Toronto Community Housing

Green Fleet Planning Update

Item 10I
June 17, 2022
Building Investment, Finance and Audit Committee

Report:	**BIFAC:2022-82**
To:	Building Investment, Finance and Audit Committee ("BIFAC")
From:	Sr. Director, Capital Planning, Design & Engagement
Date:	May 18, 2022

PURPOSE:

To update BIFAC on the City's Green Fleet Initiative and its effect on TCHC.

RECOMMENDATIONS

It is recommended that the BIFAC receive this report for information.

BACKGROUND

TCHC utilizes 189 vehicles as part of the City of Toronto's Fleet Services Division and is identified as a participating partner in the City's *The Pathway to Sustainable City Fleets Plan*; a plan to address climate mitigation and adaptation with strategies for transitioning City Fleets to sustainable, climate resilient, and low- carbon operations.

On December 15, 2021, City Council endorsed the TransformTO - Critical Steps for Net Zero by 2040 targets and actions, with the following interim targets:

- 45% GHG reduction by 2025; and
- 65% GHG reduction by 2030.

The Strategy also identifies key City Fleet targets and objectives:

- Update and implement the Sustainable City of Toronto Fleets Plan to support the transition of 20% of City fleet to zero-emission by 2025 and 50% by 2030, and
- Starting in 2022, for any light duty vehicle being purchased by the City, the City will select only the electric version of this vehicle where operationally feasible.

TRANSITION TO ELECTRIC VEHICLES

For TCHC, the City's policy will mean an incremental transition to electricity as new cars are cycled into the fleet.

The cost of vehicle replacement, when fuel switching to electric, will be between 25%-40% more than a gas-run equivalent. Currently, on average, this could mean additional costs between $246,000 and $395,000 in electric vehicle replacement per year.

TCHC, however, is expected to realize significant savings on maintenance and fueling costs. City staff have forecasted that a TCHC fleet converted to 90% electric would save 62% in maintenance and fuel costs. Currently, this would mean savings of approximately $641,535.58 per year. At the current replacement rate, it would take approximately 8.5 years to convert 90% of TCHC's fleet.

CREATING A CHARGING STATION INFRASTRUCTURE

The City's initiative also includes an expanded charging station network with an expected 350 charge ports available by the end of 2022, and 1,200 charge ports by 2025 at more than 100 City locations. The network will also enable the expansion of the City's workplace charging program.

Fleet Services Division is leading a major expansion of the City's corporate electric vehicle charging infrastructure that will enable and support accelerated transition of City Fleets to electric vehicles, and help with broader promotion and adoption of electric vehicles in Toronto, and Greater

Toronto and Hamilton region. Importantly, the City will fund all costs towards creating a charging station infrastructure.

Fleet Services have connected with TCHC and are coordinating together on initial charging stations at 13 potential sites. TCHC is currently working with the City to vet the technical feasibility of the proposed charging station locations.

Table A – Proposed TCHC Recharging Stations

WEST	495 Wilson Ave
	5 Needle Firway
	1901 Sheppard Ave. West
	100 High Park Ave
EAST	2180 Ellesmere Rd
	2739 Victoria Park
	415 Willowdale Ave
CENTRAL	15 Scadding Ave
	40 Asquith Ave
	275, 285, 295 Shuter Street (Moss Park)
CSU	TBD
FM	TBD
IT	TBD

NEXT STEPS

- FM will continue to work with City staff to vet feasibility plans for potential charging station locations.

- The City will be working with fleet partners, including TCHC, to provide an update on the Sustainable Plan for a new City Council later this year.

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ATTACHMENTS:

1. The Pathway to Sustainable City Fleets Plan

The Pathway to Sustainable City of Toronto Fleets

TORONTO

TORONTO

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Sustainability Roadmap

1800's

1810 – Toronto Public Library founded
1834 – Toronto Police Service founded
1849 – First public transit service began
1874 – Full time fire service began
1883 – First two ambulances acquired

1974

Toronto Zoo opens

1998

City of Toronto amalgamates

2004

Green Fleet Transition Plan

2008

City's first official Green Fleet Plan

2014

Consolidated Green Fleet Plan

14% greenhouse gas reduction

2018

Exceeded 2020 greenhouse gas reduction target of 30%

2019

Pathway to Sustainable City of Toronto Fleets

2020

30% greenhouse gas reduction

2030

65% greenhouse gas reduction

45% of City-owned vehicles are low-carbon vehicles

2050

Net zero greenhouse gas emissions

Executive Summary

The Pathway to Sustainable City of Toronto Fleets (Plan) provides an overview of the City Fleets' objectives in addressing climate mitigation and adaptation with strategies for transitioning City Fleets to sustainable, climate resilient, low-carbon operations.

GOAL

Sustainable, climate resilient, low-carbon City Fleets

OBJECTIVE 1

Transition 45% of City-owned fleet to low-carbon vehicles by 2030

OBJECTIVE 2

65% greenhouse gas reduction by 2030 (from 1990 levels)

OBJECTIVE 3

Net zero greenhouse gas emissions before 2050

The Plan builds on the achievements of the City of Toronto Consolidated Green Fleet Plan (2014 -2018) that was one of the key contributing factors to the City's overall environmental achievements. The Consolidated Plan has been recognized for its successes, as well as an example of effective local leadership on climate mitigation. As a result of the strategies from the previous plan, the City of Toronto Fleets' greenhouse gas (GHG) emissions were reduced by approximately 27 million kilograms of carbon dioxide equivalents (CO_2e), a 9 per cent decrease during this five year period.

City Fleets will lead by example to help create a clean, sustainable, and resilient City of Toronto Fleet that will continue to advance the City's vision, mission, and goals. The goal, objectives, and associated strategic actions, were developed to complement the City's strategic goals outlined in TransformTO, Toronto's climate mitigation action plan and Toronto's Resilience Strategy, Toronto's first climate adaptation plan.

The scope of the new Plan has been expanded to include approximately 98 per cent of all City owned and operated motor vehicles and equipment. In addition to the original five City Fleets: Fleet Services Division (Centrally-Managed Fleet), Toronto Transit Commission (TTC), Toronto Police Service, Toronto Fire Services, and Toronto Paramedic Services, the Plan now includes fleets operated by Toronto Community Housing, Exhibition Place, Toronto Zoo, Toronto Parking Authority and Toronto Public Library.

This multi-agency City-wide Plan focuses on reducing the environmental impacts of more than 10,000 motor vehicles and equipment owned and operated by the City of Toronto and adapting to changing climate while ensuring long-term sustainability of City fleets. It does not include Toronto Transit Commission streetcar and subway vehicles, and vehicles owned and operated by private companies who contract with the City.

We are confident that by continuing to work together City Fleets can mitigate the impacts and adapt to climate change while ensuring long-term sustainability and being a driving force on the pathway to a low-carbon resilient Toronto.

As Canada's largest city, Toronto has a responsibility to rise to the challenges created by climate change while providing leadership in climate mitigation and adaptation. This Plan will further highlight the leadership of the City of Toronto, increase public and stakeholder confidence, and provide a model for other municipalities and businesses in the Greater Toronto Area and beyond.

Introduction

Municipal governments across Canada face significant challenges to manage the service demands of our growing communities[1]. Investments in a modern sustainable fleet ensure that we continuously improve the City's environmental performance while balancing the economic needs of future generations.

The Pathway to Sustainable City of Toronto Fleets (Plan) provides an overview of the City of Toronto's objectives in addressing climate mitigation and adaptation with strategies for transitioning City Fleets to sustainable, climate resilient, and low-carbon operations.

(1) Toronto is the fastest growing city in North America and the most populous city in Canada, with a population of 2.73 million (2016). The Government of Ontario Population Projections estimates Toronto population to reach 3.36 million by 2030 and 4.30 million by 2050.

Municipal policies and leadership are central to enhancing quality of life and making communities more attractive for investment and businesses. Despite funding challenges, municipal climate mitigation and adaptation initiatives must continue to expand in order to meet the needs of a growing population, while contributing to environmental, economic, and social objectives.

The current levels of greenhouse gas (GHG) and air pollutant emissions are a major global concern given the associated environmental, social, and economic impacts. The interaction of many factors that contribute to climate change creates a complex challenge. This challenge needs to be combated with an approach that incorporates efforts to address climate mitigation and climate adaptation. Reducing greenhouse gas emissions is also an efficiency measure. Greenhouse gas emissions generated as a byproduct of business activities are a form of waste, and as such a form of business inefficiency.

Achieving a balance between the environment, society, and the economy is an essential requirement that allows today's needs to be met while ensuring the ability of future generations to meet their needs. It is imperative for governments and businesses alike to focus on achieving and enhancing sustainability.

A modern sustainable fleet involves much more than investing in green technology and fuels. A modern sustainable fleet is a fleet that is continuously improving its environmental impacts, minimizing fuel consumption, and promoting more efficient vehicle utilization by drawing from the resources already available, while remaining economically and operationally viable, and climate resilient.

With the scale and urgency of required actions, this Plan lays out a pathway to sustainable and resilient City Fleets. The strategies and actions provide feasible paths to reach the established objectives. These paths will utilize different green technologies and fuels, including renewable energy sources, and efficient fleet management practices. They are designed to ensure that City Fleets are fully optimized, utilized and maintained efficiently, while remaining cost effective, resilient, and sustainable for decades to come.

Transformational change brings risk and uncertainty that collaboration and shared expertise and experience can help address, as the success of the City's Consolidated Green Fleet Plan demonstrates. Strong engagement and collaboration that actively support progress toward sustainable, resilient, low-carbon future will be crucial to our success.


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Accomplishments

During the initial stages on our road to a sustainable, climate resilient, and low-carbon future, City Fleets have focused on investments to upgrade vehicles and equipment to more efficient and low carbon options.

Exceeded City's 2020 emissions reduction target of 30% by 4.3%

City Fleets have also made significant improvements in efficiency, including vehicle right-sizing, retrofitting, driver training and reducing non-value added travel.

This has enabled the City Fleets to reduce GHG emission by approximately 27 million kilograms of carbon dioxide equivalents (CO_2e), a 9 per cent decrease during the 2014 – 2018 period.

Initiatives undertaken by City Fleets made an important contribution to the overall City emissions reductions. The Consolidated Plan has been recognized for its successes, as well as an example of effective local leadership on climate mitigation.

The City of Toronto has been established as a Canadian leader in testing and adopting green vehicle technologies and fuels and efficient fleet management practices:

- Vehicle selection criteria includes total life-cycle cost, operational viability, available fuel options and environmental impacts;
- Standard diesel transit buses are being replaced by hybrid-electric buses;
- Heavy duty waste collection diesel trucks are being replaced by compressed natural gas (CNG) trucks (120 CNG trucks in fleet as of January 31, 2019 – 48 per cent of all collection units);
- Auxiliary batteries, anti-idling devices, inverters, LED emergency lights, and other technologies for vehicles and equipment that reduce fuel consumption and emissions have been installed on a large number of vehicles and equipment:
  - *171 ambulances and emergency response vehicles are equipped with anti idling devices;*
  - *16 Fire Services aerial trucks and 102 additional City-wide vehicles are equipped with auxiliary power units as an idle reduction technology;*
  - *428 Police patrol vehicles are equipped with auxiliary power units as an idle reduction technology;*
  - *127 new units are equipped with engine start-stop technology for reducing idle time;*
- 759 hybrid vehicles and equipment have been adopted in areas with high operational utilization;
- Continued fleet optimization and right-sizing:
  - *Light duty vehicles were replaced with more fuel efficient and battery-electric vehicles;*
  - *Police vehicles were replaced with smaller engine vehicles where viable;*
  - *Waste and recycling trailers replaced by lighter aluminum units (21 per cent weight reduction with an estimated 5 per cent fuel reduction of the towing vehicle);*
  - *11 modular type III ambulances were equipped with hybrid electric drive-train systems;*
- Continued implementation and utilization of telematics technology on City vehicles contributed to improved vehicle utilization, better fuel efficiency, reduced idling, lower emissions, improved safety and operational cost savings;
- The City's eco-driving campaign was developed in 2015 for both the G and D class. All City staff permitted to operate a City vehicle are provided with eco-friendly driving tips, including trip planning and driving behaviours;
- Car sharing and bike sharing programs for City staff as alternative modes of transportation were implemented;
- Vehicles were substituted with bicycles where operationally viable:
  - *Toronto Police have utilized 420 bicycles for neighbourhood patrols, avoiding the use of up to 100 police patrol vehicles as a result;*
- City Fleets have increased the bio-based component of diesel fuel from the mandatory 4 per cent to 5 per cent of the total volume.

The Pathway to Sustainable City of Toronto Fleets

The Pathway to Sustainable City of Toronto Fleets (Plan) provides an overview of the City of Toronto Fleets' objectives in addressing climate mitigation and adaptation with strategies for transitioning City Fleets to a sustainable, climate resilient, low-carbon operations.

The Plan is a product of continuing close cooperation of City Fleets that articulates a collective vision of the path to a sustainable future. The scope of the Plan includes approximately 98 per cent of all City owned motor vehicles and equipment, managed and operated by Fleet Services Division (Centrally Managed Fleet), Toronto Transit Commission (TTC), Toronto Police Service, Toronto Fire Services, Toronto Paramedic Services, Toronto Community Housing, Exhibition Place, Toronto Zoo, Toronto Parking Authority, and Toronto Public Library.

This multi-agency City-wide Plan focuses on reducing the environmental impacts of more than 10,000 motor vehicles and equipment owned and operated by the City of Toronto. It does not include Toronto Transit Commission streetcar and subway vehicles, and vehicles owned and operated by private companies who contract with the City.

The Plan builds on the achievements of the City of Toronto Consolidated Green Fleet Plan (2014 -2018) that was one of the key contributing factors to the City's overall environmental achievements. The Consolidated Plan has been recognized for its successes and an example of effective local leadership on climate mitigation.

With firmly developed and established sustainability and resiliency at its core, the Plan will ensure City Fleets continue to invest in and improve technologies and processes that support long-term environmental, social, and economic sustainability. The Plan is also flexible and well positioned to adopt and take advantage of any current and future low-carbon technologies, fuels, practices and future government regulations to address climate mitigation and adaptation.

Goal and Objectives

GOAL
Sustainable, climate resilient, low-carbon City Fleets

OBJECTIVE 1
Transition 45% of City-owned fleet to low-carbon vehicles by 2030

OBJECTIVE 2
65% greenhouse gas reduction by 2030 (from 1990 levels)

OBJECTIVE 3
Net zero emissions before 2050

Meeting these objectives requires significant capital investments in green technologies and fuels, and innovative improvement strategies for operational and management practices. A wide range of green vehicle technologies and fuels, with distinct advantages and challenges, different operational applicability, and at various stages of development, presents a very complex situation for green, efficient, and sustainable vehicle and fuel selection and implementation. Investments in green technologies are often most viable when vehicles that have reached the end of their life cycle are replaced with solutions that balance economic, environmental and social impacts. As a result, our focus will be on maximizing the use of renewable and sustainable fuels that alleviate or balance environmental and economic concerns throughout the production, distribution, and consumption process. The approach to alternative fuels includes addressing both fueling infrastructure and operational requirements before a broader implementation can be undertaken.

As the largest municipal fleet in Canada, and one of the largest in North America, City of Toronto Fleets play an important leadership role in advancing technologies that aim to significantly reduce environmental impacts, improve vehicle efficiency, reliability, and safety, while reducing life-cycle costs and associated impacts. The City of Toronto will continue to demonstrate leadership to ensure the greening of our fleets and the transition to sustainable, resilient, low-carbon City operations.

Contributing Strategies and Actions

- Continue to assess and evaluate the range of commercially viable power sources for vehicles through a fuel neutral approach. This approach will ensure selected vehicle and equipment options are consistently the most viable for the City operations, and economically, environmentally, and operationally sustainable.
- Fleet asset management and state of good repair will take into account both climate change mitigation and adaptation to ensure sustainability and avoid future costs and service disruptions.
- Improve operational preparedness for extreme weather and other shocks, and our capacity to recover from them with minimal service disruptions.
- Incorporate climate change mitigation and adaptation in our business continuity planning, to ensure climate-resilient operations and services.

- Working with various industry and government agencies to develop strategies and policies that enable the adoption of electrified transportation. We are collaborating with other City divisions and agencies, including Toronto Hydro, on the development of electrified transportation projects.
- TTC Green Bus Program:
  - *Clean diesel buses - Clean diesel buses emit 40 per cent less GHG emissions than the older conventional buses in the fleet. The last clean diesel bus was delivered in 2018.*
  - *Hybrid-electric buses - Hybrid buses are the new TTC standard for bus replacement and fleet growth. The first 255 hybrid buses are scheduled to be delivered by the end of 2019. Hybrid-electric buses consume 25 per cent less fuel and emit approximately 30 per cent less GHG emissions than clean diesel.*
  - *All-electric buses - First 60 all-electric buses (eBuses) are scheduled to be delivered by March 31, 2020. Based on the TTC's current procurement plan (full funding sources yet to be identified), the bus fleet will be 50 per cent zero emissions by 2030 and 100 per cent zero-emissions by 2040.*
  - *Wheel-Trans Para Transit Fleet - The TTC is currently developing a Green Wheel-Trans Bus Procurement Plan, consistent in approach as was undertaken in the development of the Green City Bus Procurement Plan.*
  - *Non-Revenue Automotive Fleet - The TTC has begun greening its non-revenue fleet in 2019 with the procurement of the first 20 hybrid-electric SUV's. Staff are developing a green fleet plan, to work in conjunction with and support of our revenue operations.*
- 220 passenger vehicles in the Centrally-Managed Fleet are planned for replacement by electric vehicles during the next five years.
- Heavy duty waste collection diesel trucks continue to be replaced with compressed natural gas (CNG) trucks.
- Continue to improve our fleet management and utilization practices through vehicle right-sizing, trip planning and optimization, retrofitting, efficient maintenance practices, vehicle sharing, and driver training.
- Explore the feasibility of implementing technologies that enables City vehicles to collect dynamic local air pollution data. This can enable the City to implement specific and targeted local climate actions where they can make the most significant difference for public health.
- Continue to expand the use of the existing car share, bike share and cargo bike programs, and other viable emerging alternative modes of transportation for our operations.
- Collaborate with other City divisions and agencies on the development of automated driving systems policies and projects in a manner that increases the number of low emission vehicles and equipment in City Fleets, or reduces overall impacts.
- Work with our clients and business partners to raise awareness of environmental, economical, and social aspects, manage risk, and develop solutions.
- Demonstrate accountability and transparency in regularly disclosing our progress in implementing these strategies and achieving established objectives.

Implementation

This Plan is part of the City's efforts toward making Toronto a sustainable, resilient, low-carbon city as outlined in the TransformTO action plan and Toronto's Resilience Strategy.

Achievement of the objectives outlined in this Plan will require the engagement and cooperation of City divisions, agencies, and corporations who operate City vehicles and equipment to ensure success. It's also dependent upon building existing partnerships with federal and provincial legislators, community groups, businesses, and foundations, in addition to forging new partnerships. Accountability and continued engagement will be crucial in the implementation, further development, and success of this Plan.

The Fleet Services Division General Manager will be responsible for coordinating and monitoring the implementation of the strategies and actions, reviewing progress, and making recommendations to the Fleet Management Steering Committee (FMSC) for the Plan updates, including directional changes as required, subject to review and approval by the FMSC.

Monitoring and Reporting

To ensure the Plan remains flexible and well positioned to adopt and take advantage of current and future low-carbon technologies, fuels, and practices, and government regulations to address the climate mitigation and adaptation, the General Manager, Fleet Services will provide an update to the Plan every four years. This will coincide with four-year terms of City Council, with the next update planned for the second quarter of 2023.

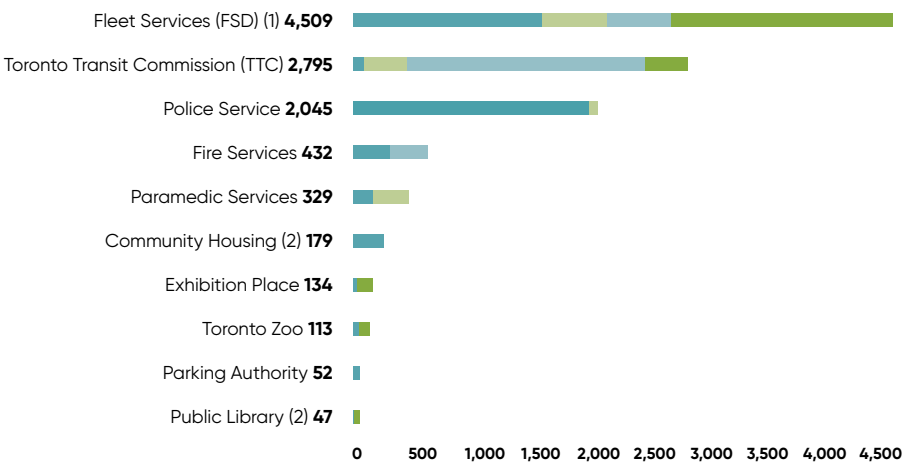
The reports will include recent developments and results of strategy implementation, the status, trends, and rates of progress. It will also include changes in environmental circumstances, external drivers and barriers, and any updates to the current goal and objectives.

The progress of established strategies and actions will be reported regularly as part of the TransformTO City-wide updates.

City of Toronto Fleet Profiles

The City of Toronto operates a diverse fleet of more than 10,000 motor vehicles and equipment to deliver a variety of services to city residents, businesses, and visitors. These assets include many different vehicle categories including motorcycles, passenger vehicles, pick-up trucks, vans, fire trucks, ambulances, sanitation trucks, street sweepers, transit buses, construction equipment, dump trucks, tractor trailers, ice resurfacing machines, crane and tower trucks, vacuum trucks and many other specialized units. They are allocated across four weight classification categories, light duty, medium-duty, heavy-duty and off-road vehicles.

Breakdown of City Fleets by Weight Classification, 2019



(1) Centrally-Managed Fleet, managed by Fleet Services Division and operated by a number of City departments including Parks, Forestry & Recreation, Transportation Services, Toronto Water, Solid Waste Management, Municipal Licensing & Standards, and many others.

(2) Managed by Fleet Services Division.

(3) Vehicles with auxiliary batteries, anti-idling devices, start-stop system, etc.

(4) Low-emission vehicles, bicycles, regenerative air sweepers

(Source: City of Toronto Fleets)

City Motor Vehicles and Equipment by Weight Classification, 2019

City Green Vehicles and Equipment by Type, 2019

Green vehicles currently account for 25 per cent of the total City vehicles and equipment. In addition to this, diesel used in our vehicles and equipment contains 5 per cent of bio-based component (B5), compared to provincially mandated 4 per cent of the total volume.

43% **Vehicles with Green Tech. Devices** (3)

34% **Hybrid Vehicles**

11% **Compressed Natural Gas Vehicles**

10% **Electric & Plug-in Hybrid Vehicles**

2% **Other Green Vehicles** (4)

City of Toronto Centrally-Managed Fleet

The City of Toronto Centrally-Managed Fleet is managed by the Fleet Services Division (FSD). FSD purchases, manages, and maintains a fleet of approximately 4,500 motor vehicles and equipment, and 950 trailers and other non-motorized units.

Centrally-managed Motor Vehicles and Equipment by Weight Classification, 2019

Light-Duty
37%

Heavy-Duty
16%

Off-Road
33%

Medium-Duty
14%

(Source: City of Toronto Fleets)

Breakdown of Centrally-managed Fleet by City Division, 2019

Parks, Forestry & Recreation
39%

Solid Waste Management
13%

Toronto Water
17%

Other
10%

Transportation Services
17%

Municipal Licensing & Standards
4%

(Source: City of Toronto Fleets)

FSD also oversees 24 City fuel sites, 22 of which are directly managed, and one DC fast electric vehicle charger and 19 Level 2 chargers located at eight different City facilities.

Toronto Transit Commission

The Toronto Transit Commission (TTC) is the most heavily-used urban mass transit system in Canada, and the third largest in North America. TTC's bus fleet serves nearly 3 million residents with an average ridership of 253 million per year and provides critical mass transit links throughout the broader Greater Toronto Area.

Toronto Transit Commission

The busiest urban mass transit system in Canada.

Serving **1.5 million** people that ride the system every day

Toronto's first public transportation company was the Williams Omnibus Bus Line, which carried passengers in horse drawn stagecoaches along Yonge Street between the St. Lawrence Market and the Village of Yorkville in 1849. In 1920, a Provincial Act created the Toronto Transportation Commission and in 1921, the Commission took over and amalgamated nine existing fare systems within the city limits. On January 1, 1954, the Toronto Transportation Commission was renamed the Toronto Transit Commission and public transit was placed under the jurisdiction of the new Municipality of Metropolitan Toronto.

TTC fundamentally contributes to the social and economic development of Toronto, while fostering environmental stewardship. Economic vitality and urban development occur in the presence of high quality and high capacity transit - and TTC clearly plays a very important role in meeting the mobility needs of the city. By providing access to education, recreational and employment opportunities that the city offers, TTC influences the social and economic fabric of Toronto. We also make a vital contribution to the fight against climate change by offering a sustainable alternative to passenger vehicle use thereby reducing greenhouse gas (GHG) and air pollutants emissions.

Introducing additional green initiatives is essential to the TTC's service modernization process. One of the key goals we have set is to attain a zero emissions bus fleet that will continue to deliver safe and reliable service.

Starting in 2019, TTC bus procurement will only include hybrid and zero-emissions units and starting in 2025 zero-emissions buses only. TTC bus fleet will be 50 per cent zero emissions by 2030 and 100 per cent zero-emissions by 2040.

This, and other major investments the TTC has made, continue to make expanding and modernizing its fleet of vehicles one of the cornerstones of the Pathway to Sustainable City Fleets.

Toronto Police Service

The Toronto Police Service was founded in 1834, when the City of Toronto was first created from the Town of York.

In the days before public social services, the force functioned as a social services mega-agency, operating the city's ambulance service, child welfare services, animal services and acted as the Board of Health. On January 1, 1957, the Toronto Police merged with the other municipal forces in the metropolitan area to form the Metropolitan Toronto Police Force.

Toronto Police has a permanent authorized strength of 5,505 sworn officers and 2,162 civilian members. The Service's fleet inventory consists of 1,625 vehicles and 420 bicycles, the majority of which operate on three shifts, 365 days a year. The vehicles, other than boats, are serviced and repaired at three garage locations. The three garages have been strategically located to allow reduced travel time for officers when attending these sites.

Toronto Police will continue to change from V8 to V6 engines, and V6 to L4 engines, and purchase more hybrid vehicles where possible, as part of its fleet regular life-cycle replacements. We will also continue to utilize bicycles instead of vehicles for neighbourhood patrols wherever operationally viable.

Toronto Police Service

47% of Police vehicles are green

420 bicycles used for neighbourhood patrol

Toronto Fire Services

The first fire engine house in Toronto was established in 1826 at Church Street and Newgate Street (current Adelaide Street East).

Full-time fire services began in 1874. After the Great Toronto Fire in 1904, which destroyed much of Bay Street from The Esplanade West to Melinda Street, the Fire Department in Toronto became a critical service and has evolved into the full-time service that exists today. The Toronto Fire Services (TFS) was created in 1998 from the merger of the former fire departments of the original City of Toronto, East York, Etobicoke, North York, Scarborough and York. It is the largest fire department in Canada and the fifth largest municipal fire department in North America.

TFS is comprised of 3,144 personnel who are employed in four sections: Operations, Fire Prevention and Public Education, Mechanical and Training and Staff Services and Communications. Fire Services is a pro-active leader in fire prevention, protection and emergency services to meet the diverse needs of the community.

Toronto Fire Services

Largest fire department in Canada

29% green vehicles

More than **130,000** emergencies per year

Toronto Paramedic Services

The City of Toronto has directly operated an uninterrupted ambulance service since 1883.

In 1975, the City's Department of Ambulance Services (DAS) was created, amalgamating all private and public ambulance services operating within Toronto. In October 2014, the Division became Toronto Paramedic Services to reflect the advanced medical care provided by its frontline staff.

Toronto Paramedic Services (TPS) provides emergency medical response for the City of Toronto, an area of 650 square kilometres with a daytime population of 3.5 million people. This makes TPS the largest municipal paramedic ambulance service in Canada and one of the most comprehensive pre-hospital emergency care systems in the world. Currently, TPS operates a fleet of 329 motor vehicles to meet its operational needs. The TPS fleet consists primarily of ambulance and emergency response vehicles.

Toronto Paramedic Services

58% of vehicles are green

66% increase in emergency transports since 2005

Toronto Community Housing

Toronto Community Housing is the largest social housing provider in Canada and the second largest in North America. Toronto Community Housing has 2,100 buildings and 50 million square feet of residential space, which represents $9 billion in public assets.

Toronto Community Housing was created by the City of Toronto on January 1, 2002, with the amalgamation of the Metropolitan Toronto Housing Corporation (formerly Metro Toronto Housing Authority, which managed the provincial public housing units in the city) and the Toronto Housing Company (a merger in 1999 of the Metropolitan Toronto Housing Company Ltd. and the City of Toronto Non Profit Housing Corporation, also known then as Cityhome).

Toronto Community Housing fleet is managed by Fleet Services Division as part of the City's Centrally Managed fleet and it primarily consists of light duty passenger vehicles and vans.

Toronto Community Housing

Largest social housing provider in Canada, second largest in North America.

Toronto Exhibition Place

Toronto Exhibition Place

64% green vehicles

5 electric charging stations

Toronto Exhibition Place is a publicly owned mixed-use district. The 197 acre site includes exhibit, trade, banquet centres, theatre and music buildings, monuments, parkland, sports facilities, and a number of civic, provincial, and national historic sites. The district's facilities are used year-round for exhibitions, trade shows, public and private functions and sporting events.

Established in 1879, Exhibition Place has grown from its rather humble origins into an exciting, world-class venue playing host to numerous trade and consumers shows each year, including the Canadian National Exhibition.

Toronto Exhibition Place fleet mostly consists of passenger vehicles (19 per cent) and various off-road vehicles and equipment (81 per cent).

Exhibition Place has five electric vehicle charging stations and is assessing the expansion. As part of the City's commitment to reducing greenhouse gas emissions from its operations, Exhibition Place is looking to phase out diesel and gasoline vehicles at their end of life and where possible substitute with electric vehicles.

Toronto Parking Authority

Electric vehicle charging will provide another value offering to our customers and communities.

The Toronto Parking Authority (TPA) is a financially self-sustaining agency of the City of Toronto whose mandate is to provide safe, attractive, conveniently located and competitively priced off and on-street public parking.

It strives to achieve customer service excellence, in support of the vibrancy of local businesses and the liveability of the communities it serves, through the provision of over 250 facilities city-wide.

The Toronto Parking Authority fleet consists of approximately 50 service vehicles, which are primarily light duty vans and pick-ups. TPA has a service level agreement with City Fleet Services with respect the purchase of fuel and collaborates closely with Fleet Services and the other agencies through active participation on the Fleet Management Steering Committee (FMSC). In addition, TPA engages Fleet Services for various equipment and driver training programs and also consults regularly on vehicle purchase matters with the Division, including scoping the viability of green fleet alternatives for its requirements.

As well, through the development of vehicle specifications, in conjunction with its outsourced fleet management service provider, TPA has researched the current availability of alternative green technologies and potential application for its fleet purposes. TPA staff continue to monitor and leverage the work being undertaken under the City's Shared Services Fleet Management umbrella and work closely with its service provider to seek future green fleet options that provide substantive environmental benefits for the investment made while delivering the service demands necessary.

TPA currently has 19 electric vehicle (EV) charging stations located at four carparks. TPA, under its strategic vision and direction, is advancing an initiative to explore and focus its emerging role from a business planning perspective in EV charging capabilities and development of an EV strategy and roll-out plan. TPA's premise is that EV charging will not only enhance our offering to our customers, but enable TPA to promote this service as another value offering for our communities. The benefit for our customers is that we provide a safe and clean location to both park and charge their cars at a fair price. TPA is collaborating with other City divisions and agencies, including Transportation Services and Toronto Hydro on its EV charging initiative.

Toronto Zoo

The Toronto Zoo opened on August 15, 1974, and it is the largest zoo in Canada and one of the largest in the world, encompassing 287 hectares (710 acres).

The Zoo is a very dynamic organization providing compelling guest experiences that educate visitors about the animals in our care and also inspiring them to take actions to protect them.

We are committed to practicing and promoting activities and actions that benefit wildlife and the environment.

Toronto Zoo fleet mostly consists of various off-road vehicles and equipment.

Toronto Zoo

Canada's largest zoo and one of the largest in the world.

Toronto Public Library

Toronto Public Library is North America's busiest urban public library system providing high quality library service to Torontonians across a network of 100 branches, including research and reference libraries, district and neighbourhood branches, mobile library services with two bookmobiles and through the virtual branch services on the Library's website. Every year more than 19 million people visit our 100 branches, more than 26 million visit our website and over 32 million items are borrowed.

Toronto Library fleet is managed by Fleet Services Division as part of the City's Centrally Managed fleet, with 62 per cent of it being light duty vehicles, 23 per cent medium duty vans and trucks and 15 per cent heavy duty trucks including bookmobiles.

Toronto Public Library

North America's busiest urban public library, the fleet helps to provide service for more than **19 million people** every year.

Appendix A Definitions

Alternative Fuel
Any fuel other than gasoline, diesel, and other substantially petroleum-based fuel that is less polluting than gasoline or diesel fuel. Alternative Fuel shall include, but is not limited to, natural gas, propane, ethanol, biodiesel (five per cent blend or above) and electricity.

Alternative Fuel Vehicle (AFV)
Any motor vehicle powered in whole or in part by non petroleum-based fuels.

Battery Electric Vehicle (BEV)
An all-electric vehicle which runs entirely on an electric motor and rechargeable battery.

Biodiesel
Fuel refined from agriculturally derived oils that is suitable for use in diesel engines. Often blended with traditional petroleum-based diesel in amounts connoted by the letter "B" and a number (e.g. B20 = 20 per cent biodiesel and 80 per cent petroleum diesel).

CO_2
Carbon Dioxide, a standard component of conventionally powered vehicle emis sions and a principal greenhouse gas.

CO_2e
Carbon Dioxide Equivalent, a funda mental unit for measuring greenhouse gas emissions. Greenhouse gases are converted by their global warming potential (GWP) which is based on their ability to absorb and radiate back to the earth s surface relative to carbon dioxide (CO_2).

CNG
Compressed Natural Gas

Clean Diesel
Clean diesel is a type of diesel fuel that is highly refined to improve combustion efficiency and reduce harmful emissions. The term is often used interchangeably with ultra-low sulfur diesel. This is due to the fact that clean diesel is refined to significantly reduce the amount of sulfur found in the fuel (97 per cent less sulfur than the traditional diesel).

Electric Vehicle (EV)
An electric vehicle which runs partially or entirely on an electric motor and rechargeable battery.

Greenhouse Gas (GHG)
Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth s surface, the atmosphere and clouds. This property causes the greenhouse effect. Water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3) are the primary greenhouse gases in the earth s atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

Green Vehicle
A green vehicle or environmentally preferable vehicle is a motor vehicle with an engine, fuel or device that causes it to produce less impact on the environment than a comparable, conventional, internal combustion engine (ICE) vehicle running on gasoline or diesel.

Heavy Duty Vehicle
Any motor vehicle, licensed for use on roadways, having a manufacturer s gross vehicle weight rating greater than 8,845 kilograms.

Hybrid Vehicle
A motor vehicle that draws propulsion energy from onboard sources of stored energy that are both an internal combustion / heat engine that runs on combustible fuel and a rechargeable energy storage system.

Light Duty Vehicle
Any motor vehicle having a manufacturer s gross vehicle weight rating less than 4,536 kilograms. Light duty vehicles include passenger cars, light duty trucks, sport utility vehicles (SUV), minivans and pick-up trucks.

Medium Duty Vehicle
Any motor vehicle having a manufacturer s gross vehicle weight rating between 4,536 and 8,845 kilograms.

Motor Vehicle
Any self-propelled vehicle powered by an internal engine.

Off-Road Vehicle
Any motor vehicle commonly used in the construction or maintenance of highways, and vehicles designated for off-road use as per the Ontario Highway Traffic Act (Regulation 316/03).

Plug-in Hybrid Electric Vehicle (PHEV)
A type of hybrid vehicle that takes electricity from an outlet to recharge internal batteries. The energy stored in the batteries can be used to drive an electric motor, just as in a BEV. However, a PHEV also has an engine, typically gasoline-fueled, which can power the vehicle when the battery is depleted.

Acknowledgements

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Participating Fleets

Toronto Fleet Services Division
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Toronto Transit Commission

Toronto Police Service

Toronto Fire Services

Toronto Paramedic Services

Toronto Community Housing
(part of the Centrally-Managed Fleet)

Exhibition Place

Toronto Zoo

Toronto Parking Authority

Toronto Public Library
(part of the Centrally-Managed Fleet)

Contributors

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