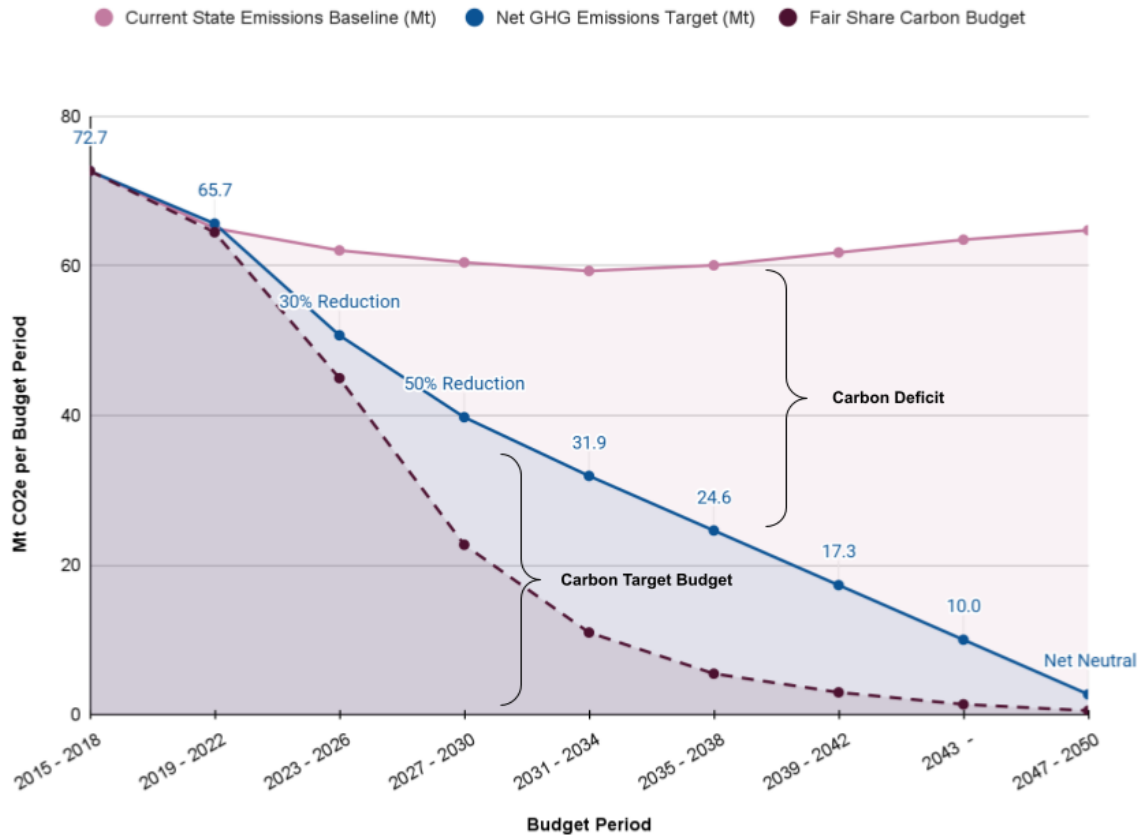
Community Emissions Targets	
35% reduction in Community-based net greenhouse gas emissions by 2025	Energy Transition Strategy, P. 16
50% reduction in Community-based net greenhouse gas emissions by 2030	Energy Transition Strategy, P. 16
Achieve net zero Community-based greenhouse gas emissions by 2050	Energy Transition Strategy, P. 16
Corporate Emissions Targets	
Achieve net zero Corporate greenhouse gas emissions by 2040	Energy Transition Strategy, P. 23

Community Carbon Target Budget

This graph provides a summary of the annual community emission targets compared to the current state emissions, aggregated by the four-year budget periods based on the Paris Agreement targets to limit the increase of global temperature to 1.5 degrees Celsius. Edmonton has set GHG emission reduction targets of 35 per cent by 2025, 50 per cent by 2030, and being carbon net neutral by the year 2050 from the baseline year of 2005, as previously communicated in the Energy Transition Strategy.

Edmonton’s “fair share” of the global carbon budget using the C40 methodology is also shown here, as represented by the dashed line in the graph below. The fair share carbon budget is based on the theory that cities with above average GHG emissions and with high per capita GDP need to reduce emissions on a steep decline.

Edmonton Community Carbon Target Budget



As shown in the table below, the cumulative deficit of Community GHG emissions by the target year of 2025 is 6.5Mt, increasing to 31.4Mt in 2030 and reaching a cumulative deficit of 254.3Mt from being net neutral in 2050.

Cumulative Community Carbon Target Emissions (Mt)	2025	2030	2050
Cumulative Current State Emissions	111.6	187.6	497.1
Cumulative Target Emissions	105.1	156.2	242.8
Cumulative Carbon Deficit	6.5	31.4	254.3

Annually the table below shows that in 2025 there is a deficit of 3.6Mt of community GHG emissions from the target, a 5.7Mt deficit in 2030 and a 16.4Mt deficit from being net neutral in the year 2050.

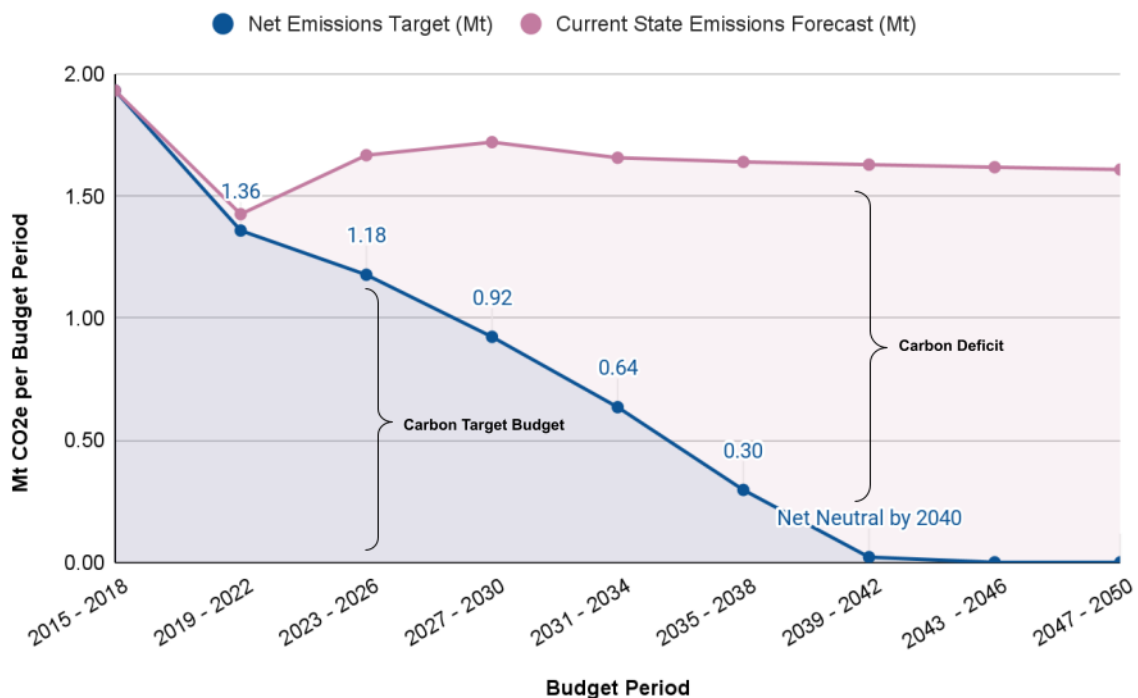
Annual Community Carbon Target Emissions (Mt)	2025	2030	2050
Current State Emissions	15.5	14.8	16.4
Target Emissions (in year)	11.9	9.1	0.0
Annual Carbon Deficit to Target	3.6	5.7	16.4

Corporate Carbon Budget

Corporate carbon emissions contribute to approximately 2.4 per cent of the total annual Community GHG emissions output based on the average annual corporate GHG emissions inventory from 2015 to 2020.

This graph provides a summary of the annual corporate emission targets compared to the current state emissions, aggregated by the four-year budget periods. The corporate emissions target is to be net neutral by the year 2040, as indicated in the Energy Transition Strategy.

City of Edmonton Corporate Carbon Target Budget



Attachment 3

Given the current state emissions forecast of approximately 0.41Mt a year, the Corporate cumulative GHG emissions deficit is 4.5Mt by the target of being net neutral in 2040.

Cumulative Corporate Carbon Target Emissions (Mt)	2040
Cumulative Current State Emissions	8.9
Cumulative Target Emissions	4.4
Cumulative Carbon Deficit	4.5

The corporate annual GHG emissions deficit is 0.4Mt, compared to the target of being net neutral in 2040, which is also equivalent to the annual amount of emissions.

Annual Corporate Carbon Target Emissions (Mt)	2040
Current State Emissions	0.4
Target Emissions (in year)	0.0
Annual Carbon Deficit to Target	0.4

Investing in a Low Carbon Future

Meeting the carbon reduction targets set in the Energy Transition Strategy will require significant levels of private and public investment. In total, the strategy requires approximately \$42 billion of public and private investment over the next 30 years, averaging \$1.4 billion annually. The level of public investment required to catalyze private investment and for local infrastructure is estimated to be approximately \$300 million. Shared with federal and provincial governments, a targeted City funding share is one-third or \$100 million annually.

As discussed in the Community Energy Transition Strategy provided to City Council on April 12, 2021 (CR_UFCSD00209 Attachment #5 Funding Approach), the City's funding share can be aggregated into two categories:

- \$75 million annually for capital infrastructure including, but not limited to:
 - Electrification of bus fleet, deep facility retrofits, district energy systems and expansion of active transportation network

- \$25 million annually for catalyst investment to encourage community uptake

The impacts of investment scenarios have not been reflected in the information presented. Investment scenarios in this field can vary widely and will be better informed through a discussion on interim targets, scheduled with Council in Q1 2022. This information will inform the development of annual emission reductions required to achieve targets, corrective actions and associated required investment to be presented in Q2 as part of the Annual Climate Update and will allow us to update and refine the emission targets trajectory presented above with planned action details to reduce the carbon deficit.

Prioritization of financial resources will be critically important to achieve the ambitious targets set for GHG emissions while managing the pressure placed on property tax rates. Please refer to the Community Energy Transition Strategy and Action Plan for comprehensive information on the strategies and financial investments required to achieve the four pathways of:

- Renewable and Resilient Energy Transition
- Low Carbon City and Transportation
- Emissions Neutral Buildings
- Nature Based Solutions and Carbon Capture

The implementation of the Carbon Accounting Framework within City financial and decision making processes will be an important tool to allow Council and Administration to evaluate our work against our goals and understand what financial pathways we have to get there.

Next Steps for Carbon Accounting Framework

Administration is continuing to develop the Carbon Accounting Framework for implementation in 2022 to contribute to the 2023 - 2026 capital and operating budgets and financial processes. Deliverables of this initiative include:

- Q1 - Q2 2022: Carbon Accounting Framework/Tool - The implementation of the framework will provide a suite of tools that will integrate a carbon lens with budgeting, prioritization and reporting processes. The tool will apply a climate lens to assess carbon impacts of financial decisions (carbon impact assessments); help allocate and track carbon budget and expenditures for City operations; integrate with budget requests and IT applications; and provide reporting to Council, for the Task Force on Climate-Related Financial Disclosures and other global organizations.
- Q4 2022: Proposed Capital/Operating Budgets - Use of the Carbon Budgeting and Accounting Framework to help support capital and operating investment decisions that help achieve emissions targets or reduce the carbon deficit. The reporting would highlight the carbon impacts associated with the proposed services packages and capital projects included in the multi-year budgets and demonstrate how the environmental lens to assess carbon impacts was applied in the priority-based budgeting principles.
- 2023 and beyond: Ongoing Training, Education, Capacity - Continue to improve and enhance carbon budget and accounting framework knowledge and integration throughout the organization.