Funding climate action in the City of Calgary

May 2022

Contents

Executive summary

Climate as a strategic priority

Climate resilience is a strategic priority for the City of Calgary and was identified as a foundation within Council's Strategic Direction for the 2023-2026 Service Plans and Budgets.[1] With this Council direction, as well as Council's Climate Emergency Declaration in November 2021[2], investments into climate resilience and low-carbon initiatives will need to grow and be prioritized.

Funding challenge

Funding climate action is challenging as there is no single source of funding or single mechanism that will allow municipalities to meet their climate goals. A coordinated effort across all City departments, the federal and provincial governments, and the private sector will be required.

To enable long-term planning and support for climate work within the corporation, with civic partners, and in the community, a stable and consistent set of funding sources and mechanisms will be required. One-off or project-by-project funding requests are inefficient as this method does not consider long-term implications of all projects or allow The City to act quickly on external funding opportunities.

While grants and financing from other levels of government play an important part in supporting climate actions, political uncertainty and competition for limited funding make it difficult to plan projects and initiatives that rely exclusively on provincial or federal funding. The City must also consider how to use available funding and the prioritization of projects to best support climate action within the corporation and the community.

Mechanisms for funding, financing, and supporting climate action

The following recommendations have been made to support the development of a long-term and stable funding strategy for climate action in The City:

- Integrate climate considerations into financial and resource planning and decision making through increased climate knowledge and expertise across The City.
- Enable agile decision making and prioritization through a centralized fund for climate-related public infrastructure projects.
- Leverage existing and new funding sources, including external grant and funding opportunities, to support climate initiatives.
- Enable incentive programs, lending initiatives, partnerships, and policy to support climate actions.
- Evaluate and implement appropriate financing mechanisms to support corporate climate projects.

Two main themes weave through these recommendations, (1) leveraging public funding and (2) mobilizing private investment.

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[1] The City of Calgary. (2022). *Resilient Calgary: Council's Strategic Direction 2023–2026* (No. C2022-0372). https://pub-calgary.escribemeetings.com/FileStream.ashx?DocumentId=202786
[2] The City of Calgary. (2021). *Notice of Motion: Declaration of Climate Emergency and Call to Action* (No. EC2021-1525). https://pub-calgary.escribemeetings.com/filestream.ashx?DocumentId=188421

Leveraging public funding

The City has applied to certain grant and debt financing programs through the Canada Infrastructure Bank, the Canada Mortgage and Housing Corporation, the Federation of Canadian Municipalities, and grant funding programs directly through the Government of Canada and Government of Alberta.

While The City has had success in the past with certain programs, an opportunity exists to pursue more options within these and other grant and debt financing programs, but timely responses to external funding programs are critical. The City must be prepared to accelerate and prioritize programs that are most aligned with the available funding opportunities. There must be the capacity and resources available within the leading and supporting business units to successfully apply for funding and implement successful projects.

Mobilizing private investment

Private investment in climate action is required from the individual household projects to large commercial and industrial projects to meet the goals and milestones of the Calgary Climate Strategy. The City can strategically design enabling programs and mechanisms to encourage private investments.

Providing flexible lending programs or credit enhancements will support Calgarians to invest into their homes and businesses to achieve financial and climate goals. Incentives can spur investment into emerging technologies, drive change in decision making, and transform the market.

The City represents an attractive long-term partner to the private sector. Partnerships with private and non-profit organizations will allow The City to leverage private capital for corporate and community projects.

Navigating a dynamic funding landscape

The landscape of funding and financing is dynamic based on changes in federal and provincial government priorities, evolving private investor priorities and risk appetites, and development of new investment approaches and tools. Prioritization of projects and initiatives that align with federal and provincial funding programs as well as private investor ESG goals will be increasingly important to ensure maximum external funding can be leveraged for climate projects in Calgary.

Continuous engagement with partners, both public and private, will be required to understand and adapt to this changing financing and funding environment. Building strong relationships and collaborating across public and private sectors will be vital to reach the level of investment required to address the challenges of the climate emergency.

1. Introduction

Calgary City Council made a Climate Emergency Declaration in November of 2021. This declaration puts The City on record in support of emergency action to respond to climate change and recognizes the pace and scale of action needed. In declaring the climate emergency, climate change has become a strategic priority for The City and includes calls to action for The City to develop strategic business plans and budgets across all departments that identify, invest in, and accelerate ideas for climate mitigation and adaptation. Advancing the strategic focus on climate, Council declared climate resilience as one of the Foundations in the Strategic Direction for the 2023-2026 Service Plans and Budgets.

The Climate Emergency Declaration included an updated target of net zero emissions by 2050. This is an ambitious target that aligns with the goals stated by many municipalities, governments, non-profits, and private companies across the globe. This declaration is intended to support Calgary's ability to leverage federal, provincial, and private investments to support both climate mitigation and climate adaptation actions (e.g., greenhouse gas emission reductions, flood and drought mitigation, disaster risk reduction).

The COP26 UN Climate Change Conference, held in fall 2021, included mobilizing finance for climate action as one of the top four goals.[3] COP26 stressed financing will be imperative to support the scale and speed of action and changes that are required across the world.COP26 proposed that every financial decision needs to take climate into account, this includes both private and public investment decisions.

The Calgary Climate Strategy is being updated in 2022 to reflect the latest climate science, best practices and international and national obligations. The Calgary Climate Strategy will also reflect the updated target of reducing greenhouse gas emissions to net zero by 2050, as established in the Climate Emergency Declaration. The updated Calgary Climate Strategy will identify critical actions, tools, and programs needed to meet the net zero target, reduce the impacts of climate change on the city, and support a low carbon economy.

With the ambition of the proposed actions and milestones in the updated Calgary Climate Strategy, a significant level of investment is required. This investment cannot be made by The City alone. Coordinated efforts across City departments, the federal and provincial Governments, and the private sector will be required to reach the level of investments needed.

This report identifies potential options for sources of funding for climate action as well as potential mechanisms The City can leverage to support climate mitigation and adaptation initiatives in the community and within the corporation. Opportunities have been identified to guide the development of long-term sustainable funding strategies for achieving the milestones identified in the Calgary Climate Strategy.

[3] *COP26 Goals*. UN Climate Change Conference (COP26) at the SEC – Glasgow 2021. https://ukcop26.org/cop26-goals/

2. Municipal role in funding climate action

2.1. Municipal roles

Municipalities play an important part in the funding of climate action. The World Bank identified five main roles of municipal governments to provide or influence financing in climate mitigation and adaptation.[4] It is important for The City to consider all five of these roles as the options for funding and financing climate action are evaluated:

Consumer of goods and services

- Ensure low carbon and climate resilient procurement

Provider of goods and services

- Ensure low carbon & climate resilient investments and services

Fundraiser of capital

- Facilitate or establish green financing instruments

Regulator that offers incentives

- Incentives through policies, regulations, standards, and subsidies

Convener and champion of systems thinking

- Drive transformational change in layers of jurisdictions and sectors within a city

These five roles are important to consider as the Calgary Climate Strategy and the actions identified in the plans are implemented. Additionally, these roles should be considered across all the service lines within The City and how they can be integrated into the services The City procures, provides, or influences.

[4] World Bank. 2021. *State of Cities Climate Finance 2021 Part 2: The Enabling Conditions for Mobilizing Urban Climate Finance*. © World Bank. License CC BY 3.0 IGO climatepolicyinitiative.org

2.2. Governance

Climate action initiatives are subject to the City's governance procedures and require early engagement with the Corporate Finance team. Consultation with Corporate Finance begins during the project identification phase to structure a project's financing needs and to ensure that the project meets The City's governance criteria as well as the requirements of any potential financing partners. The Corporate Finance team will assist the Climate Team and sponsoring business units in developing financial partnerships and completing the approval process. This includes the provision of appropriate resources and structuring the timing to obtain the required approvals during procurement that will help ensure successful and timely completion of the transaction. Adhering to the City's governance process helps to ensure that projects meet the following objectives:

Maximize Value for The City

- Potential to secure low-cost financing to bridge financing gaps
- Innovative financing structures with a long-term established partner
- Enable projects that are otherwise not possible
- Effective risk transfer to support the development of new technologies

Work most effectively with the financing partners to achieve City Priorities

- Timely engagement with the financing partners to support growth objectives
- Leverage financial and technical advisory services and development funding
- Capital markets advocacy to address the private financing requirements

One City, One Voice approach

- Organizational awareness of the various financing partners
- Foster a productive relationship to triage opportunities
- Clear roles and responsibilities

Strengthened collaboration, improved internal coordination, greater innovation

- Staged project management approach
- Effective debt structuring that achieves financial and technical objectives
- Integrated reporting and debt management

A consistent approach is recommended, with the flexibility to allow for differences required for varying types of infrastructure projects. Certain types of financing may result in a long-term financial arrangement with public and private sector entities that obligate The City to make payments over a number of years. Given these potential implications, a formal due diligence and approval process will be required that may include the involvement of Council.

3. Mechanisms for funding, financing, and supporting climate action

To enable long-term planning and support for climate work within the corporation, with civic partners, and in the community, a stable and consistent set of funding, financing, and supporting mechanisms will be required. The following sections will focus on the sources of funding and the mechanisms through which The City can fund and support climate initiatives. Each option is ranked High, Medium, or Low based on the criteria outlined in Appendix B. Those ranked as High are those that can be more readily implemented and likely have a higher impact on climate reductions.

- **Sources of funding** means a source of incremental funding to support The City's climate initiatives. A single initiative may have multiple sources of funding.

- **Financing and supporting mechanisms** mean financing, incentives, or any other financial tool that enables The City to support its climate initiatives. A funding mechanism does not generate funds itself and requires a source of funding to back the mechanism.

3.1. Sources of funding for climate action

3.1.1. Grants and funding

Federal and provincial grants and funding

Ranking: High

There are many opportunities available from other levels of government that support climate initiatives in municipalities as well as across other sectors. Appendix A lists the programs currently available (at the time this report was written) for municipalities, the private sector, individuals, academia, and non-profit organizations.

Taking advantage of funding opportunities as soon as they become available is important as many of these programs are highly competitive, with The City competing with other municipalities, as well as the private sector and non-profits in some cases. Moreover, funding programs have limited budgets and limited application windows that require The City to act fast on applications. Changes in provincial and federal government can vastly reduce or increase the available funding for specific initiatives available to municipalities.

The federal government has invested approximately $60 Billion toward climate action and clean growth since 2015, and through Budget 2021, proposed to provide $17.6 Billion more towards a green recovery.[5] This budget included funding over the next five years for investing in Canada's clean energy future, advancing Canada's climate plan, building green homes and communities, and adapting to climate

[5] *Budget 2021*. Government of Canada. https://www.budget.gc.ca/2021/report-rapport/toc-tdm-en.html

change for a more resilient future. Across Canada, these investments are intended to support individuals, businesses, municipalities, and provinces to take climate action. Additionally, the 2030 Emissions Reduction Plan, announced in March 2022, included $9.1 Billion in new investments across buildings, transportation, community support, grid decarbonization, and economic growth.

The level of funding from the provincial government for climate initiatives has decreased since the Climate Leadership Plan (originally introduced in 2015) was repealed in 2019 and a new climate plan has yet to be introduced. Almost all provincial funding for climate mitigation has been directed to industry and technology innovation through the Technology Innovation and Emissions Reduction (TIER) Regulation, with funding funneled through organizations like Alberta Innovates and Emissions Reduction Alberta. While these types of programs are important and align with the end-goals of the Calgary Climate Strategy, they are not targeted to supporting municipal climate actions.

▶ The City of Calgary received just over $2.2 million in grant funding from the Municipal Climate Change Action Centre for the 4.3MW solar array known as the Shepard Solar Park.[6] ◀

3.1.2. Taxes and levies

Property tax revenues

Ranking: High

Municipal property tax dollars make up just under 50 per cent of The City's annual operating budget. The City calculates the revenue required from property taxes by taking the overall expenditures and subtracting all other sources of revenue (e.g., fees, permits, user fees, grants). The property tax rates are set by a Property Tax Bylaw.

The City offers a variety of services to Calgarians and businesses in Calgary, with climate initiatives being one of those services. It is a risk that other services may be deemed more important through the budgeting and service planning process and could be prioritized over climate initiatives.

▶ The City of Edmonton's Environment and Climate Resilience Budget (2021) of $13.68 million is tax supported (0.4% of total tax supported expenditures).[7] ◀

Municipal climate tax

Ranking: Medium

There are a variety of options for municipalities to implement a tax or fee on greenhouse gas emitting activities or to support climate initiatives.

The Vancouver and Victoria regions and the City of Montreal have dedicated taxes on gasoline and/or diesel that are directed to their respective transit service region authority. The funds collected through the fuel taxes are used to support the transit systems that service the regions where the fuel tax is collected. The collection of a tax on gasoline and/or diesel by the transportation/transit organizations is allowed through British Columbia's *Motor Fuel Tax Act*[8] and Quebec's *Fuel Tax Act*[9]. If a similar tax on gasoline

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[6] Municipal Climate Change Action Centre. *Calgary Shepard Solar Park Solar PV* | MCCAC. https://mccac.ca/project-showcase/calgary-organic-composting-facility-solar-pv/
[7] *Open Budget Environment and Climate Resilience* 2021. City of Edmonton. https://budget.edmonton.ca/#!/year/2021/operating/0/program/UPE%7EPLA+-+Environment+%2526+Climate+Resilience/0/fund_type?vis=barChart
[8] *Motor Fuel Tax*, RSBC 1996, c. 317, s. 12. https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96317_01
[9] *Fuel Tax Act*, CQLR c. T-1, s. 2. https://www.canlii.org/en/qc/laws/stat/cqlr-c-t-1/latest/cqlr-c-t-1.html

and/or diesel was to be implemented in the Calgary region, changes to Alberta's *Fuel Tax Act*[10] *Chapter F-28.1* would need to be implemented to allow for collection of the tax.

An example of a different type of carbon fee is in Boulder, Colorado where a carbon tax (Climate Action Plan Tax or CAP Tax) has been implemented based on electricity consumption as it is the largest contribution to their greenhouse gas emissions.[11] Boulder uses the funds to implement energy efficiency and renewable energy programs that are intended to reduce the fuel consumption of the participants (and therefore reduce the amount of tax they will pay). Boulder also makes sure to include specific programs targeted to those who may be impacted more by the tax (e.g., low-income households). The City of Boulder is currently proposing changes to the tax that would generate approximately $5 million per year until 2040. Although a successful program, the United States has different state and municipal legislation than Canada as well as different regulations on their utility companies. In Canada, carbon taxes have been implemented by the federal and provincial governments and have not been assessed by municipalities.

▶ In 2022, the Halifax Regional Municipality approved a 4.6% increase to the average property ◀ tax bill, with 3% of the increase being approved for a Climate Action Tax. The Climate Action Tax will support municipal deep energy retrofits, EV strategy, climate adaptation, and electric bus procurement.[12]

Off-site levy

Ranking: Low

Calgary's off-site levy helps pay for infrastructure that supports growth and development; developers pay for a portion of the costs of infrastructure within a new community or development site they are building. The off-site levy is one of several funding sources that contribute to covering these costs, others being property taxes and utility rates.

The off-site levy is subject to the *Municipal Government Act* where requirements and provisions are set for municipalities implementing a levy. The eligible capital costs that can be paid for through the off-site levy includes water and wastewater treatment facilities, storm water facilities, roads, transportation infrastructure, community recreation facilities, fire hall facilities, police station facilities, libraries, and land purchases to support these facilities. Municipalities are required to pass an Off-Site Levy Bylaw that meets the requirements outlined in the *Municipal Government Act*.

Based on the restrictions in the *Municipal Government Act*, the off-site levy cannot be used specifically for individual climate mitigation or adaptation projects. However, there should be consideration for climate mitigation and adaptation measures when the infrastructure funded through the off-site levy is planned. For example, as facilities like community recreation buildings or police and fire stations are planned, they should be built to low carbon or net zero standard with climate resiliency measures integrated as applicable.

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[10] *Fuel Tax Act*, SA 2006, c. F-28.1. https://www.qp.alberta.ca/documents/Acts/F28P1.pdf
[11] Center for Climate and Energy Solutions (C2ES). (2016). *City-Level Climate Leadership In Boulder: The Climate Action Plan Tax*. https://www.c2es.org/wp-content/uploads/2016/06/city-level-climate-leadership-boulder.pdf
[12] Halifax Regional Municipality. (2022). *Proposed 2022/23 Budget*. https://cdn.halifax.ca/sites/default/files/documents/city-hall/regional-council/220412bc6.pdf

3.1.3. Fees or surcharges

Franchise fees

Ranking: High

A franchise fee is charged to a utility distribution company, by way of a franchise agreement, for the exclusive right to serve utilities in that municipality. Typically, franchise fees are calculated as a percentage of the total distribution charges on the bill. The *Municipal Government Act* (Division 3) includes provisions and requirements on the implementation and collection of franchise fees. In certain circumstances, the Alberta Utilities Commission must approve the franchise agreements between the utility and the municipality. In Calgary, franchise fees are collected (per the franchise fee agreement) and are flowed into general revenue (like property taxes) and are used to fund a variety of services.

Franchise fees are directly associated with energy use and could be allocated to directly fund climate mitigation projects thereby using the funds to support reduction of energy use across The City. However, as franchise fees are currently flowed into general revenue and fund a variety of services, if the franchise fees were exclusively allocated to new climate initiatives the amount that was funding other services would need to be offset by other revenue sources (e.g., property taxes).

▶ The Town of Canmore uses a portion of franchise fees to fund climate action initiatives ◀ (Climate Change Specialist staff and Sustainability reserve fund).[13]

Fees or surcharges

Ranking: Medium

A user fee or surcharge is applied to individuals or businesses in exchange for a good or service. Fees are implemented for a variety of City services (e.g., parking fees, development fees, building permits) and is a lever The City controls and could use to drive desirable climate actions and behaviors.

To encourage or limit specific choices or behaviors, a fee may be implemented or increased. An increase in fees could be implemented across all users or could be increased to only those who do not meet specific climate-related criteria. If implementing this type of fee program, considerations need to be made for those who may be disproportionately affected by the fee increase (e.g., low-income users).

Examples of where this tactic could be implemented include:

- Goal: Reduction in high-emitting vehicles in Calgary and increased usage of Calgary Transit
    - Increased parking fees for high-emitting vehicles in specific areas in The City.
    - Creation of fees for accessing specific areas of The City by vehicle or for using specific roads.
- Goal: Increased low-carbon and climate resilient building retrofits and new construction development in Calgary
    - Increased development or building permit costs for not meeting a specified energy use target or climate resilience target.

It is important to note that all of these examples would require further investigation as some would require significant investment into technology (e.g., parking meter software that can manage different fees for different types of vehicles) or may require policy or legislation change (e.g., provincial legislation regulates the implementation of a toll road).

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[13] *2021-2025 Budget and Business Plan*. Town of Canmore. https://canmore.ca/documents/finance/budget-business-plan/4597-2021-2025-budget-and-business-plan

Any fee that is implemented should be considered with supporting processes (e.g., guidance on how to move to compliance with the climate criteria to receive a discounted rate) and reviewed with an equity lens. In late 2020, the City of Vancouver was unable to pass the Climate Emergency Parking Program which would place higher parking fees on new high-emitting vehicles due to a variety of reasons including equity concerns. Fee increases should not place additional financial stress on low-income or vulnerable populations in the city.

▶ In 2017, The City of Westminster in the United Kingdom implemented a Low Emission Neighborhood (LEN). Vehicles that do not meet a specific threshold are charged a surcharge to park in the neighborhood.[14] ◀

3.1.4. City of Calgary Reserves

City of Calgary reserves

Ranking: Medium

Reserve for Future Capital[15]

The Reserve for Future Capital funds capital projects (per Council approval), hold Pay-As-You-Go funding (which helps pay for City maintenance and upgrade projects, and costs ineligible to be paid using grant funds if a grant funded project), and to hold contingency funds. Pay-As-You-Go funding may be leveraged to support climate projects that need matching funds from the municipality in order to be eligible for a grant.

Planning & Development Sustainment Reserve[16]

The Planning and Development Sustainment Reserve can be used for stabilizing the operating budget, fund one-time operating expenditures, and fund capital expenditures. The reserve is used to respond to fluctuations in development and building activity, and therefore fluctuations in fees collected. Several operating programs are included under the reserve (e.g., Calgary Growth Strategies, Calgary Building Services, Capital Asset Acquisition, etc.).

In 2022, The City is completing its reorganization process and the portfolio of climate programs are being moved into the Planning and Development Department. It may be prudent to adjust the terms of the Planning & Development Sustainment Reserve to support the Climate and Environment Business Unit, specifically the Climate divisions, under this reserve.

Lifecycle Maintenance and Upgrade Reserve[17]

The Lifecycle Maintenance and Upgrade Reserve is established to maintain and upgrade capital assets. There are restrictions for spending based on the source of the funds (e.g., sale of surplus transit capital assets is used for transit capital purchases). Energy efficiency and climate resiliency upgrades are important considerations when looking at the lifecycle of a building. Climate considerations should be made when prioritizing the capital assets that use funding from this reserve.

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[14] *Low Emission Neighbourhood Initiatives* | Westminster City Council. (n.d.). City of Westminster. https://www.westminster.gov.uk/parking/parking-policy-strategy-and-initiatives/low-emission-neighbourhood-initiatives
[15] The City of Calgary. (2021). *Reserves and Long Term Liabilities Balances 2020* (No. PFC2021-1002). https://pub-calgary.escribemeetings.com/filestream.ashx?DocumentId=173093
[16] Ibid. pg. 10
[17] Ibid. pg. 10

3.1.5. Private sector investment

Private sector investment

Ranking: High

Private sector investment into climate action is required to meet net zero targets and adapt to a changing climate. Many financial institutions and lending organizations are working to meet their environmental, social, and governance goals through investments in decarbonization. The industry-led, UN convened Net-Zero Banking Alliance is a great example of financial institutions coming together across the globe to commit to aligning lending and investment portfolios with net-zero emissions by 2050.

With the increase of desirable emission reducing projects ready for investment, private sector investment will more readily flow to the low-carbon market in the Calgary region. Providing flexible lending programs or credit enhancements will support Calgarians to invest into their homes and businesses to achieve financial and climate goals. Incentives can spur private investment into emerging technologies, drive change in decision making, and transform the market.

The City represents an attractive long-term partner to the private sector. Partnerships with private and non-profit organizations will allow The City to leverage private capital for corporate and community projects.

3.2. Mechanisms for financing climate action

3.2.1. Debt financing

Federal and Provincial financing

Ranking: High

There are government agencies and non-profits that have been granted funds to allocate through financing programs and initiatives. An example of a federal financing program is the Canada Infrastructure Bank. Founded in 2017, the Canada Infrastructure Banks is a Crown Corporation of Canada tasked with financially supporting revenue-generating infrastructure projects that are “in the public interest” through public-private partnerships. Administration is reviewing numerous potential projects and has developed a Framework and Best Practices document to guide potential projects seeking financing through the Canada Infrastructure Bank. This framework would need to be used to ensure a consistent approach and the appropriate due diligence is used by The City.

The Canada Infrastructure Bank is complementary to and distinct from existing federal government programs. The Canada Infrastructure Bank has the flexibility to invest across the capital structure for new projects, potentially bridging gaps in the capital structure to enable a project to move forward, which, in the absence of Canada Infrastructure Bank participation, may not be delivered at all. The nature of CIB financing is flexible and may include loans, equity, derivatives, or other instruments. Often a Special Purpose Vehicle (SPV) is established specific to a particular project or infrastructure asset. The use of an SPV provides greater flexibility, facilitates private sector investment, risk transfer, and non-recourse project financing structures when this is an objective. In some instances, the Canada Infrastructure Bank may provide project financing by way of direct lending. For example, under its $10 billion growth plan, the Canada Infrastructure Bank CIB is pursuing a Zero-Emission Bus (ZEB) initiative under its growth plan.

The City can also look to obtain debt financing from the province. Borrowing from the Province of Alberta is the current method to which The City borrows for capital projects. The terms with the province are governed by a Master Loan Agreement dated December 15, 2020. The City’s borrowing is subject to the Municipal Government Act and Council Debt Policy (CP2020-05).

3.2.2. Issuance of bonds

Climate bonds

Ranking: Medium

A climate bond (also referred to as a green bond) is type of bond issued specifically for environmental or climate-related projects. Investors purchase bonds from the bond issuer (i.e., The City) and would receive periodic interest payments and repayment of their initial investment at a future date. Climate bonds can help to mobilize private financing for climate adaptation and mitigation projects in Calgary.

Climate bond issuance requires a robust framework for project evaluation and selection criteria, management of proceeds, measurement and verification, and reporting. Additionally, a third-party verification of the green bond framework and implementation is required to ensure investor confidence in the bond. Collectively these steps are required to establish credibility with investors and to convey an authentic commitment to targeted sustainability objectives which are required to capture the pricing efficiencies typically associated with green bond.

Overall, there are more overhead costs associated with the issuance and management of a climate bond in comparison to other forms of borrowing. But with limited opportunities to access lower cost borrowing through the Government of Alberta, a climate bond may be a preferable alternative.

Bonds are subject to the Council Debt Policy (CP2020-05) and would be included in any calculations of debt limit and debt service limit. While not a requirement, The City would consider the International Capital Markets Association's (ICMA) Green Bond Principles (2021) which are voluntary guidelines on transparency and disclosure of Green Bonds. A variety of categories are explicitly identified by ICMA as eligible green projects including climate change mitigation and adaptation, natural resource conservation, biodiversity conservation, and pollution prevention and control.

As noted above, the issuance of a climate or green bond requires a specific framework in place and third-party verification processes to ensure that the projects funded meet their stated obligations. Because of the additional administrative costs associated with implementing and maintaining the framework for green bonds, it may be more prudent for The City to issue a bond not identified as green or climate project specific, to support both climate capital projects and other capital projects within The City. While this might alleviate some administrative burden, if The City has large enough projects that would fit into the scope of a climate bond, it may be worth pursuing as some investors are seeking to specifically invest in green or climate bonds because they have specific ESG obligations and may be more amenable to a lower rate of return.

▶ Vancouver issued their first green bond in September 2018 for $85 Million with a 3.10% ◀ coupon interest rate (matures in 20 years). The eligible projects financed from the green bond includes green buildings, renewable energy, clean transportation, and sustainable water and wastewater management.[18]

[18] *Investor relations*. City of Vancouver. https://vancouver.ca/your-government/investor-relations.aspx

3.2.3. Community revitalization levy

Community revitalization levy

Ranking: Low

A community revitalization levy is a financial tool where municipalities will borrow against future property tax revenues to pay for infrastructure required to attract new private investment in an area (e.g., municipal buildings, roads).

Community revitalization levies are governed by the *Municipal Government Act* (Division 4.1). To implement a community revitalization levy, the city council must pass a community revitalization levy bylaw. The bylaw must be approved by the provincial government. A regulation may be passed by the Government of Alberta establishing an area as a community revitalization area and placing requirements or stipulations on the levy.

A community revitalization levy is not a financing source for widespread climate action as it is to be used directly in the area where the levy was established. It is intended to be used to revitalize blighted areas where private investment would likely not occur unless public investment occurred first. However, there is the opportunity to ensure that when a community revitalization levy is introduced, the infrastructure plans incorporate ambitious climate mitigation and adaptation considerations (e.g., net zero municipal buildings, flood protection). Ideally, ambitious climate actions in the public infrastructure implementation would catalyze the same or greater level of ambition for any future private investment and projects in the area.

▶ The City of Calgary created a community revitalization levy to fund the activities outlined in the Rivers District Revitalization Plan. This plan aims to meet ambitious economic, social, and environmental objectives.[19] ◀

3.3. Mechanisms for supporting community and corporate climate initiatives

3.3.1. Incentive programs

Fee rebates

Ranking: High

A user fee or surcharge is implemented for individuals or businesses in exchange for a good or service. Fees are implemented for a variety of City services (e.g., parking fees, development fees, building permits) and is a lever The City controls and could use to drive desirable climate actions and behaviors.

There is the opportunity to provide a reduction in fees for users that meet criteria that aligns with the Calgary Climate Strategy. These rebates are created to reward early adopters as well as drive the behavior of users. It provides a very clear indication to the market on the direction The City is moving regarding climate initiatives and projects.

Rebates on fees reduce the revenue collected by The City. These fees may need to be offset by another source to ensure there is the budget required to provide the services the fees normally pay for. This discrepancy could be offset by fee increases for those that do not meet the climate criteria set out for fee reductions.

Examples of the goals that fee reductions could help meet include:

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[19] *The Rivers District Community Revitalization Plan*. The City of Calgary. https://www.calgary.ca/cs/cpb/projects-and-initiatives/the-rivers-development/the-rivers-district-community-revitalization-plan.html#:%7E:text=What%20is%20the%20Revitalization%20plan,this%20underdeveloped%20inner%20city%20area.

- Goal: Development in established areas is increased over greenfield development
  - Density Bonus Fee Abatement: Incentivize increased density in established areas by reducing the Density Bonus fees that would create a barrier to additional density in a redevelopment.
  - Property Tax Abatement: Property tax is 'locked in' at the pre-development value over a specified period which reduces the developer's carrying cost and reduces the property tax for future owners.
  - Redevelopment Credit: Provides a rebate on development and/or building permits for a specified number of units or square feet for redevelopment projects in established areas.
  - Expedited Approvals & Fee Rebates: Submissions for redevelopment are prioritized over those for greenfield developments and may receive a rebate on their fees.
- Goal: Net zero retrofits and new construction
  - Development Permit Fee Incentive: Reduction in development permit fees are provided to developers that are building to net zero/net zero ready or meet a green building certification.
  - Net Zero Development Prioritization: Submissions for development are prioritized if the developments are being built to net zero/net zero ready or meet a green building certification.
  - Building Permit Fee Incentive: Incentivizes energy or resiliency upgrades during building renovations to a specified energy usage, greenhouse gas reduction, or resiliency criteria.
- Goal: Increasing zero-emission vehicles
  - Parking Fee Incentive: Vehicles that meet a specified criterion (e.g., electric vehicles) can receive reduced parking fees.

▶ Strathcona County offers rebates for a percentage of the cost of Building Permit Fees if ◀ a green certification (e.g., Built Green, R-2000 and LEED) was achieved.[20]

Property tax incentives

Ranking: Medium

The *Municipal Government Act* (Section 364.2) enables municipalities to partially or fully exempt or defer property taxes for a non-residential property for up to fifteen years to encourage the development or revitalization of properties. To offer these tax incentives, a municipality must pass a bylaw that meets the requirements outlined in the *Municipal Government Act* and outlines the eligibility and processes for the tax incentives. This type of tax incentive program could be implemented for both climate mitigation and climate adaptation projects in non-residential properties.

This type of incentive program reduces the property tax revenues collected by The City. While there will be a short-term reduction in revenue collected (up to fifteen years), over the entire lifecycle of the buildings or projects completed there could be a net positive benefit (e.g., adaptation project reduces or eliminates restoration costs after an extreme weather event).

▶ The City of Medicine Hat used similar provisions in the *Municipal Government Act* to provide ◀ tax relief for brownfield developments that support economic development.[21]

[20] Strathcona County. *Green Building Rebate Program*. https://www.strathcona.ca/agriculture-environment/environment-and-conservation/environmental-initiatives/green-building-rebate-program/
[21] City of Medicine Hat, bylaw no. 4585, *Brownfield Tax Incentive Bylaw*. https://www.medicinehat.ca/en/government-and-city-hall/resources/Documents/Bylaws/4585.pdf

Direct incentive programs

Ranking: Medium

Incentive programs provide monetary incentives to individuals or businesses to encourage specific behaviors or purchases. These types of programs can be useful to spur market activity, especially for new and emerging technologies or to push for deeper greenhouse gas emission reductions or climate resiliency measures than would be seen in a typical project.

Incentive programs are cost intensive because public funds are directly invested into the projects. The returns on the incentive investment are decreased greenhouse gas emissions and increased climate resiliency infrastructure.

Incentive programs can be administratively burdensome, especially if the target of the program is to have widespread uptake of a technology or behavior. A third-party program implementation contractor may be required to support this type of program.

▶ The City of Edmonton provides incentives for energy efficiency upgrades in homes (HERA)[22] ◀ and commercial buildings (BERA)[23].

Off-site levy rebates

Source of Funding: TBD
Ranking: Low

Calgary's off-site levy helps pay for infrastructure that supports growth and development; developers pay for a portion of the costs of infrastructure within a new community or development site they are building. The off-site levy is one of several funding sources that contribute to covering these costs, others being property taxes and utility rates.

An off-site levy rebate could be applied if the proposed development meets certain climate criteria, for example, a certain percentage of units are net zero. However, as the levy pays for required infrastructure for the newly developed area, the funding would need to come from another source if a rebate is provided. This would likely be sourced from increased property tax from the entire property tax base to support the infrastructure developments. To justify this, an evaluation of the benefits of the climate measures in the new development for the entire city would need to be completed.

Alternatively, there could be an opportunity to develop a secondary rate chart for net zero communities, as there may be reduced costs for public infrastructure due to the nature of the net zero development.

3.3.2. Lending initiatives

Loan loss reserve

Ranking: High

A loan loss reserve is a fund that is available to cover a portion of the losses in event of a default on a loan. Similar to a loan guarantee, a loan loss reserve can function as a tool to encourage private lenders to provide preferable interest rate and terms for energy efficiency and renewable energy projects.

A leverage ratio is chosen by the reserve provider (e.g., leverage ratio of 5:1 or 20% of the loan balance). Based on the leverage ratio, funds must be placed into the reserve as loans are provided. Participating private lenders can access the funds if there are losses due to a default.

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[22] *HERA Program Page – Change Homes for Climate*. City of Edmonton. https://homes.changeforclimate.ca/hera/
[23] *Building Energy Retrofit Accelerator*. City of Edmonton. https://www.edmonton.ca/programs_services/environmental/building-energy-retrofit-accelerator

The City would need to engage with private capital providers to gauge interest in this type of program and the leverage ratio required to enable preferred lending terms. Additionally, management of the reserve would be required to rebalance the fund as loans are repaid, or losses are compensated. Loan loss reserves would be subject to The City's Debt Policy (CP2020-05).

▶ The Connecticut Green Bank created a loan loss reserve for a low-interest loan for residential energy retrofits. The reserve is available to lenders that provide preferential terms to participants.[24] ◀

Loan guarantees

Ranking: High

To implement a loan guarantee, a government body provides a partial or full guarantee on a loan from a third-party lender. A loan guarantee reduces the risk for private lenders which encourages preferred lending terms (e.g., flexible underwriting terms, lower interest rate, flexible loan length). Loan guarantees can be structured to cover the entire loan amount or a portion of the loan, usually up to a maximum dollar value or percentage of the loan. Funds are only required to be used if there is a default on a loan with a guarantee (a partial guarantee is preferable as the lender will have the incentive to complete a thorough underwriting process).

The Calgary City Charter (Section 264 2.1) allows The City to implement loan guarantees for improving energy conservation and/or energy efficiency on private property. In order to provide a guarantee, The City would need to pass a bylaw that sets out the criteria of the guarantee. Loan guarantees are subject to The City's Debt Policy (CP2020-05). Guarantees are included in the calculation of the total debt and the total debt service and would be subject to the limits in the Debt Policy.

The City would need to engage with private capital providers to gauge interest in this type of program and the level of guarantee required to enable preferred lending terms. A loan guarantee is similar to a loan loss reserve, however, a loan guarantee does not require a fund to be established and funds set aside as loans are made which is required for a loan loss reserve.

▶ The U.S. Department of Energy's Loan Programs Office offers the Renewable Energy & Efficient Energy Projects Loan Guarantee which provides partial loan guarantees for energy projects.[25] ◀

Soft loans

Ranking: Low

Soft loans are loans provided by development bodies or governments to businesses or individuals with preferential terms (e.g., low interest rates, long amortization terms, or interest breaks).

The Calgary City Charter (Section 264 2.1) allows The City to implement loans for improving energy conservation and/or energy efficiency on private property. Based on the legislation, climate resilience projects would likely be ineligible under this mechanism. The City would be required to pass a bylaw to authorize the loans and set out conditions of the loans, including a mortgage to be registered against the certificate of title for the property in respect to the loan given. Loans would be subject to The City's Debt

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[24] *Residential Energy Efficiency Financing*. Green Bank Network. https://greenbanknetwork.org/residential-energy-efficiency-financing/

[25] *Renewable Energy & Efficient Energy Projects Loan Guarantees*. U.S. Department of Energy. https://www.energy.gov/lpo/renewable-energy-efficient-energy-projects-loan-guarantees

Policy (CP2020-05) and included in the calculation of the total debt and the total debt service and would be subject to the limits in the Debt Policy.

The Clean Energy Improvement Program is a preferable alternative to soft loans as a mortgage is not required to be registered and any borrowing made to capitalize the Clean Energy Improvement Program does not count against the debt limit or debt service limit of The City.

▶ The City of Toronto offers the Energy Retrofit Loan program, which offers low-interest loans for energy efficiency projects. The City offers terms up to 20 years at a fixed low-interest rate.[26] ◀

Interest rate buy-down

Ranking: Low

To implement an interest rate buy-down, governments pay lenders a sum to cover a portion of the interest rate over a designated loan value and period. This buy-down method allows the lender to provide a more affordable loan to property owners (i.e., low to no interest).

Interest rate buy-downs can be cost intensive, and to avoid over-subscription, there needs to be a cap on the total value of the loans given through the program and should only be used for short- to medium-term loans (e.g., 5 years).

This type of financing tool is best suited to support a specific segment of the population, for example low-income households, seniors, those facing energy poverty, or affordable housing providers. The City could buy down the interest rate to close to 0% which would provide these more vulnerable populations with affordable financing. Both climate mitigation and adaptation projects could be supported through this type of financing incentive program.

▶ The City of Milwaukee offered an interest rate buy-down program, reducing interest rates from 7% to 4% for businesses implementing energy efficiency projects.[27] ◀

On-bill repayment or on-bill financing

Ranking: Low

On-bill financing/repayment refers to a mechanism where the repayment of a loan is tied to a utility bill. On-bill financing refers to a program where the funds are provided by the utility offering the repayment option. On-bill repayment refers to a program where the repayment mechanism is the utility bill, but the capital is provided from another source (e.g., financial institution).

This type of program requires partnership with a utility and depending on the type of program, a third-party financial institution. Interest from utilities may be limited as these types of programs are not within their current mandate, however, as focus on ESG metrics are integrated into business plans, interest in these types of programs may increase.

As the loans are tied to a utility bill, usually the types of projects that are eligible are energy saving projects. However, there could be an opportunity to integrate climate resiliency upgrades that are supportive of the energy upgrades (e.g., replacing roofing to high-impact resistance product before installing solar panels or installing more resilient siding with increased R-value).

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[26] *Energy Retrofit Loans*. City of Toronto. https://www.toronto.ca/services-payments/water-environment/environmental-grants-incentives/energy-retrofit-loans/

[27] *ME2 | Milwaukee Energy Efficiency*. City of Milwaukee. https://city.milwaukee.gov/eco/Me2/Homeowners

This type of program can be developed to support residential and commercial buildings. Some programs allow renters to apply and implement a project if they are paying the utility bill for the property (with approval from the building owner). Additionally, some programs allow for the transfer of the payment to the new owners or new renters, similar to a PACE-style program but using utility bills instead of property tax bills.

▶ Manitoba Hydro offers the Energy Finance Plan and the Home Energy Efficiency Loan to help homeowners, small businesses, and agricultural building owners to increase the energy performance of the properties and repay the loans through their utility bill.[28] ◀

3.3.3. Partnerships

Public-private partnerships

Ranking: Medium

There are a variety of contractual tools that could be implemented to leverage both private sector expertise and capital. These types of contractual tools help to mitigate risk, leverage private sector experience, and in some cases, leverage private sector capital to support financing and funding projects.

Public-private partnerships (P3) are a way to deliver public infrastructure and services by using the private sector's management, expertise, technology, and equity. P3s are usually long-term contracts between the government body and a private entity for providing goods or services, and where the private entity bears some of the risk and management responsibility. P3s are used in situations where private sector participation will add value for money and service benefits that would otherwise not be available without their participation.

P3s have been identified as a tool for implementing climate related projects, with references to different versions of P3s like Climate Resilience P3s, Climate-Smart P3s, and Community-Based P3s. All three versions highlight using the benefits of a P3 model while integrating specific climate or community considerations during procurement and implementation.

The City of Calgary has an established policy for P3s (CFO011) which provides a framework to guide its approach to P3 projects. This framework outlines the P3 process and defines the roles of council and administration. Additionally, there is an administration policy, Assessing and Procuring Public-Private Partnerships, which guides the process of assessing, procuring, and managing P3s. Any P3 approach evaluated by The City would need to be assessed to ensure compliance with both policies, as well as meet the City's value for money requirement.

▶ Prince George's County, Maryland entered a 30-year CBP3 agreement (Clean Water Partnership) to address stormwater management at a large scale.[29] The County is taking a green streets approach to reduce runoff and pollution. Cost sharing of upfront program costs between the public and private partners allowed for project construction to commence quicker. Use of local small and minority-owned businesses was required for a percentage of the project. ◀

[28] *Energy Finance Plan*. Manitoba Hydro. https://www.hydro.mb.ca/your_home/loans_financing/energy_finance_plan/

[29] *Program Goals - Clean Water Partnership*. The Clean Water Partnership. https://thecleanwaterpartnership.com/program-goals/

Non-profit partnerships

Ranking: Medium

City green banks are becoming more popular across North America to support climate and environment initiatives. These banks can be tied to a government body, such as a state/province or a municipality or can be developed as a separate entity. In Canada, a great example is The Atmospheric Fund which was established as a public agency and registered non-profit and was initially capitalized through an endowment from the City of Toronto funded through public land sales. The model of The Atmospheric Fund was expanded across Canada through the Low Carbon Cities Canada which, with support from the Federation of Canadian Municipalities, established the Climate Innovation Fund in Alberta. The Climate Innovation Fund is hosted by the Alberta Ecotrust Foundation and serves the Calgary and Edmonton regions.

The Climate Innovation Fund supports Calgary projects and organizations that are in alignment with the Calgary Climate Strategy and focused on three areas: buildings, transportation, and renewable energy. As the Climate Innovation Fund is established and mandated to support climate initiatives in Calgary, creating a second green bank to serve Calgary may be a duplication of efforts. Continued close coordination with the Climate Innovation Fund into the future can ensure the efforts of the Fund are aligned with the goals of The City and future programs and funding opportunities are explored in partnership.

▶ The D.C. Green Bank is a quasi-public agency established in 2018 by the Mayor and City Council. The bank focuses on green buildings, solar power, green infrastructure, and clean transportation. The bank was funded initially through the DC Government and has a goal of self-sufficiency.[30] ◀

Energy performance contract (EPC)

Ranking: Medium

An EPC is an agreement between an energy service company (ESCO) and a building owner for energy efficiency retrofits. During project planning the ESCO estimates project costs and energy savings with the requirement that the project costs and the ESCO are paid through the realized energy savings. Contracts can be built where ESCOs guarantee the savings and if there is a shortfall, they will absorb the cost. The building owner will retain all the energy and cost savings generated after the contract ends.

This type of contracting enables an innovative method to financing energy retrofits through the energy savings and operating cost savings of the retrofit. The risks associated with this type of financing include the savings not materializing and potential changes to the price of avoided energy. The agreement entered with the ESCO can be built to mitigate some of these risks. Additionally, rigorous tracking of energy and cost savings is required in order to ensure there are the realized savings. The ESCO is usually in charge of tracking these savings and can be verified by the building manager. The purchase of goods and services is governed by The City's Procurement Policy. While likely not a limiting factor for this type of contract, any contracts entered would need to follow the Procurement Policy.

▶ The City of Saskatoon's Facility Improvement Program uses an energy performance contract as a turn-key approach to energy retrofits. Upgrades completed to date include LED lighting and HVAC upgrades with plans to add water conservation and smart building technology.[31] ◀

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[30] C40 Cities & New York Energy Efficiency Corporation (NYCEEC). (2020). *Establishing a City Green Bank - Best Practice Guide*. https://www.c40knowledgehub.org/s/article/Establishing-a-City-Green-Bank-Best-Practice-Guide?language=en_US

[31] *Facility Improvement Program*. (2022). City of Saskatoon. Retrieved 2022, from https://www.saskatoon.ca/environmental-initiatives/energy/facility-improvement-program

3.3.4. Policy

Percent for climate

Ranking: Medium

There are several examples both in The City and in other jurisdictions where a percentage of a specific cost or budget item is allocated to a related initiative.

The City of Calgary allocates a small percentage of eligible project capital costs to public art through the Public Art Policy (Corporate Public Art Policy CSPS014). For example, under such a program if a project met specific criteria, a percentage of that project's capital cost must then be allocated to energy saving or climate resiliency measures in the project.

The City of Montreal has proposed a percentage (approximately 10%) of Montreal's total capital expenditure over 10 years be allocated to an approved list of new capital projects prioritized for climate adaptation. A climate screening tool will be used to prioritize projects being implemented.

It should be noted that this approach reduces the capital budget available for the project. While there is a reduction in the capital budget at the outset, there could be a reduction in the operating and overall lifecycle costs of the project because of the climate mitigation and adaptation measures implemented.

▶ The City of Calgary has a Public Art Policy where from eligible project capital costs over $1 million, 0.5%-1% is allocated to public art implementation on the project site and allocation to the Public Art Reserve.[32] ◀

Revolving energy savings project fund

Ranking: Medium

The intention of a revolving energy savings fund is as projects are completed and energy savings generated, the cost savings of those projects would be allocated towards new energy retrofit projects. This creates a revolving fund for implementation of energy reducing retrofits for the long term.

Rigorous measurement and verification processes are required to track and verify the energy and energy cost savings for this type of fund. A robust assessment methodology is required to estimate the energy and cost savings of a potential retrofit.

This type of fund works well when implemented through an energy service company, especially if the company will guarantee the savings. This provides additional confidence for the building owner and operator that the savings will be generated, and the operational cost savings can be directed into a new project.

▶ The City of Pittsburgh established a Green Initiatives Trust Fund (GITF) in 2008.[33] Funds from savings in operating budget and grant funds awarded for green initiatives were placed into the GITF and used to fund future projects. The City targets projects that have a payback period of less than half of the operational life expectancy. ◀

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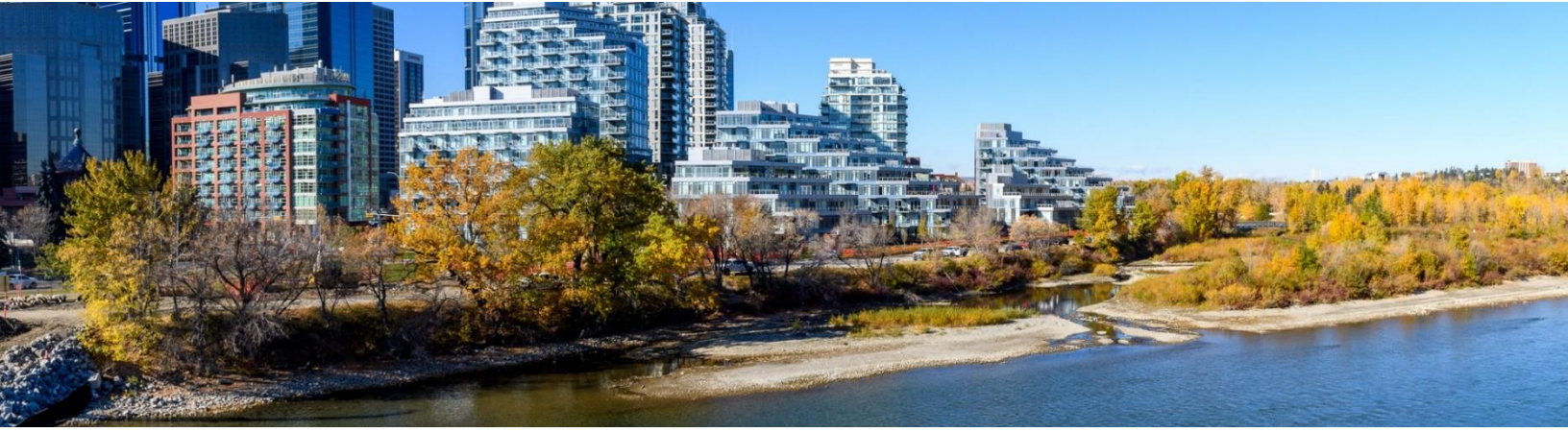
[32] City of Calgary. (2004). *Corporate Public Art Policy* (No. CSPS014). https://www.calgary.ca/content/dam/www/ca/city-clerks/documents/council-policy-library/csps014-corporate-public-art-policy.pdf

[33] *Pittsburgh Finances Projects With Green Initiatives Trust Fund*. U.S. Department of Energy. https://betterbuildingssolutioncenter.energy.gov/implementation-models/pittsburgh-finances-projects-green-initiatives-trust-fund



4. Climate funding strategy opportunities

4.1. Advance current initiatives

The City has applied to certain grant and debt financing programs through the Canada Infrastructure Bank, the Canada Mortgage and Housing Corporation, the Federation of Canadian Municipalities, and grant funding programs directly through the Government of Canada and Government of Alberta. An opportunity exists to pursue more options within these grant and debt financing programs.

4.1.1. Zero Emission Transit Fund

Diesel buses are significant greenhouse gas contributors across Canada, and zero-emission buses (ZEBs) are an alternative to both improve transit and make a transition to low-carbon infrastructure. The City of Calgary is seeking funding from Infrastructure Canada's Zero Emission Transit Fund with an opportunity of partnering with the Canada Infrastructure Bank (CIB) to leverage its preferred financing rates to modernize The City's bus fleets on an accelerated basis. This initiative will potentially access the $2.75 billion Zero Emission Transit Fund (ZETF) and the Canada Infrastructure Bank's $1.5 billion in funding for Zero Emission Buses (ZEB) to achieve specific emissions targets by accelerating the adoption of an estimated 4,000 ZEBs nationally.

In 2020, as part of Calgary Transit's electric shuttle bus pilot project, the City completed an updated system wide route model (state of charge, energy consumption) and completed a market scan of the latest ZEB and charger technologies. This data from this market scan will be used to evaluate the purchase of ZEBs and in-depot plug-in chargers. Additional feasibility studies are being completed on The City's transition to zero-emission buses. This fleet of ZEBs will be comprised of a mix of transit and school buses. The City plans to utilize CIB financing (in the form of direct loans) to cover the higher upfront capital costs of ZEBs and charging infrastructure relative to the purchase of new diesel buses. Repayment of CIB's loans under the program are sourced solely from actual savings generated by the lower cost of operating ZEBs compared to the higher costs of operating diesel buses. At a high level, the incremental cost of ZEB's versus traditional diesel-powered buses is financed with repayment tied to the energy savings realized. Potential financial structures include direct financing (loan) or a leasing model.

4.1.2. Clean Energy Improvement Program

The City is currently in the process of developing its Clean Energy Improvement Program (CEIP). Modelled after the PACE (Property Assessed Clean Energy) program being offered by other municipalities, CEIP is a voluntary program that offers low interest, long term financing for property owners implementing energy upgrades on their residential dwelling. The financing is then repaid over time through their property tax bill. This program is unique compared to traditional financing as the financing is tied to the property and not the property owner; in the event of a property sale the Clean Energy Improvement Tax can transfer to the new owner who continues to pay the Tax while benefiting from the energy savings.

In December 2021, Calgary Council passed the Clean Energy Improvement Program Bylaw and approved the residential stream of the program. The City has applied to the loan and grant stream of the Federation of Canadian Municipalities' Community Efficiency Financing Initiative for a $10 million loan (to finance clean energy improvements) and a $5 million grant (to support program operations). An additional $5 million has been allocated from the Fiscal Stability Reserve to finance clean energy improvements. It is anticipated that the Clean Energy Improvement Program will launch to residential homeowners in fall 2022. Exploration of a commercial version of the program will occur over 2022/2023.

4.1.3. Canada Mortgage and Housing Corporation

The Canada Mortgage and Housing Corporation (CMHC) represents a form of direct funding and financing from the federal government. A part of its National Housing Strategy, the Canada Mortgage and Housing Corporation (CMHC) provides funding through various streams such as the National Housing Co-Investment Fund for both new construction and repair and renewals, the Affordable Housing Innovation Fund, Rental Construction Financing, and Rapid Housing Initiative. These programs offer grants, low-cost loans, forgivable loans or a combination to advance the National Housing Strategy's federal initiatives. Projects seeking financing from these programs are often required to achieve higher environmental, affordability and accessibility standards in order to access financing with below-market interest rates or grant funding options through CMHC. CMHC funded projects must adhere to strict environmental standards, including being net zero ready, or having a minimum 26% decrease in energy consumption and a minimum 25% decrease in greenhouse gas emissions.

The City of Calgary's Affordable Housing 10 Year Capital Development Program relies on funding from the municipal, provincial and federal sources, and is intended to operate on a mixed-income basis with the opportunity for revenue from rent to support debt financing. In Q2 2021, Administration presented a report to Council seeking approval of multiple borrowing bylaws and authorization to negotiate and execute all definitive agreements to secure funding and financing from the Canada Mortgage and Housing Corporation, the Province of Alberta, or other federal crown corporations. This wholistic approach to the financing strategy for the portfolio of affordable housing projects provided The City the flexibility to explore various sources based on the readiness of individual projects and availability of financing.

4.1.4. Calgary Composting Facility Expansion

In 2017, The City of Calgary launched a city-wide Green Cart Program to collect source separated food and yard waste from single-family households to support its waste-diversion target of 70% by 2025. The Calgary Composting Facility, which is owned by The City of Calgary and operated by AIM Environmental Group, is the largest of its kind in Canada and is designed to process 100,000 tonnes of food and yard waste and 45,500 tonnes of dewatered biosolids per year. Calgarians have embraced the City's Green Cart Program, and due to this enthusiastic response, the City is now collecting food and yard waste that exceeds the Facility's design capacity. The Composting Facility Expansion project will increase the processing capacity to accommodate an additional 60,000 tonnes per year of source separated organics. This additional capacity will be achieved by incorporating a high-solids plug flow anaerobic digestion system to pre-process incoming organic feedstock. The biogas generated from the anaerobic digestion process will be captured and upgraded into renewable natural gas (RNG). It is expected that a minimum of 140,000 GJ / yr. of RNG will be generated through this process.

Additional processing capacity also means more material will be diverted away from landfills where it would have generated leachate and landfill gas. Diverting these organics will extend the life of our landfills and reduce their impact on climate change by removing the material that contributes most to the emissions from the landfill. Even with landfill gas capture systems at our landfills, it is estimated that diverting 72,000 tonnes per year of organics from landfills will result in reducing emissions by 64,000

tonnes CO2e/yr. Additionally, the displacement of fossil natural gas with renewable natural gas will reduce emissions by 8,000 tonnes CO2e/yr. Adding anaerobic digesters to the facility will also reduce the overall emissions being reported by the facility. The digesters will remove approximately 27,000 tonnes of organics to generate the biogas. This reduction of this material, that would otherwise be composted, will reduce the emissions reported from the facility by approximately 5,000 tonnes CO2e/yr.

4.1.5. Green Line LRT

The City of Calgary is expanding its LRT network through the addition of the Green Line LRT. Once fully built, the Green Line LRT will add 46 kilometers of LRT track to the existing 59-kilometer LRT system. The Green Line LRT will play an important role in shaping the City's future as it is both a transit system and platform for long-term city building. This will encourage redevelopment and investment opportunities in Calgary businesses and communities, and will provide critical transit infrastructure to connect Calgarians with major employment hubs, residential areas, and essential services. Stage 1 of Green Line, from 126 Avenue SE to 16 Avenue N, will build the initial 20 kilometers of Green Line and construct the most technically complex section of the new LRT line. The Stage 1 project was approved by Calgary city council on June 16, 2020 and is the largest project in Calgary's history.

Through the Government of Alberta and Government of Canada, as part of the Investing in Canada Infrastructure Program (ICIP), the City secured more than $3 billion in grant funding commitments for Stage 1. As a requirement of ICIP, a climate lens assessment to review the environmental impact and effects on climate change from Green Line has been completed. A socio-economic benefit costs analysis was also conducted and included in the 2020 Green Line LRT Stage 1 Business Case. Stage 1 has the potential to generate $1.84 billion through travel time, amenity, crowding, and reliability benefits for transit riders over the next 30 years. When combined with external benefits, including GHG reductions and road safety, there is an estimated combined benefit of $2.26 billion to the City as a whole. By taking cars off the road, Stage 1 of the Green Line LRT is expected to save up to 30,000 tonnes of GHG emissions a year in support of municipal, provincial, and federal environmental goals.

4.2. Explore new opportunities

The following recommended opportunities to explore were identified to provide guidance with consideration of the five municipal roles for funding climate action (outlined in Section 2).

- Integrate climate considerations into financial and resource planning and decision making through increased climate knowledge and expertise across The City.
- Enable agile decision making and prioritization through a centralized fund for climate-related public infrastructure projects.
- Leverage existing and new funding sources, including external grant and funding opportunities, to support climate initiatives.
- Enable incentive programs, lending initiatives, partnerships, and policy to support climate actions.
- Evaluate and implement appropriate financing mechanisms to support corporate climate projects.

4.2.1. Integrate climate considerations into financial and resource planning and decision making through increased climate knowledge and expertise across The City.

Collaborate with departments across The City to develop accountability and sense of ownership with climate initiatives assigned to their department through the Calgary Climate Strategy.

- The Climate team will need to support each department and business unit that are identified as the responsible groups for the climate actions to appropriately budget, implement, and report on the progress.
- Fostering a sense of ownership and accountability within each of the business units will help ensure that these climate initiatives are prioritized, and the appropriate resources are allocated to their implementation.
- Resources and budgets for climate actions will be requested by each applicable business unit through The City's four-year service and budget plans and annual adjustment process (ONE Calgary 2023-2026 Service and Budget Plans).
- There must be the appropriate resources within the Climate team to support departments as projects are proposed for development, including greenhouse gas assessments and climate risk and resilience assessments.

4.2.2. Enable agile decision making and prioritization through a centralized fund for climate-related public infrastructure projects.

Work together with the Corporate Finance team to create a centralized climate fund with sub-funds dedicated to climate adaptation projects (including natural infrastructure and public infrastructure), low-carbon projects, and community climate initiatives.

- Development of a centralized climate capital fund for public infrastructure is underway, which will enable The City to prioritize public infrastructure projects based on climate impacts.
    - Matching contributions for climate-related grant programs is likely to be more readily available and flexible through a central fund dedicated to climate actions.
- Within the central fund, separate dedicated sub-funds need to be created to support the different types of climate initiatives (e.g., adaptation, low-carbon, community) outlined in the Calgary Climate Strategy.
    - Creation of specific sub-funds ensures adequate funding across the different actions and allows for the potential to allocate funds from certain sources to a specific sub-fund (e.g., allocating franchise fee revenues to support energy saving and low carbon projects).
- Criteria should be developed to approve and prioritize projects funded through the central climate fund (e.g., lifecycle assessments). The Climate team will need to work closely with the Corporate Finance team to structure a central climate fund that will support multiple sources of funding and multiple dedicated streams of use.

4.2.3. Leverage existing and new funding sources, including external grant and financing opportunities, to support climate initiatives.

Identify external funding sources available to support municipal, private, academic, non-profit, and individual climate actions.

- A list is provided in Appendix A of the programs that are currently available or are anticipated to re-open to applications over the next year. The City has already taken advantage of some of the programs listed in the table (e.g., Recreation Conservation Program from the Municipal Climate Change Action Centre).

- There should be on-going efforts to track and monitor offerings from external funding agencies to quickly identify opportunities for The City to apply for grants and financing.
- Leveraging the central climate fund described above will support The City to be more agile when evaluating and acting on external funding opportunities that require matching funds.

Collaborate across internal departments and business units to submit applications for grants and financing to support municipal projects with positive climate outcomes.

- Potential projects that align with the goals identified in other levels of government's plans and strategies should be highlighted to enable quick action when applicable funding opportunities become available.
- The City should be an active partner and advocate in the development of programs and standards developed by the federal and provincial government and other funding organizations.
- Infrastructure Calgary is supporting the development of funding applications across The City to ensure coordination across business units and increase efficiency in application development.
- The Climate team will need to have the resources available to support climate related data collection and analysis to contribute to the development of the funding applications.

Provide support, as required, to municipal partners to apply for funding for climate-related projects.

- There are funding programs that are better suited or targeted to projects and initiatives completed by external parties rather than The City itself. Examples of funding opportunities targeted to the private sector, non-profits, academia, and individuals are further categorized in Appendix A.
- Non-municipal organizations can be eligible for grants or financing in some programs, if the municipality provides a letter of support and/or in-kind contributions to the project.
- As opportunities are identified and brought forward by external organizations, The City should be ready and willing to support these projects so long as they meet the goals of the Calgary Climate Strategy, as well as other goals of The City (e.g., increasing housing affordability).

Develop relationships with external organizations to advance collaborative projects eligible for external funding programs.

- Developing strong collaborative relationships and partnerships with funding organizations, project developers, community organizations, and industry associations is important to advance competitive projects suitable for external funding programs.
- The City currently has collaborative relationships with many climate-focused organizations and should continue to work closely with them. (e.g., the Federation of Canadian Municipalities, Alberta Ecotrust's Climate Innovation Fund, the Canada Infrastructure Bank, and the Municipal Climate Change Action Centre).
- Experience and capacity in the market can be a limiting factor to completing climate projects. Building relationships with industry will be vital to implementing climate actions at the pace and scale required.
- Building on the successes of partnerships seen in other municipalities will be important. For example, The Atmospheric Fund in Toronto has seen great success as a model of a green city bank and the Climate Innovation Fund will act in a similar model for Calgary.

Explore, in collaboration with the Corporate Budget Office, the use of existing reserves and revenue streams (e.g., franchise fees) to support climate projects.

- Determination of the scenarios in which existing reserves, taxes and levies, and fees and surcharges may be used for climate action is required. There is a precedent for what and when these existing sources are used for and the potential impacts need to be determined if the sources are to be used for climate action.

- Considerations should be the reliability of the source, connection to climate outcomes, and potential impact to The City's services. This will require coordination with the Corporate Budget Office, as well as any groups within The City that may be impacted.

In collaboration with other business units within Planning and Development, explore the option to create fees or surcharges in new or established user fee supported services while considering an equitable implementation.

- Options should be evaluated to add surcharges or additional climate-related fees to established user fees (e.g., development permits and building permits).
- Potential impacts to current services or processes, both financial and service level, will need to be identified and mitigated with other business units.
- Stakeholder engagement would be required to understand the potential impacts to the users including equity considerations to ensure that low-income, vulnerable, or disadvantaged groups are not disproportionately affected by the fee increase.
- Introducing this option should be presented as a piece of a full package. For example:
    - Fees are increased to all users and a discounted fee rate is available to users if they meet the specific climate or income criteria.
    - The incremental fee amount collected is directed to programs that would directly support the climate target (e.g., the portion of fees on development permits that do not meet net zero standards would be directed to programs that provide capacity building for developers to meet net zero targets).
    - Training/capacity building programs are introduced to ensure market capacity is available to complete projects to the specified criteria to ensure an accessible pathway to receive the discounted fee.
- Fee increases should be monitored and revisited to evaluate whether the increase is producing the intended changed decisions and behaviors.

Engage and collaborate with other municipalities to create and share innovative ideas for funding municipal climate action.

- Accessing lessons learned from other municipalities will help The City avoid potential pitfalls and more efficiently implement new and innovative ideas. Engagement with other municipalities should be an on-going effort through existing relationships and convening parties like the Federation of Canadian Municipalities and CUSP.
- Working with municipalities in the Calgary region and within Alberta can lead to economies of scale and potential for partnerships (e.g., collaborative procurement for a collective solution like procurement of zero-emission vehicle technology or clean energy generation).

Explore new business models of working in partnerships where NGOs, private companies, insurance companies, and financial organizations can use their strengths and established support systems to act on climate initiatives.

- Leveraging the strengths and assets of private institutions to support climate initiatives is vital, as The City alone likely does not have the capacity or resources required to achieve the climate targets outlined in the Calgary Climate Strategy.
- Public-private partnerships (P3s) are a contractual approach to bring in the expertise of the private sector to complete municipal capital projects and services.
- Other business models based on more collaborative efforts include City-Business Climate Alliances or Green Economy Hubs.[34]

[34] City-Business Alliance // Green Economy Canada

    - These types of alliances or business hubs are places for the private sector and municipalities to come together and work collaboratively to meet the sustainability and climate goals of the municipality.
    - For example, financial institutions can support the creation of innovative financing tools and provide private sector capital, technology start-ups can bring forward innovative technologies, and insurance companies can support with climate risk assessment and solution building. This work supports the municipality's goals while also providing a space for businesses to meet their own ESG goals.
- Calgary has been a leader in innovation in the energy industry and there is a wealth of knowledge to be gained through private sector collaborations.

4.2.4. Enable incentive programs, lending initiatives, partnerships, and policy to support climate actions.

Collaborate with external partners and the Corporate Finance team to develop financing mechanisms and products to support climate action in the community.

- The Climate team has already initiated work on this opportunity. Development of the Clean Energy Improvement Program to support energy retrofits in residential initiated in 2021. The Climate team will work with the Corporate Finance team and external partners, including the CEIP provincial program administrator and the Federation of Canadian Municipalities (if The City's application to FCM is approved), to launch a residential offering in 2022. Exploration of options to develop a commercial version of the CEIP program will occur over the next 1-2 years.
- Mobilizing private capital is a priority, credit enhancement options like loan guarantees, loan loss reserves, and interest-rate buy downs may enable The City to leverage more private capital for community climate change initiatives. Understanding the financial implications (e.g., impact on debt limits and credit rating) and the potential risks (e.g., high rates of defaults) of implementing a credit enhancement product.
- Opportunities for accessing grants, additional funding, project aggregation opportunities, or program delivery partnerships should be explored through organizations like the Federation of Canadian Municipalities, Alberta Ecotrust Climate Innovation Fund, the Canada Infrastructure Bank, or other private lending institutions. Current offerings by these organizations may not be available long-term and should be leveraged while still available.

Collaborate with the Corporate Finance team and other business units within Planning and Development to develop incentive programs to support climate action in the community.

- Determining the potential impact to The City (e.g., reduced property tax revenues), budget requirements and cost effectiveness, and strategic eligibility requirements is important to the development of incentive programs or frameworks (e.g., property tax incentives, direct incentive programs, fee reductions).
- These types of programs usually require a budget allocation or the reduction of revenue streams to The City and would need to be carefully considered to mitigate any adverse impacts. Evaluation of these options in conjunction with exploration of potential incentive funding sources will be important to balance and mitigate the financial implications.

Collaborate with other business units within Planning and Development to explore options for process-related incentives.

- In some cases, the incentive for a specific behavior or decision can be process related instead of a direct monetary incentive (e.g., prioritization of permit review for net zero developments). Process incentives can reduce the permit review timelines for the project developer, saving them time and money.

- Evaluation should be completed to identify the steps in the planning continuum where process incentives could be implemented for achieving specific climate resiliency or mitigation targets or certifications and any potential impacts to City services.

4.2.5. Evaluate and implement appropriate financing mechanisms to support corporate climate projects.

Collaborate with the Corporate Finance team to explore borrowing mechanisms to support climate-related projects and ensure alignment with the corporate borrowing objectives and other guidance documents as applicable.

- The City's Corporate Finance team is developing a Corporate Borrowing Strategy to establish additional funding alternatives intended to improve and expand the City's borrowing alternatives when supporting the financing of capital projects.
- The proposed borrowing mechanisms in this report, including the additional framework requirements of Green Bonds will be considered and developed in alignment with this Corporate Borrowing Strategy.
    - In consultation with Corporate Finance, the Climate Action team will be kept apprised and informed of Green Bond investor requirements and considerations to help guide the Climate team's efforts in developing and implementing these requirements.
- There may be additional guidance documents that should be considered when evaluating mechanisms to support climate projects (e.g., the *'Canada Infrastructure Bank & The City of Calgary: Framework and Best Practices for Administration'* document should be used as guidance if considering financing through the Canada Infrastructure Bank).
- As projects and potential financing and funding mechanisms are identified, the Corporate Finance team will be consulted to ensure compliance with internal policies and that the full spectrum of borrowing options are evaluated.

Collaborate with Infrastructure Calgary to ensure proposed climate-related projects are aligned with the Capital Infrastructure Investment Strategy and Capital Investment Plan.

- The Climate team and the applicable business units proposing the capital projects should collaborate with Infrastructure Calgary to ensure there is alignment and coordination with projects across the corporation, and to ensure that funding and financing options are optimized and used efficiently.
- Additionally, the integration of climate priorities and considerations should be integrated into Infrastructure Calgary's plans and strategies.

5. Conclusion

There are several options for sources of funding and mechanisms that The City can leverage to support climate initiatives and achieve the milestones set out in the Calgary Climate Strategy. The opportunities identified in this report provide options The City can consider when building out a long-term sustainable funding strategy.

There are opportunities The City should prioritize over the next four years to enable the climate actions identified in the Calgary Climate Strategy. Leveraging the grant and financing opportunities through the federal and provincial governments is vital to bring new money into The City. Timely responses to external funding programs are critical; The City must be prepared to accelerate and prioritize those programs that are most aligned with the available opportunities**.** Public sector investment, policy, and regulation can be used to spur private investment by increasing investor confidence in climate projects and emerging technologies, catalyzing a low carbon economy in Calgary. Internal funding sources such as property tax revenues, franchise fees, or user fees and surcharges must be strategically leveraged for programs to complement external funding. It is critical to ensure there is the capacity within The City to be able to evaluate and integrate climate considerations into the prioritization and decision making when these internal funding sources are allocated to projects and initiatives.

Four priorities have been identified for The City to pursue:

1. **Partnerships**: Continued partnerships with organizations such as the Canada Infrastructure Bank, the Climate Innovation Fund, and the Federation of Canadian Municipalities will support investments into corporate and community climate projects and help leverage private investment.
2. **Lending initiatives**: Financing programs such as the Clean Energy Improvement Program and credit enhancement programs (e.g., loan guarantees or loan loss reserves) facilitate public and private investments into the community. The City has initiated implementation of the Clean Energy Improvement Program and must explore other financing program opportunities with a priority to enable the mobilization of private capital.
3. **Incentives programs**: Rebates and incentives can be used to accelerate low-carbon and climate resilient decision-making and investments within the community. Rebates and incentives are short-term investments made by The City to catalyze the market and the need for rebates and incentives will be reduced over time as the desired outcomes become the norm.
4. **Climate or Green Bonds**: Climate bonds are an emerging financing tool to be used by municipalities. Timelines for implementation of this tool will be longer as developing a robust framework is required to establish credibility with investors and to convey an authentic commitment to targeted sustainability objectives which are required to capture the pricing efficiencies typically associated with green bond.

The landscape of funding and financing is dynamic based on changes in federal and provincial government priorities, evolving private investor priorities and risk appetites, and development of new investment approaches and tools. Continuous engagement with partners, both public and private, will be required to understand and leverage the changing financing and funding environment. Building strong relationships and collaborating across public and private sectors will be vital to reach the level of investment required to address the challenges of the climate emergency.

Appendix A: External Sources of Funding Climate Actions

Funding from the provincial and federal governments as well as the private sector will be required to meet Calgary's climate goals. The table below highlights the available funding programs or investment opportunities that correspond with the themes and goals of the Calgary Climate Strategy. This table has been included to highlight the breadth of programs that are currently available and their alignment to the priorities and themes in the Calgary Climate Strategy. The City will need to prioritize programs that align with these funding opportunities as well as support other sectors to access funding. This table up to date as of May 2022.

Funding Source	Program Name	Target Sector					Climate Actions						Type	
		Municipalities	Private Sector	Non-Profit	Individuals	Academia	Net Zero Homes & Buildings	Zero Carbon Energy Transition	Zero Carbon Neighborhoods	CCUS[35]	Consumption and Waste Reduction	Climate Resilience	Grant	Financing
Alberta Ecotrust	Climate Innovation Fund[36]	✓	✓	✓			✓	✓	✓				✓	✓
Alberta Innovates	Clean Resources[37]		✓			✓		✓		✓			✓	✓
Business Development Canada	CleanTech Practice[38]		✓				✓	✓	✓	✓				✓
Canada Infrastructure Bank	Public Buildings[39]	✓					✓							✓
Canada Infrastructure Bank	Commercial Buildings[40]		✓	✓			✓							✓
Canada Mortgage and Housing Company	Green Home Insurance Premium Refund[41]				✓		✓						✓	

[35] CCUS means carbon capture, utilization, and storage.
[36] *Climate Innovation Fund.* (n.d.). Alberta Ecotrust Foundation. Retrieved 2022, from https://albertaecotrust.com/climate-innovation-fund
[37] *Clean Resources* . (2020). Alberta Innovates. Retrieved 2022, from https://albertainnovates.ca/focus-areas/clean-resources/
[38] *Cleantech Practice – Support for your growth*. (n.d.). BDC.Ca. Retrieved 2022, from https://www.bdc.ca/en/about/what-we-do/cleantech-practice
[39] *Green Infrastructure*. (n.d.). Canada Infrastructure Bank. Retrieved 2022, from https://cib-bic.ca/en/sectors/green-infrastructure/
[40] *Green Infrastructure*. (n.d.). Canada Infrastructure Bank. Retrieved 2022, from https://cib-bic.ca/en/sectors/green-infrastructure/
[41] *CMHC Green Home*. (2018). Canada Mortgage and Housing Corporation. Retrieved 2022, from https://www.cmhc-schl.gc.ca/en/consumers/home-buying/mortgage-loan-insurance-for-consumers/cmhc-green-home

Funding Source	Program Name	Target Sector					Climate Actions						Type	
		Municipalities	Private Sector	Non-Profit	Individuals	Academia	Net Zero Homes & Buildings	Zero Carbon Energy Transition	Zero Carbon Neighborhoods	CCUS[35]	Consumption and Waste Reduction	Climate Resilience	Grant	Financing
Canada Mortgage and Housing Company	Greener Homes Loan Program[42]				✓		✓							✓
Canada Mortgage and Housing Company	National Housing Co-Investment Fund[43]	✓	✓	✓			✓						✓	✓
Emissions Reduction Alberta	Energy Savings for Business[44]		✓				✓						✓	
Emissions Reduction Alberta	Carbon Capture Kickstart[45]		✓			✓				✓			✓	
Emissions Reduction Alberta	Circular Economy Challenge[46]	✓	✓	✓	✓	✓				✓	✓		✓	
ENMAX	Community Solar Fund[47]			✓			✓	✓					✓	
Export Development Canada	Green Bonds[48]		✓	✓			✓	✓	✓					✓
Federation of Canadian Municipalities	Community Efficiency Financing[49]	✓					✓						✓	✓

[42] *Canada Greener Homes Loan*. (2021). Canada Mortgage and Housing Corporation. Retrieved 2022, from https://www.cmhc-schl.gc.ca/en/professionals/project-funding-and-mortgage-financing/funding-programs/all-funding-programs/canada-greener-homes
[43] *National Housing Co-Investment Fund*. (2021). Canada Mortgage and Housing Corporation. Retrieved 2022, from https://www.cmhc-schl.gc.ca/en/professionals/project-funding-and-mortgage-financing/funding-programs/all-funding-programs/co-investment-fund
[44] *Energy Savings for Business*. (2022). Emissions Reduction Alberta. Retrieved 2022, from https://eralberta.ca/energy-savings-for-business/
[45] *Carbon Capture Kickstart*. (2022). Emissions Reduction Alberta. Retrieved 2022, from https://eralberta.ca/funding-technology/carbon-capture-kickstart/
[46] *Circular Economy Challenge*. (2022). Emissions Reduction Alberta. Retrieved 2022, from https://eralberta.ca/funding-technology/50-million-for-projects-to-support-albertas-circular-economy/
[47] *ENMAX Community Solar Fund - Program Overview*. (n.d.). City of Calgary. Retrieved 2022, from https://www.calgary.ca/csps/cns/community-associations/CommunitySolarFund.html?redirect=/communitysolar
[48] *Sustainable Bonds*. (n.d.). Export Development Canada. Retrieved 2022, from https://www.edc.ca/en/investor-relations/sustainable-bonds.html
[49] *Capital program: Loan or credit enhancement*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/funding/gmf/capital-program-loan-credit-enhancement-local-home-energy-upgrade-financing-program

Funding Source	Program Name	Target Sector					Climate Actions						Type	
		Municipalities	Private Sector	Non-Profit	Individuals	Academia	Net Zero Homes & Buildings	Zero Carbon Energy Transition	Zero Carbon Neighborhoods	CCUS[35]	Consumption and Waste Reduction	Climate Resilience	Grant	Financing
Federation of Canadian Municipalities	Sustainable Affordable Housing[50]	✓		✓			✓						✓	✓
Federation of Canadian Municipalities	Energy Recovery or District Energy[51]	✓	✓	✓		✓		✓					✓	✓
Federation of Canadian Municipalities	Transportation Networks and Commuting Options - Study & Capital Projects[52]	✓	✓	✓		✓			✓				✓	✓
Federation of Canadian Municipalities	Reduce Fossil Fuel Use in Fleets – Study, Pilots, Capital Projects[53]	✓	✓	✓		✓			✓				✓	✓
Federation of Canadian Municipalities	Waste Stream Management – Study & Capital Project[54]	✓	✓	✓		✓					✓		✓	✓
Federation of Canadian Municipalities	Waste Reduction and Diversion – Pilot & Capital[55]	✓	✓	✓		✓					✓		✓	✓
Government of Alberta	Municipal Sustainability Initiative[56]	✓					✓		✓				✓	

[50] *Sustainable Affordable Housing*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/programs/green-municipal-fund/sustainable-affordable-housing
[51] *Capital project: Energy recovery or district energy*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/funding/gmf/capital-project-energy-recovery-district-energy
[52] *Capital project: Transportation networks and commuting options*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/funding/gmf/capital-project-transportation-networks-commuting-options
[53] *Capital project: Reduce fossil fuel use in fleets*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/funding/gmf/capital-project-reduce-fossil-fuel-use-fleets
[54] *Capital project: Waste stream management*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/funding/gmf/capital-project-waste-stream-management
[55] *Capital project: Waste reduction and diversion*. (n.d.). Federation of Canadian Municipalities. Retrieved 2022, from https://fcm.ca/en/funding/gmf/capital-project-waste-reduction-diversion
[56] *Municipal Sustainability Initiative*. (n.d.). Government of Alberta. Retrieved 2022, from https://www.alberta.ca/municipal-sustainability-initiative.aspx#resources

Funding Source	Program Name	Target Sector					Climate Actions						Type	
		Municipalities	Private Sector	Non-Profit	Individuals	Academia	Net Zero Homes & Buildings	Zero Carbon Energy Transition	Zero Carbon Neighborhoods	CCUS[35]	Consumption and Waste Reduction	Climate Resilience	Grant	Financing
Government of Alberta Government of Canada	Investing in Canada Infrastructure Program - Green Infrastructure[57]	✓		✓			✓	✓	✓		✓	✓	✓	
Government of Alberta Government of Canada	Canada Community-Building Fund[58]	✓					✓		✓				✓	
Government of Alberta	Watershed Resiliency and Restoration Program[59]	✓		✓								✓	✓	
Government of Canada	Building Capacity with the Smart Renewables and Electrification Pathways Program[60]	✓	✓	✓				✓					✓	
Government of Canada	Energy Efficient Buildings RD&D[61]	✓	✓				✓						✓	
Government of Canada	Incentives for Zero-Emission Vehicles Program[62]				✓				✓				✓	
Government of Canada	Green and Inclusive Community Buildings[63]	✓		✓			✓						✓	
Government of Canada	Smart Renewables and Electrification Pathways Program[64]	✓	✓	✓		✓		✓					✓	

[57] *Green Infrastructure*. (n.d.). Government of Alberta. Retrieved 2022, from https://www.alberta.ca/ICIP-green-infrastructure.aspx
[58] *Infrastructure Canada - The Canada Community-Building Fund*. (2022). Government of Canada. Retrieved 2022, from https://www.infrastructure.gc.ca/plan/gtf-fte-eng.html
[59] *Watershed Resiliency and Restoration Program*. (n.d.). Government of Alberta. Retrieved 2022, from https://www.alberta.ca/watershed-resiliency-and-restoration-program.aspx
[60] *Building Capacity with the Smart Renewables and Electrification Pathways Program*. (2022). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/climate-change-adapting-impacts-and-reducing-emissions/green-infrastructure-programs/building-capacity-the-smart-renewables-and-electrification-pathways-program/23829
[61] *Energy Efficient Buildings RD&D*. (2020). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/netzerobuildings
[62] *Incentives for purchasing zero-emission vehicles*. (2022). Government of Canada. Retrieved 2022, from https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles/incentives-purchasing-zero-emission-vehicles
[63] *Infrastructure Canada - Green and Inclusive Community Buildings Program*. (2021). Government of Canada. Retrieved 2022, from https://www.infrastructure.gc.ca/gicb-bcvi/index-eng.html
[64] *Smart Renewables and Electrification Pathways Program*. (2022). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/climate-change-adapting-impacts-and-reducing-emissions/green-infrastructure-programs/smart-renewables-and-electrification-pathways-program/23566

Funding Source	Program Name	Target Sector					Climate Actions						Type	
		Municipalities	Private Sector	Non-Profit	Individuals	Academia	Net Zero Homes & Buildings	Zero Carbon Energy Transition	Zero Carbon Neighborhoods	CCUS[35]	Consumption and Waste Reduction	Climate Resilience	Grant	Financing
Government of Canada	Investment Tax Credit for Carbon Capture, Utilization, and Storage[65]		✓							✓			✓	
Government of Canada	Energy Innovation Program – Clean Fuels and Industrial Fuel Switching[66]	✓	✓	✓		✓		✓					✓	
Government of Canada	Greener Homes Rebate and Audit Program[67]				✓		✓						✓	
Government of Canada	Disaster Mitigation and Adaptation Fund[68]	✓	✓	✓		✓						✓	✓	
Government of Canada	Active Transportation Fund[69]	✓		✓					✓				✓	
Government of Canada	Zero Emission Transit Fund[70]	✓	✓	✓					✓				✓	✓
Government of Canada	Low Carbon Economy Fund [71]	✓	✓	✓		✓	✓	✓	✓				✓	
Government of Canada	Industrial Energy Management Program[72]		✓				✓						✓	
Government of Canada	Emissions Reduction Fund [73]		✓							✓			✓	

[65] *Investment Tax Credit for Carbon Capture, Utilization, and Storage*. (2021). Government of Canada. Retrieved 2022, from https://www.canada.ca/en/department-finance/programs/consultations/2021/investment-tax-credit-carbon-capture-utilization-storage.html
[66] *Energy Innovation Program – Clean Fuels and Industrial Fuel Switching*. (2022). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/science-and-data/funding-partnerships/funding-opportunities/funding-grants-incentives/energy-innovation-program/energy-innovation-program-clean-fuels-and-industrial-fuel-switching/23956
[67] *Canada Greener Homes Grant*. (2022). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/energy-efficiency/homes/canada-greener-homes-grant/23441
[68] *Infrastructure Canada - Disaster Mitigation and Adaptation Fund*. (2021). Government of Canada. Retrieved 2022, from https://www.infrastructure.gc.ca/dmaf-faac/index-eng.html
[69] *Active Transportation Fund*. (2022). Government of Canada. Retrieved 2022, from https://www.infrastructure.gc.ca/trans/index-eng.html
[70] *Infrastructure Canada - Zero Emission Transit Fund*. (2022). Government of Canada. Retrieved 2022, from https://www.infrastructure.gc.ca/zero-emissions-trans-zero-emissions/index-eng.html
[71] *Low Carbon Economy Fund*. (2022). Government of Canada. Retrieved 2022, from https://www.canada.ca/en/environment-climate-change/services/climate-change/low-carbon-economy-fund.html
[72] *Financial assistance for industrial energy management projects*. (2022). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-for-industry/financial-assistance-energy-efficiency-projects/20413
[73] *Emissions Reduction Fund*. (2022). Government of Canada. Retrieved 2022, from https://www.nrcan.gc.ca/science-and-data/funding-partnerships/funding-opportunities/current-funding-opportunities/emissions-reduction-fund/22781

Funding Source	Program Name	Target Sector					Climate Actions						Type	
		Municipalities	Private Sector	Non-Profit	Individuals	Academia	Net Zero Homes & Buildings	Zero Carbon Energy Transition	Zero Carbon Neighborhoods	CCUS[35]	Consumption and Waste Reduction	Climate Resilience	Grant	Financing
Government of Canada	Food Waste Diversion Program[74]	✓	✓	✓	✓	✓					✓		✓	
Government of Canada	Nature Smart Climate Solutions Fund[75]	✓	✓	✓	✓	✓				✓		✓	✓	
Government of Canada	Net Zero Accelerator Initiative[76]		✓	✓		✓	✓	✓		✓			✓	
Municipal Climate Change Action Centre	Electric Vehicle Charging Program[77]	✓							✓				✓	
Municipal Climate Change Action Centre	Electric Vehicles for Municipalities Program[78]	✓							✓				✓	
Municipal Climate Change Action Centre	Recreation Energy Conservation Program[79]	✓					✓						✓	
Municipal Climate Change Action Centre	Solar for Schools[80]					✓	✓						✓	
TD Friends of the Environment Foundation	TD Friends of the Environment Foundation Grant[81]	✓		✓		✓						✓	✓	

[74] *Government of Canada launches Food Waste Reduction Challenge*. (2020). Government of Canada. Retrieved 2022, from https://www.canada.ca/en/agriculture-agri-food/news/2020/11/government-of-canada-launches-food-waste-reduction-challenge.html
[75] *Nature Smart Climate Solutions Fund*. (2021). Government of Canada. Retrieved 2022, from https://www.canada.ca/en/environment-climate-change/services/environmental-funding/programs/nature-smart-climate-solutions-fund.html
[76] *Net Zero Accelerator Initiative - Strategic Innovation Fund*. (2022). Government of Canada. Retrieved 2022, from https://www.ic.gc.ca/eic/site/125.nsf/eng/00039.html
[77] *Electric Vehicle Charging Program*. (2022). Municipal Climate Change Action Centre. Retrieved 2022, from https://mccac.ca/programs/electric-vehicle-charging-program/
[78] *Electric Vehicles for Municipalities Program*. (2022). Municipal Climate Change Action Centre. Retrieved 2022, from https://mccac.ca/programs/electric-vehicles-for-municipalities-program/
[79] *Recreation Energy Conservation Funding Program*. (2022). Municipal Climate Change Action Centre. Retrieved 2022, from https://mccac.ca/programs/recreation-energy-conservation-program/
[80] *Solar for Schools Funding Program*. (2022). Municipal Climate Change Action Centre. Retrieved 2022, from https://mccac.ca/programs/solar-for-schools-program/
[81] *Environmental Grants & Funding for Environmental Projects*. (n.d.). TD. Retrieved 2022, from https://www.td.com/ca/en/about-td/ready-commitment/funding/fef-grant/

Appendix B: Assessment of sources and mechanisms

Sources of funding: ranking criteria

The following criteria was used to rank the sources of funding identified in this report. The higher the ranking the greater the opportunity for The City through that source of funding.

Ranking Criteria	1	2	3	4	5
Applicability of Funding Source to Climate Actions	The source of funding is not related to climate initiatives and contains major restrictions on the use of the funds for climate measures.	The source of funding has limited relation to climate initiatives and has restrictions on the use of funds for climate measures.	The source of funding may be related to climate initiatives or may be used for climate initiatives but does contain some restrictions on how the funds are used for climate measures.	The source of funding is directly related to climate initiatives or has very limited restrictions on the use of the funds	The source of funding is meant for climate initiatives or has no restrictions on the use of the funds.
Level of Effort Required for Implementation	The source of funding would require significant additional resources from The City to set up or access the source of funding and/or would require significant changes to policy or legislation.	The source of funding would require considerable additional resources from The City to set up or access the source of funding and/or may require some changes to policy or legislation.	The source of funding would require some additional resources from The City to set up or access the source of funding and/or would only require minimal changes to legislation or policy.	The source of funding would require limited additional resources from The City to set up or access the source of funding but likely does not require many changes to legislation or policy.	The source of funding would require minimal or no additional resources from The City to set up or access the source of funding but does not require changes to legislation or policy.
Estimated Level of Funding Available	The level of funding available through the source specifically for climate measures is limited relative to the other sources.	The level of funding available through the source specifically for climate measures is lower relative to the other sources.	The level of funding available through the source specifically for climate measures is moderate relative to the other sources.	The level of funding available through the source specifically for climate measures is significant relative to the other sources.	The level of funding available through the source specifically for climate measures is substantial relative to the other sources.

The funding sources listed in the table below were evaluated based on the criteria above. Those ranked as ‘High’ are most applicable to climate actions, require minimal resources to implement and little to no changes in policy or legislation, and have a greater level of funding available relative to the other funding sources. The funding sources ranked as ‘Low’ are not directly applicable to climate actions, require significant resources or major policy or legislation change, and have limited funding available specifically for climate initiatives.

High	**Medium**	**Low**
10 – 15	5 – 9	1 – 4

Funding Source	Ranking Criteria			Total	Rank
	Applicability of Funding Source to Climate Actions	Level of Effort Required for Implementation	Estimated Level of Funding Available		
Property Tax Revenues	5	5	5	15	High
Private Sector Investment	5	5	5	15	High
Franchise Fees	5	4	4	13	High
Federal and Provincial Grants	5	4	4	13	High
Fees or Surcharges	4	2	3	9	Medium
Municipal Climate Tax	3	1	3	7	Medium
City of Calgary Reserves	2	3	1	6	Medium
Off-Site Levy	1	1	1	3	Low

Financing and supporting mechanisms: ranking criteria

The following criteria were used to rank the mechanisms for funding identified in this report. The higher the ranking the greater the opportunity for The City to facilitate climate actions through the mechanism.

Ranking Criteria	1	2	3	4	5
Level of Effort and Resources Required for Implementation	The mechanism would require significant additional resources from The City to set up and/or would require significant changes to policy or legislation.	The mechanism would require considerable additional resources from The City to set up and/or may require some changes to policy or legislation.	The mechanism would require some additional resources from The City to set up or access and/or would only require minimal changes to legislation or policy.	The mechanism would require limited additional resources from The City to set up but likely does not require many changes to legislation or policy.	The mechanism would require minimal or no additional resources from The City to set up but does not require changes to legislation or policy.
Level of Impact of the Mechanism for Climate Outcomes	The mechanism is expected to lead to very low climate outcomes and/or limited application across sectors.	The mechanism is expected to lead to minimal climate outcomes and/or limited application across sectors.	The mechanism is expected to lead to moderate climate outcomes and/or moderate application across sectors.	The mechanism is expected to lead to considerable climate outcomes and/or broad application across sectors.	The mechanism is expected to lead to significant climate outcomes and/or widespread application across sectors.
Level of Readiness for Implementation of the Mechanism	The mechanism would require significant time and effort before implementation could occur.	The mechanism would require considerable time and effort before implementation could occur.	The mechanism would require moderate time and effort before implementation could occur.	The mechanism would require limited time and effort before implementation could occur.	The mechanism would require minimal time and effort before implementation could occur.
Level of Funding Able to Flow through the Mechanism (Financing Mechanisms)	A limited amount of financing that could flow through the mechanism.	A moderate amount of financing that could flow through the mechanism.	A considerable amount of financing that could flow through the mechanism.	A significant amount of financing that could flow through the mechanism.	It is close to unlimited in the amount of financing that could flow through the mechanism.
Level of Investment Required to Flow through the Mechanism (Incentive Mechanisms)	A significant amount of investment is required for the incentive mechanism, or a significant reduction in revenue would be required.	A considerable amount of investment is required for the incentive mechanism, or a considerable reduction in revenue would be required.	A moderate amount of investment is required for the incentive mechanism, or a moderate reduction in revenue would be required.	A limited amount of investment is required for the incentive mechanism, or a limited reduction in revenue would be required.	Little to no amount of investment is required for the incentive mechanism, or no reduction in revenue would be required.

The funding and supporting mechanisms listed in the table below were evaluated based on the criteria above. Those ranked as 'High' require minimal resources and no changes to policy or legislation, have the opportunity to lead to significant climate outcomes, minimal time would be required to implement the mechanism, and, if a financing mechanism, can facilitate large-scale financing flow through, or if an incentive program, would require minimal investment or revenue losses through the mechanism. The funding mechanisms ranked as 'Low' require greater resources and significant changes to policy or legislation, will likely lead to lower climate outcomes, significant time would be required to implement the mechanism, and, if a financing mechanism, there are limitations on financing flow-through, or if an incentive program, would require significant investment or revenue losses through the mechanism.

High	Medium	Low
13 – 20	8 – 12	1 – 7

Funding Mechanisms	Ranking Criteria					Total	Rating
	Level of Effort and Resources Required	Level of Impact	Level of Readiness	Level of Financing Flow Through	Level of Investment Required		
Mechanisms for Financing Climate Action							
Federal and Provincial Financing	3	4	3	4	-	14	High
Climate Bonds	1	3	1	4	-	9	Medium
Community Revitalization Levy	2	1	2	2	-	7	Low
Mechanisms for Supporting Climate Action							
Loan Guarantee	3	3	3	4	-	13	High
Loan Loss Reserve	3	3	3	4	-	13	High
Fee Rebates	3	2	3	-	3	11	Medium
Direct Incentives Program	3	3	3	-	1	10	Medium
Non-Profit Partnerships	2	3	1	4	-	10	Medium
Percent for Climate	3	2	2	-	3	10	Medium
Revolving Energy Savings Project Fund	2	2	2	-	3	9	Medium
Property Tax Incentives	2	2	3	-	2	9	Medium
On-Bill Repayment/Financing	2	3	1	2	-	8	Medium
Soft Loans	2	3	1	2	-	8	Medium
Interest Rate Buy-Down	2	2	2	-	1	7	Low
Off-Site Levy Rebates	2	1	1	-	3	7	Low
Public-Private Partnerships	1	2	2	-	2	7	Low
Energy Performance Contract	1	2	2	-	2	7	Low