

PARTNERS FOR CLIMATE PROTECTION

2022 Update Report



TERRITORY ACKNOWLEDGEMENT

The City of Lethbridge acknowledges that the place we now call Lethbridge has for many generations had another name given to it by the Siksikaitsitapi, the Blackfoot Peoples. The name is Sikóóhkotok, a reference to the black rocks found in the area.

The City of Lethbridge is located in the traditional territory of the Blackfoot Peoples and within Treaty 7 lands. The City of Lethbridge is also home to the Métis Nation of Alberta, Region III.

We pay respect to all Indigenous Peoples past, present and future, by recognizing and respecting their cultural heritage, beliefs, inherent rights, and relationship to the land.



Table of Contents

2	Territory Acknowledgement
4	Overview
6	Milestone Progress
7	March 9, 2020 Council Resolution
8	Reporting Sectors
9	Considerations
11	Existing Initiatives
19	Corporate GHG Emissions
20	Creating Sustainable Projects
21	Energy Conservation Master Plan and Strategy
22	Summary

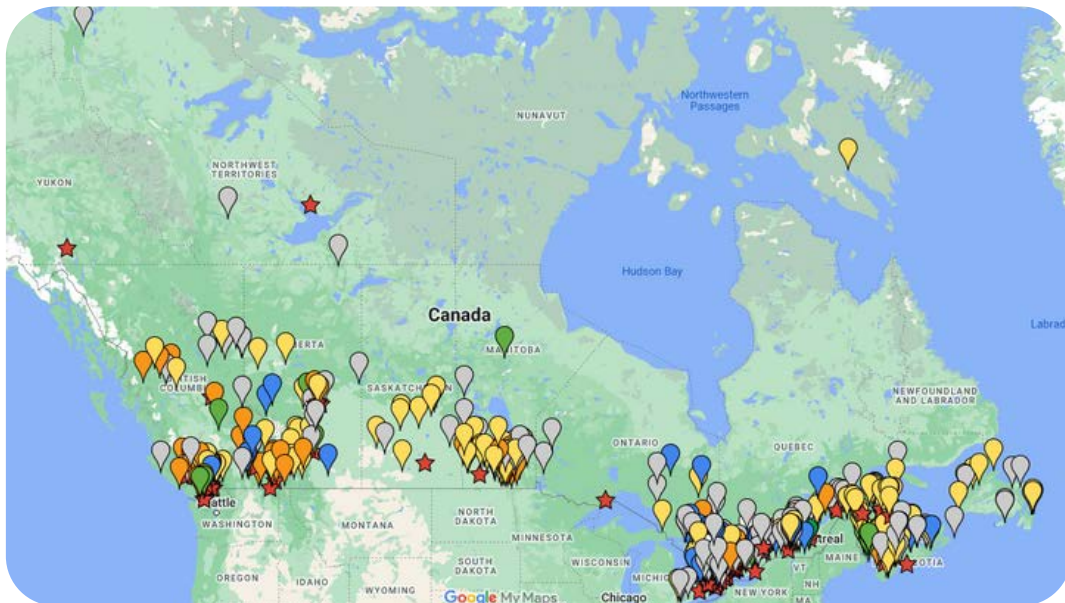
Appendix Sections

Appendix A	Energy Conservation Initiatives 2022 Update Report
-------------------	--

OVERVIEW

Partners for Climate Protection

The Partners for Climate Protection network is Canada-wide encompassing more than 500 municipalities and representing 70 percent of Canada's population, all for the purpose of taking action against climate change through greenhouse gas (GHG) reductions.



Graphic retrieved from www.pcp-ppc.ca/program.

500+
Municipalities
Participating

13
Provinces and territories
with members

70%
Canadian population
represented

OVERVIEW

Milestone Framework

The Partners for Climate Protection (PCP) program was created for municipalities in partnership and funded by the Federation of Canadian Municipalities (FCM) and Local Governments for Sustainability (ICLEI) as action against climate change through GHG. This program provides resources and technical support to navigate through a 5-step Milestone Framework developed to assist municipal governments effectively manage GHG emissions.



To learn more about the Partners for Climate Protection program, please visit www.pcp-ppc.ca

MILESTONE PROGRESS

City of Lethbridge

The City of Lethbridge signed onto the PCP program in 2007. Milestone #1 (baseline) was completed in 2019, establishing the 2018 corporate and community emissions as a baseline for future GHG reductions. The Sustainability Team presented to Council a preliminary corporate emissions reduction target of 20 percent through coordination with departments. Milestone #2 (reduction target) was completed in 2020 when the Council adopted a corporate emissions reduction target of 40 percent relative to the 2018 total corporate GHG emissions, to be fulfilled by 2030.



MILESTONE 1

**CREATING A BASELINE EMISSIONS INVENTORY
COMPLETE**



MILESTONE 2

**SET EMISSIONS REDUCTIONS TARGETS
COMPLETE**



MILESTONE 3

**DEVELOPING A LOCAL CLIMATE ACTION PLAN
IN PROGRESS**



MILESTONE 4

**IMPLEMENTING A LOCAL CLIMATE ACTION PLAN
TO BE COMPLETED**



MILESTONE 5

**MONITORING AND REPORTING RESULTS
TO BE COMPLETED**

This report was prepared as an update to the status of greenhouse gas emissions reduction initiatives relative to the targets adopted by the City Council on March 9, 2020.

MARCH 9, 2020

COUNCIL RESOLUTION

March 9, 2020 Council Resolution

Excerpt from Minutes

City Council Meeting held Monday, March 9, 2020

6.3. Partners for Climate Protection

580

J.A. Coffman:

WHEREAS the City of Lethbridge is a member of the Partners for Climate Protection Program which assists members in the reduction of greenhouse gas emissions; and

WHEREAS the City of Lethbridge would like to encourage and promote continuous improvement with respect to environmental goals and targets; and

WHEREAS Administration presented to Council on March 2nd the results of the baseline for greenhouse gas and targets for the Corporate Milestone 2 of the Partners for Climate Protection Program; and

THEREFORE, BE IT RESOLVED THAT Council adopt a reduction of 40% of the 2018 total corporate emissions of Greenhouse Gases by the year 2030; and

FUTHER BE IT RESOLVED THAT the City Manager provide Council a report on the City's emission reduction efforts before December 31, 2022 in order to assess progress, including plans for new initiatives through to 2030; and

FURTHER BE IT RESOLVED THAT an annual update of the status of the approved target is provided to City Council.

In Favour: C.A. Spearman, B.A. Crowson, A.M. Campbell, J.H. Carlson, J.A. Coffman,
J.P. Mauro, S.R. Miyashiro, R.K. Parker

Opposed: B.E. Hyggen

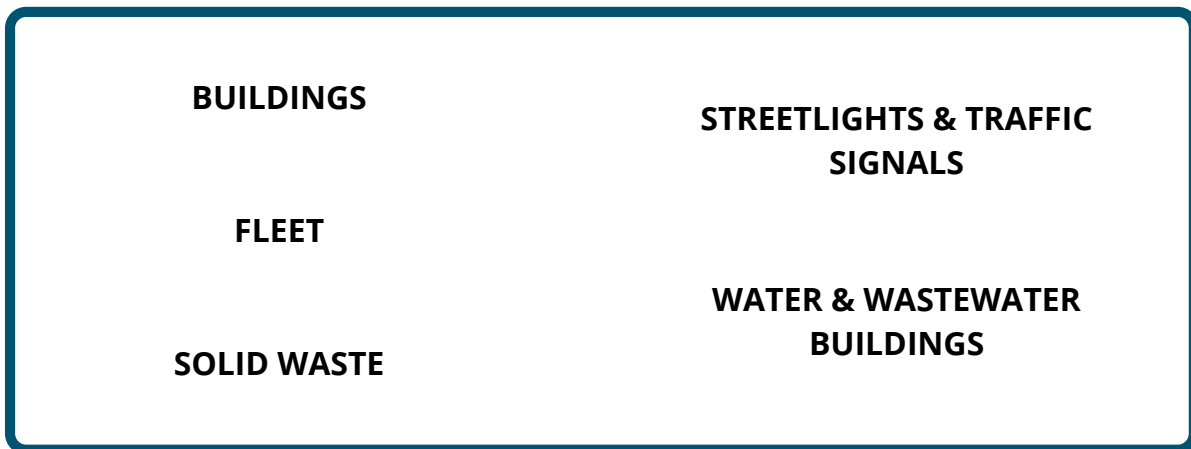
----- CARRIED

REPORTING SECTORS

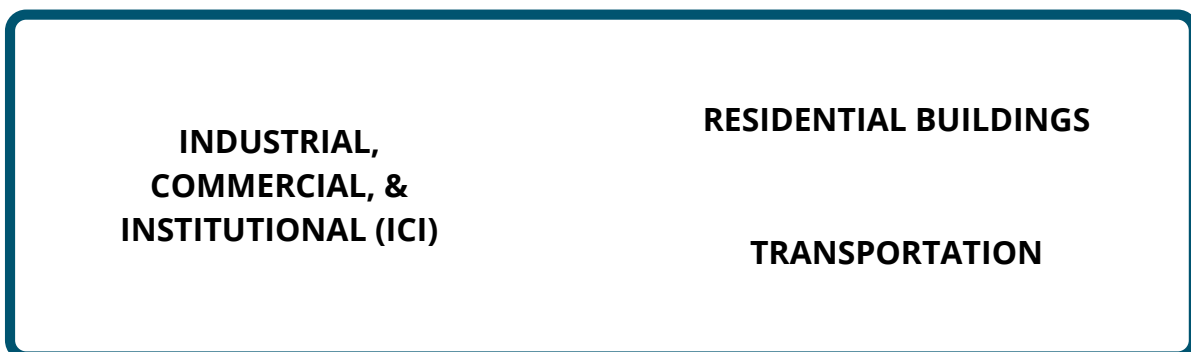
Corporate and Community

To meet the reporting requirements of the PCP program, emissions are to be recorded based on the City's sectors and sub-sectors. The City tracks emissions as a corporate entity and from a community-wide perspective. These sectors and sub-sectors are presented below.

CORPORATE



COMMUNITY



CONSIDERATIONS

Tracking GHG Emissions

Energy and fuel consumption is seldom constant. There are numerous factors that influence the amount of energy is used in both community and corporate settings. Establishing trends in a municipal setting requires years of data as there are multiple variables at play.

COVID-19 Pandemic

City of Lethbridge staff, with exception of essential services, commenced working from home in March 2020. Public amenities and facilities were also closed. As a result, there were significant reductions in energy consumption. Recreational facilities such as pools and ice rinks were closed, office spaces were vacant, and some fleet vehicles parked. This reduced the amount of electricity, natural gas, and fuel consumed by the corporation and led to a reduction in emissions.

As of March 2022, staff are being reintroduced into the physical workplace with the ability to work remotely through the Work from Home program. Offices have not returned to their pre-pandemic occupancy levels.

With the global pandemic having significant impacts on energy consumption and associated GHG emissions, data from 2020 to 2022 may not be fully representative of status quo operations. Data collected post-pandemic, 2023 and onwards, will provide a more holistic perspective on the City's carbon footprint.

Regulatory Environment

The regulatory environment surrounding GHG emissions is continuously evolving to tackle climate change and may require changes to operational procedures.

Municipal Services

Municipal services fluctuate and adapt to meet the needs of residents while responding to the environmental changes and increasing population. The City offers many demand-based services, including but not limited to, OnDemand transit, water and wastewater treatment, and emergency response.

Seasonal Variability

The City's public services respond to the needs of residents, such as the use of snow plows and increased streetlight hours during winter to irrigation of parks during summer.

CONSIDERATIONS

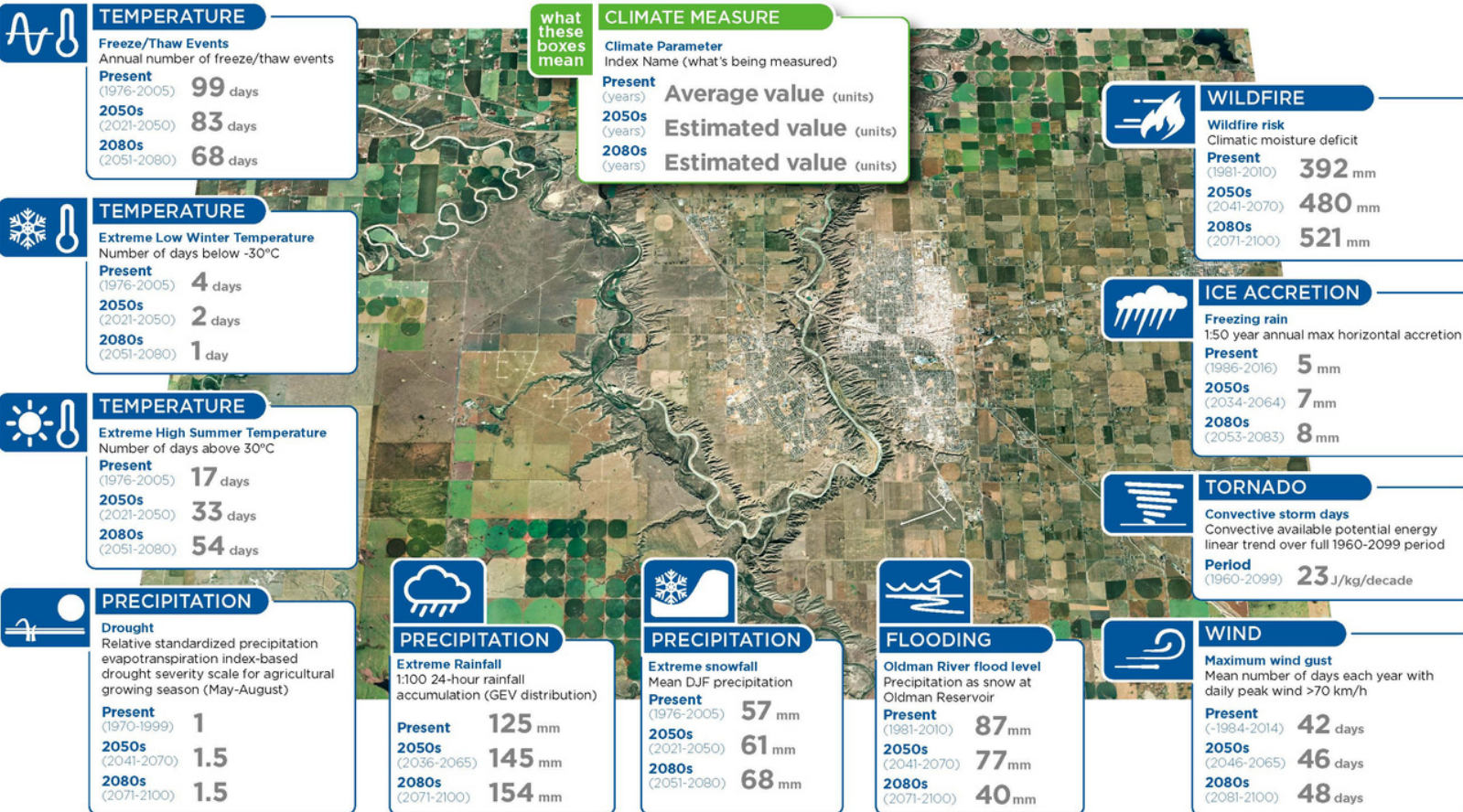
Tracking GHG Emissions

Climate Trends

As the global climate continues to change, so does the City's energy demand. The Sustainability Team had a climate scenario completed as part of a Climate Vulnerability and Risk Assessment for participating departments. The climate scenario is predicting extreme weather events for our area, including extreme heat. This translates into potentially increased energy demands such as air conditioning use during heat waves and emergency response services. The Climate Scenario has been included below.



City of Lethbridge Climate Projection



EXISTING INITIATIVES

Departments and Initiatives

To reduce corporate GHG emissions, the Sustainability team coordinated with City departments to identify and select projects to implement as part of the PCP program presented in 2020. These departments and associated initiatives are presented below.

ELECTRIC UTILITY

Conservation Voltage Reduction

FACILITY SERVICES

Building Efficiency Retrofits

FLEET SERVICES

Alternative Fueled Vehicle Conversion
Fuel Efficient Emergency Vehicles
Green Fleet Policy

TRANSIT

Electric Buses w/ Infrastructure
OnDemand Service

WASTE & RECYCLING SERVICES

Landfill Gas Capture System
Residential Organics Collection

WATER, WASTEWATER & STORMWATER

WWTP Cogeneration System
Cured-in-Place Piping



EXISTING INITIATIVES

Projects



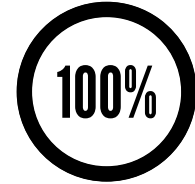
In Progress



On Hold



Planned



Completed

Conservation Voltage Reduction

Electric Utility



This initiative was a city-wide pilot to adjust what is traditionally a static distribution system into a dynamic system, tailoring substation voltages to match load requirements. This initiative was in partnership between the Lethbridge Electric Utility, Alberta Innovates, and Dominion Voltage Incorporated.

The pilot ran from December 2019 to March 2022 and was completed successfully with preliminary energy savings within a 0.18% to 3.83% range. The outcomes of this pilot indicated that there are challenges with long-term implementation that does not make CVR viable at this time. The City of Lethbridge Electric Utility is looking into alternative methods to reduce power consumption. Approximately 750 tCO₂e were saved during the pilot.



EXISTING INITIATIVES

Projects

Building Efficiency Retrofits

Facility Services



The building efficiency retrofits are currently in progress. Lighting retrofits have been completed at the Henderson Ice Centre, Fleet Services Building, and Police Headquarters. Additional lighting retrofits will be implemented at several other facilities, including the Crossings Ice Complex, ENMAX Centre, and City Hall.

A number of building envelope upgrades were also completed. Additional insulation was added during the roof replacement projects at Fire Station #2, Nicholas Sheran Pool, and the Public Operations building. Other building envelope upgrades include weather-stripping/sealing at the Nicholas Sheran Ice Centre, Henderson Ice Centre, the downtown Library, and the Public Operations building.

The Investing in Canada Infrastructure Program (ICIP) contributed grant funding towards several of these projects. The Municipal Climate Change Action Centre's (MCCAC) Recreation Energy Conservation Program contributed grant funding towards the lighting replacement at the Henderson Ice Centre.



EXISTING INITIATIVES

Projects

Fuel Efficient Emergency Vehicles

Fleet Services



The City of Lethbridge is exploring opportunities to acquire more fuel efficient vehicles for emergency services. Fleet Services recently replaced two existing Fire Engines. The new units are equipped with technologies to improve fuel efficiency and reduce GHG emissions that were not available on the previous engines.

There are also four hybrid vehicles in the City of Lethbridge police fleet. The hybrid vehicle group consumes an estimated 11,000 litres less fuel per year compared to the vehicles they replaced with an estimated annual GHG reduction of 25 tCO₂e.

Fleet Services is looking into further options for fuel efficient emergency vehicles and have been in discussion with a few vendors for acquiring a fully electric police patrol vehicle.

Alternative Fueled Vehicle Conversion

Fleet Services



The City of Lethbridge is exploring the opportunities to acquire alternative fueled vehicles (i.e., electric, hydrogen, hydrogen-electric, etc.) and is currently working with a collective purchase agreement to expedite the procurement process. There are currently delays in acquiring these vehicles due to supply chain issues linked to the COVID-19 pandemic. Fleet Services has an electric ice resurfacers on order and will be ordering an electric vehicle (Chevy Bolt) and UTV (Polaris Ranger) for the Waste and Recycling Centre.

Fleet Services received approval to apply for the MCCAC grant in 2022 for the procurement of these vehicles.



EXISTING INITIATIVES

Projects

Green Fleet Policy

Fleet Services



The Green Fleet Policy aims to minimize environmental impacts while maintaining the functional utility of vehicles and/or equipment. This is achieved through focusing on longevity of corporate vehicles and equipment through effective lifecycle management, aligning with Performance and Partnership Excellence strategic objectives by strengthening internal partnerships and contributing to the City's emission reduction targets, and increasing performance management of the City's fleet. The Green Fleet Policy has been approved and is in the process of being implemented.

1. Eco Driver Training

The Eco Driver Training course is an introductory course for City drivers to reduce emissions by adopting simple driving techniques. This course is under development and will be rolled out early 2023 to City Employees.

2. Vehicle Sharing

Fleet Services is investigating the challenges and opportunities to help shape the framework for creating this strategy going forward. As this could potentially be a significant change to operations, Fleet Services will be actively working with many resources to ensure the success of this program.

3. Anti-idling Technology

Older vehicles are being replaced with new vehicles equipped with auto start/stop technology to reduce fuel consumption during idling. Fleet Services is also looking at alternative anti-idling technologies on the market.

4. Vehicle Right Sizing

Vehicle right sizing is in progress and will require additional corporate resources to implement this initiative. This involves a shift in mindset to how the City of Lethbridge operates today. Certain factors (e.g., environmental, financial) contribute to this challenge of how City departments can best work together to find the right size vehicle for the task.

EXISTING INITIATIVES

Projects

Electric Buses w/ Infrastructure (Project ZEUS)

Transit



Lethbridge Transit is moving to adopt zero emission bus and infrastructure technology to reduce GHG emissions and noise pollution within the City of Lethbridge. In order to meet the requirements for the Infrastructure Canada grant funding, a complete planning study is required. With an approved plan from Infrastructure Canada, Transit will engage in a capital project to specify and procure electric buses, charging equipment, and facility additions to complete the integration of zero emission buses. Transit has successfully retained the services of an experienced Transit consulting firm, IBI Group, to assist with the feasibility study and grant application. The planning phase began in Q4 2022 and is expected to be completed in early 2023. The specification, procurement, and construction of buses, charging equipment, and facility additions will then take place between 2023 and 2025. It is estimated that each electric bus will displace approximately 130 tCO₂e per annum.

OnDemand Service

Transit



OnDemand transit service fulfills public transportation needs following bus route optimization to ensure all residents of Lethbridge have access to the public transportation network and has been implemented since August 25, 2021. This service reduces the number of full size buses in low ridership areas and allows the use of smaller, more efficient, transit vehicles to connect demand response zone customers to the fixed route network. Booking a Demand Response Ride can be done using the mobile app or calling 311. Lethbridge Transit is in the process of introducing a 3rd fleet category, Accessible Vans. These will service both Transit on Demand and some Access A Ride service. These Accessible Vans will represent approximately 40 percent savings in fuel and maintenance costs per unit. It is expected to replace 5 cutaway buses for 5 Accessible Vans by mid-2023.



EXISTING INITIATIVES

Projects

Landfill Gas Capture System

Waste & Recycling Services



A natural byproduct of landfills is the generation methane gas which is a potent greenhouse gas. The Waste and Recycling Centre commissioned its landfill gas (LFG) collection and flaring system in July 2021 to reduce this greenhouse gas from escaping into the atmosphere. There will be expansions to the LFG collection system as the landfill develops to further reduce greenhouse gas emissions with the first expansion being 80 percent complete.

Since July, approximately 6,500 tonnes of carbon dioxide equivalents (tCO₂e) have been destroyed. Next steps for the landfill gas flaring system is to continue flaring operations, monitor landfill gas quality and composition data, and continue expanding the gas collection system.

Residential Organics Collection

Waste & Recycling Services



Organic materials typically produce carbon dioxide when decomposing under aerobic conditions. However, under anaerobic conditions such as landfills, methane is produced which is significantly more potent as a greenhouse gas. By diverting organics from the residential waste stream, the City can compost these organics to avoid methane production while generating a beneficial product.

Major elements of the program for education and outreach, green cart collection, and organics processing are underway and the curbside organics collection project is on-track. Phase 1 curbside collection is complete with Phase 2 being approximately 60 percent complete.

Next steps for Phase 2 is to finish constructing the composting facility at the Lethbridge Waste and Recycling Centre and roll out organic carts to 32,500 single family homes for implementation in Spring 2023.

This initiative is 100 percent funded by the use of grants through the Canada Community-Building Fund (formerly Federal Tax Grant) and the Municipal Sustainability Capital Grant providing \$5,879,000 and \$4,750,000 respectively.

EXISTING INITIATIVES

Projects

WWTP Cogeneration System

Water, Wastewater & Stormwater



Municipal wastewater treatment plants (WWTP) produce biogas as a byproduct of the treatment process. Biogas is largely comprised of methane which is a highly combustible and potent greenhouse gas. The City of Lethbridge is currently investigating methods to beneficially use biogas. A common project developed by WWTPs is the implementation of a cogeneration system; cogeneration systems produce both heat and power which can then be used in the wastewater treatment process.

Biogas utilization options, including the WWTP cogeneration system, will be based on the results of the Stantec 30-year WWTP Expansion Conceptual Design project and the upcoming WWTP Energy Audit. The review of biogas utilization options is planned to be completed by spring 2023 within the WWTP Expansion Conceptual Design project. The WWTP Energy Audit is within the procurement process to be awarded prior to the new year.

Cured in Place Piping

Water, Wastewater & Stormwater



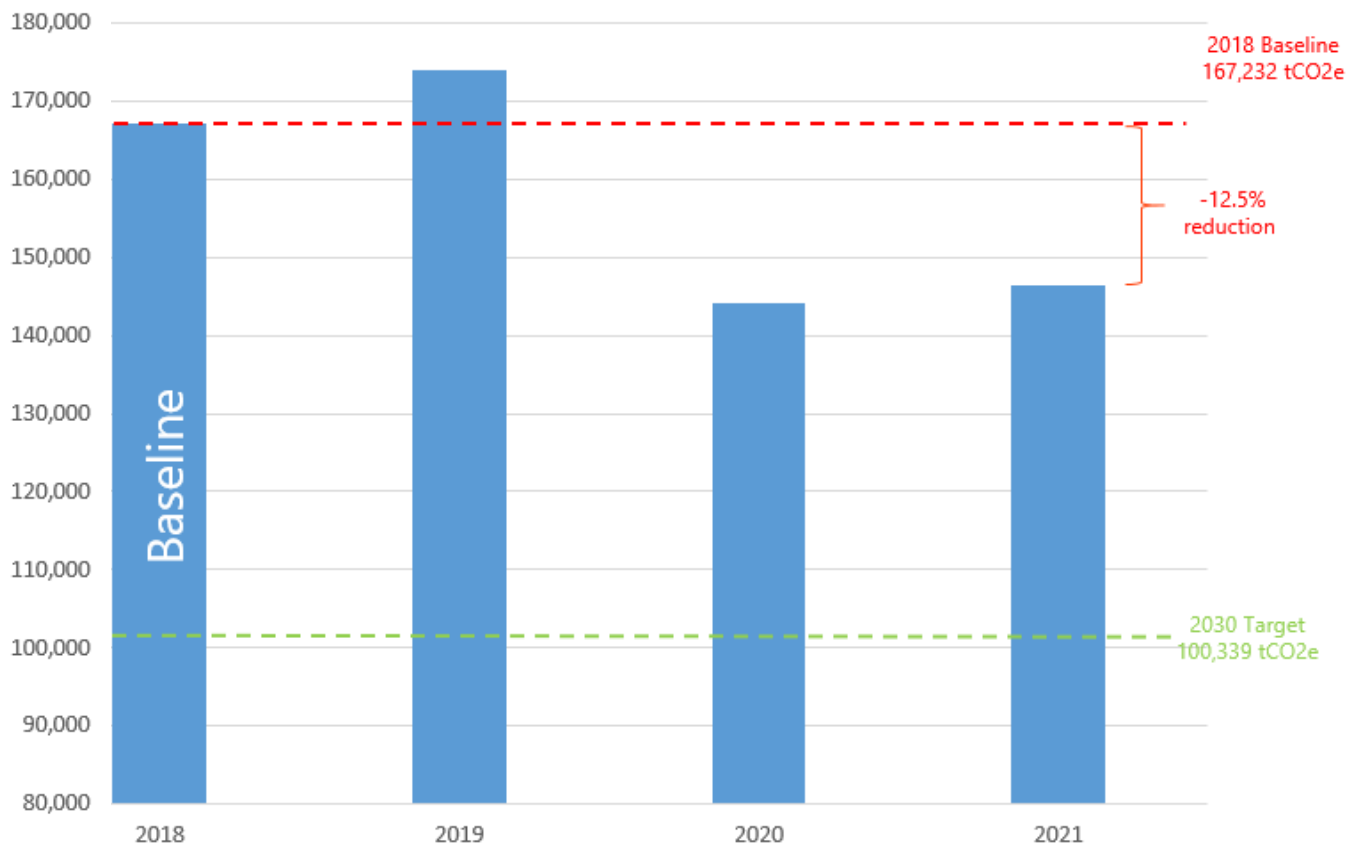
Cured in place piping (CIPP) is an alternative trenchless construction method used to repair existing pipelines. This process involves installation of a felt pipe lining into an existing pipe which is then cured, effectively creating a pipe within a pipe. This method removes the need to trench for pipe remediation, thereby reducing construction time. This year, the City of Lethbridge lined 8,900 metres of sewer pipes with CIPP. This resulted in an estimated savings of 1,200 tCO₂e emissions year to date relative to traditional trenching.



CORPORATE GHG EMISSIONS

City of Lethbridge

The City of Lethbridge reported a reduction in corporate GHG emissions in 2020 and 2021. This reduction can be partially attributed to temporary closing of City buildings and facilities due to the COVID-19 pandemic. The City is currently investigating opportunities to further reduce GHG emissions for an overall reduction in status quo operations to meet the 2030 target. Many City initiatives mentioned are in progress and will provide further GHG reductions as they develop.



	2018	2019	2020	2021
Corporate Emissions (tCO ₂ e)	167,232	173,890	144,247	146,345

CREATING SUSTAINABLE PROJECTS

Milestone 3 Development

The Sustainability Team previously identified initiatives to reduce GHG emissions by 20 percent and is currently investigating potential opportunities with city departments to further reduce emissions to achieve the 40 percent target. With an aggressive target of 40 percent, GHG emission reduction needs to be on top of mind for all project planning and delivery. 2023 will focus on the planning of projects to achieve the PCP Milestone #3.

MILESTONE 3

DEVELOPING A LOCAL CLIMATE ACTION PLAN

- Open conversations with City departments
- Project identification, description, and stakeholder participation
- Estimate costs and/or funding sources
- Project assignment and implementation



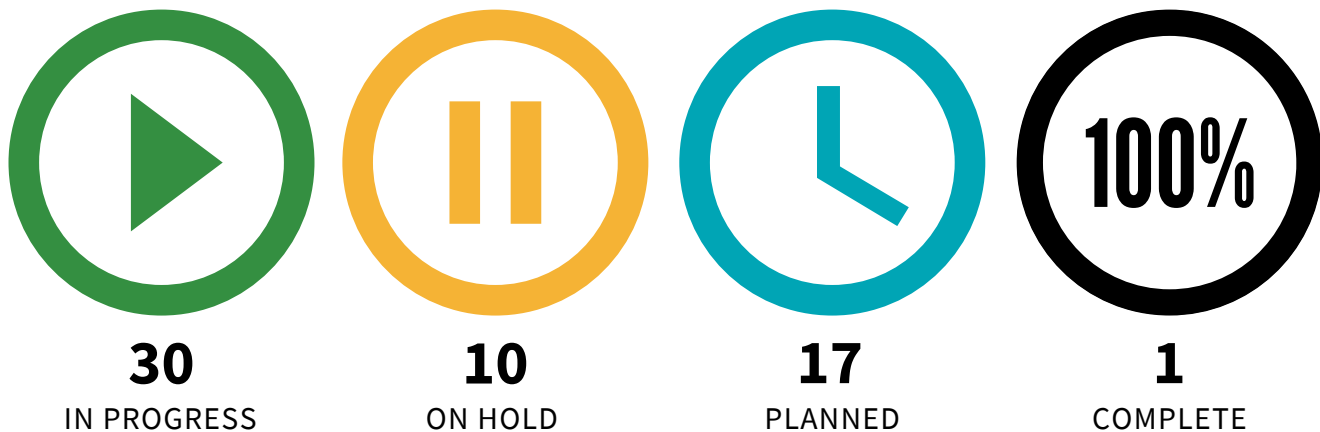
ENERGY CONSERVATION MASTER PLAN AND STRATEGY

Energy Conservation Initiatives

Energy consumption and GHG emissions are interrelated. The City of Lethbridge Energy Conservation Master Plan and Strategy (ECMP) is an energy efficiency roadmap for transitioning towards technologies and practices towards energy efficiency for corporate assets and operations.

Up to 47 additional initiatives were identified, in addition to the 11 existing initiatives under the PCP program, that can be further explored to achieve the City's GHG reductions target. These will be considered for Milestone #3 which will be completed towards the end of 2023.

It should be noted that it may not be feasible to quantify direct GHG emissions reductions for select projects due to project type, scale, and/or tracking methods. The realized GHG reductions from these types of projects will be represented in the City's total corporate emissions profile.



The status of the Energy Conservation Master Plan and Strategy initiatives can be found in Appendix A.

SUMMARY

Energy Efficiency and Emission Reduction

The City of Lethbridge, as a corporation, is committed to taking a responsible leadership role in the efficient use of natural resources. The City recognizes the importance of investing into a sustainable future and taking initiative to be a leading example of municipal environmental stewardship.

To date, the City has reduced GHG emissions by 12.5 percent; however, this is likely a result of COVID restrictions. It is anticipated that 2023 will be a normalized year for assessment and the City will be in a better position to truly understand the impacts of the current GHG reduction efforts.

The City of Lethbridge is in process of developing Milestone #3 by investigating potential opportunities to further reduce GHG emissions to meet the 40 percent target by 2030 adopted by Council.

Through the implementation plan in the Energy Conservation Masterplan, the PCP reduction target, future energy efficiency policy, the Municipal Development Plan, and planning for the PCP Milestone #3, the City is working towards reduced GHG emissions and improved energy efficiency.



ACKNOWLEDGEMENTS

Report Authors:

Brandon Nguyen, Sustainability Engineer-in-Training
Mandi Parker, Sustainability Manager

The following individuals contributed in the preparation of this report:

Allyson Racz, Waste & Recycling Technologist
Kyle McKenna, Waste & Recycling Gas and Controls Technician
Stewart Purkis, Broadband Pilot - Project Lead
Sam Conard, Facilities Plan & Project Manager
Jason Drenth, General Manager of Electric Utility
Robert Ulrich, General Manager of Fleet Services
Joel McDonald, Manager of Innovation and Planning
Adam Campbell, Wastewater Treatment Plant Manager
Greg Burland, Water & Wastewater Engineer
Jeremy Charlesworth, Water & Wastewater Project Technologist
Steve Rozee, Waste & Recycling Interim General Manager
Mario Galeana, Transit Asset Manager

PARTNERS FOR CLIMATE PROTECTION

Appendix A

Energy Conservation Initiatives 2022 Update Report

ENERGY CONSERVATION INITIATIVES

2022 Update Report



TERRITORY ACKNOWLEDGEMENT

The City of Lethbridge acknowledges that the place we now call Lethbridge has for many generations had another name given to it by the Siksikaitsitapi, the Blackfoot Peoples. The name is Sikóóhkotok, a reference to the black rocks found in the area.

The City of Lethbridge acknowledges that we are gathered on the lands of the Blackfoot people of the Canadian Plains and pays respect to the Blackfoot people past, present and future while recognizing and respecting their cultural heritage, beliefs and relationship to the land. The City of Lethbridge is also home to the Metis Nation of Alberta, Region III.



PREFACE

The Energy Conservation Master Plan & Strategy was developed in 2021 and provides a framework that the City of Lethbridge can implement in transition towards becoming a leader in sustainable energy practices.

The Energy Conservation Initiatives Update Report was created to provide an update to the status of energy efficiency initiatives developed by the City of Lethbridge.

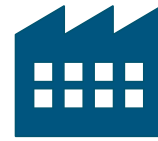
Table of Contents:

- 4** Key Department Stakeholders
- 5** Types of Initiatives
- 6** Initiative Highlights
- 7** Corporate Initiatives
- 8** Electric Initiatives
- 9** Fleet Initiatives
- 10** Parks Initiatives
- 11** Transit Initiatives
- 12** Transportation Initiatives
- 13** Water, Wastewater and Stormwater Initiatives
- 14** Waste and Recycling Utilities Initiatives
- 15** Facility Services Initiatives
- 16** Initiatives Summary (1/3)
- 17** Initiatives Summary (2/3)
- 18** Initiatives Summary (3/3)
- 19** Acknowledgements

KEY DEPARTMENT STAKEHOLDERS



WASTE & RECYCLING UTILITY



FACILITY SERVICES



**WATER, WASTEWATER &
STORMWATER**



PARKS



FLEET



TRANSPORTATION

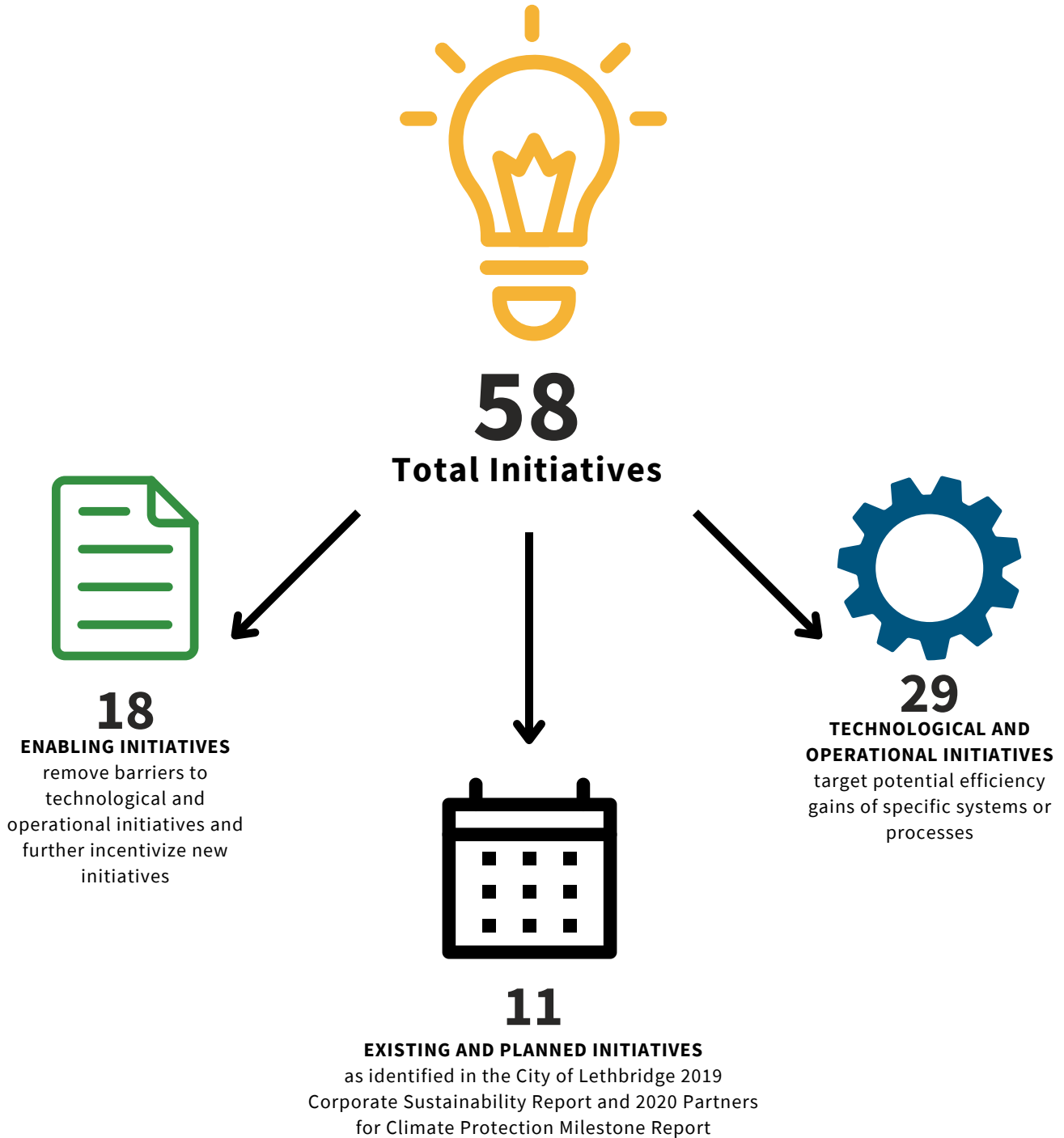


TRANSIT

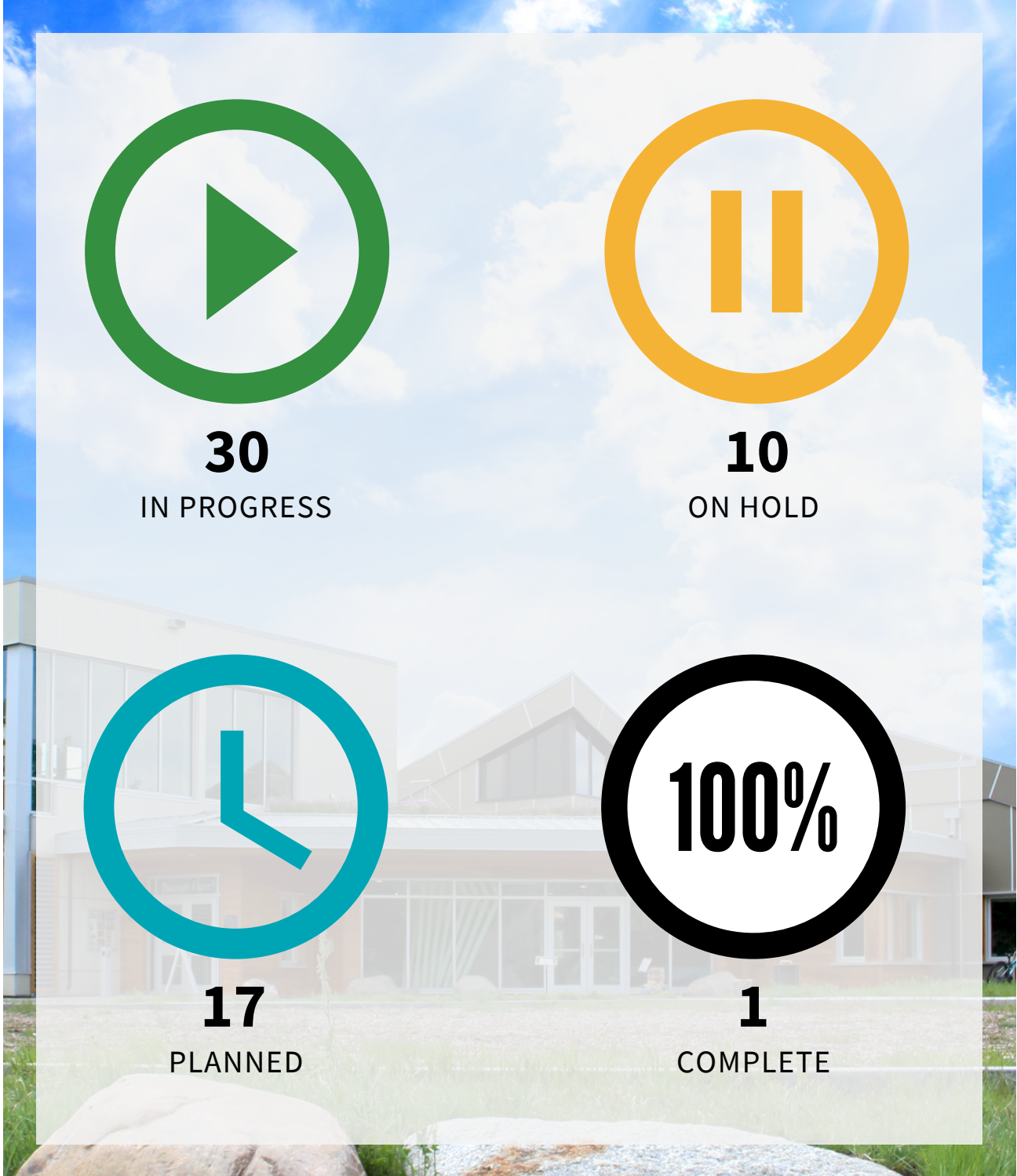


ELECTRIC

INITIATIVE CATEGORIES



INITIATIVE HIGHLIGHTS



CORPORATE INITIATIVES



The corporate-wide initiatives are geared towards shifting the culture and narrative around energy efficiency to be further incorporated into everyday practices. This includes establishing energy benchmarks, tracking energy metrics, removing obstacles to green projects, and increasing overall presence and knowledge surrounding energy consumption.

INTERNAL COMMUNITY OF PRACTICE

C.6

The implementation of the Energy Conservation Master Plan and Strategy and the Partners for Climate Protection Initiatives are the first steps in formally transitioning into a sustainability-oriented culture from an energy and emissions perspective. This will only improve as more green projects are implemented.

ANNUAL REPORTING ON EFFICIENCY

The City of Lethbridge Corporate Sustainability team is putting together an Annual Sustainability Report which will include efficiency performance. This report will be complete for Q1 2023.

C.3



**Corporate
Sustainability**

THE CITY OF LETHBRIDGE
is committed to taking a responsible leadership
role in the efficient use of natural resources

ELECTRIC INITIATIVES



E.1

CONSERVATION VOLTAGE REDUCTION (CVR)

This initiative was a city-wide pilot to adjust what is traditionally a static distribution system into a dynamic system, tailoring substation voltages to match load requirements. This initiative was in partnership between the Lethbridge Electric Utility, Alberta Innovates, and Dominion Voltage Incorporated.

The pilot ran from December 2019 to March 2022 and was completed successfully with preliminary energy savings within a 0.18% to 3.83% range. The outcomes of this pilot indicated that there are challenges with long-term implementation that does not make CVR viable at this time. The City of Lethbridge is looking into alternative methods to reduce power consumption.



FLEET INITIATIVES



FL.2 GREEN FLEET POLICY

The Green Fleet Policy aims to minimize environmental impacts while maintaining the functional utility of vehicles and/or equipment. This is achieved through:



Focusing on longevity of corporate vehicles and equipment through effective lifecycle management

Aligning with Performance and Partnership Excellence strategic objectives by strengthening internal partnerships and contributing to the City's emission reduction targets



Increasing performance management of the City's fleet



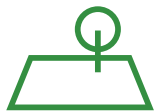
PARKS INITIATIVES



P.1

NON-POTABLE WATER USE

The use of non-potable water for irrigation can reduce energy requirements by the need for less infrastructure (piping, pumps) and transmission length. The ability to use non-potable water depends on how close it is to a water body source, such as a lake or stream, and is evaluated on a case-by-case basis.



28 PARKS WITH NON-POTABLE WATER USE COVERING **172 HECTARES**



P.2

The City of Lethbridge owns, operates, and maintains an abundance of parks and green spaces. A streamlined method to tracking and decreasing water usage, and subsequently power usage, is by installing automatic irrigation controllers.

AUTOMATIC IRRIGATION CONTROL



100 PARKS WITH CENTRAL CONTROLLERS



89 AUTOMATIC CONTROLLERS ON THE WAY

TRANSIT INITIATIVES



ON-DEMAND TRANSIT

TR.2

On-demand transit service fulfills public transportation needs following bus route optimization to ensure all residents of Lethbridge have access to the public transportation network.



ROUTE OPTIMIZATION

TR.4

Bus route optimization incorporates a review and usage of existing routes, then modifies the routes to efficiently serve the community. This initiative is implemented in conjunction with the on-demand transit to maintain or improve the level of service.



TRANSPORTATION INITIATIVES



TP.1

OPTIMIZING SNOW REMOVAL ROUTES AND SCHEDULES

Snow removal optimization is an evolving process as the Lethbridge is continuously expanding. On June 21, 2022, the City of Lethbridge Council approved service modifications to be more efficient while saving costs, time, and fuel.



HIGH EFFICIENCY PARKING LOTS

Replacing existing public lighting infrastructure with energy efficient equivalents is a simple method to reduce overall energy consumption. Efficient lighting is planned to be installed in the ENMAX Centre's parking lot in 2023.

TP.2

WATER, WASTEWATER AND STORMWATER INITIATIVES



W.3

W.4

TREATMENT PLANT ENERGY AUDITS

Energy audits will be completed for the Water Treatment Plant and Wastewater Treatment Plant in 2023. The energy audits will provide clear recommendations for energy conservation measures.



W.8

PROCESS OPTIMIZATION UV DISINFECTION

The ultraviolet (UV) disinfection systems at the Water Treatment Plant and Wastewater Treatment Plant are approaching the end of their useful life. The replacement of the UV systems provide an opportunity to explore modern technology while improving reliability and efficiency.

WASTE AND RECYCLING

UTILITIES INITIATIVES

WR.1

LANDFILL GAS COLLECTION AND FLARING SYSTEM

A natural byproduct of landfills is the generation methane gas which is a potent greenhouse gas. The Waste and Recycling Centre commissioned its landfill gas collection and flaring system in July 2022 to reduce this greenhouse gas from escaping into the atmosphere. In future, depending on the volume and characteristics of gas that can be feasibly extracted, there may be opportunity to beneficially use landfill gas to generate power or renewable natural gas.

The viability of generating renewable energy from collected landfill gas depends on the quantity and quality of gas. There are planned expansions of the landfill gas collection system that are dependent on future landfill development. The beneficial use of landfill gas will be explored following these expansions.

MATERIAL RECOVERY FACILITY ENERGY AUDIT

WR.2

By establishing a baseline to energy usage for the Material Recovery Facility, the City of Lethbridge will be able to identify, implement, and track methods to reduce overall energy consumption.

An energy audit will be completed by January 2023 and will provide clear recommendations for energy conservation measures.

FACILITY SERVICES INITIATIVES

F.1

The building efficiency retrofit initiative is a compilation of numerous efforts to further reduce overall energy usage. This includes lighting retrofits (F.9), active lighting controls (F.10), building envelope sealing and window retrofits (F.11), and air source pumps and HVAC improvements (F.12).



BUILDING EFFICIENCY RETROFITS



ON SITE SOLAR SMALL INSTALLATION

F.7

Solar panel installations are flexible and can be adapted to meet project energy requirements. A solar carport project is currently in development for installation by City Hall. This project is a pilot to assess the viability of future small-scale solar projects.

INITIATIVES SUMMARY (1/3)

Department	Initiative #	Initiative	Initiative Category	Status
Corporate	C.1	Energy Use Gamification Across BU's	Enabling	On Hold
Corporate	C.2	Including Efficiency Metrics and Targets in Staff Performance Plans	Enabling	On Hold
Corporate	C.3	Annual Reporting on Efficiency Performance to Council	Enabling	In Progress
Corporate	C.4	Energy Benchmarking with BU's	Enabling	On Hold
Corporate	C.5	Alternative Work Strategies	Enabling	In Progress
Corporate	C.6	Develop Internal Community of Practice to Share Knowledge, Insights, Lessons	Enabling	In Progress
Corporate	C.7	Internal Energy Efficiency Fund - Awarded by Competition	Enabling	On Hold
Corporate	C.8	Adopt Technological and Data Solutions to Better Monitor Energy Usage	Enabling	On Hold
Electric	E.1	Conservation Voltage Reduction	Existing and Planned	In Progress
Facility Services	F.1	Building Efficiency Retrofits	Existing and Planned	In Progress
Facility Services	F.2	Smart Commissioning of New Facilities	Enabling	Planned
Facility Services	F.3	Creating Baselines for Energy Usage at Facilities Which Have Not Previously Undergone an Energy Audit	Enabling	Planned
Facility Services	F.4	On Site Solar (Medium Installation)	Technological and Operational	Planned
Facility Services	F.5	Active controls - Heat	Technological and Operational	In Progress
Facility Services	F.6	On Site Solar (Large Installation)	Technological and Operational	On Hold
Facility Services	F.7	On Site Solar (Small Installation)	Technological and Operational	In Progress
Facility Services	F.8	Heat Recovery	Technological and Operational	In Progress
Facility Services	F.9	Lighting Retrofits	Technological and Operational	In Progress
Facility Services	F.10	Active Controls - Lighting	Technological and Operational	In Progress
Facility Services	F.11	Building Envelope Sealing and Window Retrofits	Technological and Operational	In Progress
Facility Services	F.12	Air Source Heat Pumps and HVAC Improvements	Technological and Operational	Planned

INITIATIVES SUMMARY (2/3)

Department	Initiative #	Initiative	Initiative Category	Status
Fleet Services	FL.1	Fuel Efficient Emergency Vehicles	Existing and Planned	In Progress
Fleet Services	FL.2	Green Fleet Policy	Existing and Planned	In Progress
Fleet Services	FL.3	Performance Dashboarding	Enabling	In Progress
Fleet Services	FL.4	Vehicle Right-Sizing	Enabling	In Progress
Fleet Services	FL.5	Fleet Right-Sizing	Enabling	In Progress
Fleet Services	FL.6	Electric/CNG Vehicle Conversion	Existing and Planned	Planned
Fleet Services	FL.7	Driver Training	Technological and Operational	In Progress
Fleet Services	FL.8	Fleet Tire Pressure Program	Technological and Operational	Planned
Fleet Services	FL.9	Electric Vehicles for Light Duty Fleet (Pilot)	Technological and Operational	In Progress
Parks	P.1	Non-Potable Water Use for Irrigation	Technological and Operational	In Progress
Parks	P.2	Automatic Irrigation Control	Technological and Operational	In Progress
Transit	TR.1	Bay Door Operational Improvement	Technological and Operational	Complete
Transit	TR.2	OnDemand Transit	Existing and Planned	In Progress
Transit	TR.3	Electric Buses with Charging Infrastructure	Existing and Planned	Planned
Transit	TR.4	Route Optimization	Technological and Operational	In Progress
Transportation	TP.1	Optimizing Snow Removal Routes and Schedules	Technological and Operational	Planned
Transportation	TP.2	High Efficiency Lighting in Parking Lots	Technological and Operational	Planned
Transportation	TP.3	Adaptive Streetlight Technology	Technological and Operational	Planned
Waste & Recycling Utilities	WR.1	Landfill Gas Capture System	Existing and Planned	In Progress
Waste & Recycling Utilities	WR.2	Creating Baselines for Energy Usage for the MRF	Enabling	In Progress
Waste & Recycling Utilities	WR.3	Residential Organics Collection	Existing and Planned	In Progress

INITIATIVES SUMMARY (3/3)

Department	Initiative #	Initiative	Initiative Category	Project Status
Waste & Recycling Utilities	WR.4	Education and Outreach Initiatives to Reduce Community Waste Generation, and as a Result Reduce the Total Energy Use of Waste & Recycling Facilities	Enabling	On Hold
Waste & Recycling Utilities	WR.5	Optimizing Waste Collection Routes	Technological and Operational	Planned
Waste & Recycling Utilities	WR.6	HVAC Upgrades - Waste & Recycling Utilities	Technological and Operational	Planned
Water, Wastewater, Stormwater	W.1	WWTP Cogeneration System	Existing and Planned	Planned
Water, Wastewater & Stormwater	W.2	Cured-in-Place Piping	Existing and Planned	In Progress
Water, Wastewater, Stormwater	W.3	Creating Baselines for Energy Usage for the Water Treatment Plant	Enabling	In Progress
Water, Wastewater, Stormwater	W.4	Creating Baselines for Energy Usage for the Wastewater Plant	Enabling	In Progress
Water, Wastewater, Stormwater	W.5	Education and Outreach Initiatives to Reduce Community Water Use, and as a Result Reduce the Total Energy Use of Water and Wastewater Treatment Plants	Enabling	Planned
Water, Wastewater, Stormwater	W.6	Peak Shaving Opportunities - Water & Wastewater	Technological and Operational	On Hold
Water, Wastewater, Stormwater	W.7	Aeration System Optimization and Blower Upgrades - Wastewater	Technological and Operational	Planned
Water, Wastewater, Stormwater	W.8	Process Optimization - UV Disinfection	Technological and Operational	Planned
Water, Wastewater, Stormwater	W.9	HVAC Upgrades - Wastewater	Technological and Operational	On Hold
Water, Wastewater, Stormwater	W.10	High-Lift Pump Station Optimization - Water	Technological and Operational	Planned
Water, Wastewater, Stormwater	W.11	HVAC Upgrades - Water	Technological and Operational	On Hold
Water, Wastewater, Stormwater	W.12	Raw Water Pumping Optimization - Water	Technological and Operational	Planned
Water, Wastewater, Stormwater	W.13	Reduce Leakage - Water	Technological and Operational	In Progress

ACKNOWLEDGEMENTS

Report Authors:

Brandon Nguyen, Sustainability Engineer-in-Training
Mandi Parker, Sustainability Manager

The following individuals contributed in the preparation of this report:

Allyson Racz, Waste & Recycling Technologist
Stewart Purkis, Broadband Pilot - Project Lead
Raene Barber, Sustainability Engineer
Tracey Rice, Systems Innovation Manager
Kim Schaaf, Talent Development Manager
Sam Conard, Facilities Plan & Project Manager
Jason Drenth, General Manager of Electric Utility
Jeff Gunderson, Waste & Recycling Technician
Robert Ulrich, General Manager of Fleet Services
Blair Richter, Parks General Manager
Jackie Cardinal, Parks Natural Resource Coordinator
Joel McDonald, Manager of Innovation and Planning
Mario Galeana, Transit Asset Manager
Darwin Juell, Transportation Manager
Juliane Ruck, Transportation Operations Manager
James Nicholls, Waste & Recycling Utility Operations Manager
Kyle McKenna, Gas and Controls Technician
Leslie Burke, Waste & Recycling Community Initiatives & Education Specialist
Stephanie Vehnon, Water & Wastewater Communications & Outreach Specialist
Adam Campbell, Wastewater Treatment Plant Manager
Greg Burland, Water & Wastewater Engineer
Tyler Bennett, Water & Wastewater Engineer
Robin Kubik, Water Treatment Plant Manager
Jeremy Charlesworth, Water & Wastewater Project Technologist