


EDMONTON'S COMMUNITY ENERGY TRANSITION STRATEGY & ACTION PLAN

Publication Date: April 29, 2021

The logo for the City of Edmonton, featuring the word "Edmonton" in a white sans-serif font inside a white square border.

Edmonton

A photograph of the Edmonton skyline, featuring the modern glass and steel architecture of the TELUS Convention Centre on the left and several other high-rise buildings in the background. The entire image is overlaid with a semi-transparent blue filter. The text is centered in the right half of the image.

**ALBERTANS AND
EDMONTONIANS HAVE
A PROUD HISTORY OF
BEING SOME OF THE BEST
ENERGY INNOVATORS IN
THE WORLD. THE UPDATE
OF EDMONTON'S COMMUNITY
ENERGY TRANSITION IS AN
OPPORTUNITY TO RE-IMAGINE
OUR CITY AND THE ENERGY
MARKETS WE WILL LEAD.
THE ENERGY TRANSITION
REPRESENTS A ONCE IN A
LIFE-TIME OPPORTUNITY
TO CREATE A NEW ERA OF
ECONOMIC GROWTH IN THE
REGION. THIS IS OUR NEXT
GREAT OPPORTUNITY.**



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INDIGENOUS ACKNOWLEDGEMENT

The lands on which Edmonton sits and the North Saskatchewan River that runs through it have been the sites of natural abundance, ceremony and culture, travel and rest, relationship building, making and trading for Indigenous peoples since time immemorial.

Edmonton is located within Treaty 6 Territory and within the Métis homelands and Métis Nation of Alberta Region 4. We acknowledge this land as the traditional territories of many First Nations such as the Nehiyaw (Cree), Denesuliné (Dene), Nakota Sioux (Stoney), Anishinaabe (Saulteaux) and Niitsitapi (Blackfoot).

The city of Edmonton owes its strength and vibrancy to these lands and the diverse Indigenous peoples whose ancestors' footsteps have marked this territory as well as settlers from around the world who continue to be welcomed here and call Edmonton home.

Together we call upon all our collective honoured traditions and spirits to work in building a great city for today and future generations. We would like to thank the Indigenous communities who participated in the strategy update engagement sessions. The contributions provided were greatly appreciated and it is hoped that the ideas, comments and input shared are reflected here.

FOREWARD FROM THE ENERGY TRANSITION CLIMATE RESILIENCE COMMITTEE

We are incredibly proud of how far the City of Edmonton's climate policy has come since the Energy Transition Advisory Committee was formed in 2015. City Administration has worked hard to implement the original Community Energy Transition Strategy through energy retrofit and solar energy programs, expanding electric vehicle and bike infrastructure and the procurement of green electricity for municipal operations. In 2018, the City hosted the Intergovernmental Panel on Climate Change's (IPCC) Cities Conference and created the Edmonton Declaration. Endorsed by more than 4,500 North American municipalities, the Declaration committed Edmonton to action to meet the Paris Agreement and the 1.5°C goal. In 2019, City Council declared a climate emergency and directed City Administration to update Edmonton's Community Energy Transition Strategy to align our action with Edmonton's ambition to live within a 1.5°C world.

To address the urgency of the climate crisis and materially reduce our carbon footprint to protect against the worst impacts of climate change, we must redefine and reclaim our city as a leader in climate and energy. This is the key to solving the triple threat of climate, COVID-19 and the economy. The world is recognizing that Environmental, Social and Governance (ESG) criteria will determine the leaders and laggards of a prosperous, just and equitable world. Getting this right will be what brings investment into our city and inspires the next generation of Edmontonians.

We are proud to stand behind Edmonton's Community Energy Transition Strategy & Action Plan. The plan is strategic, well-thought out and ambitious. It will establish Edmonton as a leader on climate action and adaptation while placing people at the centre of the transition. The Edmonton imagined here is not only net zero, but also healthier, with more active citizens, closer communities and a vibrant, prosperous economy. As you read this strategy, we hope you feel inspired by our City's plan for energy transition, resilience, adaptation and innovation as a leading northern city. We hope too that you feel inspired to join us in the crucial next steps to implement the plan and transform our city.

This plan is our call to action, for the City, our committee and Edmontonians. We must all do the work to turn this vision into a reality and that work must start today. We hope you'll join us.

Sincerely,

Camille Jasper-Fabiyi
Co-Chair Energy Transition Climate Resilience Committee
Shafraaz Kaba
Co-Chair Energy Transition Climate Resilience Committee

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EXECUTIVE SUMMARY

The update of Edmonton's Community Energy Transition is an opportunity to re-imagine our city and the energy markets we will lead. The energy transition represents a once in a life-time opportunity to create a new era of economic growth in the region. This will require transformational change at an unprecedented rate.

Globally, it is expected that tens of trillions of dollars will be invested in the transition. Edmonton businesses and industry could market, support and sell its energy transition expertise to this growing global demand. This is our next great opportunity, and is a key component of Edmonton Economic Action Plan which offers a roadmap to build a vibrant, inclusive, and sustainable economy.

The transition is unfolding in front of our eyes. Over the last few years, leading companies in our region have invested in innovative projects that have created our global competitive advantage. Suncor has recently announced a new cogeneration facility that will help green Alberta's electrical grid and avoid the equivalent emissions of 550,000 passenger vehicles per year. They have also announced the Forty Mile Wind Project, which will provide the equivalent of 100,000 homes' electricity use per year. The region is now home to the world's largest CO₂ pipeline and a significant carbon capture and storage facility. The region is also home to the first-of-its-kind hydrogen blending project.


There are emerging businesses in bitumen beyond combustion, lithium refinement, smart grid, low carbon hydrogen for heavy transportation and heating, building automation, energy efficiency and green buildings. Edmonton is well-situated to be the place for manufacturing, distribution and construction. This will attract new talent dedicated to technology innovation, create, grow and diversify our economy and contribute to meeting climate and energy goals.

Albertans and Edmontonians have a proud history of being some of the best energy innovators in the world. This expertise has led to growth and economic prosperity. We have responded to and supplied the global markets with our energy products for the last 50 years, and we can respond to and supply the energy products the global markets are demanding for the next 50 years.

To further catalyze this growth, we propose four interconnected pathways which are built on a foundation of climate solution leadership. The pathways represent bold and brave actions, and are grounded in the principles of prosperity, just and equitable, urgent and dynamic, collaborative and transformative. The interconnected pathways are:

- ▶ A **Renewable and Resilient Energy Transition** that attracts the next generation of energy innovators to the region while transitioning Edmonton to 100% decarbonized energy.
- ▶ A **Low Carbon City and Transportation** that continues to build on the transformative city building efforts outlined in The City Plan and those that are currently underway such as the Blatchford carbon neutral development.
- ▶ **Emission Neutral Buildings** that are highly energy efficient, powered by renewable energy, and create a thriving energy efficiency industry.
- ▶ **Carbon Capture and Nature Based Solutions** that catalyze innovative technology and efforts to make a greener and healthier city.

These pathways will require a smart and agile implementation approach. As with many transitions there are built-in tensions and difficult trade-off decisions. The Energy Transition Strategy and Action Plan will need to use the right levers of change at the right time to achieve prosperity in a just and equitable way and to achieve significant GHG reductions. Transformational change is achievable, but there will be many challenges and opportunities during this transition.

A blue-tinted photograph of the Edmonton skyline, featuring several high-rise buildings and a bridge over a river. The image is used as a background for the text.

**THE ENERGY
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CLIMATE RESILIENCE

Our climate is already changing, both globally and locally. It is affecting our weather, economy, environment and health. There is international recognition that climate change is an urgent threat and that global pursuits are needed to reduce greenhouse gas emissions and limit global warming. Historical climate records show that the world is warming, and at unprecedented rates. These climate records also indicate that Edmonton is warming at a faster rate than the global average. Action needs to be taken locally, as well as globally, to limit further greenhouse gases being emitted into our atmosphere.

While climate change efforts are underway at national and provincial levels, cities are often leaders in climate change action. Cities around the world are taking two approaches to addressing climate change. Mitigation refers to actions taken to reduce greenhouse gas emissions, whereas adaptation refers to actions taken to prepare for impacts of climate change, thereby reducing the negative effect. Edmonton's strategic plan, ConnectEdmonton includes a goal of Climate Resilience which includes both mitigation and adaptation outcomes. The City of Edmonton's *Climate Resilient Edmonton: Adaptation Strategy and Action Plan*, is the path forward for adapting to a changing climate.

Decisions made today about how we design and build our city, transportation systems, infrastructure and energy will set the course for our future greenhouse gas emissions. Steps to build this future are already being taken. There are exciting leaders globally, nationally, provincially and locally.

The voices and actions in the community are inspiring. There are leaders in the business and entrepreneur community, academic community, maker community, in our community leagues and advocates, as well as the countless individuals taking climate actions everyday. The time to act is now. Edmontonians see the challenge and opportunities and are working to find solutions and contribute to the discussions and actions that create the path forward.

Edmonton's Community Energy Transition Strategy and Action Plan, presented here, is the path forward for a low carbon city and is the City of Edmonton's climate change mitigation plan under section 615.4 of the City Charter. The City of Edmonton is taking a dynamic approach to the Community Energy Transition Strategy and Action Plan, reviewing these strategic documents every five years and updating as needed to stay relevant and to meet City Charter requirements.

DECISIONS MADE TODAY ABOUT HOW WE DESIGN AND BUILD OUR CITY, TRANSPORTATION SYSTEMS, INFRASTRUCTURE AND ENERGY WILL SET THE COURSE FOR OUR FUTURE GREENHOUSE GAS EMISSIONS.

OUR STARTING POINT

Our starting point has changed. We are entering a new era of economic growth at the same time that a global pandemic has emerged. This new starting point has become our greatest opportunity.

The COVID-19 pandemic has presented health, economic, and social challenges that have impacted economies worldwide in an unprecedented way. Heading into the pandemic, the Edmonton economy was still recovering from the 2015/16 recession. As a result of the pandemic, Edmonton's economy is estimated to have contracted by 6.4% in 2020. A return to pre-COVID levels of output is not expected until around 2022. The pandemic and its impact on the Edmonton economy has not only introduced a significant setback to our recovery but has the potential to redefine normalised behaviour. Public health measures that were introduced to contain the spread of the virus have reduced business activity and affected household consumption, including travel and the use of public spaces. The pandemic and its impact on the Edmonton economy has not only introduced a significant setback to our recovery but has the potential to redefine everyday habits. It is unknown at this time whether these impacts will be temporary and if so, when behaviour will return to pre-COVID levels.

This global economic shock is impacting employment and investment across all sectors, including energy. The demand for energy has been impacted by the pandemic, reduced energy demand globally in 2020 (relative to 2019), and a sharp pullback in global energy investment. The International Energy Agency identified governments have a unique opportunity today to boost economic growth, create millions of new jobs and put global greenhouse gas emissions into structural decline through a sustainable recovery for the energy sector.¹ If done correctly, the energy transition can help Edmonton recover from the COVID public health and economic crisis, and put our city in a stronger position into the future. However, this will require a transformational change; one that will be difficult.

The global economy is changing. **We are entering a new era of economic growth.** Moving forward, Edmonton is

entering a phase of slow economic recovery and a lower medium-term growth. This will mean that the City will need to explore new economic recovery mechanisms for Edmonton's economic recovery that test the bounds of its existing monetary and fiscal policy. This can be driven by the interaction between rapid technological innovation, sustainable infrastructure investment, and increased resource productivity.² The Paris Agreement was adopted by nearly every nation and these commitments and targets have set a clear signal to the market on the inevitability and pace needed for the global energy transition. This will define the global economy of the 21st century.³ Over the coming decades, **the national plans under the Paris Agreement represent tens of trillions of dollars in investment**⁴ and leading companies and investors are creating a new competitive race.

The businesses who can deliver the innovation and solutions will seize the international markets who are looking for solutions. The demand exists and will only grow. Canada's clean technology developers and adopters are well positioned to compete and win in this global market.⁵ In Canada clean technology contributed \$26.7 billion (2016) to GDP, and has an annual growth rate of 3.4% per year since 2007. The Government of Canada has a goal that clean technology is one of Canada's top five exporting industries and that by 2025 clean technology's contribution to GDP will grow to \$80 billion.⁶ The federal government has plans to make Canada the most competitive jurisdiction in the world for clean technology companies. This is an economic growth opportunity that is recognized by Canada's industry leaders. Nearly fifty of Canada's major business leaders recognize this as the country's competitive advantage and in an open letter encouraged governments to lead a collaborative and bold economic recovery that builds on the strengths of our existing economy and talent to capture the growth markets of the future.⁷

OUR STARTING POINT CONT'D

Edmonton's Economy 2.0 – the story unfolding before our eyes

Our local economy is changing. The Energy industry will continue to be a critical and fundamental structural platform for our economy. There are transformative, innovative changes taking place in industry that are addressing climate resilience. Edmonton has an opportunity to capitalize and diversify the economy through new investments within emerging industries in the energy and innovation sectors and benefit from well established companies that are transforming their businesses.

Many companies – globally, in Alberta and the Edmonton metro region – are transforming their businesses to capitalize on, respond to and provide leadership to energy transition and climate challenges. Making the transition to a low carbon economy is challenging but many companies in the private sector are finding new ways of responding and leading to achieve positive climate outcomes while creating new economic opportunities.

Right here in the Edmonton Metropolitan Region, Suncor has recently announced a new cogeneration facility that will help green Alberta's electrical grid and avoid the equivalent emissions of 550,000 passenger vehicles per year. They have also announced the Forty Mile Wind Project, which will provide the equivalent of 100,000 homes' electricity use per year. Adding to all that, the completion of Canada's electric highway, with EV charging stations at our Petro-Canada stations from coast to coast. Suncor is embedding sustainability as a value driver in day to day business decisions.

There are emerging businesses in bitumen beyond combustion, including lithium refinement, smart grid, low carbon hydrogen for heavy transportation and heating, building automation, energy efficiency and green buildings, which Edmonton is situated to support by way of manufacturing, distribution and construction. This has the potential to attract new talent dedicated to technology innovation, and create, grow and diversify our economy

and contribute to meeting climate and energy goals. As well, this presents an opportunity for retraining displaced workers in other industries.

In recent years key projects in the region have given us a competitive advantage to supply global markets with the energy services and products the world is now demanding. The region is home to the world's largest CO₂ pipeline and a significant carbon capture and storage facility. Also the first-of-its-kind hydrogen blending project is being advanced in the region.

We are home to a young, well-educated, talented workforce and we have demonstrated innovation and a strong tradition of research and development with respect to cutting edge technologies. In 2016, Edmonton's green energy economy was responsible for generating \$3.59 billion in gross output, \$1.79 billion in gross domestic product (GDP), and employed approximately 14,669 direct jobs, equal to 2.0% of the region's workforce.⁸ Our value chain has strengths that span all elements including: design, engineering and technical services, construction and manufacturing, operations, and broader ecosystem supports. Edmonton's economy 2.0 has been unfolding before our eyes.

Edmonton's Energy Transition – the story is already in progress

Our efforts towards becoming an energy sustainable and climate-resilient city began in earnest in 2013. That year, a Citizens' Panel on Edmonton's Energy and Climate Challenges provided City Council with the recommendation that the City of Edmonton take the measures needed to become a low carbon city by 2050. As a result, Edmonton's Community Energy Transition Strategy was developed to outline how we could collectively make Edmonton into a sustainable energy city. The Strategy was unanimously approved by City Council in 2015, and was designed to accelerate Edmonton along a low carbon pathway by taking direct and indirect actions to reduce greenhouse gas (GHG) emissions and increase renewable energy and energy efficiency across all sectors.

OUR STARTING POINT CONT'D

Over the last five years, with oversight of City Council (through an established Council initiative) and the advice of the Energy Transition Climate Resilience Committee, the City of Edmonton has implemented various programs and initiatives including:

- ▶ Adoption of Edmonton's Electric Vehicle Strategy and roll out of electric vehicle charging facilities
- ▶ Development of protected bike lanes in the downtown core
- ▶ Extension of Edmonton's LRT network and Edmonton Transit Services deployment of its first battery-electric buses into service, and single largest purchase of electric buses (40) in Canadian history
- ▶ Ongoing development of Blatchford – planned to be a carbon-neutral community for 30,000 residents that uses 100% renewable energy
- ▶ Approval and funding of the Downtown District Energy System
- ▶ Launch of Change Homes for Climate: Residential Solar Program that offers a rebate to install rooftop solar and the launch of an online solar potential map
- ▶ Launch of Change Homes for Climate: Home Energy Plan Program that offers a rebate for EnerGuide evaluations and the launch of an online home energy map
- ▶ Launch Change Homes for Climate: Home Energy Retrofit Accelerator (HERA), a program that offers rebates to homeowners for energy efficiency retrofit investments.
- ▶ Launch of Change Buildings for Climate: Building Energy Retrofit Accelerator (BERA), a program that provides rebates for energy efficiency retrofits on commercial buildings 10,000 sq ft and larger
- ▶ Launch of Change Mobility for Climate: A program that provides rebates for electric vehicle charging infrastructure
- ▶ Launch of Building Energy Benchmarking Program, a rebate for a voluntary program that invites Edmonton's large commercial, institutional, industrial, and multi-family buildings to submit their energy performance data to the City for benchmarking and disclosure purposes – the first program of its kind to be hosted by a municipality in Canada
- ▶ Launch of Corporate Climate Leaders Program, where Edmonton corporations come together to analyze their own carbon footprints, create a reduction plan, and report their progress towards targets in a public forum so successes and challenges can be shared with their peers
- ▶ Launch of a community Eco-City Grant Program to support the community to take action to reduce GHG emissions
- ▶ Launch of CitiesIPCC Legacy Research Grant Program which provides research grants to advance knowledge on how Edmonton can become an energy sustainable and climate resilient city.
- ▶ Launch of Green Leagues Program to provide support to the Edmonton Federation of Community Leagues
- ▶ Launch of Change for Climate Community Outreach and Engagement Program, a community outreach program that encourages climate action through activities including public events, newsletters and video storytelling
- ▶ Awarded FCM GMF funding (loan/grant) to support a Clean Energy Improvement Program pilot scale initiative for residential and commercial energy efficiency / renewable energy retrofit financing.

These programs are just examples of the many energy transition efforts underway across the community.

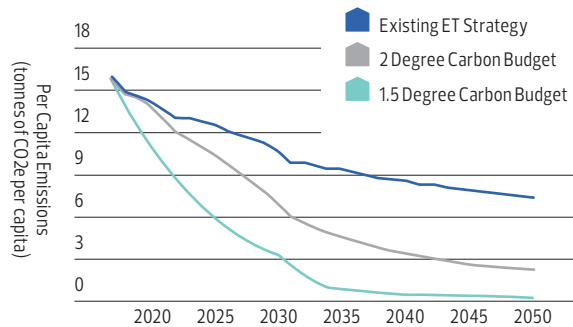
BACKGROUND — GETTING TO 1.5

Since Edmonton's Community Energy Transition Strategy was first developed key events have accelerated the global energy transition.

- ▶ **The Paris Agreement was adopted by nearly every nation.** The agreement commits nations to limit the rise of global average temperatures well below 2 degrees Celsius and to pursue efforts to limit the temperature increase even further, to 1.5 degrees Celsius. This **requires an unprecedented reduction in greenhouse gas emissions.**
- ▶ An Intergovernmental Panel on Climate Change special report on the impacts of global warming of 1.5 degree Celsius identified that to limit warming to 1.5 degrees, global CO₂ emissions need to decline by about 45% by 2030, reaching net zero around 2050.

In order to build on and update the existing Energy Transition Strategy to reflect ambitious 1.5 degree targets, and to align it with the City's long term vision as outlined in ConnectEdmonton and The City Plan, technical analysis was undertaken. ConnectEdmonton's Goal for Climate Resilience states: Edmonton is a city transitioning to a low-carbon future, has clean air and water and is adapting to a changing climate. To understand what the transition to a low-carbon future looks like, a local carbon budget was calculated. Local carbon budgets are "bleeding edge" work, and the thinking, precision and methodologies around this field of work will continue to be

Figure 1 Edmonton's Local Carbon Budget Trajectory



refined based on new knowledge and improved scientific understanding. The carbon budget shows "how far and how fast" we have to move in terms of emission reductions, and the magnitude of change required. Meeting Edmonton's local carbon budget requires rapid reduction of greenhouse gas emissions and carbon neutrality by 2050.

The technical work also identified that there is no single measure (or even a handful of measures) that can reduce emissions to levels to align with Edmonton's local carbon budget. The work identified that a suite of actions across different sectors are required, and the magnitude of emissions reductions in any one measure are relatively small, but collectively can achieve deep reduction targets.

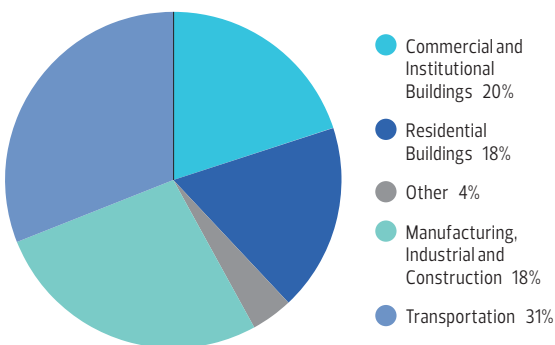
BACKGROUND – GETTING TO 1.5 CONT'D

From a greenhouse gas emission perspective, Edmonton is in a challenging starting point. Edmonton's exceptional growth rate over the last decade has meant total GHG emissions have increased, though the average per person emissions have decreased. Despite this progress, Edmonton still has one of the highest per capita greenhouse gas emissions levels in the world (18 tonnes/person). The four major sources of greenhouse gas emissions in Edmonton are:

- ▶ Transportation – 31% of Edmonton's total emissions;
- ▶ Manufacturing, industry and construction – 27%;
- ▶ Commercial and institutional buildings – 20%; and
- ▶ Residential buildings – 18%.

The remaining emissions come from agriculture, forestry, waste and waste water treatment, and fugitive and non-specified sources. Edmonton's river valley and urban forest capture approximately 1% of the city's emissions.

Figure 2 Edmonton's GHG Emissions by Sector

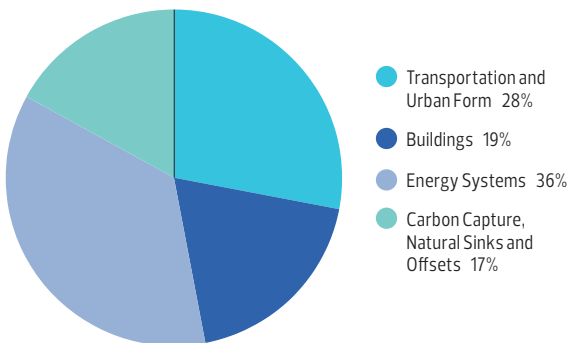


The work to update the strategy identified that with rapid and significant actions, Edmonton's emissions could be reduced by up to 83%. The three major reduction areas are:

- ▶ Transportation and Urban Planning – up to 28% of needed reduction;
- ▶ Energy Systems – up to 36%; and
- ▶ Buildings – up to 19%.

A gap of up to 17% of needed reductions remains, and will need to be addressed by actively removing carbon from the atmosphere through carbon capture technology, nature based solutions or purchasing offsets.

Figure 3 Emission Reduction Profile



Work was undertaken to understand Edmonton's role in this accelerated transition, including: jurisdictional scans, best practices review, review of "Paris compliant" municipal plans, developing technical and policy discussion papers, and seeking advice and feedback from technical experts. In addition, public and targeted engagement took place including 28 events (community drop in events, public workshops, stakeholder workshops, a Climate Action Youth Policy Jam, committee meetings and webinars) which led to over 850 conversations and 2,600 written comments. This engagement helped us understand where Edmontonians want the community energy transition to be in the next 30 years and the types of actions they wish to see.

BACKGROUND — GETTING TO 1.5 CONT'D

Also, since Edmonton's Community Energy Transition Strategy was first developed,

- ▶ The leadership of the **Edmonton Declaration has signaled** that we are **open for business and investment** in the future energy market.
- ▶ Numerous City of Edmonton climate actions programs have been launched **demonstrating the City's willingness to act and invest in this area.**
- ▶ Climate Resilient Edmonton: Adaptation Strategy and Action Plan, the companion document to this strategy, was developed. The strategy identifies climate change impact projections for Edmonton, if global greenhouse gas emissions reductions are not taken. That strategy also identifies the local impacts of climate change, such as damages and disruption from extreme weather events, adverse health effects, and direct and indirect lost productivity and services. These projected impacts could lower Edmonton's GDP by \$3.2 billion and \$7.4 billion annually by the 2050s and 2080s (respectively), and could increase the number of physical and mental health incidents by 22,000 episodes annually by the 2050s.

Building on and updating the Energy Transition Strategy in a bold, brave, agile and smart manner, is needed to embrace an incredible economic opportunity and respond to a changing world.

**WE COMMIT TO
AND CALL UPON
ALL NATIONAL,
STATE AND LOCAL
GOVERNMENTS
TO FORMALLY
RECOGNIZE THE
IMMEDIATE AND
URGENT NEED FOR
ACTION THAT WILL
LIMIT GLOBAL
WARMING TO 1.5°C**

EDMONTON DECLARATION, 2018

STRATEGIC ALIGNMENT AND STRATEGY STRUCTURE

The Energy Transition Strategy and Action Plan fall under ConnectEdmonton and The City Plan, and provide further details on how goals and outcomes in those strategic documents, related to energy and climate, will be achieved.

ConnectEdmonton sets the direction for our future and outlines where we need to change today to realize our vision for Edmonton in 2050. ConnectEdmonton is about transformational change and has four goals: Climate Resilience, Regional Prosperity, Urban Places and Healthy City.

The City Plan sets the strategic direction for the way Edmonton grows, its land use, its mobility systems, open spaces, employment and social networks, generally touching on most aspects of life in Edmonton.

The Energy Transition Strategy and Action Plan outline how we achieve the transformational change to a low carbon city as outlined in ConnectEdmonton and City Plan.



STRATEGY STRUCTURE

The Energy Transition Strategy and Action Plan have:

5 STRATEGIC PRINCIPLES

Guide how the Energy Transition Strategy and Action Plan will be advanced and implemented. Following ConnectEdmonton's guiding principle of being connected, the energy transition strategic principles ensure that we make strategically consistent choices as we work to achieve our goals.

4 PATHWAYS

Areas of transformative action. Pathways are interconnected and they are all needed to achieve Edmonton's low carbon future. Each Pathway has goals, strategies and actions.

1 FOUNDATION

The commitment to "climate solution leadership" is the foundation on which the Energy Transition Strategy and 1.5 Climate Action Plan is built.

15 GOALS

Set out what needs to be achieved in Edmonton. The goals are long term outcomes aligned to Council's vision.

36 STRATEGIES

Approaches needed to achieve the goals. The strategies represent the overall action that is required to achieve emissions reduction goals, even if specific actions are modified during implementation due to changing contexts such as emerging technologies.

1 ACTION PLAN

The tactics that will put Edmonton on a trajectory to achieve overall targets.

THE PATH FORWARD

Through ConnectEdmonton and the City Plan, the community has shared their desire and excitement for a low carbon future. ConnectEdmonton is about transformational change and the four goals, including Climate Resilience, require action and change to achieve our vision. Transformational change poses many challenges and opportunities. Edmonton's vision is achievable, but it will not be easy.

Four bold and transformative pathways have been developed to reach Edmonton's Climate Resilience goal of a low carbon city:

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

Pathways are areas of transformative action. The four pathways are interconnected and they are all needed to achieve Edmonton's low carbon future. Each pathway has goals that set out what needs to be achieved for a low carbon, prosperous and just and equitable future. The pathways reflect the four main reduction opportunities for Edmonton.

Each Pathway will require different levels of investment, that will depend on the tools, actions or approaches that the City can use to enact change and achieve specific outcomes. These tools are referred to as Levers of Change.

Achieving transformational change means setting ambitious **Targets**. The following targets reflect a community wide accelerated energy transition journey. We are just starting to accelerate our journey, and like any journey we will have to regularly reflect on our progress and adjust our plans as needed to successfully reach our goals and targets.

2025

Reducing community-based net greenhouse gas emissions by 35% (compared to 2005 levels)

2030

Reducing community-based net greenhouse gas emissions by 50% (compared to 2005 levels)

Reduce energy consumption by 35% per person by 2030 (compared to 2005 levels)

Generate 10% of Edmonton's electricity locally

2050

Achieving net zero per person GHG emissions

Milestones illustrate how a pathway advances until 2050. Milestones represent significant initiatives aligned with meeting the pathway goals. Each pathway will require multiple initiatives, some small and some large. Milestones illustrate the transition to 2050, however the Action Plan focuses on actions for the coming decade. The pathways require targets to achieve the strategy's goals and the transition's milestones.

PATHWAY #1 RENEWABLE AND RESILIENT ENERGY TRANSITION

This pathway allows us to re-imagine where our energy comes from and the future energy markets we can lead.

This pathway will see Edmonton supplied with **100% emission neutral electricity and heating by 2050** and a complete build out of a **city-wide decarbonized district energy network by 2050**. This pathway will see 10% of the electricity used in Edmonton generated locally by 2030. This pathway will build on our current strengths and innovation to develop the next generation of energy jobs, small business opportunities and products the global market is beginning to demand. This pathway will see the Edmonton Metropolitan Region **attract and incubate 50 next generation energy companies by 2030 with diverse ownership (ie. women, Indigenous, minority owned)**. This pathway could achieve up to 36% of the needed emission reductions and would require approximately an average \$860 million in annual public and private investment over the next 30 years. The level of public investment required will depend on the Levers of Change that are applied to achieve this pathway.

The Opportunity: Edmonton and Alberta are home to the world's best energy innovators and we can use our strengths to lead this transition. We have competitive advantages, including the ability to produce near zero-emission hydrogen at a lower cost than virtually any other jurisdiction in the world.⁹

The Challenge: A part of our economy and identity are tied to the fossil fuel industry. Factors in the global energy market are changing and global energy systems are going through a rapid transition. These changes will cause economic and social challenges in our region and province. As we work to diversify, making ourselves more resilient and attractive, there will not be consensus in the community on this transition. As with many transitions there are built-in tensions. There will be enthusiasm from the next wave of energy entrepreneurs, and there will be others who are experiencing various "stages of grief" (ie. denial, anger, etc.). This transition will be a challenging time in which to govern.

MILESTONES – UP TO 36% CO₂ REDUCTIONS

2020	2030	2040	2050
Attract and incubate next generation energy companies	Increasing manufacturing, distribution and construction		
Plan and establish district energy network	Expand district energy network	Completed and decarbonized energy network	
Increasing local renewable installations and decarbonizing of the grid		100% emission neutral electricity and heating	



PATHWAY #1 RENEWABLE AND RESILIENT ENERGY TRANSITION CONT'D

PATHWAY #1: RENEWABLE AND RESILIENT ENERGY TRANSITION

Goal: Edmonton is a thriving city powered by low carbon energy

Strategy 1: Support regional employment through local renewable energy and storage systems.

Strategy 2: Promote the development of community renewable energy projects and the expansion of a renewable district energy network.

Strategy 3: Support and advocate for and support the supply and purchasing of low carbon energy.

Strategy 4: Support opportunities for all Edmontonians to participate in Edmonton's energy transition.

Goal: Edmonton is a hub for low carbon energy innovation and investment

Strategy 5: Support new collaborations with utilities, alternative energy suppliers, post-secondary institutions, businesses and regional partners to advance the low carbon energy market and industries.

Strategy 6: Support the attraction of investment and technology start-ups that build on the region's energy resources and innovation strengths.

Strategy 7: Support the expansion of Edmonton's partnership ecosystem to build and support green economy employment and promote strategies to market regional clean technology products and services.

Goal: Edmonton uses waste as a resource

Strategy 8: Promote the production of zero emission energy and resources from waste while minimizing emissions.

Big Win Actions

- City wide district energy network
- Hydrogen heated neighbourhood pilot
- Scaling-up local renewable electricity installations through expanded incentives
- Group/ Aggregated renewable energy purchasing
- 100% renewable energy for Civic Operations

PATHWAY #2 EMISSION NEUTRAL BUILDINGS

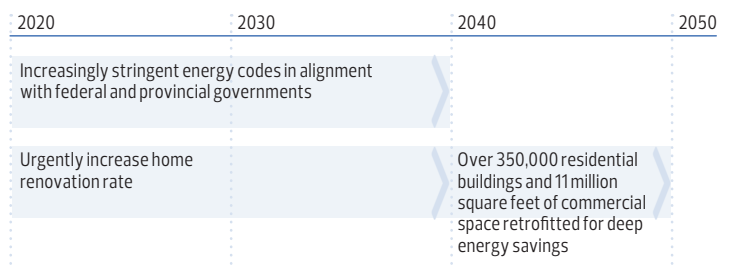
This pathway imagines a future with highly energy efficient, healthy homes and buildings, powered by renewable energy.

This pathway will see Edmonton administrating **increasingly stringent energy codes in alignment with federal and provincial governments**. This pathway will see Edmonton undertake an unprecedented energy efficiency retrofit effort (**over 350,000 residential buildings and over 11 million square feet of commercial space retrofitted for deep energy savings by 2050**). This effort could create a thriving retrofit industry and significant local job opportunities. This pathway could achieve up to 19% of the needed emission reductions and would require approximately an average \$180 million in annual public and private investment over the next 30 years. The level of public investment required will depend on the Levers of Change that are applied to achieve this pathway.

The Opportunity: An emission neutral building is one that is highly energy efficient and uses only renewable energy. Edmonton is home to significant expertise in sustainable building practices and green building technologies. It is home to the highest number of net-zero residential buildings in Canada. Construction and engineering is a key sector of Edmonton's economy. We have the expertise and innovative building technologies the world will need. The homes built in Edmonton today are more energy efficient than homes built a decade ago. The strategy imagines a future where homes in the coming decade will be even more comfortable, energy efficient, and resilient as well as having lower energy costs than the homes we have today. This pathway also imagines an unprecedented energy efficiency retrofit effort (over 350,000 residential buildings) that could create a thriving retrofit industry and significant local job opportunities.

The Challenge: Edmonton is consistently ranked as one of the most affordable cities in Canada. However, there are roughly 74,000 energy poor households in Edmonton, meaning the household is unable to maintain 'adequate' (ie. a level of energy consumption in the home necessary to meet basic health and well-being needs) access to energy services at a reasonable cost. Inefficient buildings have higher energy costs which can be especially challenging for lower-income homes. Not only are housing conditions and long term affordability a challenge, but the higher upfront costs to building an emission neutral building or the ability to access funding to complete a retrofit will be a challenge. Some members of the development industry have expressed concerns about affordability implications and their capacity to meet increasingly stringent building regulations. Retrofitting efforts will require equity and community needs considerations.

MILESTONES – UP TO 19% CO₂ REDUCTIONS



PATHWAY #2 EMISSION NEUTRAL BUILDINGS CONT'D

PATHWAY #2: EMISSION NEUTRAL BUILDINGS

Goal: The buildings that Edmontonians live, work and play in are emission neutral and improve personal wellness

Strategy 9: Support the acceleration of emission neutral buildings.

Strategy 10: Support residential, commercial and institutional property owners to reduce overall energy use and utility costs through retrofits and energy efficiency improvements.

Strategy 11: Support low embodied carbon buildings and infrastructure

Goal: Eliminate energy poverty

Strategy 12: Promote programs to alleviate energy poverty and increase energy efficiency in affordable buildings

Goal: Catalyze the local green building and energy efficiency industry

Strategy 13: Support the attraction and expansion of opportunities for green building technology, products and services

Big Win Actions

- ▶ Accelerated and Expanded Building Retrofit Program
- ▶ Home Renovation program to address energy poverty
- ▶ Emissions neutral building standard for new City of Edmonton buildings

PATHWAY #3 LOW CARBON CITY AND TRANSPORTATION

This pathway continues to build on the transformative city building efforts outlined in The City Plan and those that are currently underway such as the Blatchford carbon neutral development.

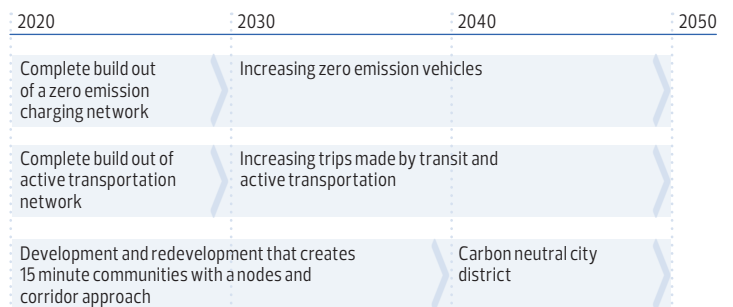
This pathway will see Edmonton with **city districts that are carbon neutral by 2050, 50% of growth occurring as infill development, and the complete build out of the active transportation network by 2030.** This pathway helps create the city that is attractive to top global employers by providing the lifestyle their employees are looking for. This pathway will see **50% of trips made by transit and active transportation by 2040, development and redevelopment that creates 15 minute communities with a nodes and corridor approach, and a city with a completed zero emission vehicle charging network by 2030.** This pathway could achieve up to 28% of the needed emission reductions and would require an approximate average of \$45 million in annual public and private investment over the next 30 years, with a \$1.2 billion in local infrastructure investment required over the next 10 years. The level of public investment required will depend on the Levers of Change that are applied to achieve this pathway.

The Opportunity: The way a city is designed and built has a direct impact on how people get around, connect and experience their city. Observations from 27 major urban centers across North America showed that cities with higher levels of energy efficiency, reduced GHG intensity, higher rates of “green” buildings, greater availability of sustainable transport options tend to have: higher rates of employment; higher GDP per capita; lower rates of violent crimes; higher levels of educational attainment; lower levels of perceived stress among residents (improved mental health); a greater sense of community; and higher levels of investment in new commercial and institutional buildings. Edmonton has a lot of potential to be designed and re-built to connect us to each other, to our communities and to our local businesses. We can

have a city that helps each of us save money on the ways we move around, while also reducing the amount of time we spend driving, ultimately helping to create a healthier lifestyle. We can have a city that is attractive to top global employers by providing the lifestyle their employees are looking for. Urban planning practices are changing, and Edmonton has already shown bold transformative leadership in developments such as Blatchford. Continuing to catalyze those bold and transformative urban planning decisions across Edmonton and implementing The City Plan will help to create a vibrant and thriving low carbon city.

The Challenge: Many growing cities, particularly in North America, have been designed to prioritize the car. We are currently a city with “big city” commutes, wide and multi-lane roads and big surface parking lots that are missing pedestrian and cycling connections. Transforming to a city with accessible and easy multi-modal transportation choices, where people do not have to travel far to meet their daily needs, and where our increased density will help accommodate a larger population within our existing boundaries will not be simple, easy or cheap.

MILESTONES – UP TO 28% CO₂ REDUCTIONS



PATHWAY #3 LOW CARBON CITY AND TRANSPORTATION CONT'D

PATHWAY #3: LOW CARBON CITY AND TRANSPORTATION

Goal: Edmonton is planned, designed and built to be a vibrant carbon neutral city

Strategy 14: Ensure sustainable urban planning practices to become a carbon neutral city.

Strategy 15: Ensure low carbon districts with complete and compact communities

Strategy 16: Support initiatives that allow all Edmontonians to have access to the benefits and opportunities of a vibrant low carbon city

Goal: Safe and accessible zero emission mobility

Strategy 17: Ensure a safe, accessible, and comfortable active transportation system that enhances walking and cycling.

Strategy 18: Ensure the establishment and expansion of a zero emissions public transit system that is safe, convenient, reliable and connected across the Edmonton region.

Strategy 19: Support the transition to electric and other zero emission vehicles.

Strategy 20: Support the changing transportation system needs of a low carbon city.

Goal: Edmontonians reduce consumption based emissions by supporting local businesses

Strategy 21: Promote a circular economy that reduces consumption based carbon emissions.

Strategy 22: Support a low carbon resilient food system.

Big Win Actions

- ▶ City Plan implementation
- ▶ City-wide active transportation network
- ▶ City-wide zero emission charging network
- ▶ Zero Emission transit system and fleet

PATHWAY #4 CARBON CAPTURE AND NATURE BASED SOLUTIONS

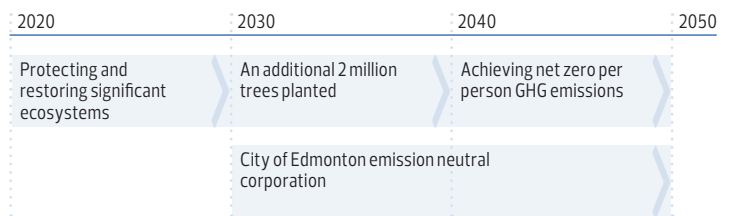
This pathway imagines a future where we cost effectively remove carbon from the atmosphere using innovative technology and nature based solutions that cultivate a healthier city.

This pathway sees Edmonton **protecting and restoring significant ecosystems by 2030 and planting an additional 2 million trees by 2040**. This pathway helps support attractive, healthy urban places and carbon sequestration. The technology solutions under this pathway can grow prosperity in the region by using our carbon capture technology and infrastructure competitive advantage to attract and grow investment and jobs. This pathway will see the **City of Edmonton is an emission neutral corporation by 2040**. This pathway sees Edmonton **achieving net zero per person GHG emissions by 2050**. This pathway addresses the gap of up to 17% of the needed emission reductions and would require approximately an average \$50 million in annual public and private investment over the next 30 years. The level of public investment required will depend on the Levers of Change that are applied to achieve this pathway.

The Opportunity: To limit global warming to 1.5°C, actions that actively remove carbon from the atmosphere are needed. These actions include nature based solutions (such as planting more trees and protecting existing carbon sinks) and technological options (such as using carbon capture equipment). Nature based solutions help support attractive, healthy urban places and carbon capture technology can grow prosperity in our region. The Edmonton Metro region is home to state of the art CO₂ carbon capture and storage technology and infrastructure, such as the world's largest capacity CO₂ pipeline and a significant carbon capture and storage facility. This is our competitive advantage and these strengths position the region to attract and grow carbon capture investment and jobs.

The Challenge: Even with decisive and bold climate action, up to 17% of the reductions needed in Edmonton will have to come by removing carbon from the atmosphere or offsetting emissions. There are uncertainties in this pathway including the amount of "negative" emissions needed. This will depend on the amount of reductions that different actions achieve, and the level of action taken by other levels of government, businesses and the community. There are also uncertainties in the feasibility, scalability and impact of carbon capture measures.

MILESTONES – UP TO 17% CO₂ REDUCTIONS



PATHWAY #4 CARBON CAPTURE AND NATURE BASED SOLUTIONS CONT'D

PATHWAY #4: CARBON CAPTURE AND NATURE BASED SOLUTIONS

Goal: Edmonton is full of nature, to support healthy people, emissions reductions, communities and carbon sequestration

Strategy 23: Promote investment in natural carbon storage and sinks such as tree planting, ecosystem conservation and restoration.

Strategy 24: Promote the acceleration of nature based solutions to achieve climate resilience goals.

Goal: Expand carbon technology investment/opportunities and business in the Edmonton Metropolitan region

Strategy 25: Support the acceleration of the development and deployment of carbon capture and storage and utilization technologies.

Goal: Edmonton cares for future generations by offsetting remaining emissions

Strategy 26: Support and track community, institutional and business offset purchases.

Big Win Actions

- ▶ Accelerated tree planting campaign
- ▶ Expanded and accelerated conservation and restoration of urban ecosystems
- ▶ Conservation Offset Program
- ▶ Expanded CO2 infrastructure



FOUNDATION: CLIMATE SOLUTION LEADERSHIP

The energy transition is a complex community effort that will require leadership. The strategy needs to stand on a foundation where the City of Edmonton demonstrates climate solution leadership in our own decision making, actions and advocacy.

FOUNDATION: CLIMATE SOLUTION LEADERSHIP

Goal: The City of Edmonton aligns decision making with the international target of limiting global warming to 1.5°C

Strategy 27: Use a local carbon budget and carbon accounting system to inform decisions and monitor progress towards goals.

Strategy 28: Embed low carbon goals into its plans, policies and standards.

Strategy 29: Create an internal task force and continues working with the external Council advisory committee to lead Edmonton to be a carbon neutral city.

Goal: The City of Edmonton partners with and mobilizes communities and governments to meet carbon budget goals

Strategy 30: Advance a climate action framework for government collaboration.

Strategy 31: Work with other municipalities and regional associations to advance a collaborative approach for climate action in the Edmonton Metropolitan Region.

Strategy 32: Work with international collaborators to support the Edmonton Declaration and the IPCC Cities and Climate Change Science research agenda.

Strategy 33: Continue to inform, work with and mobilize the community to take action on climate change via Change for Climate and Corporate Climate Leaders programs, among others.

Goal: The City of Edmonton establishes innovative and participatory financing tools

Strategy 34: Align investment decisions with low carbon goals

Strategy 35: Access and create innovative and participatory funding mechanisms to support private green investments

Strategy 36: Develop a just and equitable working group and framework for energy transition programs.

Big Win Actions

- Carbon Neutral Corporation
- Integrated Carbon and Financial Accounting
- Clean Energy Improvement Financing Program

THE APPROACH

In order to activate the changes identified in the Energy Transition Strategy, two complementary approaches are needed. The first is an approach to accelerate efforts. The second is a smart and agile implementation approach. These approaches, and the development of the strategy are guided by a series of strategic principles.

The **Strategic Principles** ground how the Energy Transition Strategy and 1.5 Climate Action Plan will be advanced and implemented.

The **Acceleration Approach** reflects the level of ambition and action needed over the next 30 years.

The **Implementation Approach** reflects how that ambition will be realized.

STRATEGIC PRINCIPLES

The update and implementation of the Energy Transition Strategy is guided by the following strategic principles:

Just and Equitable

- ▶ We will lead Edmonton through a just and equitable energy transition, fostering a good quality of life for all Edmontonians, leaving no one behind.
- ▶ We are not only serving those today, but we are serving those who come after us by taking action and not deferring action to future generations.
- ▶ Environmental protection and sustainability will be integral to the energy transition.

Prosperous

- ▶ This energy transition will be an economic development and job diversification transition, equipping Edmontonians to be resilient to changing economies.

Urgent and Dynamic

- ▶ We work towards achieving increasingly urgent and ambitious climate action and find ways to accelerate our energy transition efforts.
- ▶ We will learn from others to accelerate and prioritize our own actions and we will use a dynamic steering and flexible approach to respond to evolving knowledge and technologies, allowing us to leverage and accelerate efforts.

Transformative

- ▶ Edmonton's energy transition will be a re-imagining of our city; departing from a business-as-usual approach to transform into a low carbon community.
- ▶ We will lead by example in our decisions, services, projects, procurement, infrastructure and actions. Every decision is a climate change decision.

Collaborative

- ▶ Transitioning to a low carbon city is a collective effort, and we will connect and collaborate with other governments, regional partners, institutions, communities, businesses, academia, and global partners for accelerated action.
- ▶ We will approach this challenge in a holistic and integrated way. The Pathways are integrated with each other, with other climate actions and with City processes.

THE APPROACH CONT'D

REGIONAL PARTNERSHIP

There are a number of actions within the energy transition strategy that could be implemented on a regional or sub-regional basis through collaboration with regional partners. This includes opportunities to integrate actions into existing and developing regional and sub-regional initiatives, plans and strategies. The City of Edmonton is committed to working with regional partners to find shared goals around the transition that will support common approaches and prosperity in the region. The conversations and partnerships on energy transition are beginning to emerge and will continue to develop in the coming years.

Actions outlined in the 1.5 Climate Change Action Plan can be classified under three general categories as it relates to the Edmonton metropolitan region:

- (1) actions that the City is doing that could, at the right time, be expanded or scaled up to include other municipalities so as to increase the reach and impact of a City program or initiative (i. e. incentive programs, group/aggregated purchasing of renewable energy ; partnerships to scale up nature based solutions) ;
- (2) actions within established voluntary regional or sub-regional frameworks, as well as new voluntary collaborative initiatives that could be initiated jointly with willing municipal partners (i.e. waste to energy initiative, hydrogen production and distribution network expansion, common regulation or policy approaches; planning for the needs of CO2 infrastructure (CO2 pipelines, CCU/S corridors, etc.); and

- (3) actions that would apply to plans and associated policies that are required under the Municipal Government Act or regulation (i.e. updating the Edmonton Metropolitan Region Board (EMRB) Growth Plan or actions on waste management that support the EMRB's Metropolitan Region Servicing Plan).

Additional direct dialogue with neighbours and at regional tables is needed following City Council's approval of the action plan to determine areas of common ground and focus for possible future collaboration among municipalities in the Edmonton Metropolitan Region.

ACCELERATION APPROACH

Irreversible climate change is already happening, and impacts are being felt around the world. The window to act in order to avoid the most damaging effects is quickly closing, requiring accelerated efforts to reduce greenhouse gas emissions. There is an urgency to deliver on climate change mitigation actions. This urgency is balanced with an understanding that significant action will continue to be required for decades beyond the ten year action plan. The transformational impacts of some of the actions initiated in the next decade may not be evident until several years after their inception. The acceleration approach has three phases:



THE APPROACH CONT'D

PHASE 1: CONNECTING (2020–2022)

The first phase of accelerated action is **Connecting**. This phase connects our level of ambition with a plan to achieve that ambition, by updating the current Energy Transition Strategy and developing the Action Plan. The Action Plan sets Edmonton on the path to do our part in limiting average global warming to 1.5°C. This phase connects the need for more urgent action to current initiatives, by accelerating initiatives (where possible), and launching new budgeted initiatives. This phase connects the network of businesses, institutions, academia, community groups and residents who will collectively make this energy transition happen. This phase connects our plan with regional, provincial and federal initiatives. Finally, this phase connects our ambition to the financial resources needed for Phase 2 of acceleration. Phase 1 includes building the foundation to implement and scale up further accelerated and transformative climate actions, and connecting climate action to other transformative initiatives underway. In this phase transformational decisions will begin, the impacts of which will be evident in the decades to come.

PHASE 2: ACCELERATING (2023–2030)

The second phase of accelerated action is **Accelerating**. This phase requires rapid and significant scaling up of existing programs, as well as the launch of several new initiatives, actions, programs and services. This will need to be done quickly and strategically, in order to create a large emissions reduction impact and economic prosperity in a just and equitable way. This phase includes actions that will transform our city and economy in the coming decades. The Accelerating phase of the 10 year 1.5 Climate Action Plan builds on work initiated in the Connecting phase to further accelerate Edmonton's climate response and begin the transformational change required to meet our 2050 goal. This is a critical decade in the energy transition, and so too are the actions of this phase.

PHASE 3: TRANSFORMING (2031–2050)

The third phase of accelerated action is **Transforming**. This phase builds off the rapid and significant scaling up during Phase 2. This phase sees the outcome of earlier transformational decisions that are changing our city: our energy systems, the way we move around, and the buildings in which we live, work and play. While the actions taken in the previous phases will initiate and enable this transformational change, ongoing transformational actions will be needed, in order to achieve carbon neutrality or net zero emissions.

IMPLEMENTATION APPROACH

The Energy Transition Strategy and Action Plan require an agile and smart implementation approach. This means knowing if, and what type of, an initiative is needed and knowing when government action is no longer required, or at least not required in the same way.

While the approach to achieving our greenhouse gas emissions targets requires multiple actions, not every action is required immediately or forever, and the solutions must respond to the challenge of new fiscal constraints. Though the majority of climate actions have a positive return on investment, they do impose an upfront cost, and it may not be feasible or realistic for those costs to be borne all at once.

Not only do we need to know when to enter into an action, we also need to know when to exit, stop, or change an action. Market transformation may reach a point when government intervention would no longer be required. Monitoring and review, as well as regular check-ins with City Council, will be required in order to implement effectively and in an accelerated manner.

THE APPROACH CONT'D

The proposed implementation approach:

- ▶ aligns with the City of Edmonton's Capital Project Development and Delivery approach, but includes an additional "monitoring" element that is not typical for infrastructure projects,
- ▶ provides a flexible overall framework to guide the management of the broad range of energy transition initiatives (ie. policy, infrastructure, etc.),
- ▶ ensures effective and efficient use of public funds,
- ▶ includes formal checkpoint reviews during different phases of the approach, and
- ▶ includes exceptions to allow for accelerated action to meet energy transition goals and targets where opportunities emerge.

KEY ELEMENTS OF THE IMPLEMENTATION APPROACH

The proposed implementation approach has four key elements:

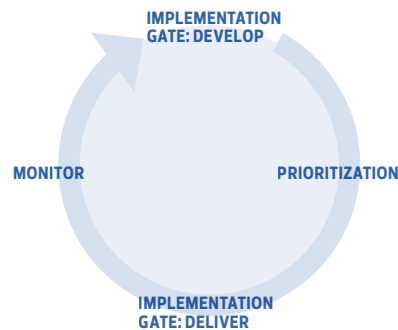
Levers of Change – are tools, actions or approaches that the City can use to enact change and achieve specific outcomes. The different outcomes of the strategy will require different actions, and the action might change at different times.

Implementation Gates – provide communication, check-in and approval opportunities as initiatives move through a development to delivery process. The gates are aligned with decision points (ie. What lever of change? Should the initiative be altered, proceed or be delayed? etc.).

Prioritization – part of the implementation gate process will include prioritization. Once it has been determined actions need to be taken, and how those actions should be delivered, prioritization will be conducted based on the carbon accounting framework and budget processes.

Thresholds and Monitoring – are the signals to be monitored to determine when to implement an action, when to change or modify our approach, or when to stop doing an action.

Figure 4 Energy Transition Implementation Approach



LEVERS OF CHANGE

The City Plan identifies levers of change that are tools, actions or approaches that the City can use to enact change and achieve specific outcomes. These levers are how the City can bring about a market transition and can be applied to the energy transition.

The City Plan identifies four levers of change: Partnership and Advocacy; Incentives, Pricing and Subsidies; Infrastructure Investment; and Policy and Regulation. Levers of change may need to be applied to varying degrees to achieve an Energy Transition outcome. In some cases, multiple levers will need to be used at the same time.

Partnerships and Advocacy require fostering relationships with private, community, institutional and not for profit entities to activate strategies, initiatives and actions to advance common goals, recognizing shared interests and aspirations.

Incentives, Pricing and Subsidies include applying a premium to cost or a reduction in cost to support a shared outcome or influence behaviour. This can include off-setting the costs of services and amenities for certain user groups or types of activities, or applying charges and fees for users through available financial mechanisms.

THE APPROACH CONT'D

Infrastructure Investment is about providing capital or operational investment in physical infrastructure, City assets, services and planning activities to activate and encourage specific energy transition outcomes.

Policy and Regulation is a municipal planning instrument that can guide, direct, manage or shape how we provide strategic direction for land, infrastructure or services to influence or change the behaviour of residents and markets or market groups.

The four levers of change the City Plan identifies, are expanded to include a fifth lever in the Energy Transition context:

Activation is about providing awareness, filling knowledge gaps, and building capacity to encourage and support energy transition outcomes.

IMPLEMENTATION GATES

Implementation gates are a structured check-in and approval process that allows decision makers to set initial direction on priorities, and refine the initiative (if needed) prior to delivery. The implementation gate framework can be applied to a broad range of initiatives (ie. policy, infrastructure, etc.) and has an "exceptions process" for certain initiatives.

Implementation gates help to phase in distinct pieces of work related to the life-cycle of an initiative. Many initiatives or decisions will have a design life (ie. the period of time the initiative or service is needed and is relevant). At each gate there is a formal checkpoint review on whether or not to proceed to the next gate, or if adjustments are needed. This gated approach helps ensure that the right lever(s) of change is being implemented at the right time.

The gated implementation approach consists of three phases:

Develop – During this phase actions will be co-designed with stakeholders. The initiatives that will enter the "Develop" phase will be based on Council identified priorities through the City's long-term capital investment plan and Priority Based Budgeting (PBB) process. During this phase, planning and design decisions will be made, and the specific **Levers of Change** will be selected. A composite fund will support the work during this phase.

Deliver – During this phase, the developed actions and initiatives will be presented to Council for **Prioritization** through the carbon accounting framework and budgeting processes. During this phase operating and/or Capital funding requirements will be identified. Those initiatives that are funded by Council will be delivered (ie. the infrastructure would be constructed, services launched for residents or businesses, policy enacted, etc.).

Monitor – A monitoring and evaluation framework will be developed to track the signals that will determine when to modify an initiative approach, or when to exit the service, program or action.

EXCEPTIONS

Similar to the City of Edmonton's Capital Project Development and Delivery approach, the following exceptions to the gated implementation approach are proposed: i) low risk initiatives; and ii) initiatives that meet criteria for acceleration.

Low risk initiatives, in the Energy Transition Strategy context, are those that maintain a composite budget profile or can be integrated into existing City programs and services with minimum re-alignment or without additional resources.

THE APPROACH CONT'D

Acceleration criteria are the basis for when an initiative will not need to follow the gated approach. This acceleration criteria include:

- ▶ Opportunities to leverage external funding;
- ▶ Opportunities for delivery at significantly reduced costs; or
- ▶ Council directed priority projects.

PRIORITIZATION

Once actions have been vetted through the implementation gates process, prioritization of the actions based on an integrated carbon and overall capital and operating budget.

Similar to a financial budget, a **Carbon Budget** includes revenues (annual emission limit), expenses (emissions) and deficits/surpluses (annual emission limit minus emissions). The Carbon Budget aligns with decision-making frameworks used by local governments for capital and operating budgets, frameworks in which investments, costs and benefits are assessed over multiple years and often involve trade-offs between early action and deferred spending. When combined with effective monitoring of emissions, the Carbon Budget also provides a framework for reporting progress on a consistent basis from year-to-year.

Central to the success of Carbon Budgeting is a **Carbon Accounting Framework** to support the quantitative tracking and management of greenhouse gas emissions throughout the community. The accounting framework must contain the periodic emission inventories that provide the most accurate reading of overall progress toward achieving the level of emissions specified in the Carbon Budget. It must also support the quantification of the expected and actual emission impacts of the City's policies, practices and spending decisions, as well as the community emission impacts of initiatives of households, firms, utilities and other levels of government.

THRESHOLDS AND MONITORING

Many initiatives or decisions will have a design life (ie. the period of time the initiative or service is needed and is relevant). To understand when an initiative or service has reached the end of its design life, various indicators will need to be tracked. This will require thresholds and signals to be defined.

Signals can be thought of as indicators. The signals will need to be reliable, comparable, and understandable. Signals can be economic, social, and/or energy market related. There may be signals that are specific to certain initiatives and there may be signals that apply to a suite of initiatives.

Thresholds are the point at which the effects of the initiative are observed. Reaching a threshold does not mean we have achieved the overall target, but it is the point where progress towards or deviation from the outcome is becoming evident. Once a defined threshold is reached, a decision point will be triggered. This decision point can be to plan an exit for the service/initiative or direction to re-enter into the Design and Deliver implementation gate process to identify the next approach to take (ie. Does the initiative need to be modified? Is a different lever of change required? Is the initiative still required?).



REPORTING

To track progress towards the overall targets and goals in each path, indicators and measures will be established and monitored for City initiatives or actions contemplated by the Charter.

This will include, but may not be limited to, public reporting on:

- ▶ greenhouse gas emission levels of City-owned buildings, facilities and fleets of vehicles
- ▶ initiatives, actions and progress to: improve energy efficiency of City-owned buildings, facilities and fleet of vehicles; develop and encourage the development of renewable electricity; mitigate the effects of climate change
- ▶ how the City has taken greenhouse gas emissions into account in decision making, and
- ▶ Progress of programs designed to support the community transition.

To ensure Edmontonians are kept informed on Edmonton's progress regular public reporting and communication of results will be conducted. Annual reporting led by City of Edmonton Administration will report on both qualitative and quantitative indicators to demonstrate the progress of the Energy Transition Strategy, including any assessed trends. Reporting will be through:

- ▶ Annual Implementation Progress Report to Council that will be shared on the City of Edmonton's website.
- ▶ Energy transition strategy performance updates related to ConnectEdmonton Indicators (specifically: Community Greenhouse Gases, Energy Use, and Renewable Electricity Generation) and City Plan's low carbon city targets (specifically: Achieve total community-wide carbon budget of 135 megatonnes Two million new urban trees planted Net per-person GHG emissions are Zero) will be regularly communicated through reports and the City's open data platform.
- ▶ Council and Committee Reports relating to Charter requirements, including the initiatives and actions indicated above, will be clearly identified and will be retained on the publicly accessible City of Edmonton website.

TAKING ACTION

Successful implementation and mobilizing community action will require continued engagement with residents and implementation partners. This work is collaborative and dynamic in nature, requiring ongoing engagement during implementation. Further engagement opportunities will be identified and provided to Edmontonians during implementation. The conversations are just beginning on how we achieve our ambitious goals. Though the approach to engagement may differ for various initiatives, it is clear all voices and actors are needed to achieve a prosperous, just and equitable energy transition.

The energy transition is a key part of Edmonton's and Alberta's future. This work will position us to respond to changing global markets, while creating prosperity, economic diversity, and supporting Edmontonians in a just and equitable way. This work is transformative in nature. This updated strategy takes action to the next level where Edmonton's long term goals can be achieved.



DEFINITIONS

Adaptation Lowering the risks and negative impacts and embracing potential opportunities associated with climate change so that communities and ecosystems are prepared to cope with new climate conditions.

Bitumen Beyond Combustion Initiatives that convert bitumen constituents into high-value non-fuel products.

Carbon Capture A process where carbon dioxide (CO₂) is separated (captured) from industrial and energy sources, and can be either stored and used to create a new product.

Carbon Neutral A carbon neutral community is a community where the net per-person greenhouse gas emissions is zero.

Carbon Offset A reduction in emissions of carbon dioxide or greenhouse gases made in order to compensate for or to offset an emission made elsewhere.

Climate The average weather over a long period of time – several decades, centuries or millennia.

Climate Change Mitigation Plan A plan for the purpose of addressing and mitigating the effects of climate change as required by section 615.4 of the City Charter.

CO₂E / Carbon Dioxide Equivalent A standard unit for measuring carbon footprints. The idea is to express the impact of each different greenhouse gas in terms of the amount of CO₂ that would create the same amount of warming.

Energy Although more technical definitions exist, in this strategy the term “energy” refers to the full range of energy sources we rely on to meet our wants and needs. It includes both renewable and non-renewable energy sources.

District Energy System Local, centralized energy systems that produce and distribute thermal energy (heating and/or cooling) for customer use.

Emission Neutral Building An emission neutral building is one that is highly energy efficient and uses only renewable energy for its operations, OR produces and supplies onsite renewable energy in an amount sufficient to offset the annual greenhouse gas emissions associated with its operations.

Energy Efficiency This term refers to how effectively energy is being used for a given purpose. For example, providing a similar (or better) level of service with less energy consumption on a per unit basis is considered an improvement in energy efficiency.

Energy Poverty Energy poverty refers to the inability of a household to maintain ‘adequate’ access to energy services at reasonable cost. By adequate, we mean a level of energy consumption in the home necessary to meet basic health and well-being needs.

Energy Transition A risk management approach designed to: (1) diversify a community’s energy mix and reduce its dependence on fossil fuels, (2) reduce greenhouse gas emissions to levels that are consistent with limiting the long-term rise in the average global temperature to 2°C, (3) ensure energy delivery systems (for electricity and natural gas) are resilient and durable to the forces of climate change, (4) increase self-sufficiency with respect to its electrical power and heating needs and (5) position itself to participate in what is potentially the largest economic opportunity humankind has ever experienced



DEFINITIONS CONT'D

Green Energy Green energy comes from natural sources such as sunlight, wind, rain, tides, plants, algae and geothermal heat. These energy resources are renewable, meaning they are naturally replenished.

Green Technology Green technology has a sustainability focus and can be related to: renewable power supply and alternative energy, energy storage and grid infrastructure; green buildings and energy efficiency; and green transportation.

Greenhouse Gases (GHG) Gases such as carbon dioxide, methane and nitrogen oxide which actively contribute to the atmospheric greenhouse effect. Greenhouse gases also include gases generated through industrial processes.

Low Carbon City A city that has a minimal output of greenhouse gases into the environment biosphere

Low Carbon Energy Low carbon energy is produced using significantly lower amounts of carbon dioxide emissions than is emitted from fossil fuel energy.

Market Transformation A four stage approach including (1) awareness and education, (2) capacity building, (3) incentives and (4) regulations and competitive market mechanisms) designed to achieve a specific market outcome.

Mitigation Efforts that slow climate change by reducing or preventing the release of greenhouse gases to the atmosphere.

Nature Based Solutions Actions to protect, sustainably use, manage and restore natural or modified ecosystems, which address societal challenges, effectively and adaptively, providing human well-being and biodiversity benefits.

Net Zero Net zero emissions are achieved when emissions of greenhouse gases are balanced by removals. Emissions should be reduced as close to zero as possible, and remaining emissions would be balanced by an equivalent amount of carbon removal, through nature based solutions or technology.

Renewable Energy Energy that comes from resources which are naturally replenished on a human timescale such as sunlight, wind, rain, tides, waves and geothermal heat

Smart Grid A Smart Grid uses technology and equipment to enable two way communication on the electrical grid (between the energy producer and customer) to respond to changing demand.

Solar PV Photovoltaic cells (also known as solar panels) are semiconductors made up of silicon atoms that convert the sun's energy into electricity.

15 Minute Districts Geographic areas of the city where Edmontonians can meet as many of their daily needs as possible within approximately 15 minutes from work or home by bike, bus or foot.



REFERENCES

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- 3 The Global Commission on the Economy and Climate (2018) Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times.
- 3,4 We Mean Business (2016) The Paris Agreement What It Means For Business
- 5 Government of Canada, Clean Growth Hub
- 6 Canada's Economic Strategy Tables (2018) The Innovation and Competitiveness Imperative: Seizing Opportunities for Growth Report of Canada's Economic Strategy Tables: Clean Technology
- 7 Maclean's (June 29, 2020) Industry leaders call for bold green recovery in open letter
- 8 The Delphi Group (2019) Edmonton's Green Energy Economy Summary Report
- 9 Edmonton Global (September 1, 2020) ATCO to Build Alberta's First Hydrogen Blending Project with ERA Support



**THE ENERGY
TRANSITION IS
A KEY PART OF
EDMONTON'S AND
ALBERTA'S FUTURE.
THIS WORK WILL
POSITION US
TO RESPOND
TO CHANGING
GLOBAL MARKETS,
WHILE CREATING
PROSPERITY,
ECONOMIC
DIVERSITY, AND
SUPPORTING
EDMONTONIANS
IN A JUST AND
EQUITABLE WAY.**

An aerial photograph of a bridge crossing a river, with a dense forest in the background. The entire image is overlaid with a semi-transparent blue filter. The bridge's steel truss structure is clearly visible, and the river flows beneath it. The surrounding landscape is lush with green trees and vegetation.

ACTION PLAN

The Action Plan will be advanced through Implementation Gates. During the “Deliver” phase of the gated implementation approach, developed actions and initiatives will be presented to Council for Prioritization through the integrated financial and carbon accounting framework and priority based budgeting processes.

During this phase operating and/or capital funding requirements will be identified. Initiatives identified for delivery in 2021-2022 timeframe will be delivered as per current funding levels. Those initiatives that receive funding in the 2023-2026 and 2027-2030 budget cycles will be delivered.

PATHWAY 1: RENEWABLE AND RESILIENT ENERGY TRANSITION

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	COST REVENUE
<p>1.1. Engage in ongoing dialogue with Memorandum of Understanding partners on ownership and participation opportunities of Indigenous Peoples in the energy transition. City Plan Policy Intention 3.1.1: Support the ability of First Nations, Métis and Inuit peoples to celebrate, grow and flourish.</p>	2021-2022		
<p>1.2. Advocate for a low cost and low carbon energy supply for Edmontonians and businesses. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives & 3.4.2 Support innovation and private investment in climate-resilient industries and businesses.</p>	2021-2022		
<p>1.3. Implement regulatory and policy changes to enable renewable energy access to support wide-spread adoption on appropriate land uses. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.3 Facilitate the use of local renewable energy.</p>	2021-2022		
<p>1.4. Increase and expand the existing Solar Incentive Rebate Program. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives & 3.4.2 Support innovation and private investment in climate-resilient industries and businesses.</p>	2021-2022		
<p>1.5. Provide incentives for battery storage for green power systems. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives & 3.4.2 Support innovation and private investment in climate-resilient industries and businesses.</p>	2023-2026		
<p>1.6. Support group/aggregated purchasing of renewable energy (i.e. electricity and gas). City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2023-2026		
<p>1.7. Support community, cooperative and Indigenous owned renewable energy projects. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2023-2026		
<p>1.8. Advance regional initiatives for future energy systems (i.e. geothermal, hydrogen, waste-to-energy, fusion, etc.), supply chains and infrastructure including the scale up/expansion of the hydrogen production and distribution network. City Plan Policy Intention 3.4.2 Support innovation and private investment in climate-resilient industries and businesses and 6.4.1 Promote economic development opportunities to support energy transition.</p>	2021-2022		
<p>1.9. Advance regional initiatives and attract investment and technology start-ups that build on the region's energy resources and innovation strengths, such as innovation related to bitumen-beyond-combustion industries (such as carbon fibres, plastics and polymers), lithium refinement and manufacturing industries and artificial intelligence for smart grid and building automation, including battery storage. City Plan Policy Intention 3.4.2 Support innovation and private investment in climate-resilient industries and businesses and 6.4.1 Promote economic development opportunities to support energy transition.</p>	2023-2026		
<p>1.10. Collaborate with utilities for a neighbourhood scale hydrogen heating pilot. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives & 6.4.1 Promote economic development opportunities to support energy transition; Direction: 6.4.1.2 Partner with businesses and organizations testing and implementing new-to-Edmonton solutions and technologies that support increased climate resilience.</p>	2023-2026		

FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$			
\$			
\$		●	
\$\$\$	●		Desired
\$\$			Desired
\$	●		
\$			Desired
\$		●	
\$			Desired
\$	●		

Early Successes

- ▶ Approval and funding of the Downtown District Energy System
- ▶ Launch of Change Homes for Climate: Residential Solar Program that offers a rebate to install rooftop solar and is complemented by an online solar potential map.
- ▶ Installation of solar PV systems on:
 - Meadow's Fire Station
 - Queen Elizabeth Pool
 - Davies Garage
 - Jasper Place Fire Hall
 - Blatchford Energy One
 - 12 additional facilities planned in 2021
- ▶ 200 kilowatts of building-integrated PVs were installed as part of the Edmonton Convention Centre's atrium glazing replacement project.
- ▶ The Enkern Alberta Biofuels waste-to-biofuel operation is the world's first commercial-scale facility designed to turn household garbage into biofuels and renewable chemicals. Located at the Edmonton Waste Management Centre, it was designed to process 100,000 tonnes per year of municipal, solid waste and turn it into 38 million litres of biofuel.

LEGEND

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- \$\$ Moderate Funding Requirements (\$1,000,000 - \$20,000,000)
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PATHWAY 1: RENEWABLE AND RESILIENT ENERGY TRANSITION CONT'D


ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO ₂ EMISSIONS REDUCED
1.11. Advance licenses and partnerships through Advanced Energy Research Facility to continue to drive innovation in bioenergy and renewable resource areas. City Plan Policy Intention 3.4.2 Support innovation and private investment in climate-resilient industries and businesses; Direction: 3.4.2.1 Prioritize climate-related research, industry, technology and businesses through partnerships, programs, processes and grants.	2021-2022		
1.12. Market and promote local clean tech products, projects and services and provide support programs for connecting local business to opportunities in the low carbon economy with regional economic development partners (e.g. Edmonton Global). City Plan Policy Intention 6.4.1 Promote economic development opportunities to support energy transition; Direction: 6.4.1.2 Partner with businesses and organizations testing and implementing new-to-Edmonton solutions and technologies that support increased climate resilience.	2023-2026		
1.13. The City of Edmonton leads by example by purchasing 100% renewable electricity for civic operations. City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient	2021-2022		
1.14. The City leads by example by installing renewable energy systems on municipal buildings as outlined in an updated Civic Operations GHG Management Plan. City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient	2021-2022		
1.15. Develop a district heating and cooling energy network strategy, identifying potential primary district energy nodes. City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient; Direction 2.4.2.2 Enable green energy generation and distribution systems.	2021-2022		
1.16. Begin development of the first two primary district energy nodes in Blatchford and Downtown. City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient; Direction 2.4.2.2 Enable green energy generation and distribution systems.	2021-2022		
1.17. Further expand the district energy network into primary district energy nodes through facilitation of mutually beneficial partnerships between industry, communities and the City that re-risks private investment. City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient; Direction 2.4.2.2 Enable green energy generation and distribution systems.	2023-2026		
1.18. Collaborate with district energy system owners and operators to advance low carbon energy sources for the systems. City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient; Direction 2.4.2.2 Enable green energy generation and distribution systems.	2023-2026		
1.19. Maximize the production of renewable energy from waste and implement and expand organics capture and processing and alternate processing methods for non-organic feedstock City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.4 Avoid waste at its source, improve diversion rates and reuse and recover resources	2023-2026		
1.20. Develop waste reduction and materials recovery roadmaps that aim to minimize emissions. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.4 Avoid waste at its source, improve diversion rates and reuse and recover resources	2023-2026		

FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$			
\$			
\$\$		●	
\$\$			Desired
\$			
\$\$\$	●		Desired
\$\$\$	●		Desired
\$			
\$\$			
\$			

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PATHWAY 2: EMISSION NEUTRAL BUILDINGS

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO ₂ REDUCTION
<p>2.1. Establish an industry advisory group for ongoing advice and recommendations for advancing the emission neutral building pathway.</p> <p>City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; Direction 2.4.1.3 Pursue emissions-neutral and net-positive infrastructure, buildings and neighbourhoods</p>	2021-2022		
<p>2.2. Provide incentives for new construction to build above Building Code. Incentives will be performance based and increase as follows: 2022 Tier 1; 2025 Tier 2; and 2028 Tier 3. The industry advisory group will provide ongoing advice on the incentives.</p> <p>City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; Direction 2.4.1.3 Pursue emissions-neutral and net-positive infrastructure, buildings and neighbourhoods and City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2023-2026		
<p>2.3. Establish an Emission Neutral Building Knowledge Exchange collaborative platform/hub that includes working with collaborators, such as post secondary institutes, on training.</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2021-2022		
<p>2.4. Develop a Cost Sharing Database for information on emission neutral building costs.</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2023-2026		
<p>2.5. Continue the Building Blocks information and discussion series to support learning and discussions on high performance buildings, and industry best practices.</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2021-2022		
<p>2.6. Include emission neutral building information in City of Edmonton newsletters for regular communication and expand Change for Climate consumer and tenant resources to include resources on life-cycle costs and other benefits of emission neutral buildings</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2021-2022		
<p>2.7. Accelerate and expand existing building retrofit programs to provide incentives to improve energy efficiency in existing homes and commercial buildings.</p> <p>City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; Direction 2.4.1.3 Pursue emissions-neutral and net-positive infrastructure, buildings and neighbourhoods and City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2021-2022		
<p>2.8. Continue offering voluntary energy labelling and disclosure programs that include financial and non-financial incentives.</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2021-2022		
<p>2.9. Explore mandatory energy benchmarking, disclosure, and labelling bylaws.</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2027-2030		
<p>2.10. Collaborate with energy utility companies to develop market-wide, electronic access to energy consumption data for all buildings.</p> <p>City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; Direction 1.4.1.5 Provide supports for residents, organizations and businesses to reduce energy use and greenhouse gas emissions and adapt to climate change.</p>	2023-2026		
<p>2.11. Encourage voluntary reporting of embodied carbon emissions in new construction.</p> <p>City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; Direction 2.4.1.3 Pursue emissions-neutral and net-positive infrastructure, buildings and neighbourhoods</p>	2027-2030		

FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$			
\$		●	
\$		●	
\$			
\$			
\$			
\$			
\$\$\$	●		Desired
\$			
\$			
\$			
\$			

Early Successes

- ▶ Launch of Change Homes for Climate's voluntary home energy labelling program that offers rebates for EnerGuide home energy evaluations. The corresponding EnerGuide labels are shared publicly on Edmonton's Home Energy Map.
- ▶ Launch of Change Homes for Climate: Home Energy Retrofit Accelerator, a program that offers rebates to homeowners for energy efficiency retrofit investments.
- ▶ Launch of Change Buildings for Climate: Building Energy Retrofit Accelerator, a program that provides rebates for energy efficiency retrofits on commercial buildings 10,000 sq ft and larger.
- ▶ Launch of Building Energy Benchmarking Program, a voluntary program that invites Edmonton's large commercial, institutional, industrial and multi-family buildings to submit their energy performance data to the City for benchmarking and disclosure purposes - the first program of its kind to be hosted by a municipality in Canada.
- ▶ 120 City of Edmonton buildings (all buildings eligible for participation) disclosing their energy performance. 5 city of Edmonton buildings BOMA Best certified, with an additional 15 in the certification process.

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PATHWAY 2: EMISSION NEUTRAL BUILDINGS CONT'D


ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO ₂ EMISSIONS REDUCED
<p>2.12. Continue to apply energy efficiency criteria as part of the affordable housing grant program, and establish incentives for energy efficient/emission neutral affordable housing, reducing energy costs and increasing total affordability.</p> <p>City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment & 1.3.3 Support the elimination of poverty, its root causes and disparity in Edmonton's communities.</p>	2021-2022		
<p>2.13. Pilot a home renovation program designed to address energy poverty and implement income-based programs to help residents living in energy poverty make their homes more energy efficient, access renewable energy and realize benefits of energy transition.</p> <p>City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment & 1.3.3 Support the elimination of poverty, its root causes and disparity in Edmonton's communities.</p>	2021-2022		
<p>2.14. Forecast, track and report on energy poverty while collaborating with existing poverty reduction initiatives to lessen energy burden in Edmonton.</p> <p>City Plan Policy Intention 1.3.3 Support the elimination of poverty, its root causes and disparity in Edmonton's communities.</p>	2023-2026		
<p>2.15. Support, retain and grow green technology and service businesses in the region that are locally owned and controlled by diverse groups, and market and promote local green building expertise, innovation, technologies, products and services with regional economic development partners.</p> <p>City Plan Policy Intention 6.4.1 Promote economic development opportunities to support energy transition & 3.4.2 Support innovation and private investment in climate-resilient industries and businesses; Direction: 3.4.2.1 Prioritize climate-related research, industry, technology and businesses through partnerships, programs, processes and grants.</p>	2023-2026		
<p>2.16. The City leads by example by setting an emission neutral building standard for new City buildings.</p> <p>City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient</p>	2021-2022		
<p>2.17. The City leads by example by retrofitting municipal buildings as outlined in an updated Civic Operations GHG Management Plan.</p> <p>City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient</p>	2023-2026		
<p>2.18. The City leads by example by reporting and disclosing the energy performance of City-owned buildings.</p> <p>City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient</p>	2021-2022		
<p>2.19. The City leads by example by implementing embodied carbon disclosure into procurement processes of building materials and products.</p> <p>City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient</p>	2023-2026		

FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$			
\$\$	●		Desired
\$			
\$			Desired
\$		●	Desired
\$\$\$	●		Required
\$			
\$		●	

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PATHWAY 3: LOW CARBON CITY AND TRANSPORTATION

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO2 REDUCTION
3.1. Implement City Plan and the Growth Management Framework policy directions and intentions related to climate change mitigation City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; City Plan Policy Intention 2.2.1 Promote compact, mixed use development with districts that supports equitable access to employment, education and amenities; City Plan Policy Intention 2.2.3 Ensure that walkable and attractive mixed use development occurs at nodes and along corridors in a manner that is integrated with accessible mass transit; City Plan Policy Intention 2.3.1 Promote opportunities to accommodate growth through the compact development of new and existing neighborhoods; City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient	2021-2022		
3.2. Implement regulatory and policy changes to enable sustainable and resilient development; City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient	2023-2026		
3.3. Update Design and Construction Standards with sustainable and resilient elements; City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; City Plan Policy Intention 2.4.1 Ensure public buildings and infrastructure are sustainable and resilient	2021-2022		
3.4. Create district plans that enable low carbon and climate resilient communities City Plan Policy Intention 2.2.1 Promote compact, mixed use development with districts that supports equitable access to employment, education and amenities; City Plan Policy Intention 2.2.3 Ensure that walkable and attractive mixed use development occurs at nodes and along corridors in a manner that is integrated with accessible mass transit; City Plan Policy Intention 4.2.1 Ensure that transportation investment supports urban intensification and diversification	2021-2022		
3.5. Develop a process for considering emissions targets, climate change mitigation and adaptation, and protection of critical land uses such as agriculture and natural areas, as part of the land development application reviews; City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment	2023-2026		
3.6. Apply greenhouse gas emissions mitigations and sustainability and resilient elements to urban renewal projects and urban redevelopment; City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment	2021-2022		
3.7. Identify and begin planning for potential car free or low emissions zones or corridors in combination with active transportation and public realm improvements; City Plan Policy Intention 2.2.3 Ensure that walkable and attractive mixed use development occurs at nodes and along corridors in a manner that is integrated with accessible mass transit;	2023-2026		
3.8. Accelerate Edmonton's EV-Readiness by supporting the installation of public EV charging infrastructure, and providing EV charging incentives; City Plan Policy Intention 4.4.1 Support a low-carbon mobility system	2021-2022		
3.9. Support zero emission vehicles via designated driving lanes, priority parking, or other measures; City Plan Policy Intention 4.4.1 Support a low-carbon mobility system	2027-2030		
3.10. Collaborate and explore opportunities for utilization of hydrogen in the goods movement sector, including piloting a hydrogen fuel bus retrofit project with post secondary institutions; City Plan Policy Intention 4.4.1 Support a low-carbon mobility system	2023-2026		
3.11. Monitor and plan for the advancement of disruptive transportation technology City Plan Policy Intention 4.1.1 Support inviting and inclusive transportation options for Edmontonians of all ages, abilities and incomes	2021-2022		
3.12. Support car, ride, bike and other micro-mobility sharing programs City Plan Policy Intention 4.1.1 Support inviting and inclusive transportation options for Edmontonians of all ages, abilities and incomes	2023-2026		
3.13. Identify parking management strategies that enable better access by active, transit or shared modes of transportation; City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives	2023-2026		
3.14. Identify and prioritize opportunities to reallocate road right of way to transit and active transportation City Plan Policy Intention 4.2.1 Ensure that transportation investment supports urban intensification and diversification	2023-2026		

FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$\$	●		
\$		●	
\$			
\$			
\$			
\$		●	
\$			
\$\$	●		Desired
\$			
\$			Desired
\$			
\$			
\$			

Early Successes

- ▶ Approval of the City Plan, the first municipal development plan in Canada to include a carbon budget, limiting the amount of greenhouse gases that can be emitted.
- ▶ Development of Blatchford, planned to be a carbon-neutral community for 30,000 residents that uses 100% renewable energy.
- ▶ Extension of Edmonton's LRT network and Edmonton Transit Services deployment of its first battery-electric buses into service, and single largest purchase of electric buses (40) in Canadian history
- ▶ Development of protected bike lanes in the downtown core and expansion of the bike network to connect beyond the core
- ▶ Adoption of Edmonton's Electric Vehicle Strategy and roll out of publicly accessible electric vehicle charging facilities
- ▶ Launch of Change Mobility for Climate: Edmonton's Electric Vehicle Charger program which provides incentives for investment in low GHG emission transportation options
- ▶ Energy performance clauses are considered for all sales and incorporated in most City property sale agreements.
- ▶ LED street light conversion program has replaced 60% of streetlights on collector and arterial roadways with LED lights. Over 9,000 lights have been converted to LED at LRT stations.

LEGEND

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PATHWAY 3: LOW CARBON CITY AND TRANSPORTATION CONT'D

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO2 REDUCTION
3.15. Develop an urban freight strategy that includes a focus on reducing emissions. City Plan Policy Intention 4.3.1 Ensure that the mobility system enables the efficient movement of people and goods within Edmonton and the Metropolitan Region	2027-2030		
3.16. Create a Just and Equitable Transition Initiative for equity seeking groups that identifies challenges, solutions and participation opportunities City Plan Policy Intention 3.1.2 Support equity among the diverse communities that contribute to Edmonton's sense of place, wellness and identity	2023-2026		
3.17. Support social connections in neighborhoods and communities through climate action. City Plan Policy Intention 3.4.1 Support Edmontonians in building individual and community capacity to take action on climate change	2023-2026		
3.18. The City promotes the benefits of buying low carbon, local through its Change for Climate Program City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; City Plan Policy Intention 3.4.2 Support innovation and private investment in climate resilient industries and businesses	2021-2022		
3.19. The City develops a circular economy strategy that includes creating sharing platforms and enhancing Edmonton's sharing economy City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives	2023-2026		
3.20. The City enhances the connection of businesses and industries to facilitate resource/waste sharing, including for local agricultural growers to identify waste heat locations that could be used to fuel operations City Plan Policy Intention 3.4.2 Support innovation and private investment in climate resilient industries and businesses	2023-2026		
3.21. In partnership with the region, protect agricultural lands from further fragmentation and conversion to other land uses; City Plan Policy Intention 5.3.1 Support the conservation of agricultural land to reduce its loss and fragmentation and contribute to economic development and resilience of the food system	2021-2022		
3.22. Promote urban agricultural activities and local farmers markets on appropriate land uses; City Plan Policy Intention 2.2.2 Ensure affordable housing and local food options to support social equity and meet the needs of all Edmontonians	2021-2022		
3.23. Develop food waste reduction supports that includes a focus on redistribution of food to people in need; City Plan Policy Intention 2.2.2 Ensure affordable housing and local food options to support social equity and meet the needs of all Edmontonians	2021-2022		
3.24. Promote further value-added agriculture facilities to reduce carbon footprint and improve food security; City Plan Policy Intention 2.2.2 Ensure affordable housing and local food options to support social equity and meet the needs of all Edmontonians	2023-2026		
3.25. Further grow and improve Edmonton's walking and cycling infrastructure as per City Plan City Plan Policy Intention 4.1.1 Support inviting and inclusive transportation options for Edmontonians of all ages, abilities and incomes; City Plan Policy Intention 4.2.3 Ensure active transportation networks serve a variety of purposes including recreation, commuting, commerce and fun	2021-2022		
3.26. Develop a City-led transportation marketing program to support personalized low emission transportation plans City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives; City Plan Policy Intention 4.4.1 Support a low-carbon mobility system	2027-2030		
3.27. Implement the Mass Transit network City Plan Policy Intention 4.1.1 Support inviting and inclusive transportation options for Edmontonians of all ages, abilities and incomes; City Plan Policy Intention 4.2.1 Ensure that transportation investment supports urban intensification and diversification	2021-2022		
3.28. Implement the redesign of the transit system with a focus on increasing ridership through increased reliability and service improvements City Plan Policy Intention 4.1.1 Support inviting and inclusive transportation options for Edmontonians of all ages, abilities and incomes; City Plan Policy Intention 4.2.2 Ensure a mobility system where people can move seamlessly from one travel option to another to conveniently fulfill their daily needs	2021-2022		

PATHWAY 3: LOW CARBON CITY AND TRANSPORTATION CONT'D


ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO2 REDUCTION
3.29. The City transitions the bus fleet and mass transit technologies to electric or alternative zero emissions fuel, including upgrading and building facilities/garages to accommodate electric or zero emissions fuel transit fleet; City Plan Policy Intention 4.4.1 Support a low-carbon mobility system	2021-2022		
3.30. The City transitions its vehicles and motorized equipment with zero emissions models, including upgrading facilities and installing fleet charging infrastructure requirements; City Plan Policy Intention 4.4.1 Support a low-carbon mobility system	2023-2026		
3.31. The City develops alternative work strategies (i.e., telework strategies) for its staff City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives	2021-2022		
3.32. Replace street lighting and traffic signal technology through the LED retrofit and replacement programs. City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment;	2021-2022		
3.33. Develop a food production policy for City of Edmonton owned property and public space City Plan Policy Intention 2.2.2 Ensure affordable housing and local food options to support social equity and meet the needs of all Edmontonians	2023-2026		

DE FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/ PROVINCIAL FUNDING
\$\$\$	●		Desired
\$			
\$		●	
\$			
\$			

LEGEND

 High Impact (replaces carbon intensive energy and is scalable)

 Moderate Impact (reduces emissions)

 Enabling Impact (does not directly reduce GHG emissions, but enables low carbon city outcomes)

\$\$\$ High Funding Requirements (>\$20,000,000)

\$ Moderate Funding Requirements (\$1,000,000 - \$20,000,000)

\$ Low Funding Requirements (<\$1,000,000)

Big Wins: Actions that have potential to significantly reduce greenhouse gas emissions while also supporting other Big Moves in The City Plan

Quick Wins: Actions that are easier to implement and support multiple City Plan targets

Federal/Provincial Funding: Actions that "require" funding to advance, or actions where funding is "desired" to scale and accelerate

PATHWAY 4: CARBON CAPTURE AND NATURE BASED SOLUTION

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO₂ REDUCTION
4.1. Accelerate work, including the expansion of the volunteer tree planting program, to plant an additional 2 million trees and protect the health of the existing canopy. City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment	2021-2022		
4.2. Expand green infrastructure such as low impact development, naturalized and restoration areas, and green space, in existing and new developments. City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient	2021-2022		
4.3. Conserve and restore key carbon sequestration ecosystems and natural assets such as river valley, parkland, ravine, riparian areas, wetlands, natural forests, shrublands, and grasslands. City Plan Policy Intention 5.1.1 Ensure protection, enhancement and opportunities for access to open space and the river valley and ravine system; City Plan Policy Intention 5.1.2 Promote the conservation and restoration of natural systems to improve ecological connectivity and reduce habitat fragmentation; City Plan Policy Intention 1.4.2 Ensure Edmonton's air, land and water are safe and clean	2023-2026		
4.4. Develop a conservation offset program based on the mitigation hierarchy framework. City Plan Policy Intention 1.4.2 Ensure Edmonton's air, land and water are safe and clean; Direction 1.4.2.1 Protect, restore, maintain and enhance a system of conserved natural areas within a functioning and interconnected ecological network.	2023-2026		
4.5. Establish a nature based solutions framework and program for the City of Edmonton that includes integrating nature based solutions into applicable planning documents, based on the International Union for Conservation of Nature Global Standard for Nature Based Solutions. City Plan Policy Intention 5.4.1 Ensure the safety and security of Edmonton's water supply, food systems, infrastructure and natural systems to support long-term resilience to flooding, droughts and extreme weather events; City Plan Policy Intention 1.4.2 Ensure Edmonton's air, land and water are safe and clean	2021-2022		
4.6. Undertake a natural asset and infrastructure inventory and valuation assessment that includes an assessment of greenhouse gas sources and sinks and implementation of associated monitoring requirements. City Plan Policy Intention 5.3.3 Ensure consideration of full lifecycle costs and benefits when maintaining and renewing public infrastructure	2021-2022		
4.7. Support research and collaborations to scale up nature based solutions. City Plan Policy Intention 5.4.1 Ensure the safety and security of Edmonton's water supply, food systems, infrastructure and natural systems to support long-term resilience to flooding, droughts and extreme weather events; City Plan Policy Intention 1.4.2 Ensure Edmonton's air, land and water are safe and clean	2023-2026		
4.8. Identify opportunities for reallocating public spaces to allow for naturalization and restoration. City Plan Policy Intention 2.4.1 Support ecological function and energy efficiency of Edmonton's built environment; City Plan Policy Intention 5.1.1 Ensure protection, enhancement and opportunities for access to open space and the river valley and ravine system	2023-2026		
4.9. Plan with regional partners for the needs of CO ₂ infrastructure (CO ₂ pipelines, CCU/S corridors, etc.) in a way that minimizes ecological impacts and promote carbon capture economic development opportunities City Plan Policy Intention 3.4.2 Support innovation and private investment in climate resilient industries and businesses and Ensure that development occurs in an orderly and safe manner to protect public health and the environment.	2021-2022		
4.10. Identify an approach that mobilizes and tracks the voluntary carbon offsets purchased in the community. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives	2023-2026		
4.11. The City leads by example by launching the "first buyer" of low carbon and carbon captured products initiative. City Plan Policy Intention 3.4.2 Support innovation and private investment in climate resilient industries and businesses	2023-2026		
4.12. Continue to monitor offset efforts by other orders of government and explore pathways to offset community emissions/reach carbon neutrality. City Plan Policy Intention 1.4.1 Support Edmontonians' transition to a low carbon future in their daily lives	2021-2022		
4.13. The City leads by example by updating the Civic Operations GHG Management Plan to include a pathway for offsetting residual emissions from municipal operations. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience	2021-2022		

FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$\$	●		Required
\$\$		●	
\$\$	●		Desired
\$	●		
\$			
\$			
\$			
\$	●		
\$			
\$\$		●	
\$			
\$\$		●	

Early Successes

- ▶ Development and launch of Edmonton's Urban Primary Vegetation and Land Inventory that can be used to track how municipal greenhouse gas emission levels are being impacted by land use change, among other applications.
- ▶ 49+ hectares of turf area in Edmonton naturalized.
- ▶ 560+ hectares of priority natural areas secured.
- ▶ Development of the Ribbon of Green strategy that will support and sustain an interconnected river valley system.
- ▶ Purchasing Renewable Energy Credits to offset approximately 65% of the City of Edmonton's carbon emissions associated with its electricity use

LEGEND

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FOUNDATION: CLIMATE SOLUTION LEADERSHIP

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO2 REDUCTION
<p>5.1. The City monitors and reports on the community's carbon budget and implements an integrated carbon and financial accounting framework into operating and capital budgeting decisions and priority setting. City Plan Policy Intention 5.3.3 Ensure consideration of full lifecycle costs and benefits when maintaining and renewing public infrastructure</p>	2021-2022		
<p>5.2. The City transitions Climate Related Financial Disclosures into annual reports. City Plan Policy Intention 5.3.3 Ensure consideration of full lifecycle costs and benefits when maintaining and renewing public infrastructure</p>	2021-2022		
<p>5.3. The City continues and improves monitoring of: i) corporate and community greenhouse gas emissions through both production and consumption based inventories, and ii) implementation of actions; and integrates energy transition targets and measures into the Enterprise Performance Management system. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.4. The City updates the Civic Operations GHG Management Plan to align with the updated Energy Transition Strategy outcomes. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.5. The City introduces an internal Carbon Reduction Cost Saving Program in which business areas reduce their emissions. This could be done through employee mode shift, utility savings from energy efficiency, workspace reduction, reduced printing, reduced waste, etc. City Plan Policy Intention 3.4.1 Support Edmontonians in building individual and community capacity to take action on climate change</p>	2023-2026		
<p>5.6. The City aligns its policies and standards related to planning, development, construction, and procurement/supply chain with the goal of climate resilience. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience; City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient</p>	2021-2022		
<p>5.7. The City establishes an internal Climate Action Leadership Task Force to support accelerated and focussed climate action. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.8. The Energy Transition and Climate Resilience Committee continues to advise City Council. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.9. The City advocates to, collaborates with, leverages and aligns with new government opportunities for bold climate action, standards, funding and additional powers. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.10. Advance climate change initiatives in collaboration with other municipalities in the Edmonton Region. City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient</p>	2021-2022		
<p>5.11. The City continues advancing the Edmonton Declaration, which has been endorsed by thousands of municipalities from around North America. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.12. The City continues implementation of the CitiesIPCC Legacy Research Grant Program to help advance the global research agenda on Cities and Climate Change science and help advance knowledge about how Edmonton can become an energy sustainable and climate resilient city. City Plan Policy Intention 6.4.2 Ensure Edmonton plans and implements climate change mitigation, adaptation and resilience</p>	2021-2022		
<p>5.13. Collaborate with Climate Innovation Fund on initiatives to develop green economy solutions for Edmonton's carbon emission challenges. City Plan Policy Intention 3.4.2 Support innovation and private investment in climate resilient industries and partnerships</p>	2021-2022		
<p>5.14. The City continues education, social marketing and outreach initiatives focused on communicating the solutions for taking action on climate change and supporting growing grassroots movements. City Plan Policy Intention 3.4.1 Support Edmontonians in building individual and community capacity to take action on climate change</p>	2021-2022		

FOUNDATION: CLIMATE SOLUTION LEADERSHIP CONT'D

ACTION	IMPLEMENTATION INITIATED	GHG REDUCTION POTENTIAL	CO ₂ EMISSIONS REDUCED
<p>5.15. The City expands programs that work with businesses, communities and residents to collectively reduce Edmonton's greenhouse gas emissions, and support post-secondary institutions on research and preparing a low carbon workforce. This includes various programs such as Change for Climate and Corporate Climate Leaders Program.</p> <p>City Plan Policy Intention 3.4.1 Support Edmontonians in building individual and community capacity to take action on climate change</p>	2021-2022		
<p>5.16. The City continues with its internal Energy Efficiency Revolving Fund and explores expanding it to include an emissions reduction innovation revolving fund,</p> <p>City Plan Policy Intention 3.4.2 Support innovation and private investment in climate resilient industries and partnerships</p>	2021-2022		
<p>5.17. The City hosts a pilot Clean Energy Improvement Program (CEIP), which provides residential and commercial property owners with access to long-term financing for energy efficiency upgrades and/or renewable energy installations. Repayment is made via the property tax system. Explore if the program can include new construction.</p> <p>City Plan Policy Intention 3.4.1 Support Edmontonians in building individual and community capacity to take action on climate change</p>	2021-2022		
<p>5.18. The City establishes a working group to inform a just & equitable framework that can be applied to decisions made when mitigating and responding to climate change.</p> <p>City Plan Policy Intention 3.1.2 Support equity among the diverse communities that contribute to Edmonton's sense of place, wellness and identity</p>	2023-2026		
<p>5.19. The City applies Gender Based Analysis Plus (GBA+) when developing energy transition policies and programs (an analytical process that looks at how people of different identities might experience initiatives differently).</p> <p>City Plan Policy Intention 3.1.2 Support equity among the diverse communities that contribute to Edmonton's sense of place, wellness and identity</p>	2023-2026		
<p>5.20. Develop and implement financing tools and incentives to advance priority growth areas as part of the growth management framework to support compact and efficient built form.</p> <p>City Plan Policy Intention 2.4.2 Ensure public buildings and infrastructure are sustainable and resilient</p>	2021-2022		

LEVEL OF FUNDING REQUIREMENTS	BIG WINS	QUICK WINS	FEDERAL/PROVINCIAL FUNDING
\$			
\$			
\$\$	●		Required
\$			
\$			
\$			

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For more information please visit: change4climate.ca or call 311

