ATTACHMENT 1

CORPORATE FLEET ELECTRIFICATION PLAN

York Region

11657738

TABLE OF CONTENTS

READER'S NOTE

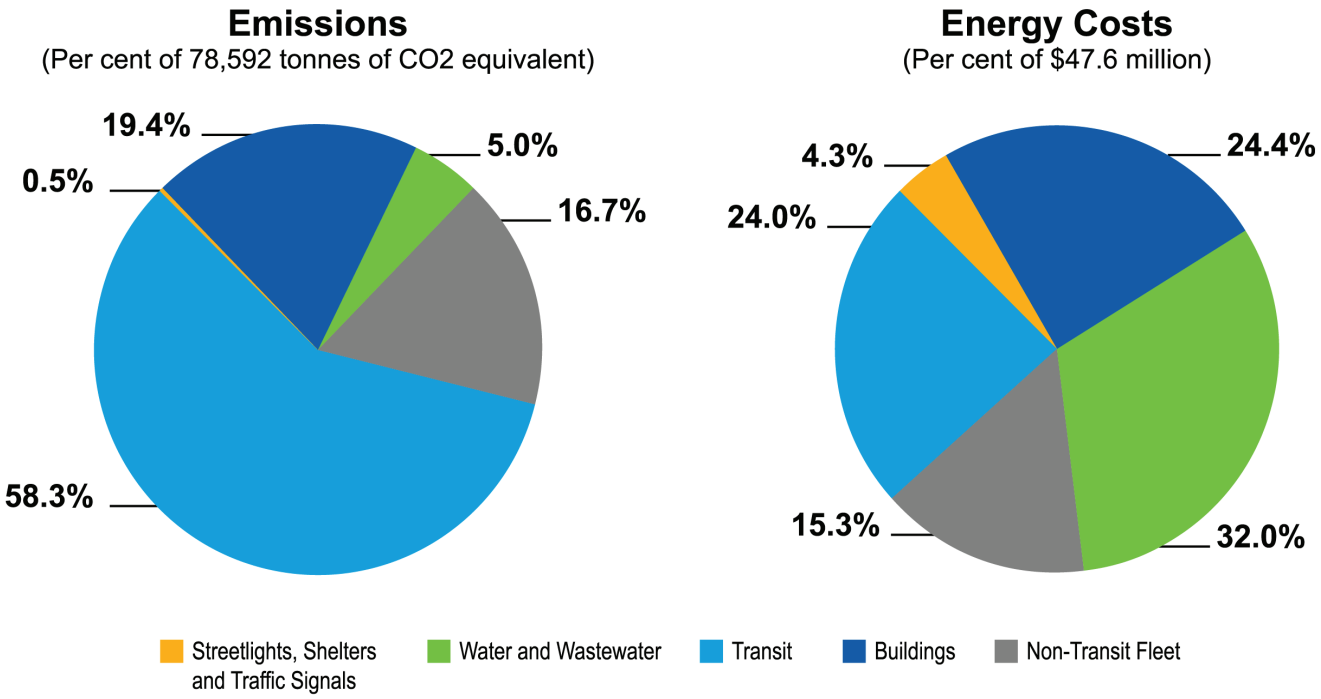
The following Corporate Fleet Electrification Plan has been developed using information from a comprehensive corporate fleet review of the various vehicle types currently used at the Region. This plan also includes alternative fuels and available green vehicle technology as considerations.

Corporate fleet vehicles under this plan do not include transit buses, police or paramedic service vehicles. Unlike the vehicles required in these areas, the corporate fleet consists of diverse vehicles from cars to plow trucks and service bodies to front end loaders. The plan also considers the *Alternative Fuel Study* conducted for York Region Transit vehicles.

BACKGROUND

The Region owns and operates more than $12.3 billion in assets in the form of buildings, transit vehicles, fleet vehicles, water and wastewater facilities, and supporting infrastructure. Operation of these corporate assets emitted 90,999 tonnes of carbon dioxide equivalent tonnes of greenhouse gases in 2017, which represent a very small fraction of the total greenhouse gases emitted by the greater Regional community.

FIGURE 1 – CORPORATE EMISSIONS AND ENERGY COSTS



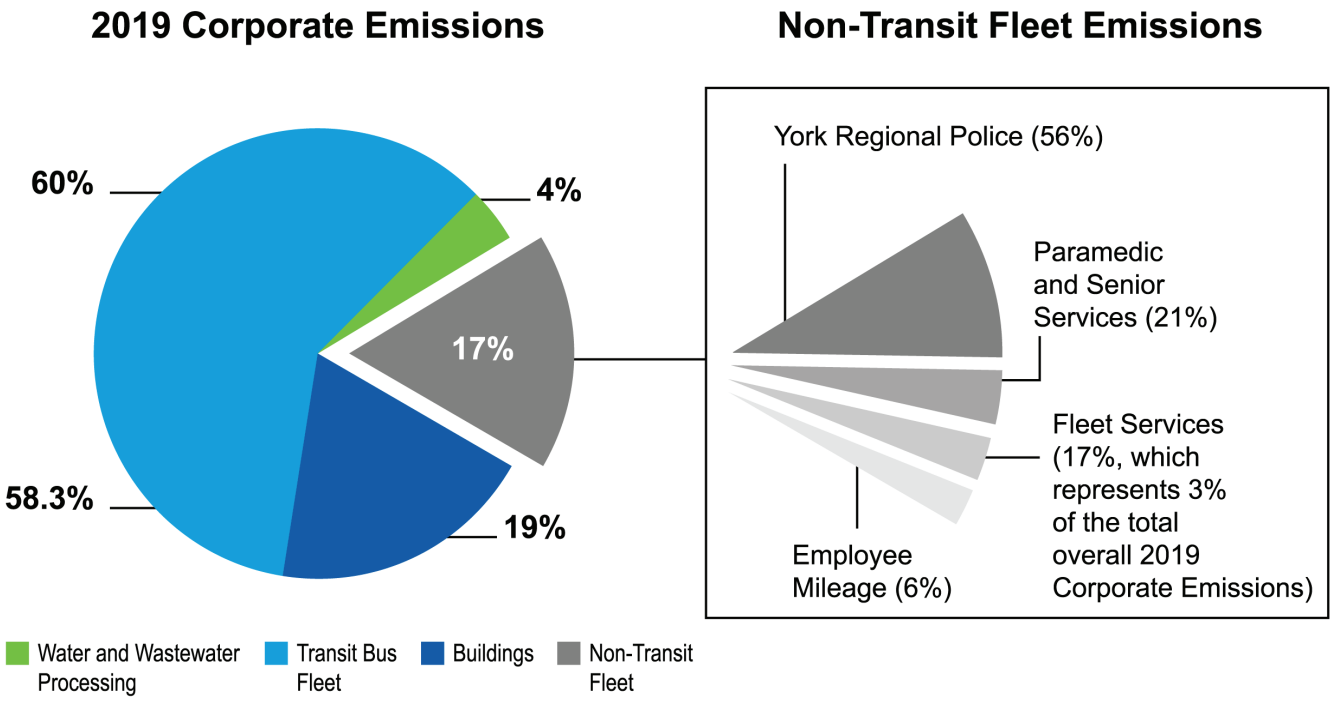
In 2017, transit buses and corporate fleet vehicles accounted for more than 75 per cent of the Region's corporate emissions, but only 39 per cent of the total energy cost. In comparison, water and wastewater processing and streetlights represented only five per cent of total corporate emissions, but 36 per cent of the Region's total energy cost. These differences are because electricity in Ontario is a lower emission and higher cost source of energy compared to fossil fuels. Staff will continue to balance cost and emission savings in prioritizing future projects, by applying a fiscally responsible approach.

The Energy Conservation and Demand Management Plan focuses on reducing energy and greenhouse gas emissions through three key pathways. These in order of priority are:

- Focus on conservation leading to reduced demand
- Improvements in energy efficiency to reduce fuel consumption
- Switching to renewable energy and less emission intense alternatives with the aim of achieving net-zero carbon

The corporate fleet, managed by Transportation Services, creates 3% of the Region's overall greenhouse gas emissions.

FIGURE 2 – NON-TRANSIT FLEET EMISSIONS BREAKDOWN



Fleet Services maintains a current corporate fleet of 374 motorized vehicles ranging from passenger vehicles to heavy-duty plow trucks as well as customized service bodies such as the roadway paint truck. Many branches within the Region rely on corporate vehicles to assist them in the many services the Region provides, such as winter plowing, watermain repairs, marketing and inspection services. Fleet Services ensures these various vehicles types and equipment are maintained and safe for staff to use in their day to day routines.

To reduce greenhouse gas (GHG) emissions, the Region has a goal to fully electrify the corporate fleet to produce zero emissions by 2051. However, Table 1 shows the targets under the current Energy Conservation Demand Management Plan.

TABLE 1 – NON-TRANSIT FLEET GREENHOUSE GAS EMISSIONS TARGETS

Year Ending	2020	2025	2030	2051
Emissions Target (tonnes of carbon dioxide equivalent):	13,700	14,900	15,200	9,000
Change from 2014 Baseline:	< 1%	+9%	+11%	-34%

Note: 2014 Baseline Emissions = 13,699 tonnes of carbon dioxide equivalent

Vision 2051 and the Energy Conservation and Demand Management Plan focus on reducing GHG emissions resulting from Regional service delivery to residents. This goal introduces interesting challenges that will need to be addressed with proper planning and innovative technology solutions.

Over the past few years with the introduction of new electric vehicle technology, various hybrid and plug-in electric vehicles have been purchased along with charging infrastructure to evaluate their fuel efficiency, maintenance and overall premium costs compared to standard combustion fuel vehicles. It is expected as technology continues to develop electric options to the various vehicle classes Fleet Services provides, an accelerated GHG emissions-reduction will enable Fleet Services to work towards the Region's zero GHG emissions goal by 2051.

This plan is intended to be a living document that will be reviewed and refreshed every five years to assess progress and future opportunities in the short-term (2020-2022), medium-term (2023-2027) and long-term (2028-2050) implementation phases.

GUIDING PRINCIPLES

To implement the Corporate Fleet Electrification Plan and position the Region to achieve the long-term GHG emission reduction targets, four guiding principles have been developed with action items.

1. MONITOR FLEET AND ANALYZE DATA TO MAXIMIZE PERFORMANCE WITH IMPROVED LOGISTICS AND NEW TECHNOLOGIES

Gathering and monitoring relevant operations statistics will help develop a greater understanding of the corporate fleet and opportunities for efficiencies. In 2018, an automatic vehicle location (AVL) initiative was undertaken by staff to gather and assess vehicle data. This initiative identified opportunities to integrate electric vehicles based on current vehicle range and idling. This type of vehicle technology can offer great insight into the fleet and offer opportunities to focus efforts in areas where environmental and cost-saving benefits can be achieved. Based on the vehicle data collected, results from this initiative indicate there is an opportunity to use battery electric vehicles and reduce unnecessary idling in fleet vehicles to save GHG emissions and fuel costs. This is specific to smaller vehicles currently and not light duty pickups, vans or larger which comprise 251 vehicles of the Region's corporate fleet.

There may also be an opportunity to reduce emissions through an enhanced Regional vehicle pool of fuel-efficient vehicles and corporate initiatives such as workplace modernization.

Action 1 Purchase a GPS / AVL system that will provide additional vehicle information to assist in the evaluation of vehicle use and potential electrification. Additional vehicle information to include telematics such as:

- Driver Information
- Engine Runtime
- Battery Voltage
- Oil Life
- Mileage
- Event Logs
- Idle Time
- Door Opened
- Hard/Harsh Breaking
- Speed
- Fuel Usage
- Quick Acceleration
- Direction Engine Hours
- Coolant Temperatures
- Airbag Deployment
- Error Codes
- Seatbelt Status
- Location waypoints every:
  - thirty (30) seconds
  - 100 m
  - turn locations > 15 degrees

Action 2 Use excessive idling statistics to identify internal policy refinements and technological tactics to reduce idling in the fleet. Create an anti-idling policy.

Action 3 Gather and refine the data on the number of kilometres driven related to Regional employee's personal vehicle business travel. Identify opportunities to reduce these kilometres through an enhanced Regional vehicle pool of high fuel-efficient vehicles or other relevant tactics.

Action 4 Share data with user groups identifying the actual use of their current vehicles to evaluate right sizing and electric vehicle opportunities

2. EXPLORE AND TRANSITION TO ALTERNATE AND RENEWABLE LOWER-CARBON FUEL TO MINIMIZE REGIONAL CARBON FOOTPRINT

Within the current fleet, there are opportunities to pilot and evaluate lower-carbon fuel alternatives that can provide GHG emissions-reductions in the near-future. In the medium and long-term, alternate fuels will form an important component of achieving the plan's GHG emissions-reduction targets. These emerging fuels and vehicle technology will continue to be evaluated for their feasibility and large-scale application in the fleet. York Region Transit conducted a comprehensive Alternative Fuel Study which considered the transition period from 2022 to 2032 as the time to introduce proven technologies that will help reduce emissions without requiring major infrastructure investments. Using the research completed within this study, Fleet Services is applying these recommendations to the heavy-duty and off-road vehicles within the fleet to evaluate future electrification options.

Action 5 Evaluate and introduce pilot studies of alternate lower-carbon fuels for select vehicles in the fleet. This may include the trial of higher biodiesel blends based on seasonality considerations for select fleet vehicles across light, medium, and heavy-duty vehicle classes. This will also include full battery electric vehicle purchases where lifecycles and maintenance costs provide a return on investment compared to internal combustion engines and plug-in hybrid electric vehicles. Current research shows that battery electric vehicles cost more to purchase, however, less to maintain, have longer lifecycles and of course zero GHG emissions.

Action 6 Evaluate larger-scale lower-carbon fuel transitions in the Regional fleet based on results of the alternate fuel pilot studies and continued monitoring of alternative technology and, when appropriate, present recommendations to Council for consideration and budget approval.

Action 7 Continue to evaluate medium-term (2023-2027) and long-term (2028-2050) fuel options and evolving vehicle technologies for the corporate fleet that align with Regional medium and long-term GHG emissions targets.

3. ALIGN PROCUREMENT PRACTICES AND GREEN VEHICLE SPECIFICATIONS TO PROVIDE RELIABLE, COST-EFFECTIVE AND CONSISTENT FRONTLINE SERVICES

Through the baseline work of the Corporate Fleet Electrification Plan, it was identified there are opportunities to better align the GHG emissions-reduction goals with the Region's internal procurement practices. Currently there are limited formal internal processes related to vehicle replacements and acquisitions for the fleet which can be a barrier when looking to influence meaningful GHG emissions-reductions.

The development of a specific procurement approach for green vehicles may also support improvement in the Region's procurement practices in being nimble to acquiring green vehicles when available. Like the Region, every other municipality is seeking the same GHG emissions-reductions with their fleets potentially making the timely purchase of green vehicles difficult.

Infrastructure required for the various types of fuel and energy options is also a critical part of the overall success of the strategy. The current Electric Vehicle Charging Station Policy speaks to public and fleet vehicle charging stations. Focusing on the fleet portion of the policy, ensuring each electric fleet vehicle has the ability to charge at the end of the day is critical to ensuring we make the most of these vehicles.

Required infrastructure for the various types of fuel and energy options is also a critical part of the overall success of the strategy. The current Electric Vehicle Charging Station Policy speaks to public and fleet vehicle charging stations. Focusing on the fleet portion of the policy, ensuring each electric fleet vehicle can charge at the end of the day is critical to ensuring we make the most of these vehicles.

Action 8 Through collaboration with fleet vehicle users and management, develop and launch vehicle selection criteria for all vehicle classes across the corporate fleet. Refine and formalize internal vehicle request processes to have an increased focus on environmental objectives that increase vehicle selection dialogue and align to the goals of the Corporate Fleet Electrification Plan and corporate GHG emissions-reduction targets.

Action 9 Through collaboration with the Region's Purchasing Department and fleet stakeholders, identify vehicle options and specifications that meet operational needs and align to the Region's GHG emissions-reduction targets. Develop business practice enhancements (for example, procurement evaluation matrices) to have an increased environmental focus so that in addition to vehicles meeting operational needs, purchases will also consider vehicle tailpipe emissions and lifecycle.

Action 10 Identify upcoming vehicle replacements where electric vehicles are being considered and work with the departments to ensure budgets are in place for timely charging station installations.

Action 11 Identify aftermarket technologies, in addition to those available through vehicle manufacturers, which can be applied to various vehicle types and classes in the corporate fleet to achieve GHG emissions-reduction benefits.

Action 12 Continue to identify and pursue grant funding and incentive opportunities to reduce the new capital and replacement budget pressure for fleet vehicle acquisitions and related equipment.

4. INCREASING DIALOGUE AND ENGAGEMENT WITH STAKEHOLDERS

Fleet operational best practices are those that address operational fleet needs while balancing environmental benefits and financial implications. Common fleet operational best practices include tactics that reduce unnecessary vehicle trips, reduce or eliminate under-used fleet vehicles, modal shift for travel, and employee training enhancements or additions.

York Region has maintained good collaborative working relationships among fleet users and continues to increase dialogue with fleet stakeholders on goals of the plan and corporate GHG emissions-reduction targets. Stakeholder engagement is vital to achieving many of the identified actions of this plan and can only be successful through an increased dialogue with cost-centre management and those that have a strong understanding of the operational requirements of fleet vehicles. Stakeholder operations may also offer overlap opportunities with the Corporate Fleet Electrification Plan that can be explored through working groups and pilot studies.

Education and outreach enhancements and new tactics will be an important component of addressing fleet driver behaviours and understanding how these behaviours can positively or negatively impact the objectives of the plan.

Action 13 Identify stakeholders in the organization who will be impacted through the vehicle replacement cycle and that will require new vehicle acquisitions for their operations over the next five years.

Action 14 Form a stakeholder working group with identified stakeholder groups, as a component of advancing the actions of the Corporate Fleet Electrification Plan. The stakeholder working group will also assist in planning for change management in the fleet, as opportunities are identified and implemented.

Action 15 Develop education and outreach tactics to reduce excessive idling and improve driving behaviours in the corporate fleet in the short-term (2020-2022), medium-term (2023-2027) and long-term (2028-2050) plan implementation phases. This may include enhancement to driver training and education activities through the Region's Efficient Driver training module and development of increased driver awareness around idling statistics and impacts on the fleet GHG emissions profile. Refine these tactics as necessary to account for change management requirements and achievements towards the corporate and plan GHG emissions-reduction targets.

Action 16 Identify opportunities with stakeholder operations that have the potential to advance the objectives of the Corporate Fleet Electrification Plan and reduce fleet related GHG emissions.

CONCLUSION

Implementation of the Corporate Fleet Electrification Plan and the 16 preliminary identified actions from baseline research, technical review and stakeholder engagement will position the Region to be more aggressive in achieving fleet related GHG emissions-reductions. The reduction of fleet related emissions through the identified actions and recommended scenario through baseline research are aligned to the fleet targets and the corporate reduction target.

Progress made through stakeholder engagement and fleet user education and outreach tactics will also support refinement and identification of future actions for the ongoing implementation phases of the Corporate Fleet Electrification Plan in the medium-term (2023-2027) and long-term (2028-2050) to bring the Region closer to meeting the long-term corporate GHG emissions-reduction target of 34 percent reduction below 2014 emission levels by 2051.

The Corporate Fleet Electrification Plan is intended to be a living document that will be reviewed and refreshed on a regular basis every five years. This will allow changes to the Region's fleet composition to be evaluated against emerging technologies and new vehicle enhancements. These opportunities will be reviewed for relevance to the Region's fleet and potential impacts on the medium and long-term targets which are more challenging to forecast at the present time.

TRANSPORTATION SERVICES

17250 Yonge Street, Newmarket, Ontario L3Y 6Z1
1-877-464-9675 ext. 75000
transportation@york.ca

York Region