Enclosure 1

Fleet Services

Emissions Reduction Strategy

2018

STRATHCONA
COUNTY

STRATHCONA
COUNTY

Contents

Fleet Services Emissions Reduction Strategy

1.0 Introduction

Global climate change has been labelled the greatest environmental challenge humanity has ever faced. Even small rises in temperature are expected to result in significant impacts—scientists say we can expect more extreme weather, increased flooding and fires, changes in ecosystems and native and pest species, and hotter summers that bring drought and heat-related health problems.

While the planet's climate is influenced by a number of factors, scientists attribute the cause of climate change to greenhouse gas (GHG) emissions stemming from human activities. In order to minimize the severity of impacts, countries and cities around the world are setting emissions targets and taking action to reduce GHG emissions. G7 countries, a group of the seven largest and most advanced economies in the world, which includes Canada, have recommended that all developed countries reduce emissions by 80 per cent or more by 2050.

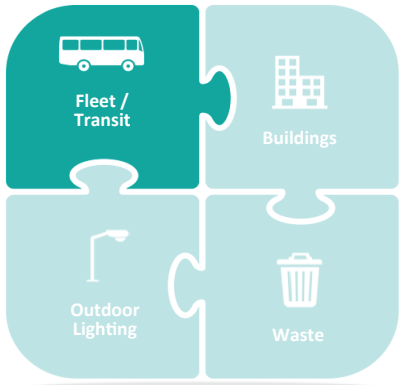
1.1 The role of municipalities

Local governments have influence over approximately 50 per cent of Canada's GHG emissions. Many are stepping up to take on the social and moral investment of tackling climate change. Taking a simplistic view, GHG emissions from municipal operations stem from fleet, civic buildings, street lighting and waste.

This plan takes a defining look at only one component of Strathcona County's emissions—those from fleet-based service delivery.

Fleet-based services require vehicles and equipment to meet the needs of the public. Some examples include:

- Transit
- Enforcement, fire and rescue response
- Snow clearing
- Grass cutting
- Road and trail maintenance
- Weed and pest control
- Parks maintenance
- Utilities operations



The term Carbon Footprint refers to the amount of greenhouse gases produced due to human activities, measured in units of carbon dioxide. A carbon footprint can be defined at many different scales, such as for an individual or household, a company, municipality, or country.

A sample of Canadian municipalities that have set emissions targets to reduce their carbon footprints:

Edmonton	Greenhouse Gas Management Plan 2019-2030, Civic Operations
Calgary	Climate Change Program; Green Fleet and Electric Vehicle Strategy
St. Albert	Local Action Plan for Energy Conservation and Reducing Greenhouse Gas Emissions
Grande Prairie	Draft Community Energy Plan
Red Deer	Corporate Greenhouse Gas Initiative
Spruce Grove	Energy Management Plan and Greenhouse Gas Emission Reduction Strategy
Leduc	Local Action Plan for GHG Emission Reduction
Lethbridge	Corporate Greenhouse Gas Inventory
Airdrie	AirdrieONE Sustainability Plan
Fernie	Greenhouse Gas Emissions Reduction Plan
Prince George	Energy and Greenhouse Gas Management Plan
Kelowna	Community Climate Action Plan
Vancouver	Renewable City Action Plan Green Fleet
Victoria	Zero Emissions Fleet Initiative
Saskatoon	Energy and Greenhouse Gas Management Plan
Winnipeg	Climate Change Action Plan
Kingston	Kingston Climate Action
Ottawa	Transit Vehicle Emissions Reduction Strategy
Windsor	Corporate Climate Action Plan
Yellowknife	Corporate and Community Energy Action Plan

2.0 Purpose

The purpose of this strategy is to define the approach to reducing GHG emissions from Strathcona County's fleet-based service delivery and to prepare the County for the actions, knowledge, timelines and change management required. Areas of focus include:

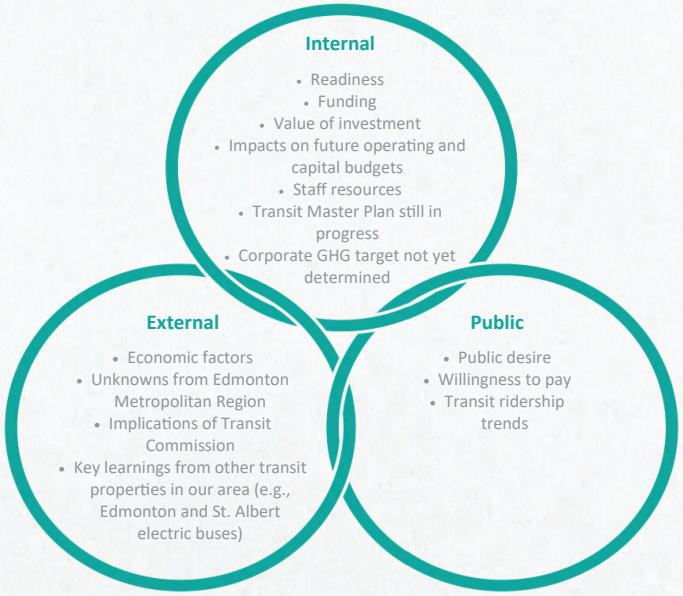
1. Data collection, monitoring and reporting
2. Preventative maintenance
3. Procurement
4. Idling and eco-driving
5. Alternative fuels
6. Autonomous vehicles
7. Community engagement
8. Emissions target and policy development

Outlined in this strategy are the appropriate actions, milestones and deliverables to achieve emissions reductions. Every step of the strategy will be developed in partnership with fleet user departments and other stakeholders to support Service Level Agreements and the needs of the organization.

Fleet user departments will inform the actions of Fleet Services Emissions Reduction Strategy

Fleet Services' Emissions Reduction Strategy is **adaptive** and **collaborative** in nature. The department will respond to emerging technologies and knowledge while working in partnership with stakeholder groups.

A key objective of this strategy is to prepare Strathcona County for action and minimize risk to the organization in the face of uncertainty. Action will be guided by a number of internal, external and public factors that will influence decision making and the success of implementation. The potential impacts of many of these factors are currently unknown, and will be determined during the processes laid out in this strategy. Some important unknowns include 1) a corporate emissions target, 2) needs that will arise from the Transit Master Plan as it is completed 3) public desire and willingness to pay for emissions reduction programs, 4) emerging actions of the Edmonton Metropolitan Region, and 5) implications of the Transit Commission.



Numerous internal, external and public factors will influence decision making and success of implementation.

3.0 Guiding documents

3.1 Federal and provincial guiding documents

Pan Canadian Framework on Clean Growth and Climate Change

Canada's plan to address climate change and grow the economy sets the target to reduce national GHG emissions by 30 per cent below 2005 levels by 2030. The four pillars of the plan include pricing carbon pollution, taking action in each sector of the economy, adapting to climate change, and supporting clean technologies, innovation and job creation.

Actions to deliver the plan specifically impact the work of Strathcona County fleet-based service delivery:

Action: Clean Transportation

The Government of Canada will work with the provinces and territories to:

- Continue cutting emissions from cars, trucks and transport vehicles through emissions standards, fuel-efficient tire standards, and requirements for fuel saving technologies
- Develop a national strategy for zero-emission vehicles in collaboration with provinces and territories
- Invest in charging and fuelling stations for zero-emission and alternative fuel vehicles
- Invest in public transit
- Develop a clean fuel standard

Alberta's Climate Leadership Plan

Alberta's Climate Leadership Plan outlines how the Province will take action on climate change and protect the province's health, environment and economy through emissions reductions and the introduction of the carbon levy. Key aspects of the plan include:

- Putting a price on greenhouse gas emissions
- Ending pollution from coal-generated electricity by 2030
- Developing more renewable energy
- Capping oil sands emissions to 100 megatonnes per year
- Reducing methane emissions by 45 per cent by 2025

Alberta's GHG emissions profile

Oil sands	26%
Electricity / heat generation	18%
Oil and gas mining	17%
Transportation	15%
Agriculture	7%
Residential / Commercial	6%
Manufacturing / construction	6%
Industrial	4%
Waste	1%

Source: www.alberta.ca/climate-change-alberta.aspx

3.2 Corporate guiding documents

Strathcona County 2013-2030 Strategic Plan

The organization's Strategic Plan sets priorities to realize the vision of becoming Canada's most livable community. The plan emphasizes a triple bottom line approach to encourage a balance of environmental, economic and social elements to sustain a healthy and vibrant community.

Clear ties to strategic priorities is essential to any initiative that Fleet Services undertakes. This Emissions Reduction Strategy is committed to supporting corporate priorities, specifically:

Goal 2—Manage, invest and plan for sustainable municipal infrastructure

Fleet units and the infrastructure required to support fleet-based service delivery is a critical component of municipal infrastructure.

Goal 3—Cultivate economic diversification, within the petro-chemical industry and beyond, through a business-friendly environment

Emissions reduction initiatives create demand for "eco" business and knowledge that will help to diversify the local economy.

Goal 4—Ensure effective stewardship of water, land, air and energy resources

Taking steps to reduce emissions and overall impact will have a positive effect on our natural environment and resources.

Goal 5—Foster collaboration through regional, community and governmental partnerships

Tackling emissions through innovative technology and relationships will inspire collaboration with neighbours and research institutions, and result in a variety of essential partnerships.

Goal 7—Provide opportunities for public engagement and communication

Each step through the emissions reduction process will benefit from public engagement and communication.

Strathcona County Organizational Excellence Goal

Continuously improving the way we work, as one organization, in an agile and sustainable manner.

- Collaborates with regional, community and government partners
- Integrates information and technology
- Supports long term financial sustainability
- Supports infrastructure management
- Supports insight-driven/evidence-based decision making
- Supports continuous improvement
- Supports integrated planning
- Leverages tools (i.e. technology, equipment) to assist in service delivery
- Engages stakeholders in decision making
- Communicates to stakeholders about County programs and services
- Collaborates with departments

Strathcona County Corporate Business Plan

The Corporate Business Plan guides day-to-day actions within the County. The goal of Organizational Excellence has strong ties to emissions reductions, as we continuously improve the way we work in a sustainable manner through evidence-based decision making, leveraging tools and technology, and collaborating with departments.

Strathcona County Environmental Sustainability Framework

The framework sets municipal priorities and provides a guide to assess environmental factors and impacts in planning and decision making. Environmental stewardship has long been key in Strathcona County. Emissions reduction will build upon the numerous environmental programs and initiatives have proven successful.

2019-2022 Fleet Services Department Business Plan

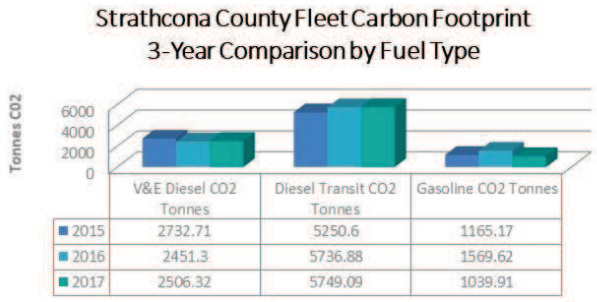
Fleet Services' commitment to emissions reductions is demonstrated in the department's business plan. Each initiative supports the reduction of Strathcona County's carbon footprint. These include:

- Fleet Management Software Upgrade and Fuel Module
- Replace Recycled Fleet Program
- Research alternative fuels
- Define and measure fleet carbon footprint
- Annual capital replacement and refurbishment programs

4.0 Areas of focus

1 Data collection, monitoring and reporting

Currently, Fleet Services estimates fleet-based service impact on Strathcona County's carbon footprint by measuring total fuel consumed. Different fuels, such as gasoline and diesel, emit different levels of CO_2 when burned—the amount of fuel consumed is multiplied by the level of emissions created to determine the carbon footprint. This is a best practice that is followed within the Fleet Industry.



	V&E Diesel CO2 Tonnes	Diesel Transit CO2 Tonnes	Gasoline CO2 Tonnes
2015	2732.71	5250.6	1165.17
2016	2451.3	5736.88	1569.62
2017	2506.32	5749.09	1039.91

Fleet Services utilizes a Fleet Management Software (FMS) system to manage, track and report on all aspects of its business, including fuel usage. A variety of highly valuable functions will be provided by an upgraded version of the FMS to enhance the efficiency and effectiveness of operations and the department's ability to capture critical data and meet customer needs and regulatory requirements. An FMS Fuel Module will automatically track fuel-related data to support emissions reporting and enhanced fuel management.

ACTIONS

- Continue to monitor and define fleet-based services carbon footprint
- Continue to develop tools to measure emissions
- Commence FMS upgrade and fuel module installation
- Identify opportunities for enhanced data capture and reporting

DELIVERABLES

- Emissions baseline for fleet-based services
- Quarterly and annual emissions reports
- Summary of tools and reports that can contribute to improved monitoring and reporting
- Employ one corporate GPS system to track data for the corporate fleet

There are many factors that affect the fuel consumption required to deliver municipal services in any given year. Total fuel consumption varies based on fleet size, weather, winter operations, transit ridership (showing an increasing trend), and size of vehicles (e.g., double decker bus vs. regular bus).

2 Preventative maintenance

A poorly-maintained vehicle burns up to 30 percent more fuel than one that is regularly serviced. Fleet Services operates the vehicle, equipment and transit bus repair shops that provide centralized predictive and preventative inspections and repairs, following a strict and efficient preventative maintenance program which reduces overall fleet emissions.

Fleet Services strives for continuous improvement in vehicle and equipment maintenance. The processes are ever-evolving and adjusting to meet changing industry standards and respond to the needs of the organization. Enhanced availability of data with an upgraded Fleet Management Software (FMS) will create new opportunities for the department to excel at timely preventative maintenance that results in optimal emissions control, safety and reliability.

ACTIONS

- Continue to excel at frequent and appropriate vehicle maintenance
- Continue to seek efficiencies within the Preventative Maintenance Program

DELIVERABLES

- A fleet of well-maintained units that meet all relevant standards and run at high performance to reduce emissions

3 Procurement

Fleet Services administers the corporation's annual Capital Fleet Replacement Program jointly with each fleet user department. Capital acquisitions and replacements are made based on life-cycle analysis and a 10-year capital plan that ensures current and future requirements are preserved.

Fleet Services will continue to utilize and improve upon life cycle costing and condition-based assessments to ensure the most economical cost for fleet units. Emphasis will be placed on emerging technologies and right-sizing vehicles to match their intended functions and reduce the impact on Strathcona County's carbon footprint. Relevant and timely acquisitions will continue to secure vehicles that are safe, reliable, and assist in fulfilling essential service delivery.

ACTIONS

- Continue to right-size vehicles for appropriate functions
- Continue to complete condition-based assessments to minimize emissions impacts
- Investigate emissions reductions actions taken by external service providers and vendors

DELIVERABLES

- Right-sized fleet
- Timely acquisitions
- 'Green' procurement procedures that consider energy and GHG emissions

4 Idling guideline and eco-driving

Optimizing fuel efficiency is an important step in reducing emissions. Approximately 40,000 gallons of fuel were consumed due to idling Strathcona County fleet in 2017. Fleet Services sees this as an opportunity. An anti-idling campaign would help to minimize idling, reduce greenhouse gas emissions and encourage awareness throughout the organization.

A variety of driving techniques can also impact fuel usage. Eco-driving is a comprehensive approach to changing driver behaviour related to acceleration, braking, speed and planning out driving routes in an effort to reduce emissions and the amount of fuel consumed.

ACTIONS

- Implement an anti-idling campaign
- Implement eco-driving training for staff drivers

DELIVERABLES

- Idling guideline
- Eco-driving program
- Driver operating training for each staff member assigned a vehicle
- Fuel efficiency target
- Emissions report to show impact of fuel efficiency initiatives

5 Alternative fuels

Research on alternative fuel and emerging technologies opportunities for Strathcona County's fleet is essential to define 1) alternative fuel options , 2) the benefits and disadvantages of alternative fuels, 3) the potential to reduce fuel costs and emissions, 4) the capacity to improve air quality and resident quality of life, and 5) the impacts on future capital and operating budgets. This research will prepare the County to enter the alternative fuel arena and provide the information necessary to make sound decisions in the future. Fleet Services will be proactive in offering guidance to user departments that may wish to employ alternative fuel vehicles to meet department and corporate goals.

Additional topics for focused research:

- Cradle-to-grave environmental impacts of each unit type
- Capacity of local electricity grid to support e-buses
- Infrastructure requirements to support alternative fuel units
- Value of investment
- Public desire and willingness to pay
- Change management needs

Significant uncertainties exist that would have considerable impacts on the investment of alternative fuel units and the infrastructure they require. Clarification is required before moving forward. These uncertainties include:

- Needs that will arise from Transit Master Plan
- Emerging actions of the Edmonton Metropolitan Region
- Implications of the Transit Commission

ACTIONS

- Complete intensive research on alternative fuels and required infrastructure
- Develop relationships with other municipalities that are piloting alternative fuel units, such as electric buses, to gain key learnings
- Develop relationships with research institutions and other innovative organizations
- Continue to participate in ESSO's Diesel Efficient Fuel pilot to determine potential GHG reductions

DELIVERABLES

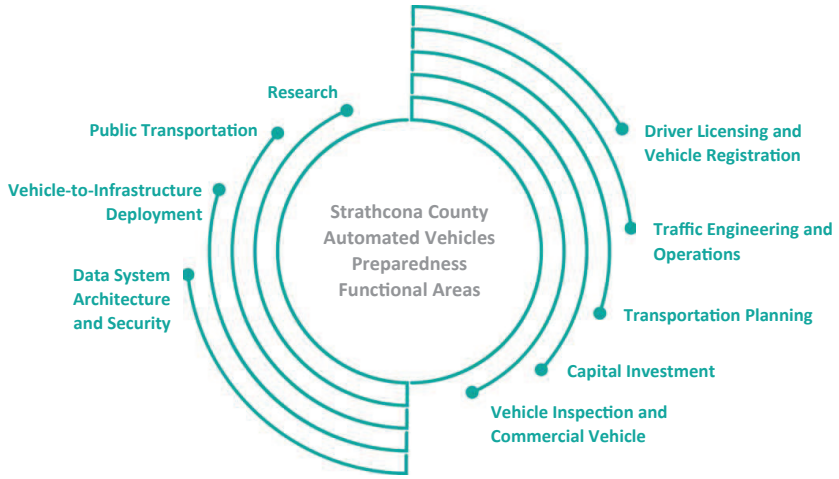
- Alternative fuels report that defines
  - The organization's readiness for alternative fuel vehicles and required infrastructure
  - Environmental impacts of each unit type
  - Recommendations for investment
  - Impacts on capital and operating budgets
  - Change management requirements
  - Critical partnerships

6 Autonomous vehicles

Autonomous vehicles, which are primarily electric, are emerging as a new technology for the future. Driverless vehicles will create change for service delivery and the way residents live and commute. Federal and provincial legislation is currently lacking regarding autonomous vehicles, and municipalities are beginning to make preparations for shifts in policy and planning for infrastructure and public transportation. Research is required to enhance Strathcona County's readiness and uncover the implications for municipalities.

Topics for focused research include:

- Functional areas (outlined in functional areas graphic)
- Infrastructure requirements
- Return on investment
- Impacts to operating and capital budgets
- Public desire and willingness to pay
- Change management needs



Autonomous vehicles necessitate preparedness in a variety of functional areas.

ACTIONS

- Complete intensive research on autonomous vehicles and required infrastructure
- Develop relationships with other municipalities and research institutions that are piloting autonomous vehicles to gain key learnings

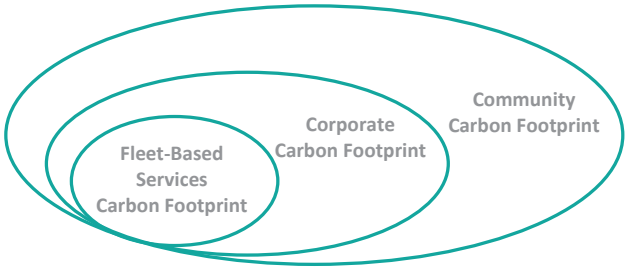
DELIVERABLES

- Autonomous vehicles report that defines
  - The organization's readiness for autonomous vehicles and required infrastructure
  - Recommendations for investment
  - Impacts on capital and operating budgets
  - Change management requirements
  - Critical partnerships

7 Community engagement

True stewardship of community resources—both environmental and financial—involves responsible planning and action in partnership with the public. While grants and funding opportunities do currently exist, some emissions reduction strategies will require significant investment of tax payer dollars and may have serious implications for service delivery, it is critical to gauge the public's interest and willingness to pay. Strathcona County values public input to decision making and supports public engagement that is honest, transparent and accessible.

Fleet Services will partner with the organization and the community to answer pressing questions about measuring Strathcona County's carbon footprint. Outside of the impacts created by fleet-based service delivery are the impacts of the corporation as a whole, and beyond that, those of the community. The approach in measuring and monitoring GHGs differs among municipalities. Some municipalities consider only the GHG emissions stemming from civic operations. Others consider the impact of residents, businesses and industry within their boundaries as well.



How will we measure Strathcona County's carbon footprint?

ACTIONS

- Complete a community engagement campaign to gauge public desires and expectations and willingness to pay for various emissions reduction strategies

DELIVERABLES

- Community engagement report to summarize public opinion related to emissions reduction strategies

Strathcona County's Public Engagement Framework presents an overview of the vision, guidelines, and a continuum of engagement for public engagement activities in the County. The goal is to deliver high quality relevant public engagement processes in the County.

8 Emissions target and policy development

A greenhouse gas emissions target refers to the desired level of emissions reduction to be achieved by a specified time. Targets may vary among municipalities, provinces, and countries. Canada's emissions target is to bring GHGs to 30 per cent below 2005 levels by 2030. Fleet Services is committed to aligning with federal and provincial efforts, as well as with Strathcona County's strategic priorities, to address an ambitious yet attainable goal.

Policy development based on sound research and evidence will guide the inclusion of emissions targets into all levels of business. Change management actions will follow as a necessary step to successful collaboration with stakeholders.

ACTIONS

- Assess fleet-based service delivery's capacity and readiness to reduce emissions in the short- and long-term
- Define emissions accounting approach
- Collaborate with the organization to set an emissions target and develop policies and a plan to implement it

DELIVERABLES

- Emissions target
- Fleet Services Emissions Reduction Action Plan
- Change management strategies

5.0 Future state

Fleet Services is already taking many steps to reduce Strathcona County's carbon footprint from fleet-based service delivery. Building upon these actions and capitalizing on new initiatives through the implementation of this Emissions Reduction Strategy will bridge the gap to the Future State in which Strathcona County is prepared, adequately informed and making significant progress.

Current State	Future State
FMS utilization for data capture	Enhanced FMS utilization for data capture following upgrade
Collecting GHG data	Define and measure carbon footprint
Efficient Preventative Maintenance Program	Efficient Preventative Maintenance Program
Right-sized units	Right-sized fleet
ESSO Diesel Efficient Fuel Pilot ongoing for Transit buses	Potential to expand Diesel Efficient Fuel to Vehicles and Equipment side of business
Pursuing emerging technologies	Emerging technologies such as lower emitting engines and automatic engine shut-down and start-up systems are integrated into corporate fleet
	Eco-driving training provided to County staff
	Idling guidelines in place
	Research on alternative fuels complete
	Potential further investment in alternative fuels and vehicles and equipment
	Public desires and willingness to pay is known and guides decisions

Throughout the process laid out by this strategy, Fleet Services will consider the following impacts for each action to create the most efficient path to the future state:

- Time requirements
- Training
- Staff capacity
- Change management requirements
- Funding resources
- Impacts on future budgets

5.1 Cradle-to-grave approach

In every stage, where appropriate, Fleet Services will also consider the "cradle-to-grave" lifecycle of products and their components, such as electric buses. Considering products in terms of their environmental impacts at each stage of their lifecycle—including the raw materials and resource extraction phase, manufacturing and transport, use and disposal—will ensure that Strathcona County is making truly informed decisions to reduce impacts on the environment and become a conscious global citizen.

5.2 Low hanging fruit

"Low hanging fruit" are those actions to reduce GHG emissions that require low to moderate effort in terms of staff and funding resources. These actions are ideal to focus attention on, as they will result in emissions improvements in less time and with less staff and money.

Low hanging fruit options that are already in progress include right-sizing vehicles and timely acquisitions. Options that are not currently in progress include the adoption of green purchasing procedures, an anti-idling campaign and an eco-driving program. Though the FMS upgrade and an effective vehicle maintenance program take a considerable amount of Fleet Services' resources, these projects may also be considered low hanging fruit simply because they are already incorporated into daily operations.

STRATHCONA COUNTY