ENVIRONMENTAL SUSTAINABILITY REPORT

2020

Acknowledgements

We extend our gratitude to all of those who provided us with the information required for this report and for reviewing the numerous drafts prepared. We would also like to thank the broader London Hydro community for their continued commitment to sustainability both in our own organization and in our community.

Table of Contents

1. Organizational Profile

1.1 About Us

London Hydro is a Local Distribution Company that services the City of London, Ontario, Canada. With a peak load of approximately 694 megawatts in 2020, we deliver a safe and reliable supply of electricity to over 162,140 customers from the residential, institutional, commercial and industrial sectors, through 3,070 kilometres of overhead and underground cables, spanning 423 square kilometres of service territory.

London Hydro - Customer Breakdown by Type						
	2013	**2016**	**2017**	**2018**	**2019**	**2020**
Residential	137,191	141,323	143,018	144,731	146,208	147,666
General Service < 50 kW (incl. FIT)	12,084	12,556	12,543	12,676	12,800	12,925
General Service > 50 - 4999 kW	1,636	1,612	1,622	1,626	1,584	1,542
Large User > 5,000 kW	3	1	1	1	1	1
Cogeneration > 1MW	3	4	4	5	5	6
Streetlight - (connections)	35,034	35,882	36,498	36,780	37,461	37,973
Sentinel Lights - (connections)	653	603	535	529	516	515
Unmetered Loads < 50 kW - (connections)	1,508	1,513	1,530	1,524	1,551	1,539
Generation (Non-renewable)	0	0	6	8	9	9
Generation (Renewable)	169	320	365	393	399	404
Total Customers + Meter Points	**188,281**	**193,814**	**196,116**	**197,872**	**200,534**	**202,571**

Number of Customers 2020	
Total Customers	162,140
Residential Customers	147,666
General Service < 50 kW	12,925
General Service > 50 kW	1,542
Cogen	6
Large Users	1
All London Hydro accounts are connected at the distribution level. London Hydro also has 423 accounts that are generators of electricity	

Generator Types	# of Accounts
microFIT/Net Metering	339
FIT/Net Metering	73
Hydro	1
Biogas	1
CHP	9

1.2 Corporate Structure

London Hydro Inc. was incorporated on April 26, 2000 (Ontario Corporation No. 1415543), and in July, 2000 (through By-Law A-5686-103), the Municipal Council of The Corporation of the City of London transferred all of the employees, assets, liabilities, rights and obligations of what was then the electrical distribution business of the London Hydro Electric Commission to the new corporation.

London Hydro Inc. became a for-profit, taxable corporation when it was established as a wholly-owned subsidiary of The Corporation of the City of London under Ontario's Electricity Act (1998). On April 1, 1999, the Ontario Energy Board (OEB) granted London Hydro a licence (# ED-1999-0275) to provide electrical distribution services to the City of London as a monopolistic corporation.

As the sole shareholder, holding all 1001 shares, The Corporation of the City of London has directed London Hydro's Board of Directors to ensure its success by overseeing a governance and operation of the business with a mandate to:

- Ensure that distribution rates are fair and competitive with rates charged in the industry;
- Enhance the quality and reliability of electrical supply;
- Maintain the value of the distribution assets; and
- Operate the business in a way that fosters innovation and encourages employee satisfaction and retention.

Although The Corporation of the City of London is London Hydro's sole shareholder, London Hydro's Board of Directors has fiduciary responsibilities and is accountable to the larger set of stakeholders including customers, regulators, suppliers, debt-holders, employees and the community.

1.3 Management Approach

This Environmental Sustainability Report is limited to those activities performed by London Hydro, Inc., which is a sole subsidiary of the City of London. This report addresses items of materiality that focus on environmental stewardship determined by our mission, corporate values, and by our stakeholders. London Hydro's mission is "To provide safe, reliable electricity and energy related value-added services." London Hydro's vision is "London Hydro is your trusted energy services provider and we do so through innovation, customer focus and operational excellence." London Hydro operates within the boundaries of the City of London and adheres to the following corporate values:

Safety – Safety is our first priority.

People – Our employees are our greatest strength. Our customers are our primary focus.

Integrity – We are stewards of public trust and we demonstrate the highest standards of professional ethics and accountability in all of our activities. We treat others with respect and trust.

Agility – We will be open, innovative and adaptable as we help to shape the industry's future.

Corporate and Social Responsibility – We are committed to being a financially, socially and environmentally sustainable company.

The materiality of the report's content, therefore, is defined by the activities that support London Hydro's Mission, Vision and Values as well as by the activities that are directly requested by stakeholders, whether those represent regulatory compliance, or responses to direct requests from customers, other stakeholders or our sole shareholder, the City of London.

The Board and the executive management team routinely review various key performance indicators, to inform leadership as to the effectiveness of the management approach on all material topics, which ultimately leads to continuous improvements through specific actions, processes, projects, programs and initiatives.

1.4 Restatements

1. The method for estimating SF_6 emissions was improved and emissions from past years were recalculated. The improved estimation method reduced SF_6 emissions by approximately 5%.
2. The following values were corrected in Sections and 7.3 (Hazardous Waste):
    a. Waste Transformer Oil (<2 ppm PCB), Oily Water from 60,061 kg to 57,391 kg
    b. Waste Transformer Oil (<50 ppm PCB) from 9,792 kg to 12,675 kg
3. The following values were corrected in Section 7 (Raw Material and Waste):
    a. Conductor lengths; 2013 (214,317 m), 2018 (246,089 m), 2019 (249,531 m)
    b. Switch numbers; 2015 (23), 2017 (27)
    c. Transformer numbers; 2015 (610), 2017 (436), 2018 (456), 2019 (469)
4. The GHG emissions presented in this report are reflective of the most recent electricity generation emission factors reported in Canada's 2021 National Inventory Report.

1.5 Acronyms

ANSI	American National Standards Institute	GJ	Gigajoule	L	Litre
C&MP	Customers and Metering Points	GRIP	Governor to Reduce Idle and Pollution	LDC	Local Distribution Company
CDD	Cooling Degree Day	GWh	Gigawatt hours	m3	Cubic meter
CDM	Conservation and Demand Management	GWP	Global warming potential	Micro Fit	Micro Feed In Tariff generation (<10 kW)
CFC	Chlorofluorocarbons	HFC	Hydrofluorocarbons	MWh	Megawatt hour
CHP	Combined Heat and Power	HDD	Heating degree day	ODS	Ozone Depleting Substance
CO2e	Carbon Dioxide Equivalent	HSMS	Health and Safety Management System	OEB	Ontario Energy Board
Cogen	Cogeneration	HVAC	Heating, ventilation, and air conditioning	PFC	Perfluorocarbon
E5	Ethanol 5%	IESO	Independent Electricity System Operator	PHEV	Plug-in Hybrid Electric Vehicle
E10	Ethanol 10%	IPCC	Intergovernmental Panel on Climate Change	PILC	Paper Insulated Lead Covered
EMP	Environmental Management Program	IT	Information Technology	ppm	parts per million
EMS	Environmental Management System	IUCN	International Union for Conservation of Nature	SAIDI	System Average Interruption Duration Index
EOC	Emergency Operations Center	kg	Kilogram	SAIFI	System Average Interruption Frequency Index
ESA	Electrical Safety Authority	km	Kilometre	SF6	Sulfur Hexafluoride
EV	Electric Vehicle	KPI	Key Performance Indicators	t	Tonne (1000 kg)
FIT	Feed In Tariff Generation (> 10kW)	kV	Kilovolt	tCO2e	Tonnes carbon dioxide equivalent
FSC	Forest Stewardship Council	kW	Kilowatt	ton	2000 lbs
GHG	Greenhouse Gases	kWh	Kilowatt hour	VOC	Volatile Organic Compounds

2. Environmental Profile

London Hydro has adopted a formal "Environmental Policy," that outlines our commitment to safeguarding the environment and to conducting our business using methods that will reduce the impact of our operations on the environment through awareness, education, technological innovation, and increased process efficiency.

"To fulfill this policy, we will:

- Ensure compliance with all relevant legislation and with any other requirements to which we subscribe;
- Establish appropriate environmental performance objectives with the goal of reducing our impact on the environment;
- Design, construct, operate and maintain our facilities and equipment to ensure high standards of environmental sustainability are maintained;
- Collaboratively work with all stakeholders on matters related to the environment;
- Involve all staff in the promotion and awareness of environmental initiatives through communications, training and support;
- Ensure employees have the proper training, support, work methods, tools, and equipment to effectively protect the environment;
- Strive for a continuous improvement in environmental sustainability performance;
- On an annual basis, document and report on environmental performance."[1]

2.1 London Hydro's Environmental Management System

London Hydro has been developing and continuously improving upon the Environmental Management System (EMS). Using this best practice approach, London Hydro encourages continual improvement of sustainability performance while meeting legislative and regulatory requirements. London Hydro demonstrates its commitment to sustainable development, one of our stated values, through business practices based on environmental, social, and economic sustainability.

The foundation of an effective EMS is a comprehensive list of environmental aspects and impacts of the organization's activities. The elements of each activity, product, equipment, and service that can interact with the environment are considered. Focus is placed on the adverse changes to the environment for both normal and abnormal conditions and the aspects are segregated into the following impact categories:

Air Emissions (AE)	Energy Usage (EN)	Hazardous Waste (HW)
Non-Hazardous Waste (NH)	Noise (NO)	Raw Materials (RM)
Releases on Land (RL)	Water emission (WE)	Water Usage (WU)

To ensure the organization is focusing its efforts appropriately, each work-related environmental aspect is assigned to one of the impact categories listed above. In addition, the aspects are rated on a scale of 1 to 10 in severity, probability and detection & mitigation to determine their relative environmental risk.

[1] *Source : Environmental Policy*

Significant environmental aspects are deemed material and are then addressed by Environmental Management Programs (EMP).

During a regular management review a summary of the Key Performance Indicators along with a list of potential objectives and targets is presented to the management team. Environmental Management Programs (EMP) are then developed to help achieve the agreed upon Objectives and Targets, which are assigned to the responsible leaders. EMPs and Objectives and Targets are communicated through departmental meetings, training, and other communication mechanisms.

2.2 Environmental Key Areas

Our approach examines our environmental influences in four strategic areas that are noted below. For each of the strategic areas listed below we have developed environmental management strategies to reduce our environmental impact.

OUR WORK PLACE AND THE ENVIRONMENT

- Natural Gas, Water & Electricity Use
- Facilities and Land Management
- Emissions Management
- Emergency Preparedness Response

OUR WORK AND THE ENVIRONMENT

- Efficient Use of Resources
- Management of Materials and Chemicals
- Habitat and Biodiversity
- Emergency & Crisis Management

OUR TRANSPORTATION AND THE ENVIRONMENT

- Vehicle Types (Gasoline, Diesel, Hybrid, Electric)
- Vehicle Maintenance (Tires, Fluids, Filters, Emissions)
- Vehicle Use Efficiency (Idling, L/100km)
- Emergency Response (Vehicle Spills)

OUR COMMITMENT TO THE ENVIRONMENT

- Environmental Management Systems
- Sustainability and Carbon Footprint Reporting
- Waste Management (Reduce, Reuse and Recycle)
- Demand Management & SMART/Green Energy
- Community Outreach & Educational Partnerships

3. Energy

In the impact category of Energy Usage, the energy consumed by the organization in the form of fuel, natural gas, and electricity is monitored within the EMS. London Hydro maintains key performance indicators for energy use, while continually striving to improve our efficient use of energy.

Through effective management, London Hydro works to reduce the amount of energy consumed and lost in the process of distributing electricity as part of its commitment to sustainable development. The management team balances energy reduction initiatives with increases in demands for electricity and services to ensure it maintains a leading cost of service ratio.

As part of the Environment Management System, the objectives of reducing energy use are presented company-wide through Key Performance Indicators (KPI) of each energy type (fuel, natural gas, electricity). Efforts are made to normalize the information that is communicated relative to additional variables such as weather and employee effort. Annual achievements are communicated to employees using a variety of methods. These communications are also used to engage employees and to encourage them to participate and continuously improve all environmental sustainability initiatives.

To reduce the energy use of its operational activities, London Hydro has enhanced the operational centre's lighting and HVAC systems and initiated Fleet Greening activities and other fuel use reduction plans. Voltage conversion and system renewal plans along with technological improvements to distribution equipment are used to reduce electrical distribution losses. London Hydro is a leader in providing Green Button solutions. Green Button is an industry-led effort to provide utility customers electronic access to their energy data in a standard format. London Hydro's Green Button initiatives are designed to help both residential and commercial customers manage their energy use.

When purchasing products, London Hydro purchases Energy Star® compliant appliances when possible.

London Hydro also participates in various green energy initiatives within the community, including the City's Active and Green Communities initiative, and the City's Advisory Committee on the Environment.

3.1 London Hydro's Electricity Source

London Hydro's electricity is sourced based on the Ontario Supply Mix which can be seen in the table below.

2020 Ontario Supply Mix

Electricity Sources	Water Power	Solar PV	Wind	Bioenergy **	Nuclear	Natural Gas*	Non-Contracted ***
Ontario's Electricity Mix *(%)	24.4	2.4	8.7	0.5	56.8	6.3	0.9
* Includes Lennox and dual fuel (natural gas/bioenergy) consistent with IESO.							
** IESO's embedded generation data set combines biomass and gas.							
*** Non-Contracted represents a variety of fuel types that the IESO is unable to categorize due to a lack of information.							
Source: Ontario Energy Board - Ontario's System-Wide Electricity Supply Mix: 2020 Data							

In 2020, 36% of the Ontario electricity supply was generated from renewable sources and 92.8% comes from low-carbon generation methods.

3.2 Energy Use within the Organization

London Hydro's Energy Consumption Comparison

Energy Type	2013 (Base Year)		2020		Energy Delta	
Diesel Fuel (L, GJ)	263,608	9,610	242,718	8,848	-20,890	-762
Gasoline Fuel (L, GJ)	82,003	2,708	88,510	2,923	6,507	215
Natural Gas (m^3, GJ)	124,990	4,876	88,784	3,463	-36,206	-1,412
Propane (L, GJ)	289	7	124	3	-165	-4
Renewable Fuel (L, GJ)	8,956	296	19,948	693	10,992	398
Total Fuel (GJ), (Renewable & Nonrenewable)	17,497		15,931		-1,566	
Renewable Electricity (kWh, GJ)	797,172	2,870	956,817	3,445	159,646	575
Total Electricity (kWh, GJ) (Renewable & Nonrenewable)	2,739,422	9,862	2,657,826	9,568	-81,596	-294
Total Non-renewable Fuel & Electricity (GJ)	24,193		21,361		-2,832	
Total Renewable Fuel & Electricity (GJ)	3,166		4,138		972	
Total Energy Use (GJ)	27,359		25,499		-1,859	

Notes: Natural gas and electricity use are based on billing periods. The renewable electricity proportion is derived from the annual Ontario Supply Mix information from the Ontario Energy Board. Diesel/Gasoline fuel use figures are from fuel level checks verified by the Petrovend monitoring system. Diesel fuel includes volumes for both clear and coloured diesel. Gasoline fuel includes calculated business-related travel. Conversion Factors are from known industry standards and the energy conversion tables of the National Energy Board.

The total energy consumed decreased by 1,859 GJ over the 2013 baseline year. The renewable energy consumed increased by 972 GJ. The variations from the base year are outlined below in the discussions relative to energy type.

3.2.1 Renewable Energy Generated by the Organization

The former Ontario Feed-in Tariff (FIT) Program was designed for projects generating over 10 kW of renewable electricity. It encouraged individuals, schools, municipalities, co-operatives and Indigenous communities to participate in clean energy projects and make meaningful contributions to a cleaner environment. The former microFIT Program was established to support the development of "micro" renewable electricity generation projects (10 kilowatts (kW) or less in size) such as solar panel installations.

Since 2011 London Hydro has been growing its ability to generate renewable solar energy. In 2020, London Hydro wholly owned and operated 8 microFIT and 1 FIT solar installation totalling 110 kW of capacity. London Hydro also has a controlling stake (51%) in two FIT partnership projects totalling 350 kW of capacity. In all, London Hydro operates 460 kW of solar energy capacity generating renewable electricity that is returned to the electricity grid and becomes part of Ontario's Solar Supply Mix.

Renewable Energy Generated	2013 (Base Year)		2020	
London Hydro Owned Photovoltaic (Solar) kWh, GJ	403,581	1,453	465,399	1,675

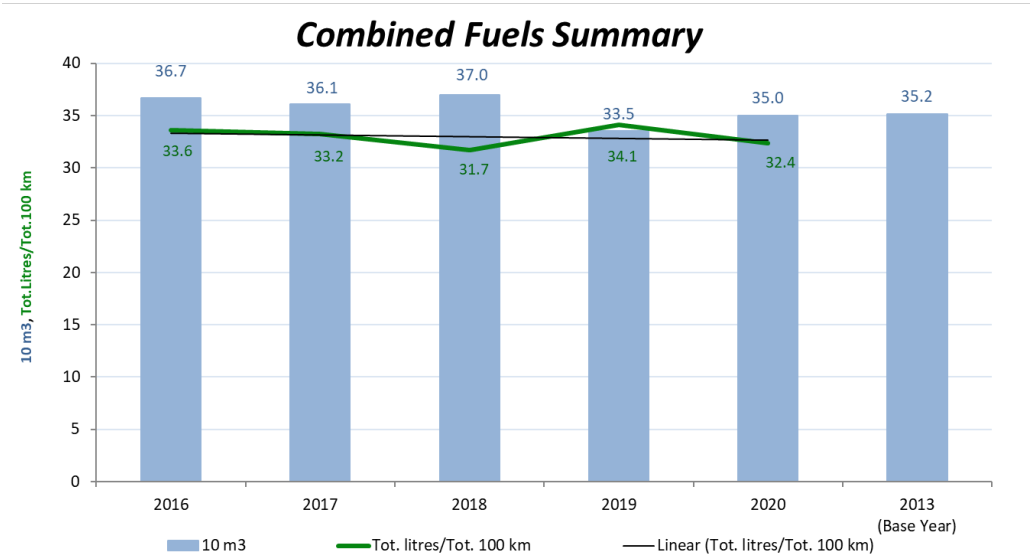
In 2020, London Hydro owned solar installations generated 465,399 kWh of renewable electricity representing 17.5% of the electricity used by the organization in 2020.

3.2.2 Vehicle Fuel Summary

In 2020, London Hydro's fleet of 127 vehicles (including 8 rentals) and equipment consumed approximately 350,611 litres of fuel (clear/coloured diesel and gasoline) and travelled approximately 1,082,000 kilometers. The transportation equipment includes small and large trucks, SUVs, sedans, backhoes, forklifts, and other equipment. It can be further divided into the following fuel categories: 10 plug-in hybrids, 17 hybrids, 43(E10) gasoline use vehicles, 57 diesel use vehicles, and 5 coloured diesel fuel use vehicles.

The number of vehicles in the fleet temporarily increased from 119 in 2019 to 127 in 2020 as 8 work vehicles were rented in order to ensure COVID-19 safety measures could be followed.

In 2020, London Hydro's fleet of 127 vehicles travelled 1,082,000 km; only slightly more than in 2013, when the 114 fleet vehicles travelled 1,044,000 km. Despite the increase in distance travelled, the fleet used 547 GJ (37,600 L) less fuel in 2020 when compared to 2013, demonstrating greater fuel efficiency. Fuel usage is minimized through green fleet purchases, business planning, efficiency improvements, and anti-idling devices and campaigns. It is also important to note that as London Hydro's service base increases, transportation requirements and resultant air emissions also increase. Additionally, vehicle fuel use is also partially dependent on outdoor temperatures, as climate control is required to maintain safe working temperatures for London Hydro staff.

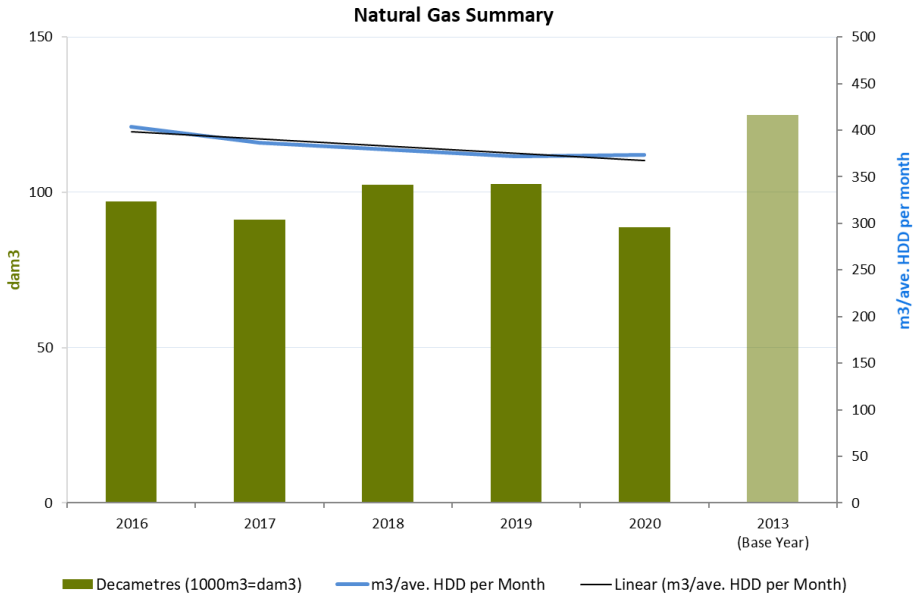


The 2020 combined fuel use increased by 4.4 % or 14,895 litres compared to 2019. There was also a 10.0% or 98,784 km increase in kilometers travelled. However, fuel efficiency, measured in litres per 100 kilometers travelled, improved by 5.1%. These improvements can be attributed to operational efficiency and idling reduction campaigns/systems, fleet management systems (Fleetio, Geotab) and fleet modernization initiatives. The idling management systems saved just over 12,200 litres in fuel and an approximate 31 tonnes of CO_2e. In 2020, London Hydro's 10 plug-in hybrid electric vehicles travelled 79,898 km using a mere 4.6 litres per 100 kms.

London Hydro strives to improve vehicular fuel use through the following initiatives:

- Idling by-law training, facility signs, and vehicle stickers;
- Vehicle purchasing selection (green vehicles) and improved manufacturer's fuel economy standards;
- Fleet Maintenance and Vehicle Management Systems;
- Integration of Idle Management Systems; and
- Alternative fuels.

3.2.3 Natural Gas Summary



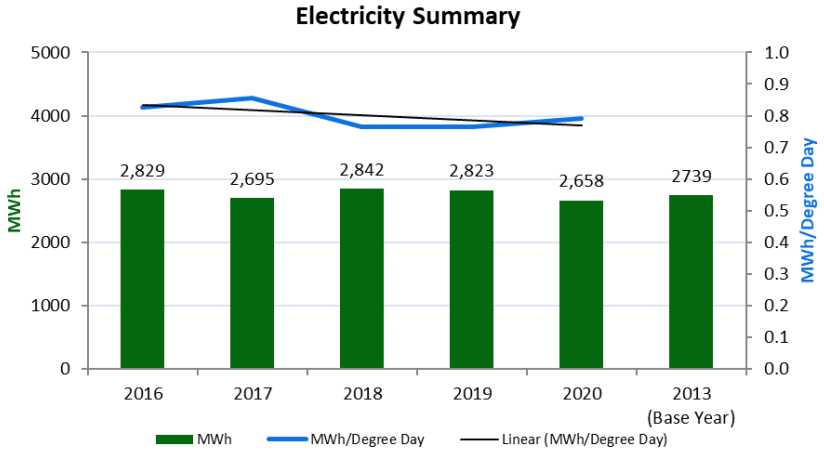
Natural gas use is weather dependent. London Hydro normalizes the data presented in the graph above using the Heating Degree Day (HDD). Heating Degree days are based on the assumption that when the outside temperature is 16°C, comfort heating would not be required. The Heating Degree Day value is the difference between the daily average temperature and 16°C. The resultant number is the Heating Degree Days for that day. The blue line in the above graph represents the cubic meters of natural gas consumed in the year divided by the average number of heating degree days per month (total number of degree days for the year divided by twelve). The downward slope of this trend line highlights the fact that less natural gas has been used relative to outdoor temperatures.

London Hydro also uses a linear regression baseline and cumulative sum of differences analysis when tracking natural gas use. Natural gas use has decreased by approximately 389,243 m^3 representing an approximate $105,100 savings and 739t CO_2e reduction since 2009.

London Hydro has undertaken the following initiatives to minimize natural gas use and subsequent air emissions:

- Increased building envelope insulation;
- Replaced windows and enhanced window treatments (films, blinds and awnings);
- Introduced and continuously improved the Building Automation system controls; and
- Linked large bay doors to unit heaters.

3.2.4 Electricity Summary



London Hydro's electricity usage is also somewhat weather dependant, as it used predominantly for climate control. Electricity use peaks predominately occur in the winter months of November through March and two smaller peaks also occur in the summer months of July and August. London Hydro normalizes the data presented in the graph above using the Degree Days (DD). Degree Days are the sum of the Heating Degree Days and the Cooling Degree Days (CDD). The Cooling Degree days are based on the assumption that when the outside temperature is 18°C, comfort cooling would not be required. Degree days are the difference between the daily average temperature and 18°C. The resultant number is the Cooling Degree Days for that day. The blue line in the above graph represents the Mega Watt hours (MWh) of electricity used in the year divided by the total number of Degree Days for the year.

Between 2019 and 2020, London Hydro's electricity use decreased by 165 MWh or 5.8%, as a result of an 8.9% decrease in degree days and other factors. The 2020 year had an additional 130 CDD and a reduction of 458 HDD. It should also be noted that more heating was required relative to outside temperatures in 2020 as a by-product of lower building occupancy due to COVID-19. The heat produced by personnel and equipment lowers the heating requirements during the colder seasons and increases the cooling requirements during the warmer seasons.

London Hydro has diligently reduced facility related electricity use for decades. As a result of various initiatives, use of electricity has been reduced by 21.4% or 722 MWh or a 24% reduction in MWh/DD between 2004 and 2020. Additionally, London Hydro used 82 MWh or 294 GJ less electricity in 2020 than in the 2013 Base Year.

By the end of 2020, London Hydro had 13 EV chargers on site and 10 plug-in hybrid electric vehicles (PHEV). It was estimated that in 2013 the two PHEVs used approximately 6.5 MWhs and in 2020 the 10 PHEVs used approximately 26 MWh of electricity.

London Hydro's operations teams rely on many handheld tools for use in the field. Increasingly, the handheld tools of choice are battery operated tools instead of gasoline powered hand tools. Battery powered tools weigh less, produce less noise, require less maintenance and repair, cost less to operate, and reduce GHGs emissions.

3.3 Energy Intensity

London Hydro uses an energy intensity model to compare year over year performance of energy used to deliver products and services relative to the number of customers and metering points serviced. The resultant value is represented in Gigajoules per Customers and Metering Points (GJ/C&MP).

London Hydro's Energy Intensity

Variable	2013 Base Year	2016	2017	2018	2019	2020
Energy (GJ)	27,359	27,143	26,226	27,481	26,191	25,500
Customers & Metering Points (C&MP)	188,281	193,814	196,116	197,872	200,534	202,571
Energy Intensity (GJ/C&MP)	0.145	0.140	0.134	0.139	0.131	0.126

3.4 Sustainable Energy Practices

London Hydro has implemented various initiatives to improve system reliability, reduce distribution losses, introduce distributed energy resources and empower customers to reduce their energy use and carbon footprint. The following initiatives and pilot projects are in line with London Hydro's vision of pursuing excellence as an industry leader and are at the forefront of sustainable energy practices.

3.4.1 Distribution Losses

London Hydro has reduced its electrical distribution losses from the 2013 Base Year through various electrical distribution system upgrades, voltage conversions, and other continuous improvement plans.

Distribution Losses

Distribution Losses	2013 Base Year	2016	2017	2018	2019	2020
Distribution Loss (%)	4.01	3.01	2.97	2.97	3.29	2.98
Distribution Loss (kWh)	134,034,727	99,138,098	94,959,222	98,870,583	106,115,325	94,826,767
Distribution Loss (GJ)	482,525	356,897	341,853	355,934	382,015	341,376

The 2020 distribution energy losses are 29% less or 141,149 GJ less than the 2013 distribution losses.

3.4.2 Conservation Demand Management

For over a decade, London Hydro has delivered energy efficiency & demand response programs. In 2019, The Ministry of Energy, Northern Development & Mines made a policy decision to centralize the delivery of energy-efficiency programs with the IESO. In 2020, London Hydro finalized its energy - efficiency projects.

Conservation Demand Management Programs

CDM Savings	2013	2015	2016	2017	2018	2019	2020
Energy Saved - CDM (kWh)	15,838,399	33,662,000	43,593,000	47,338,000	34,845,654	23,887,792	13,925,000
Joules Saved - CDM (GJ)	57,018	121,183	156,935	170,417	125,444	85,996	50,130

The annual Conservation Demand Management (CDM) energy savings listed represent the yearly summation of the programs implemented. London Hydro's CDM programs reduced customers' use of electricity by 231,046 MWh (831,765 GJ) and 8,044 t CO_2e since 2013.

3.4.3 Empowering Sustainable Energy Actions

London Hydro is enabling the future ecosystem in electrical distribution by introducing platforms and pilots that allow customers to better understand their electricity usage and to empower sustainable energy actions.

- London Hydro was the industry's first utility to obtain Green Button Download My Data (DMD) certification for multiple types of Green Button (GB) usage data. London Hydro set an example for the Ontario government to forge ahead with the development of province wide regulation requiring all utilities to adopt GB standards.
- London Hydro developed platforms like *MyLondonHydro* and *Commerce* which are powerful energy monitoring applications for residential, industrial, commercial and utility customers.
- London Hydro piloted an Innovative Electricity Price Plan to help customers use electricity wisely and save money. London Hydro was selected by the Ontario Energy Board to pilot two electricity plans: one is a real-time energy information program and the other is a critical peak pricing program.
- The Plus Pilot, a new energy conservation project offered 100 customers smart home devices to test leading-edge energy management tools. These tools are aimed at giving participants a predictable bill while lowering the carbon footprint of their homes, all within a comfort profile they select.

3.4.4 Distributed Energy Resources

- In 2020, Natural Resources Canada invested in London Hydro to develop and deploy a smart microgrid in the West 5 net-zero energy community in London, Ontario. This investment supports the design and development of Canada's first large-scale, fully integrated, net-zero energy community. The microgrid will integrate monitoring, data management and communications, electric vehicle infrastructure, distributed energy resource management, solar power generation and battery storage to reduce grid use. It consists of 2.2 MW of solar generation, 1.5 MW of battery energy storage and several level 2 and DC fast EV chargers. The goal of this project is to demonstrate that net-zero energy is feasible at the community level, which will promote sustainable development and inspire widespread change across Canada's construction industry. This innovative initiative will pave the way for Canada to achieve its net-zero emissions target by 2050.
- In 2020, London Hydro, with the support of Natural Resources Canada, entered into a partnership in the London-2-London project as part of the Power Forward Challenge. In this pilot project a London Hydro-led team developed a scalable Open Data Distributed Energy Resource (DER) platform that will allow for effective integration and management of customer-owned DERs on the grid. The project

will utilize London Hydro's Green Button data platform and will also allow customers with DERs to monetize their energy.

- Also, as part of the L-2-L project, London Hydro and London & Middlesex Community Housing (LMCH) have partnered to install a mix of solar panels and residential batteries at seven LMCH homes and one apartment building. The savings from the installations will lower electricity costs for tenants in individual homes and create a pool of funds at the apartment building to improve building amenities that benefit all tenants.
- By the end of 2020, London Hydro had enabled 423 generation connections within the city of London. These generation sources provide 89,710 kW of local power to the city of London. These connections include solar, hydro, combined heat and power, natural gas and biogas. Approximately 24% (21,348 kW) of the local generation that has been connected to London Hydro's distribution system is generated by renewable energy sources.

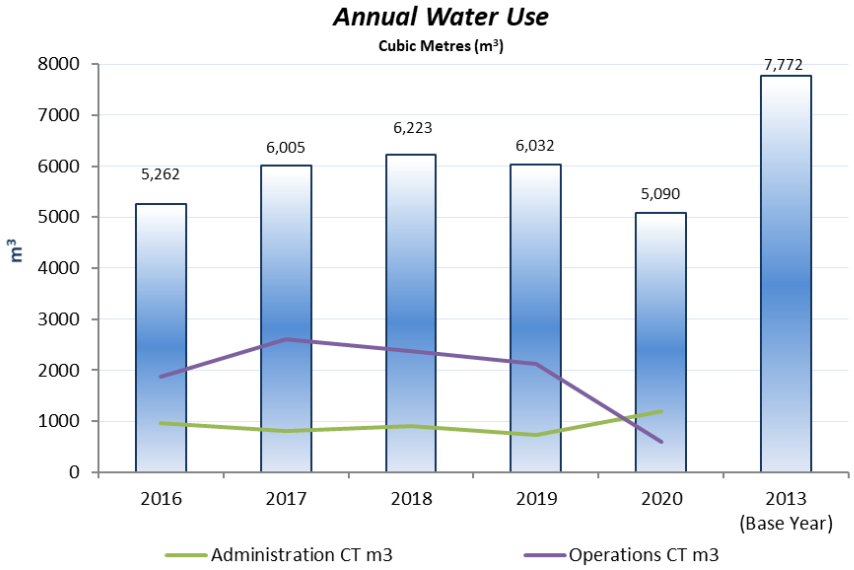
3.4.5 Sustainable Transportation

- London Hydro collaborated with Elocity, a Toronto-based company focused on accelerating the adoption of electric vehicles through smart and intuitive technology, to launch an electric vehicle (EV) charging pilot. Participating customers used the real-time data for on/off control, estimating cost per charge and understanding the expected mileage per charge thereby leading to better planning, reports on historical charging sessions and opportunities to reduce their carbon emissions.
- London Hydro has also co funded the installation of, and maintains, six downtown electric vehicle charging stations.

4. Water

As the pressure on our water resources grows, the need for an integrated approach to managing these resources is being increasingly recognized within and across federal, provincial, and territorial jurisdictions. Integrated Watershed Management (IWM) is viewed as a multidisciplinary and iterative process that seeks to optimize the contribution of aquatic resources to the social, environmental, and economic welfare of Canadians, while maintaining the integrity of aquatic ecosystems, both now and into the future. The City of London's water supply is fed from Lake Erie and Lake Huron. The volume of water used for London Hydro's operation is sourced solely from municipal supplied pipelines.

4.1 Water Use



Water use volumes are sourced through water bills and City-owned water meters.

In 2020, water use decreased by 942 m^3 (15.6%) when compared to 2019. Decreases in water use were likely related to a decrease in building occupancy as a result of COVID-19-related work-from-home measures. Similarly, the volume of water used by the operations cooling tower decreased by 1,534 m^3 (72%) due to improvements in water management as well as reduced building occupancy and heat load.

London Hydro implements Environmental Management Programs to reduce water use related to operational activities. One common activity involves employees reporting incidental leaks and drips to the facility department and the installation of low flow and automatic fixtures. Water use has been reduced by approximately 6,275 m^3 (55%) since 2011 and by 2,682 m^3 (35%) when compared to the 2013 base year as employee related water use increased. London Hydro strives to reduce unnecessary water use through the following initiatives:

- The installation of low-flow toilets and tap fixtures;
- The replacement of manual faucets with hands-free low flow fixtures;
- The installation of automated lawn sprinklers to minimize water use;
- The introduction of a notification program to log and repair leaky fixtures;
- The planting of outdoor perennials to minimize maintenance and water use; and
- Monitoring and efficient use and control of HVAC process water and cooling tower water.

At the end of 2019, five new drinking water stations were installed allowing automated, no touch, refilling of reusable water bottles. These stations minimize cross contamination health risk while reducing waste. They allowed for the dispensing of the equivalent of 30,820 disposable water bottles in 2020. This number is lower than predicted for future years due to the COVID-19-related work-from-home measures.

4.2 Protecting Our Water

London Hydro's facility is situated on 4.65 Hectares (11.5 acres) of land adjacent to the Thames River. The Thames flows west 273 kilometres through southwestern Ontario, through the cities of Woodstock, London and Chatham to Lighthouse Cove on Lake St. Clair. Its drainage basin is 5,825 square kilometres and its average discharge is 52.9 m3/s. The Thames River is not considered a protected area, but is considered to have a high biodiversity value by the City of London, the Upper Thames River Conservation Authority (UTRCA), and the community. The Thames River is a freshwater aquatic ecosystem home to several endangered species and species of concern.

For the impact category of Water Emissions, the following activities are determined to be significant within the EMS for both indoor and outdoor activities or sanitary and storm effluents respectively:

- HVAC and chiller loop chemicals and maintenance;
- Vehicle washing chemicals and processes;
- Chemicals use: i.e. cleaning, lubricating, painting activities;
- Storage and maintenance of oils and oil filled equipment;
- Maintenance of oil water separators;
- Sewer system maintenance;
- Cafeteria system grease trap maintenance;
- Automated oil notification system maintenance;
- Fuel station maintenance;
- Ground water monitoring;
- PILC replacement program;
- Spill responses; and
- Cleaning and de-watering of underground structures.

All of the above water emission concerns are managed through the use of engineering and administrative controls and regularly scheduled maintenance programs.

4.2.1 Sanitary Water Protection

The City of London routinely conducts sanitary sampling at the last exiting sanitary sampling point. The subsequent sampling results are compared to the Waste Water Discharge By-Law limits. The sampling includes tests for total suspended solids, pH and biological oxygen demand levels.

There were exceedances in effluent parameters in 2020 resulting in $759 of waste water surcharges. Exceedances are related to fewer employees on-site (less water use) and additional COVID-19-related cleaning protocols, which resulted in more concentrated sanitary effluent. Floor and vehicle cleaning and thawing of snow/slush accumulation in the winter also contributed to these exceedances.

The vehicle maintenance garage in the Operations area is equipped with a three-stage separator designed to improve the quality of sanitary effluent. The three-stage separator and the supporting collection drains in the Operations areas are cleaned, inspected, and maintained quarterly. Accumulations are removed by a Ministry of the Environment-accredited waste hauling organization. The volume of wastewater removed while cleaning the garage oil water separator system in 2020 was 8,995 litres.

Water reduction strategies further concentrate sanitary sewer effluents as employee numbers and activities increase. The future challenge will be to balance London Hydro's sanitary effluent water quality and water reduction efforts while increasing number of employees and business-related activities.

4.2.2 Storm Water Protection

The risks associated with the storage of oil filled equipment and vehicular activities on the property are mitigated through the use of 5 strategically located oil water separators. Incidental vehicle drips are mitigated through the introduction and biennial replacement of storm drain filters. These measures were introduced in addition to the existing administrative controls to provide an additional level of environmental protection. These water quality protecting separators and filters are routinely inspected and maintained. The separators are continuously alarm monitored and equipped with emergency and automatic shut-off valves as well as oil and grit separation capabilities.

London Hydro's field operational practices protect London's urban streams and the Thames River during dewatering and cleaning of underground electrical maintenance structures and spill responses through testing, training, safe work procedures, and through the use of specialized tools and equipment. In specific circumstances, the use of filter socks or the services of mobile vacuum trucks are integrated into the process of cleaning or dewatering to ensure compliance with the City's Waste Discharge By-law and Ontario's Waste Management regulations. In 2020, London Hydro properly disposed of approximately 40,000 litres of Non-Hazardous Waste Oily Water during dewatering and cleaning processes.

5. Protecting Soil

All environmental occurrences including spills are investigated to determine the occurrence, detection escape and system root causes. Corrective actions are then implemented to eliminate future occurrences. Employees receive communication on corrective actions to specific occurrences through training and awareness communications. All Operations Department employees receive Spills Training. London Hydro's Safe Work Practices outline the appropriate spill response procedures including immediate safe response, testing, appropriate cleanup and internal and external communications required.

Spills can stem from the approximate 15,960 transformers in use, from the fleet and equipment, or from facility operations. Spills also occur as a result of external factors such as weather events, vehicular strikes and vandalism. In 2020 there were 30 distribution equipment spills and 5 vehicle spills. Properly trained and equipped employees immediately respond to spills to protect health and safety and contain and clean up the spills to mitigate any potential effects on the environment. London Hydro's Spill Response and Environmental staff respond to spills to manage the spill response, remediation, restoration and regulatory communication responsibilities. London Hydro also retains approved Emergency Spill Contractors and Environmental Consultants when required.

London Hydro has incorporated approximately 50 mobile spill kits to ensure that each crew can appropriately respond to spills. Two vehicles have also been fully equipped and dedicated to responding to spill scenarios. London Hydro's facility is equipped with 10 varying types of stationary spill kits that are strategically located and specifically designed for each location's activity and risk. An additional 15 ice melt receptacles, stationed in high pedestrian/vehicular traffic areas, are also equipped with spill absorbent material.

To improve the first spill responder's ability to protect London's watershed during an emergency spill event, London Hydro equipped 20 response staff with Urethane Storm Drain Covers.

To better evaluate the volume of oil leaked from a transformer during spill responses and regular maintenance activities London Hydro has equipped Supervisory and Transformer Inspection Staff with FLIR® cameras. Through the use of these infrared cameras, the oil level inside transformers can be visualized and the volume of oil leaked can then be estimated.

In 2020, to mitigate any potential effects on the environment London Hydro:

- improved the inspection and maintenance processes for distribution infrastructure. The ground mounted transformer inspection team was also outfitted with FLIR® cameras to better evaluate the risks associated with leaking transformers. The inspection process for these transformers was also improved to reduce corrosion related oil leaks. The inspection and maintenance process of transformer-bearing hydro poles was also improved.
- integrated the Fleetio, fleet management software which facilitated improved tracking of vehicle usage and maintenance. As a result, London Hydro is able to better detect and prevent vehicle-related fluid leaks or spills.
- reviewed and improved its practices near Environmentally Significant Areas in order to minimize the impact of activities such as directional drilling.
- in a strategic manner, continuously replaced aging infrastructure in an effort to minimize the likelihood of environmental impacts through aged equipment failures.
- at two locations, a revolutionary secondary oil containment solution known as a Smart Barrier was installed to manage environmental risks related to the catastrophic failure of larger transformer installations positioned near sensitive environmental locations. This smart barrier containment system allows water to pass through but prevents the oil from escaping the containment area and negatively impacting the environment.

6. Understanding our Air Emissions

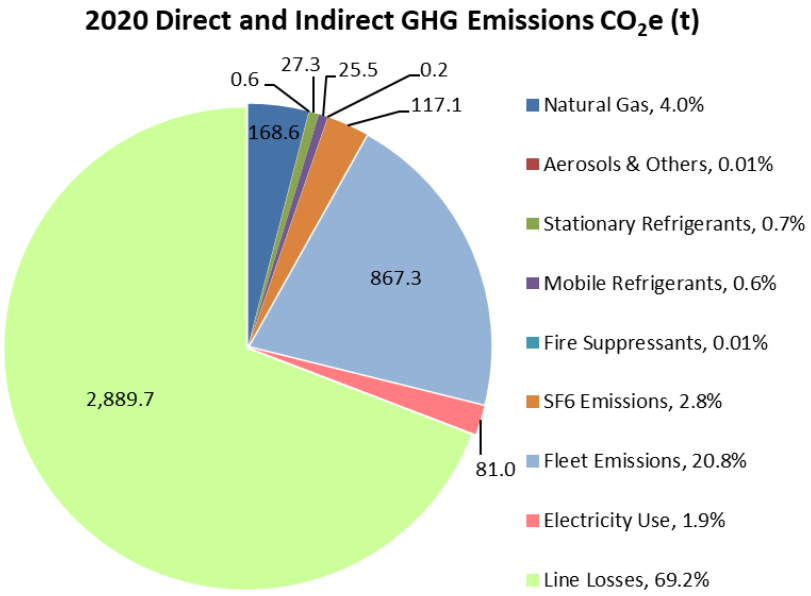
The management of air emissions is a key component of London Hydro's Environmental Management System. The annual carbon footprint report provides the medium for communicating greenhouse gas (GHG) emissions both internally and externally. This sustainability-related activity focuses on reducing adverse environmental impacts by minimizing air emissions related to all parts of London Hydro's operation, where possible.

London Hydro manages and controls its air emitting activities using substitution, engineering and administrative controls, IESO/OEB sanctioned activities and cooperative efforts with the City of London. Even though London Hydro's direct GHG emissions fall below the reporting threshold as outlined in Ontario Regulation 390 for greenhouse gas emissions, London Hydro completes an annual carbon footprint report to benchmark its GHG emissions relative to the provincial and municipal target for GHG reduction.

London Hydro began preparing an annual carbon footprint in 2013 which has subsequently become the base year for carbon footprint reporting. The organizational boundary of this inventory includes all of London Hydro owned equipment and facilities. London Hydro's GHG inventory includes Direct and Indirect Emissions (Scope 1 and Scope 2). Direct Emissions (Scope 1) are defined as direct emissions from stationary and mobile combustion and fugitive releases. Direct emissions include combustion emissions from Natural Gas, Diesel Fuel, Gasoline, Propane / Acetylene and emissions from Stationary Refrigerants, Mobile Refrigerants, Fire Suppressants, Sulfur Hexafluoride (SF_6) and Aerosols. Indirect Emissions (Scope 2) include emissions from the use and distribution of electricity (line losses). All other Indirect Emissions (Scope 3) from activities that occur from sources that are not owned or controlled by the organization are excluded from London Hydro's GHG inventory. Some information is provided throughout the report that is related to customer electricity usage reductions attributed to Conservation and Demand Management (CDM) accomplishments.

The GHG emissions are reported in tonnes of Carbon Dioxide Equivalent ($CO_2e(t)$). This unit of measurement allows for the direct comparison of the emissions of other greenhouse gases relative to one unit of CO_2. It is calculated by multiplying the greenhouse gas's emissions by its 100-year global warming potential.

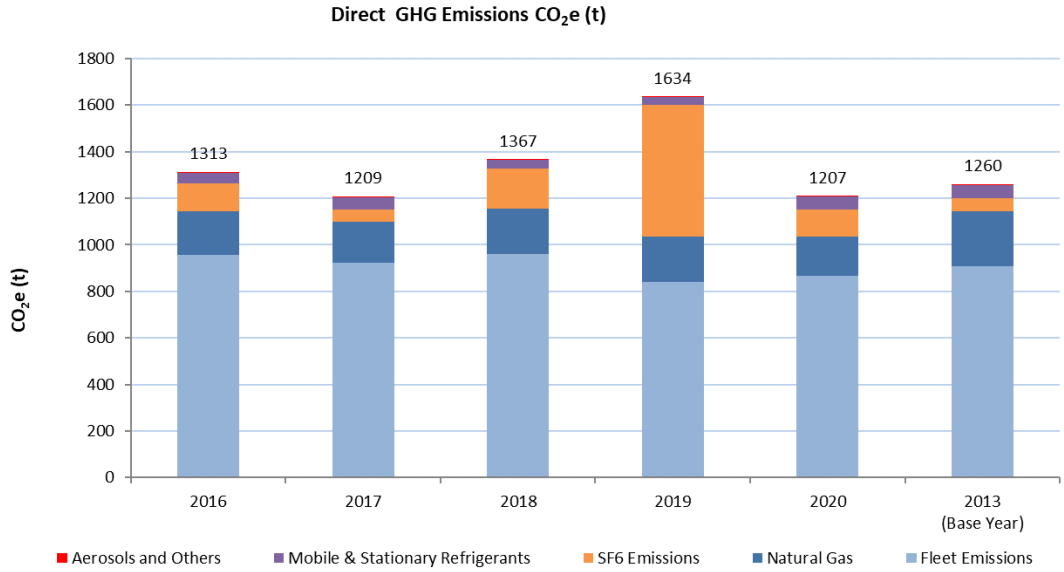
6.1 Greenhouse Gas Emissions at a Glance



Sources & Guidance used to calculate emissions:
Environment Canada Greenhouse Gas Emissions/Intensity
Environment Canada Global Warming Potentials
Environment Canada GHG Emissions Quantification Guidance
Intergovernmental Panel on Climate Change (IPCC) Guidelines
Direct HFC and PFC Emissions from Use of Refrigeration and Air Conditioning Equipment
Annex A: SF6 Emission Estimation and Reporting Protocol for Electric Utilities
Canada 2021 National Inventory Report
Natural Gas from heating, tools and emergency generators.
Fuel volumes include portable equipment.
Gasoline volumes include onsite fueling (E10) and purchased for offsite business (E10).
Electricity use includes charging of electric vehicles and 1 satellite substation.
Emission factors from Canada's annual submission to UN.

In 2020, the indirect emissions, which include emissions from line losses and electricity use, represent 71% of the total emissions reported. The direct emissions which represents all other emission sources, is 29% of the total emissions reported.

6.2 Direct (Scope 1) Greenhouse Gas Emissions

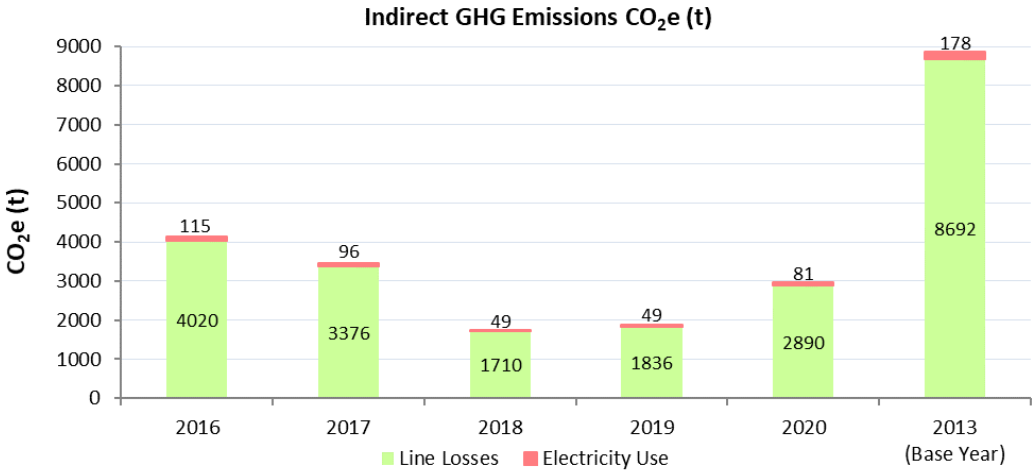


In 2020, direct (Scope 1) GHG emissions decreased by 427 t (or 26%) when compared to 2019 and were 53 t (or 4.2%) lower than in the 2013 base year. Of the 2020 direct GHG emissions, fleet emissions represent 71.9%, natural gas emissions represent 14.0% and sulfur hexafluoride (SF_6) emissions represent 9.7%. In 2020, fleet emissions increased by 25.8 t (or 3.1%) compared to 2019 due to a 10% increase in the distance travelled, which may be attributed to COVID-19 measures restricting vehicle occupancy to one individual and the addition of rental vehicles. The idling management systems reduced vehicular GHG emissions by an approximate 31 tonnes of CO2e. Additionally, natural gas emissions decreased by 26.2 t (or 13.4%) due to a 13.8% decrease in Heating Degree Days.

The frequency of inspection of devices containing SF6 gas was doubled in 2020. Additionally, the use of a handheld SF6 gas-testing detection device was introduced for use at each inspection. These changes were implemented to ultimately reduce fugitive SF6 emissions by improving the recognition, evaluation and repair of leaking equipment. SF_6 emissions also decreased by 446.7 t (or 79.2%) between 2020 and 2019 due to fewer equipment failures.

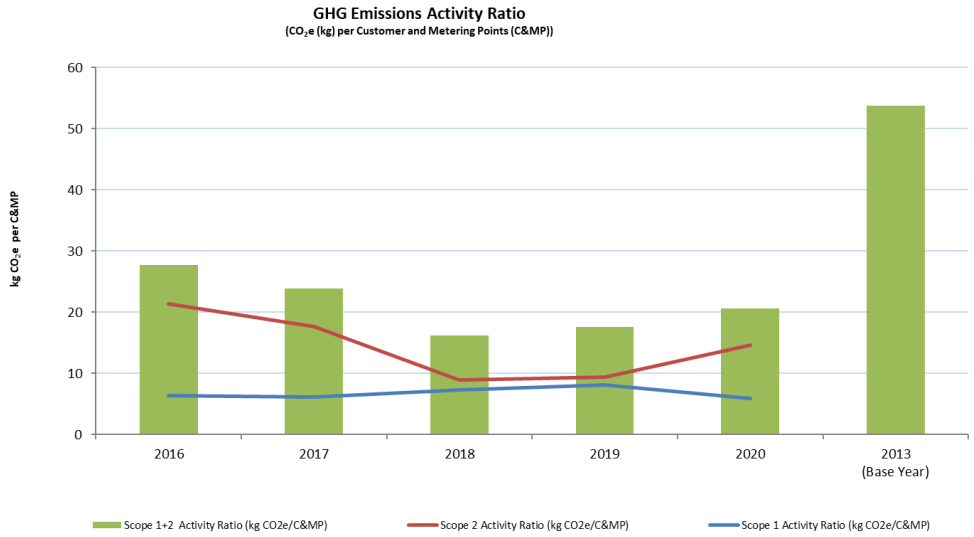
It should also be noted that year over year business activity volumes affect direct emissions.

6.3 Indirect (Scope 2) Greenhouse Gas Emissions



In 2020, London Hydro's indirect (Scope 2) greenhouse gas emissions increased by 1,086 tonnes (58%) when compared to 2019. Even though in 2020 the electricity distributed reduced by 1.2%, the line losses were reduced by 9.4% and London Hydro's electricity use was reduced by 5.8%, the 2020 indirect GHG emissions increased. This increase is as a result of the increase in Ontario's electricity generation carbon intensity. London Hydro's indirect GHGs have been reduced by 67% when compared to the 2013 base year. These decreases are attributed to the province's grid de-carbonization activities in generation and to London Hydro's reductions in distribution losses through system modernization and voltage conversions. These improvements not only improved system reliability but by reducing losses from 4% to 3% over the last 7 years, London hydro also saved 233,150 MWh and reduced GHG emissions by 7,766 t CO2e. Electricity use is also influenced by weather.

6.4 Greenhouse Gas (GHG) Emissions Intensity



London Hydro uses the greenhouse gas intensity to compare, year over year, its performance of direct and indirect emissions relative to its business activities. The resultant values or emission activity ratios are represented in kilograms (kg) of CO_2e per Customers and Metering Points (C&MP).

6.5 Conservation Demand Management & GHG Emissions Reductions

London Hydro's GHG inventory is comprised of emissions related to London Hydro-owned and controlled facilities and emission sources. Due to a limited level of influence, energy consumed outside of the organization, – i.e. Upstream & Downstream energy use, has been excluded in the scope of this report. London Hydro attempts to inform customers of their energy use options through best practice communication and coordination of the IESO programs and CDM initiatives.

CDM Activities and GHGs

CDM Program Savings	2013	2014	2015	2016	2017	2018	2019	2020
CDM MWh Saved	15,838	17,956	33,662	43,593	47,338	34,846	23,888	13,925
Equivalent # of Homes Powered (CDM Savings)	2149	2344	4176	5406	3348	7596	5213	1750
Reduction of Greenhouse Gas t CO_2e	1109	718	1346	1744	947	1045	717	418
Equivalent # of Cars' annual emissions (CDM	284	185	345	447	243	269	184	106

London Hydro's CDM program helped save over 231 gigawatt-hours of electricity and effectively reduced GHG emissions by 8,044 tonnes of CO_2e between 2013 and 2020. London Hydro was one of the few LDCs in Ontario whose program was completely self-managed, which helped ensure that standard of service was never compromised and costs remained competitive. In the spring of 2019, the provincial government moved to centralize CDM programs within the IESO. In 2020, London Hydro's CDM activities involved finalizing pre-approved projects.

6.6 Ozone Depleting Substances

London Hydro's emissions of ozone depleting substances (ODS) are separated as stationary or mobile sources used in refrigeration systems or as fire suppressants. An annual leak factor is assigned for each gas in accordance with the IPCC good practice guidelines. Only qualified technicians with Ozone Depletion Prevention (ODP) certificates maintain related equipment and service records. All repair processes include recovering, reusing, recycling, and reclaiming techniques as outlined in provincial regulations and best practice guidelines. Ozone depleting substance emissions are represented in the annual tallies of all stationary and mobile refrigerants, and fire suppressants as tonnes of carbon dioxide equivalent. The gradual replacement of equipment containing CFCs and HFCs with lower global warming potential (GWP) refrigerants at the end of the equipment's service life will result in a gradual annual reduction in the quantity of emissions.

In 2020 London Hydro initiated multiple renovations of its administrative areas. These renovations included the replacement of HVAC systems with more energy efficient units that also utilize more environmentally friendly refrigerants.

7. Reduction of Raw Material Use and Waste

In the impact category of Raw Materials, fuels and distribution system equipment are determined to be material and quantifiable. The management and reduction of raw materials and waste is a key component of London Hydro's Environmental Management System. The sustainability-related activity focuses on reducing the rate of materials and waste to landfill and delaying the rate of consumption of natural resources. London Hydro has embraced the principals of a circular economy and strives to reduce waste from entering the landfill whenever feasible. This is accomplished by first prioritizing reducing material use, then by reusing or refurbishing equipment and materials, then by recycling materials and finally, where those options do not exist, the non-reusable or non-recyclable material is routed to landfill. To accomplish these goals many reduction, refurbishment and reuse streams have been established through the development of internal practices and waste diversion partnership. For reduction of fuel initiatives please see section 3: Energy.

London Hydro's primary function is to distribute electricity to its customers. Various materials are used during this process, the most significant of which are reported below.

Material	**2013***	**2016***	**2017***	**2018***	**2019***	**2020***
Conductors (meters)	214,317	236,885	279,949	246,089	249,531	273,738
Poles (number)	548	487	583	432	492	628
Switches (number)	20	15	27	13	37	47
Transformers (number)	540	461	436	456	469	467

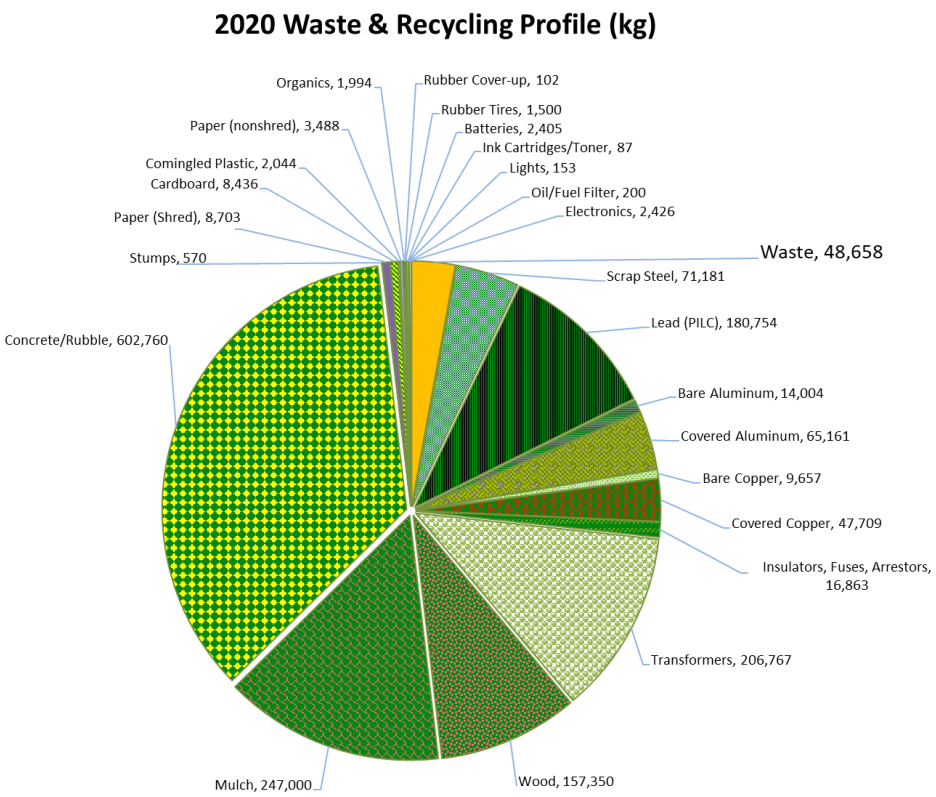
** These figures represent materials issued (minus returned to stock) to fulfill work orders in each year. The conductors, poles, switches and transformers that were reused are not noted above.*

Once materials, equipment, vehicles etc. are no longer needed by London Hydro, but are reusable, London Hydro first attempts to resell them on an open market platform to recoup value and to ensure that the reuse option is explored.

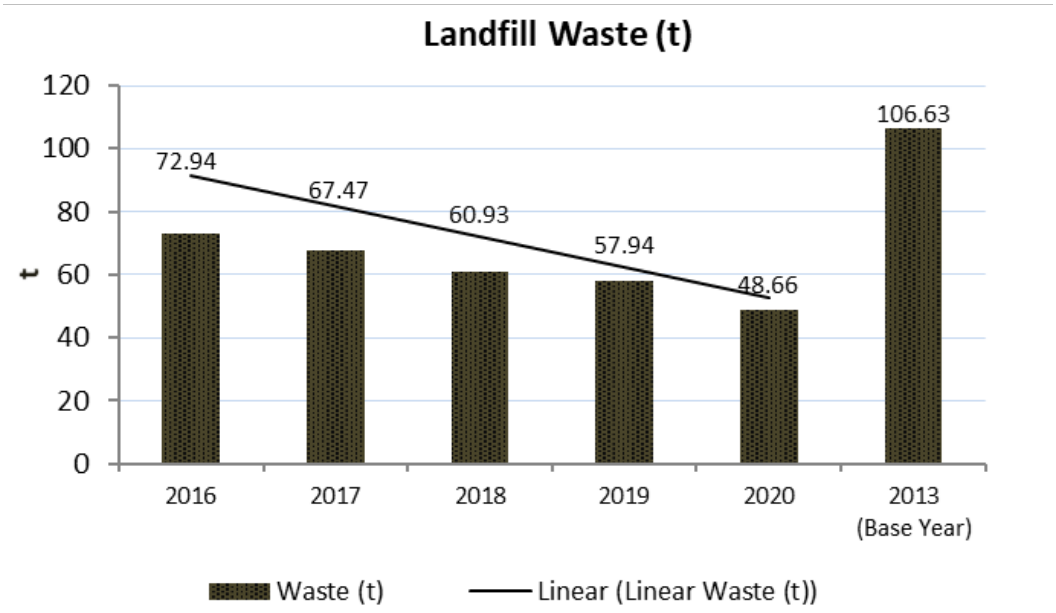
7.1 Waste and Recycling

The total amount of waste in 2020, including the 137,199 kg of hazardous waste noted in Section 7.3 and the landfill waste of 48,658 kg, was 185,857 kg.

London Hydro monitors its waste and recycling profile closely and its waste diversion programs have significantly reduced material resource consumption and the amount of waste that enters the landfill. On average (2013 to 2020) only 5.4% of the non-hazardous material leaving London Hydro is deposited into a landfill annually. In 2020, the total landfill waste stream was 16% less than 2019 and represented 2.9% of total material discarded by London Hydro. The other 97.1% or 1,651,314 kg was recycled material.



Note: Waste is also related to the volumes and types of business activity undertaken in any given year. Waste information is derived from actual weights from service providers. Where weights are not available London Hydro uses the regular waste and recycling audit data combined with the monitoring of volumes to derive waste and recycling data.



Note: 1 tonne (t) equals 1000kg

7.2 Material Reduction Initiatives

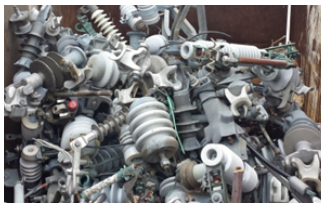
The annual implementation of Environmental Management Programs centered on reusing and reducing raw materials, reducing waste to landfill and increasing recycling have resulted in a reduction of waste to landfill by 54% since 2013. All employees are made aware of the targets and are also encouraged to submit continuous improvement ideas to reduce waste to landfill.

7.2.1 Reducing Electronic Waste

As London Hydro continues to modernize and digitize its operations, older equipment is phased out and a significant amount of electronic waste is produced. London Hydro disposes of its electronic waste sustainably, and has diverted 22,700 kg of electronic waste between 2013 and 2020.

London Hydro has partnered with multiple certified electronic waste recycling companies. These waste diversion partners purchase used electronics and IT waste, securely destroy any data and either refurbish electronics to extend their lifespan or recycle them to recover reusable materials. They also ensure that hazardous materials are not released into the environment.

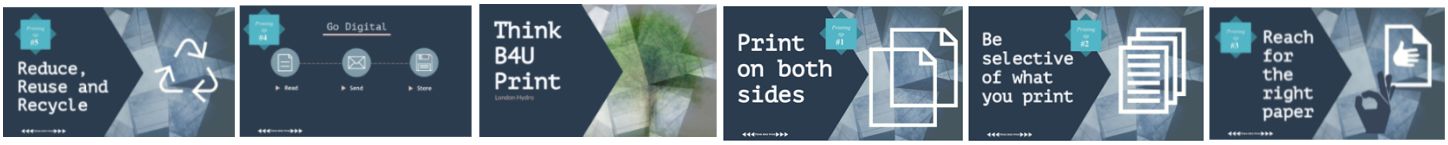
7.2.2 Insulator Recycling



In 2016, London Hydro began removing insulators, fuses and arresters from the waste stream to be sold as a commodity. This activity has diverted approximately 111,200 kg from London Hydro's waste stream since 2016. This waste diversion partnership supports the circular economy that has enabled the capture of approximately 4,500 kg of non-ferrous metals (Al, Zn, Cu etc.), 44,500 kg of ferrous (iron based) metals and 56,000 kg of ceramics that were diverted from landfill to be reintroduced into the manufacturing of new materials.

7.2.3 Think Before You Print Campaign

In 2020, paper usage was reduced by 59% when compared to 2019. This decrease can be attributed London Hydro's paper reduction initiatives as well as COVID-19 work-from-home measures. London Hydro's Think Before You Print campaign has been running for 7 years to encourage the reduction of unnecessary printing to save time, money, energy, material resources, and trees. Many strategies have been implemented such as eliminating printing where possible by switching to digital means. Since 2013, paper usage has been reduced by a total of 1,790,590 sheets of paper which saved 215 trees through the Think Before You Print campaign.



7.2.4 Paperless Billing

London Hydro strives to minimize the environmental impact of its business activities and encourages the adoption of such practices with its customers by reducing paper usage by encouraging electronic billing and customer communications.

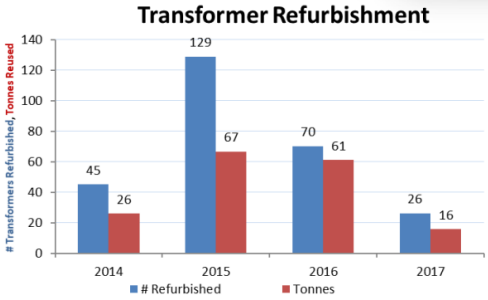
In 2015, London Hydro became the first utility in North America to offer Aeroplan® Rewards to customers who sign up for paperless billing. By the end of 2020, nearly 70,000 customers were participating in electronic billing. Since the onset of paperless billing in 2014, London Hydro has facilitated the preservation of approximately 1,500 trees *.

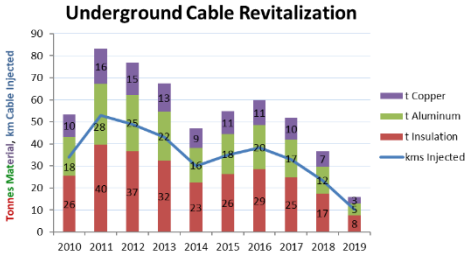
*1 ton (2000 lbs) of paper reduction saves 12 trees (conservatree.org)

100% of the paper used in billing and other customer communication where the London Hydro logo appears is made from recycled paper or Forest Stewardship Council (FSC) Mixed Paper.

7.2.5 Equipment Refurbishment/Reuse

London Hydro is committed to refurbishing and extending the life of infrastructure and equipment whenever possible. Two such programs are the transformer refurbishment and the underground cable revitalization programs. Between 2010 and 2020, London Hydro refurbished 270 transformers and used silicone injection technology to revitalize approximately 350 km of underground cable. In total, these initiatives saved almost 720 tonnes of raw materials.





Overhead Conductors

Rather than replacing overhead conductors during rebuilds and relocations, London Hydro reuses lines whenever possible.

**Source: London Hydro's Asset Sustainment Plan*

7.3 Hazardous Waste 2020

Hazardous Waste	Mass (kg)
Antifreeze	451
Parts Washer Petroleum Distillates	220
PCB Waste Articles (>50 ppm PCB)	2,248
Waste Oily Water	48,915
Waste Transformer Oil (<2 ppm PCB), Oily Water	56,551
Waste Transformer Oil (<50 ppm PCB)	21,630
Waste Oil & Grease	7,185
Asbestos (Lead Secondary Cables)	10.2

Weights obtained directly from invoicing or calculated using material specific gravity and the volume disposed.

7.3.1 PCB Management Strategy

London Hydro is committed to ensuring it remains compliant with all Polychlorinated Biphenyl (PCB) legislation and has developed a Transformer Maintenance Program with that goal in mind. All London Hydro transformers (15,960) have been tested, and our inventory does not contain any known transformers that are above 50 ppm. In fact, over 95% of our transformers are PCB-oil free (less than 2 ppm).

Approximately 61% of the transformers with PCB concentrations between 2 and 50 ppm are serving the 4 kV, 8 kV and 13.8 kV distribution systems. London Hydro is in the midst of an aggressive voltage conversion plan to convert the 4 kV and 13.8 kV to a 27.6 kV distribution system. While some 4 kV conversions remain, the planned 13.8 kV conversions are completed. Future plans may include the conversion of the 8-kV system to 27.6 kV. Achieving the long term goal of a PCB-free transformer fluid within all London Hydro equipment is linked to the completion of these plans.

Legacy Paper Insulated Lead Covered (PILC) cable and connectors exist within the electrical distribution system. Some of the splices contain PCBs. London Hydro has embarked upon a program to remove lead cable from service. When PILC cable, splices, and potheads are found to contain PCBs in excess of 50 ppm, they are properly stored, disposed of, and reported in accordance with all legislation. In 2020, PCB waste (>50 ppm) totalled 2,248 kg of PILC cable.

PCB destruction is completed by a third-party service provider, which is confirmed through a destruction certificate once work is completed. Once completed the articles are rendered clean and free of PCB and the metals are recycled.

8 Biodiversity

London Hydro strives to maintain the biodiversity of all areas of the City in which we operate.

London Hydro's activities that relate to biodiversity are found in the Environmental Management System under the impact categories of Air Emissions (AE), Releases on Land (RL), and Water Emissions (WE). London Hydro's Environmental Management Programs (EMP) related to water emissions and emergency preparedness in relation to Spills and Fuel Use are established, in part, to mitigate the impact on biodiversity.

As part of the EMS, the objectives of reducing spills and their impacts on water and land by improved response and prevention, as well as reducing fuel use and resultant air emissions are presented to operations staff through annual presentations.

8.1 Environmentally Significant Areas

The London Hydro facility is located on 4.65 Hectares (11.5 acres, 0.047 km^2) adjacent to the Thames River. This site includes facilities for parking, equipment and material storage, and office and operational use areas. The Thames River is considered to have a high biodiversity value by the City of London, the

UTRCA, and the community. The Upper Thames River Conservation Authority manages the upper watershed of the Thames River, an area of 3,482 square kilometres.

Environmentally significant natural areas are protected by the municipality of the City of London. Eleven of the 21 Environmentally Significant Areas (ESAs) are publicly-owned (the others are on private lands) and are managed by the UTRCA, in partnership with the City:

Coves	Kilally Meadows	Kains Woods
Lower Dingman	Meadowlily Woods	Medway Valley Heritage Forest
Sifton Bog	Warbler Woods	Westminster Ponds
Kelly Stanton	Pottersburg Valley	

The aforementioned ESAs are found within the City of London's urban environment and many are bordered by some of London's major thoroughfare roads where electrical distribution structures also exist. Where possible, London Hydro strives to limit electrical distribution activities within ESAs. London Hydro's assets within ESAs are located in right-of-way easements. A majority of the assets within ESAs are overhead primary and secondary electrical distribution infrastructure.

When the requirement for an electrical installation within an ESA exists, various London Hydro departments consult with the municipality and the conservation authority, who, at times, are also the customers requiring electricity. This consultation process occurs through the planning, design, and final installation approval stages.

8.2 Significant Impacts on Biodiversity

London Hydro is an electrical distribution company whose potential impact on biodiversity in London is limited to its distribution infrastructure in the City and its Operations Centre. London Hydro's activities as an electricity distributor could have an impact on wildlife that comes in contact with electrified infrastructure. If an animal's nest or burrow will be disturbed by the activities of the company, Animal Control is contacted to assist with a relocation effort.

London Hydro strives to minimize its impact during new construction and maintenance of distribution structures on road allowances, conservation lands, and water courses. The appropriate regulatory bodies are consulted in the planning stages of projects and authorizations are acquired where necessary. Every effort is made to restore the land to its prior state. Land and tree clearing activities for electrical distribution structures are also dictated by the standards used to ensure safety of employees and the public. London Hydro attempts to minimize the risks of habitat fragmentation and isolation when working in the field.

8.3 Species at Risk within Operations Area

A review of the IUCN Red List, Ministry of Natural Resources, and the Upper Thames River Conservation Authority resources was completed in 2020, indicating that the ranges of 87 species at risk (6 Critically Endangered, 51 Endangered and 30 Vulnerable) include the London area. Animals and plants under the endangered category face imminent risk of extinction or extirpation.

8.4 Integrated Pest Management

London Hydro hires licensed pest management professionals that employ best practices to manage pests within the main facility and substations. These professionals utilize an Integrated Pest Management (IPM) approach to minimize the impact on the environment. IPM is a preventative approach to pest control based on the philosophy that chemical control should be limited and used only as a last resort. Physical pest control is achieved through the elimination of the food source and access points in the structure. London Hydro's operation crews also use physical blocks to minimize rodent activities within underground duct structures throughout the City.

8.5 Vegetation Management

London Hydro hires licensed pesticide operators to apply a vegetation control plan for the electrical distribution plant locations requiring landscaping service within the City of London. The vegetation management plan is compliant with municipal and provincial pesticide by-laws, acts, and regulations. For specific areas where electrical grounding safety concerns caused by the spread of vegetation exists, London Hydro applies weed control as frequently as needed to prevent hazardous growth.

In order to maintain safe clearances of trees and other vegetation from electrical distribution structures, London Hydro exercises a proactive vegetation maintenance plan for many decades. The goal of the program is to ensure that the vegetation that could impact distribution structures is maintained on a regular cycle.

There are limited mounts of foliage that can be removed without having a negative impact on tree health. London Hydro manages vegetation growth according to Utility Pruning Standards described in ANSI Standard A300 and Dr. Alex Shigo's field pocket guide titled "Pruning Trees near Electric Utility Lines." Trees that are either dead, unhealthy, or pose a hazard due to their proximity to live conductors or proposed overhead structures are either trimmed or removed.

London Hydro works in concert with the Planning Department of the City of London through the Utility Coordinating Committee (UCC) when electrical distribution systems must be altered or installed during construction activities to ensure compliance with the City's policies, by-laws, and other requirements. Through participation and engagement with the UCC and the Trees and Forests Advisory Committee or directly with the city's Forestry Department, London Hydro representatives meet regularly to discuss common design and construction challenges, share innovative information, coordinate electrical distribution projects and review vegetation management activities.

As a result of more favourable weather conditions for plants brought on by climate change, the rates of vegetation and tree growth have increased. This increase, in turn, increases the potential risk to the reliability and safety of distribution equipment. In 2017, a review of London Hydro's vegetation management was performed, leveraging various data sets including the City of London's Tree Map. It included a situational analysis of the tree and overhead circuit densities and areas prone to tree related outages from tree contacts with overhead lines caused by severe weather such as: ice storms, high winds, early snowfalls, and lightning storms.

As a result of this review London Hydro improved the vegetation management system by:

- Networking with the City to implement new tree planting guidelines to ensure adequate clearances;
- Implementing a new GIS based mobile inspection tool to accurately record where trimming is required and where it is completed;
- Modifying annual trim areas and cycles to focus trimming resources on the highest risk areas; and by,
- Increasing the vegetation management budget to address specific areas of higher risk.

8.6 Habitat Restoration Activities

All removed vegetation is processed through a chipper, creating mulch. The mulch is distributed to the Upper Thames River Conservation Authority (UTRCA), Local Farms, Thames Valley School Board, Public/Private Schools, Children's Museum, Child Care Centres, Try Recycling, and other institutions and community organizations. This mulch facilitates the beautification of our City while enhancing the environment by creating an effective walkway in muddy areas, inhibiting weeds (reducing herbicide use), minimizing watering, protecting roots from heat and frost, and providing nutrient recapture.

London Hydro strives to replace the beneficial properties of trees through the cooperative efforts of the Tree Power Program. London Hydro and Upper Thames River Conservation Authority (UTRCA) subsidized the purchase of 600 trees for City residents through the 2020 Tree Power Program. This program has facilitated the inexpensive purchase (approximately 80% off) of 6,000 native hardwood trees in the last ten years.

The goal of this very successful partnership with UTRCA is to encourage homeowners to plant native shade trees to reduce energy use through air conditioning and heating. Trees and the shade that they provide are considered nature's best air conditioners. Since their leaves fall off in the winter, they also facilitate the suns warming effects in the colder seasons.

Over and above enhancing the aesthetics of our surroundings, planting these trees helps to reduce energy use, improve air quality, and provide additional natural habitats within our City.

9. Supplier Environmental Assessment

London Hydro realizes that suppliers need to be influenced to meet similar environmental and social standards as the company has established for itself. The management team of London Hydro strives to partner with supplying companies with similar values. London Hydro recognizes that it can influence the behaviour of suppliers and has a key responsibility in driving sustainability throughout the local and even global economy. As a customer, London Hydro can establish the conditions for future business.

London Hydro has incorporated supplier sustainability scoring into the selection process. Prospective product or service providers are asked to provide their policy documentation outlining their organization's commitment to Environmental and Social Sustainability. London Hydro has identified a

number of potential significant environmental impacts related to suppliers and service providers for which it screens as part of the supplier selection process. In particular, as part of the screening process, London Hydro considers:

- effort to minimize emissions to air, water and soil;
- proper handling or transporting of waste and recycling material;
- adequate training, authorizations, tools and equipment to prevent or minimize spills; and
- proper categorization and deposition of hazardous and non-hazardous waste streams.

10. Community Engagement

Annually, London Hydro sponsors an Earth Day Cleanup Event. London Hydro would have held its 8th annual Earth Day Event where employees and their families to take part in cleaning up areas along the river and in Thames and Carfrae Parks. Unfortunately due to the COVID-19 pandemic, this event did not occur. As an alternative way to engage the community and work on social sustainability, London Hydro donated $5,000 to the Thames Valley Children's Centre and $5,000 to the London Food Bank.

11. Climate Change

Extreme weather and climate events can negatively impact London Hydro's distribution systems and its operations. Damage to London Hydro's infrastructure as a result of severe storms or flooding affects our ability to maintain a reliable supply of electricity to our customers.

11.1 Planning for Climate Change

The Planning and Design Departments of London Hydro consider the frequency of extreme weather events and design resiliency and robust infrastructure to mitigate the impact on the distribution system. London Hydro invests in its distribution and IT infrastructure with the goal of maintaining and enhancing customer service, reliability and safety. The bulk of the investment (in excess of $20 million annually) is directed towards the distribution infrastructure in accordance with the Corporation's Asset Sustainment Plan, Asset Management Plan and other relevant engineering studies and reports. The results of these investments can be seen in the Corporation's strong 2020 SAIDI and SAIFI reliability performance (0.86 and 1.05 respectively). The increased demand on our system due to climate change (i.e. the increase in the number and duration of peak demand days and severe storms) is mitigated by the robust infrastructure that our capital reinvestment strategy has created.

London Hydro's Safe Work Practices Manual outlines the Heat Stress and Cold Weather strategies employed to mitigate the negative effects of extreme weather on the health and safety of employees and to reduce Workplace Safety and Insurance Board (WSIB) claims costs, which are expected to increase as a result of climate change.

As mentioned in the vegetation management section, climate change increases the potential risk to reliability and safety in relation to trees impacting the distribution system through growth and damage.

These risks and other factors precipitated a recent review and amendment of the vegetation maintenance plan cycle.

London Hydro is an integral community partner and maintains community engagement through various partnerships and active membership in the City's Advisory Committee on the Environment, the Subcommittee on Energy, the Climate Emergency Action Plan, Trees and Forests Advisory Committee and through proactive programs such as Sustainable Energy initiatives and the school electrical safety program. Through participation in these programs, London Hydro works towards reducing energy use during peak periods in order to mitigate our vulnerability during times of extreme temperature.

11.2 Planning for Potential Flooding as a Result of Climate Change

The City of London is situated where two tributaries of the Thames River meet. The City has a number of dikes and dams to control flood risks. To better prepare for the potential impacts of climate change, the City collaborated with the University of Western Ontario's Department of Civil and Environmental Engineering to analyze changes in rainfall intensity, duration and frequency, and the findings were used in the City's *Design Specifications and Requirements Manual*.

The City of London published a comprehensive analysis of existing infrastructure and floodwater capacities, which was summarized in "The City of London: Vulnerability of Infrastructure to Climate Change." The City's findings regarding the potential for increased flooding, directly affects London Hydro, which is situated on the banks of the Thames River. Historical impacts of flooding at the facilities are well documented. London Hydro continues to take a proactive approach to reducing the negative impact of extreme weather on its facilities and infrastructure. Flooding concerns at the main facilities have influenced the decisions made by senior management when planning capital expenditures to address flood risks and maintain business continuity.

11.3 Climate Change and Other Weather Emergencies

In addition, London Hydro is an integral member of the City of London's Emergency Management/Emergency Incident team and of the City of London's Emergency Operations Center (EOC) Policy Group. The overall responsibility for the response to any emergency situation occurring in the City of London rests with municipal authorities.

The Emergency Procedure Plan is a comprehensive plan that includes links to other community stakeholders in the event of disaster/emergency, and it outlines the responsibilities of various positions within the organization. Noted in this plan is the prioritization of various response scenarios up to and including restoration protocol for extreme hazards (e.g., live wires), Priority Customers and Life Support Customers. The approach includes the evaluation of hazards through damage survey crews and restoration prioritization to maintain public health and safety while considering available generation, load shedding/restoration requirements and protocols and the requests of the External Agencies Coordinator of the EOC Policy Group.

London Hydro outlines internal disaster/emergency plans through the Health and Safety Management System (HSMS) and the Safe Work Practice Manual (SWP). Specific procedures outline responses to critical injuries, fires, evacuations, natural disasters/severe weather such as tornados and floods,

pandemic scenarios, gas leaks (inergen, nitrogen, CO2, SF6), material or chemical spills such as gasoline, insulating fluid, and PCBs, emergency employee rescues from confined spaces, and pole top, tree top and bucket rescues.

12. Environmental Compliance

Compliance with applicable legal and other requirements is a core commitment of an Environmental Management System. London Hydro has established and implemented procedures to identify, review and maintain current access to applicable legal and other requirements. The legal and other requirements are reflected in the organization's business activities, environmental management programs, objectives and targets, training, policies, procedures, practices, and contractor expectations. A compilation of the 125 legal and other requirements has been created within the Aspects and Impacts database. A review of new and up and coming regulatory requirements is completed regularly to ensure London Hydro remains compliant to applicable legal and other requirements.

As part of our EMS, London Hydro participates in a third party environmental regulatory review relative to our business activities at our 111 Horton St. site on a regular basis. The regular reviews, revisions, corrections and continuous improvements ensure our EMS is relevant, current and effective.