

Calgary



# Climate Resilience Strategy Update 2019

UCS2020-0308

ISC: Unrestricted

Utilities and Corporate Service (UCS)

15 April 2020



# Context 2019



## 'Catastrophic' climate change is accelerating faster than predicted



Climate change is accelerating, with carbon dioxide levels increasing, sea levels rising and ice sheets melting faster than ever, experts have warned.





## What are Calgarians saying?

**In 2019 Calgarians shared their perceptions on climate change:**

**77%** “I think we need to act now to address climate change”

**76%** “I am concerned about climate change”

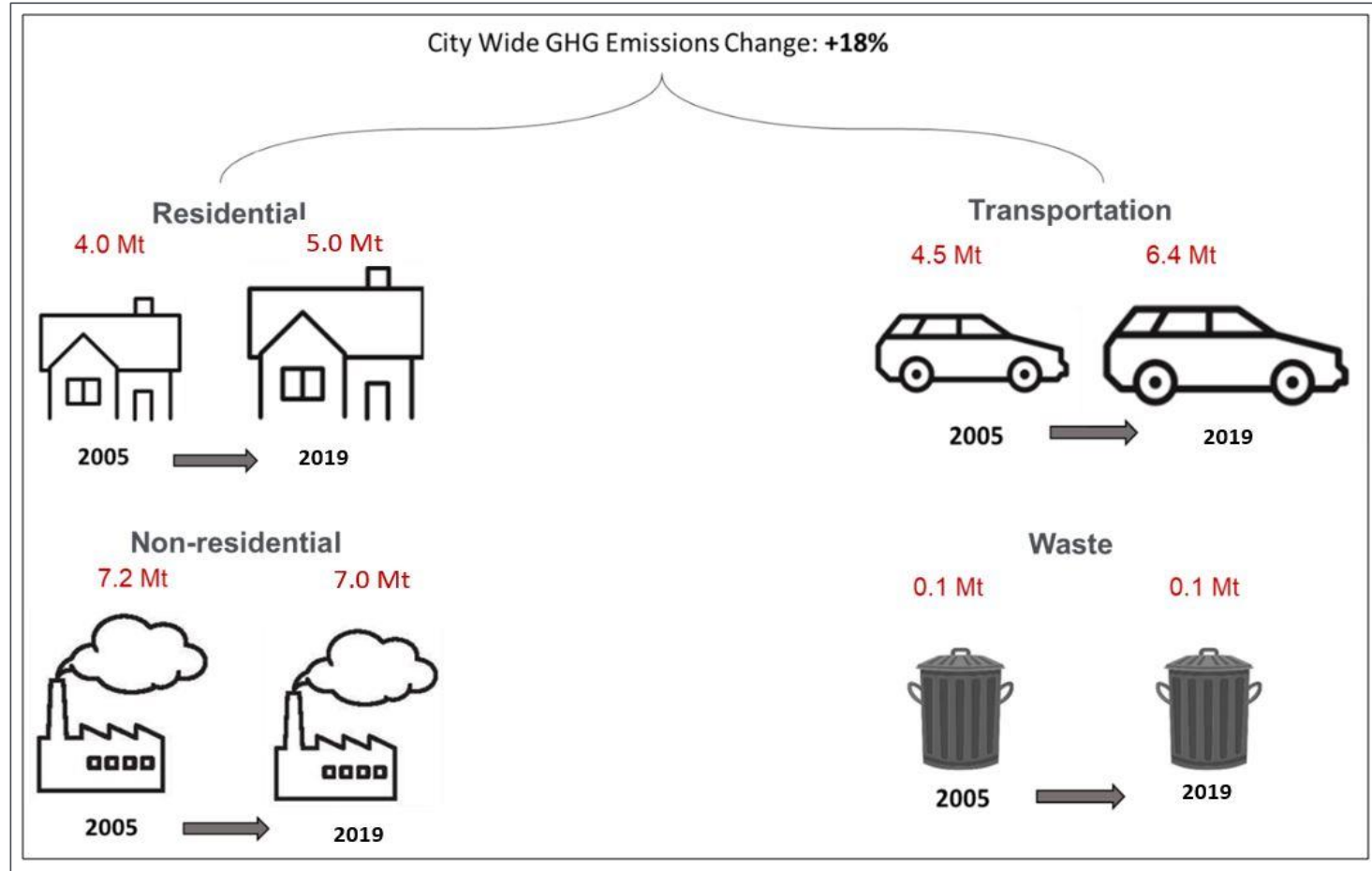
**73%** “I want to do more personally to help prevent climate change”

**72%** “I think Calgarians should be doing more to help prevent climate change”

A *Citizen Perspectives Survey* was conducted from 16-23 September 2019, asking 504 Calgarians by phone about their opinions on extreme weather events, measures taken to mitigate impacts of these events, and climate change. Questions in the climate change section were new in the 2019 survey and as such, do not have corresponding 2018 data.

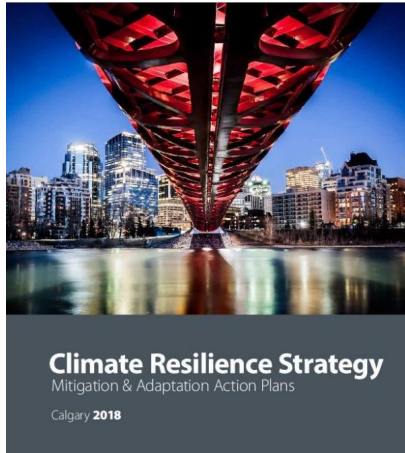


# Status of GHG Emissions





# Progress



**244** Total Actions

**36**  
Actions completed

**166**  
Actions in progress

**42**  
Actions not started

## Progress Areas

1. Buildings, Infrastructure and Energy
2. Transportation and Land Use
3. Consumption and Waste
4. Natural Infrastructure
5. Integrated Watershed Management
6. Community Outreach and Education
7. Leadership and Governance



# Climate Actions in 2019

## Climate Resilience Strategy - Transportation

### Climate Resilience Strategy Deputy City Manager & Chief Resilience Officer

**Program Highlight**  
**Resilient Calgary Strategy: Natural Infrastructure**

The natural infrastructure program is a multi-year initiative involving cross-corporation collaboration. Over 100 municipal, not-for-profit, academic and industry representatives from across Alberta and British Columbia were engaged in September 2019 to discuss the value of including natural infrastructure within the municipal asset management and financial frameworks.



**Desired Outcomes of the Natural Infrastructure Program:**

- To avoid an unfunded liability;
- To enhance natural functions and ecosystem services;
- To adapt to a changing climate;
- To reduce life-cycle costs for infrastructure;
- To realize the multiple social, economic and environmental benefits of natural infrastructure.

**Natural Asset Management**

Resilience & Infrastructure Calgary is continuing to collaborate with CPAM & ESM to integrate Natural Infrastructure into The City's corporate Asset Management Plan Framework to determine asset valuation, condition performance, risk understanding and lifecycle management.

**What are the climate risks impacting the Deputy City Manager's Office?**

**Risks**

The evidence-based vulnerability and risk assessment for Calgary, completed in 2017, indicated the following climate risks that are likely to have a direct impact on the Deputy City Manager's Office:

- extreme weather (short duration-high intensity storms)
- heavy snow, ice & blizzards
- flooding (river & stormwater)
- drought (prolonged low precipitation and low water levels)
- heat waves & temperature fluctuations (freeze & thaw)

**Impacts**

These high-risk scenarios can lead to:

- damage to City infrastructure
- compromised citizen & staff safety
- critical infrastructure failure
- service & supply chain disruption
- increased capital, operating & maintenance costs
- social inequity in risk

**Climate Mitigation Initiatives (Examples)**

**Electrification of Corporate Fleet**

Both Supply Management and Fleet Services are investigating the demonstration of electric vehicle options along with corporate charging.

**Program 4: Electric**

**Climate Adaptation Initiatives (Examples)**

**Climate Lens Approach**

Infrastructure Calgary is collaborating with ESM to develop an internal climate lens approach to inform corporate investment. The lens is to include an assessment of projected

**Program 11: Infrastructure & ESM**

**What are the climate risks impacting Transportation?**

**Risks**

The evidence-based vulnerability and risk assessment for Calgary, completed in 2017, indicated the following climate risks that are more likely to have a direct impact on transportation:

- extreme weather (short duration-high intensity storms)
- heavy snow, ice & blizzards
- flooding (river & stormwater)
- high wind events
- heat waves & temperature fluctuations (freeze & thaw)

**Impacts**

These high-risk scenarios can lead to:

- damage to Calgary Transit & Roads infrastructure
- temporary loss of transportation corridors
- compromised citizen & staff safety
- critical infrastructure failure
- service disruption
- increased capital, operating & maintenance costs

**Climate Mitigation Initiatives (Examples)**

**Heavy Transit's shift to low-carbon fuels**

Calgary Transit is in the process of adding 114 new CNG buses to its fleet. Future bus purchases will focus on the use of alternative fuels including compressed natural gas.

**Program 4: Electric & low-emissions vehicles**

**Climate Adaptation Initiatives (Examples)**

**Updating Calgary Transportation Plan**

The 2018 Plan is being updated to include effective planning and policy related to the service line's ability to endure future climate and extreme weather events.

**Program 5: Design standards & practices**

**Climate Adaptation Initiatives (Examples)**

**Green Building Design of Transit Facilities**

The LEED Gold certified Stony Oak Transit Facility includes a combined heat and power system that utilizes waste heat to create power and is constructed with solar PV-ready.

**Program 3: Reasonable & low-carbon energy systems**

**Climate Adaptation Initiatives (Examples)**

**Design Guidelines for Subdivision Servicing**

Highway guidelines are being updated to better support the existing network and alternative transportation routes in areas of roadway closures. New regional pathway connections should be located outside of a 1.100 year floodway.

**Program 5: Design standards & practices**

**Climate Adaptation Initiatives (Examples)**

**Boulevard Naturalization Project**

Transportation and Parks are seeking funding to naturalize

**Program 5: Design standards & practices**

## Climate Resilience Strategy - Community Services

**What are the climate risks impacting Community Services?**

**Risks**

The evidence-based vulnerability and risk assessment for Calgary, completed in 2017, indicated the following climate risks that are likely to have a direct impact on Community Services:

- extreme weather (short duration-high intensity storms)
- heavy snow, ice & blizzards
- flooding (river & stormwater)
- drought (prolonged low precipitation and low water levels)
- heat waves & temperature fluctuations (freeze & thaw)

**Impacts**

These high-risk scenarios can lead to:

- damage to infrastructure
- limited water supply
- shift in societal mobility and landscape function
- compromised citizen & staff safety
- critical infrastructure failure
- service disruption
- increased capital, operating & maintenance costs

**Climate Mitigation Initiatives (Examples)**

**Implementing Energy Efficiency in Affordable Housing**

437 multifamily units in a mixed-use development are under construction with a target of 20% improved energy efficiency compared to the 2015 National Energy Code for buildings.

**Program 1: Energy performance standards in buildings**

**Climate Adaptation Initiatives (Examples)**

**Improving Calgary's Ecological Awareness**

Calgary Parks is engaging and informing residents on the value of biodiversity: communities, native plants, trees, pollinators, sustainable landscape design and maintenance through various interactive programs.

**Program 7: Natural assets adaptation**

**Climate Mitigation Initiatives (Examples)**

**Village Square Leisure Centre Power Project**

A power factor correction project contributed to an improvement from 84% to 98% ratio of real power to apparent power flow to the Village Square Leisure Centre.

**Program 1: Energy performance standards in buildings**

**Climate Adaptation Initiatives (Examples)**

**Improving Protection for Vulnerable Populations**

The Calgary Neighbourhoods Non-profit Organization (Calgary NPO) provides communication and coordination between non-profit organizations and CEMA for preparedness planning and emergency response.

**Program 3: Staff & citizen outreach**

**Climate Mitigation Initiatives (Examples)**

**Rosedale Affordable Housing Development**

Calgary Housing is developing 15 affordable modular housing units within the community of Rosedale. These homes will be sustainably constructed off-site and delivered to provide secure, energy efficient, affordable housing in the area.

**Program 1: Energy performance standards in buildings**

**Climate Adaptation Initiatives (Examples)**

**Improving Citizen Awareness of Risks**

The Disaster Risk Explorer developed by CEMA shares information on hazards and risk mitigation measures that Calgarians can take to prepare and respond to natural hazards and infrastructure failure.

**Program 13: Severe weather response and recovery management**

## Climate Resilience Strategy - Planning & Development

**Program Highlight**  
**Reducing the low carbon trends for Planning & Development**

Land efficient use of land, staff, communities, and greater choices that include transit and bikes can significantly reduce trips and associated greenhouse gases.

**Risks**

The evidence-based vulnerability and risk assessment for Calgary, completed in 2017, indicated the following climate risks that are likely to have a direct impact on Planning & Development:

- extreme weather (short duration-high intensity storms)
- heavy snow, ice & blizzards
- flooding (river & stormwater)
- high wind events
- heat waves & temperature fluctuations (freeze & thaw)

**Impacts**

These high-risk scenarios can lead to:

- an enhanced urban heat island effect
- damage to public & private buildings & infrastructure
- compromised citizen & staff safety
- loss of use or enjoyment of public spaces & major civic facilities
- staff resources diverted to address acute events
- risk to urban canopy and habitats

**Climate Mitigation Initiatives (Examples)**

**Reducing Barriers for Energy Efficiency**

Calgary Building Services is reducing the minimum separation distances between buildings to allow improvements to building envelope insulation and is supporting building innovation through the development of their energy code-compliant Passive House Planning Package.

**Program 1: Energy performance standards**

**Climate Adaptation Initiatives (Examples)**

**Climate Change Training & Process Improvements**

In partnership with ESM, Community Planning is undertaking climate training to help staff incorporate climate change goals into application reviews and policy development. Process improvements, such as including a climate change section into reports to CPC and Council, are under development.

**Program 12: Staff & citizen outreach**

**Climate Mitigation Initiatives (Examples)**

**Land Use Bylaw Changes to Support Solar PV Systems**

The Land Use Bylaw has been amended to exempt most new installations of solar photovoltaic (PV) systems from requiring a Development Permit, making it easier for Calgarians to adopt this technology.

**Program 1: Energy performance standards**

**Climate Adaptation Initiatives (Examples)**

**Municipal Development Plan (MDP) Update**

The MDP is being updated to incorporate new climate language and supporting policies that aim to reduce GHG emissions and address climate risks to people, communities, and infrastructure.

**Program 12: City planning & processes**

**Climate Mitigation Initiatives (Examples)**

**Collaboration with Industry**

Community Planning collaborated with Audi Royal Oak to approve the first solar canopy full shelter as a car dealership in Canada. These shelters protect inventory from extreme weather (thaw events) while producing renewable energy as an added financial benefit.

**Program 1: Renewable & low-carbon systems**

**Climate Adaptation Initiatives (Examples)**

**Enhanced Process Support**

Through new policy, Calgary Approvals is prioritizing the review of development applications that provide significant environmental benefits, including projects on the City's climate mitigation and adaptation goals.

**Program 12: City planning & processes**



# Calgary Climate Panel Recommendations

## Challenges

Implementation  
and Credibility

Resources and  
Funding

Alignment –  
Policy and  
Initiatives

## Opportunities

Leadership &  
Effective  
Governance

Resource  
Capacity and  
Funding  
Opportunities

Project  
prioritization  
and  
Partnerships



## Climate Actions for 2020 (Examples)

| A Well-Managed Program  | Reduced Corporate and Community Risk and Vulnerability   | Reduced Corporate and Community Emissions   | Awareness and Education   |
|---|--|---|---|
| <ul style="list-style-type: none"> <li>• Low Carbon Cities Canada (LC3)</li> <li>• Internal Corporate Governance</li> <li>• Climate Investment Criteria</li> <li>• Measurement and Reporting</li> </ul> | <ul style="list-style-type: none"> <li>• Review engineering design guidelines</li> <li>• Training and technical assistance</li> <li>• Collaborative actions with development industry</li> </ul> | <ul style="list-style-type: none"> <li>• Residential Energy Labelling</li> <li>• Utilities and development opportunities</li> <li>• Corporate Emissions and Energy Plan</li> <li>• Climate in Planning and Development</li> </ul> | <ul style="list-style-type: none"> <li>• Climate 101 – Internal awareness</li> <li>• Climate campaign – community awareness</li> <li>• Citizen Action</li> <li>• Climate data sharing</li> <li>• Working with other cities</li> </ul> |

\*continue with existing programs





## RECOMMENDATION:

That the Standing Policy Committee on Utilities and Corporate Services recommend that Council direct administration to:

1. Direct Administration to return to Standing Policy Committee on Utilities and Corporate services, as required, between annual reports with a briefing report update.