ENVIRONMENTAL

REPORT

2018

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.

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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 655 megawatts in 2017, we deliver a safe and reliable supply of electricity to over 159,000 customers from the residential, institutional, commercial and industrial sectors, through 2,884 kilometres of overhead and underground cables, spanning 423 square kilometres of service territory.

London Hydro - Customer Breakdown by Type						
	2013	**2014**	**2015**	**2016**	**2017**	**2018**
Residential	137,191	138,568	139,861	141,323	143,018	144,731
General Service < 50 kW	12,084	12,386	12,485	12,556	12,543	12,676
General Service > 50 - 4999 kW	1,636	1,606	1,594	1,612	1,622	1,626
Large User > 5,000 kW	3	3	3	1	1	1
Cogeneration > 1MW	3	4	4	4	4	5
Streetlight - (connections)	35,034	35,206	35,359	35,882	36,498	36,780
Sentinel Lights - (connections)	653	646	627	603	535	529
Unmetered Loads < 50 kW - (connections)	1,508	1,523	1,522	1,513	1,530	1,524
Generation (Non-renewable)	0	0	0	0	6	8
Generation (Renewable)	169	221	275	320	365	393
Total Customers + Meter Points	**188,281**	**190,163**	**191,730**	**193,814**	**196,116**	**197,872**

# of Customers 2018	
Total Customers	159,039
Residential Customers	144,731
General Service < 50 kW	12,676
General Service > 50 kW	1,626
Large Users	1
Cogen	5
All London Hydro accounts are connected at the distribution level. London Hydro also has 401 accounts that are generators of electricity	

#of Accounts	**Generator Types**
322	microFIT/Net Metering
69	FIT/Net Metering
1	Hydro
1	Biogas
8	CHP

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 value-added services." London Hydro's vision is "To pursue excellence as an industry leader." 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 courtesy.

Agility – We will be open and adaptable as we embrace 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 2017 Carbon Footprint information has corrected Gasoline (E5) consumed. The Scope 1 emissions were amended accordingly (Increased by 4.4 CO2e (t)).
2. The 2017 fuel consumption data includes the corrected total kilometers travelled.
3. The Consumer's Electricity Consumption Value for 2017 was corrected.
4. The 2017 transportation energy reduction from 2016 is 199GJ.

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. Significant environmental aspects are deemed material and are then addressed in 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

[1] *Source : Environmental Policy*

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. Organizational Energy Use

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 consumption, 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 (EMS), the objectives of reducing energy consumption 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 consumption of its operational activities, London Hydro has enhanced the operational centre's lighting and HVAC systems and initiated Fleet Greening activities and other fuel consumption reduction plans. Voltage conversion and system renewal plans along with technological improvements to distribution equipment are used to reduce electrical distribution losses. London Hydro incorporates various Conservation Demand Management (CDM) programs to aid in the decisions of its customers when using electricity and purchasing energy consuming devices. 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 consumption.

When purchasing products, London Hydro purchases Energy Star® compliant appliances when possible. Energy Star® is an international standard for energy efficient consumer products. It was created in the United States in 1992 by the Environmental Protection Agency and the Department of Energy. Since then Canada has also adopted the program.

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 and the Subcommittee on Energy.

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. London Hydro's indirect energy consumption by primary source is detailed along with the corresponding amounts for 2013 through 2018 for comparison purposes.

2018 Ontario Supply Mix*

		Alternate Power Sources (10.8%)						
Source	Water	Solar	Wind	BioMass	Waste	Nuclear	Natural Gas**	Other
Percent %	23.9	2.3	8	0.5	0	58.4	6.2	0.8

*Includes both Tx (direct) and Dx (embedded) connected generation (Ontario Ministry of Energy)

**Includes dual-fuelled facilities that are predominantly natural gas (e.g., Lennox Generating Station)

Note: Figures may not add to 100% due to rounding.

Source: OEB 2018 Ontario's Electricity Supply Mix

3.2 Energy Consumption within the Organization

London Hydro's Energy Consumption Comparison

Energy Type	2013 (Base Year)		2018		Energy Delta	
Diesel Fuel L, GJ	263,608	9,610	288,286	10,510	24,678	900
Gasoline Fuel L, GJ	90,959	3,004	83,092	2,744	-7,867	-260
Natural Gas m^3, GJ	124,990	4,876	102,326	3,992	-22,664	-884
Propane L, GJ	289	7	125	3	-164	-4
Renewable Fuel (L, GJ)	8,956	296	8,220	271	-736	-25
Total Fuel GJ, (Renewable & Nonrenewable)	17,497		17,248		-248	
Renewable Electricity (kWh, GJ)	797,172	2,870	986,287	3,551	189,115	681
Total Electricity kWh, GJ (Renewable & Nonrenewable)	2,739,422	9,862	2,842,326	10,232	102,904	370
Total Non-renewable Fuel & Electricity (GJ)	24,193		23,659		-534	
Total Renewable Fuel & Electricity (GJ)	3,166		3,822		656	
Total Energy Consumption (GJ)	27,359		27,481		122	

Notes: Natural gas and electricity consumption 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 consumption 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.

While the total energy consumed increased by 122 GJ over the 2013 baseline year the renewable energy consumed also increased by 656 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 Ontario Feed-in Tariff (FIT) Program, designed for projects generating over 10 kW of electricity, has encouraged individuals, schools, municipalities, co-operatives and Indigenous communities to participate in clean energy projects and make meaningful contributions to a cleaner environment. The 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 2018, 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.

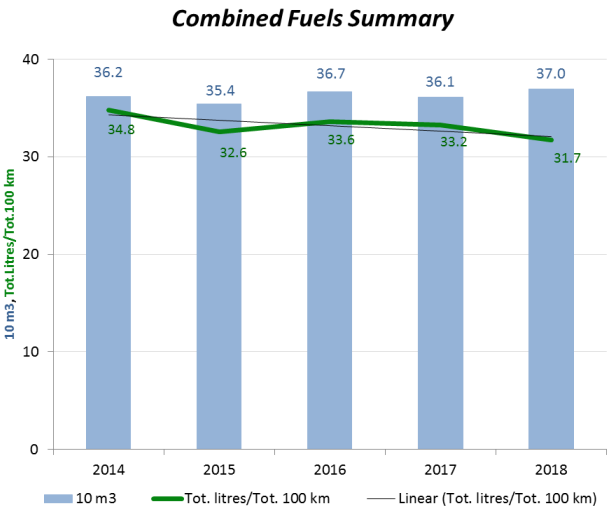
Renewable Energy Generated	2013 (Base Year)		2018	
London Hydro Owned Photovoltaic (Solar) kWh, GJ	403,581	1,453	417,286	1,502

In 2018, London Hydro owned solar installations generated 417,286 kWh of renewable electricity representing 14.7% of the electricity used by the organization in 2018.

3.2.2 Vehicle Fuel Summary

In 2018, London Hydro's fleet of 118 vehicles and equipment consumed approximately 369,500 litres of fuel (clear/coloured diesel and gasoline) and travelled approximately 1,165,500 kilometers. The fleet includes small and large trucks, SUVs, sedans, backhoes, forklifts, and other equipment. It can be further divided into the following fuel categories: 10 PHEVs, 20 hybrids, 27(E10) gasoline use vehicles, 56 diesel use vehicles, and 5 coloured diesel fuel use vehicles.

When comparing 2018 to the baseline year (2013), it is important to note that in 2013 London Hydro's fleet of 114 vehicles travelled approximately 1,044,000 km compared to 2018's fleet of 118 vehicles that travelled 1,165,500 km. The increase of 640 GJ for transportation energy is related to the additional 121,164 km travelled in 2018 compared to 2013. The 2018 increased travel requirements are related to London's expansion and rate of development especially in peripheries of the City. Transportation energy is minimized through green fleet purchases, business planning, efficiency improvements, and anti-idling devices and campaigns. Vehicle fuel consumption is also partially dependent on outdoor temperatures.

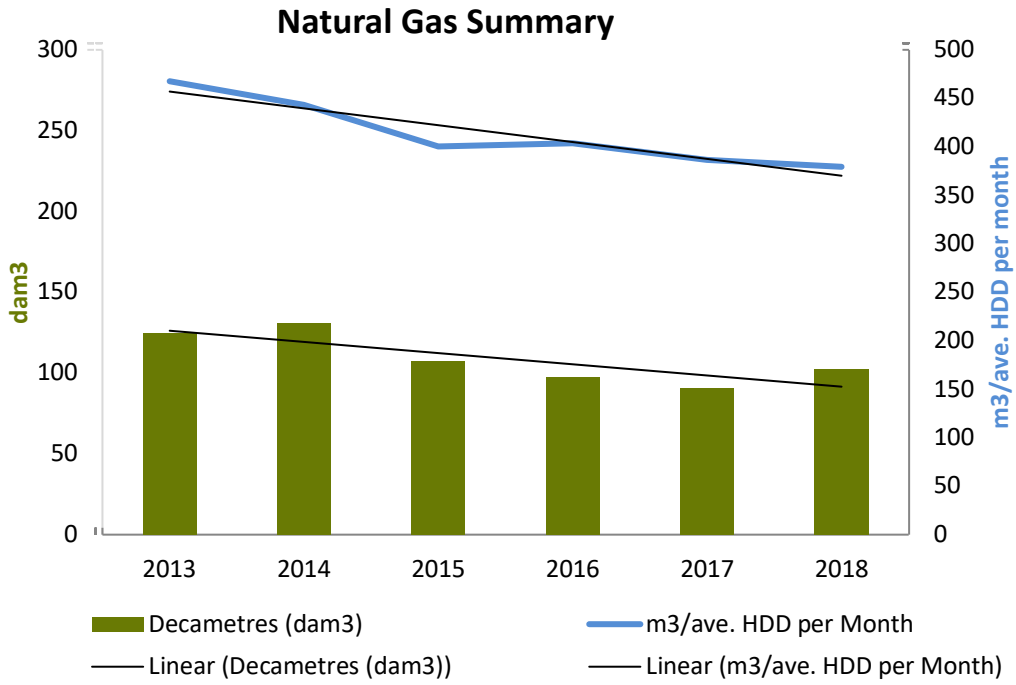


The 2018 combined fuel consumption increased by 8,240 litres compared to 2017. However, there was a 4.6% reduction in the combined fuel litres consumed per 100 km travelled. This reduction can be attributed to idling reduction campaigns, the installation of 4 Governor to Reduce Idling and Pollution (GRIP) Idling Management Systems and the ongoing fleet modernization initiative. In 2018, London Hydro's 10 Plug in Hybrid Electric Vehicles travelled 78,225 km using a mere 4.69 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;
- Installation of Governor to Reduce Idling and Pollution (GRIP) idle management systems; and
- Alternative fuels.

3.2.3 Natural Gas Summary



Natural gas consumption 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.

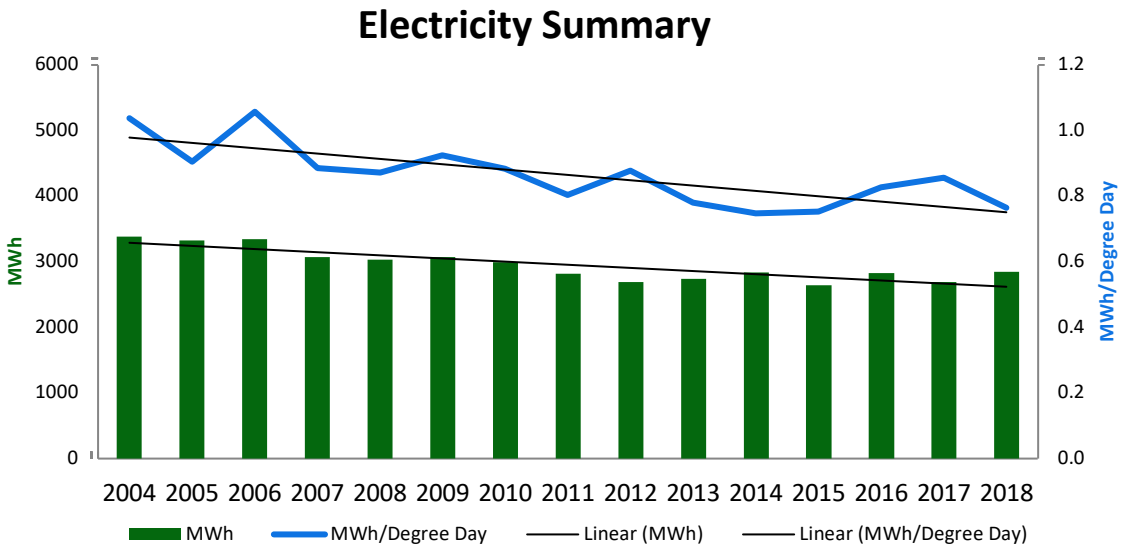
The blue line in the above graph represents the cubic meters of natural gas consumed in the year divided by the average number of heating degree days per month (total number of degree days for the year divided by twelve). The downward slope of this trend line highlights the fact that less natural gas 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 300,000 m3 representing an approximate $80,000 savings and 558 t CO2e 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;
- Linked large bay doors to unit heaters.

3.2.4 Electricity Summary



London Hydro's electricity use is also somewhat weather dependant. 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. The downward slope of this trend line highlights the fact that we have been using less electricity relative to the outdoor seasonal temperatures.

Between 2017 and 2018, London Hydro's electricity consumption increased by 147 MWh or 5% as a result of an 18% increase in the degree days. The 2018 year was warmer in the summer by 157 CDD and colder in the winter by 411 HDD. London Hydro has diligently reduced facility related electricity consumption for decades. As a result of various initiatives, consumption of electricity has been reduced by 16% or 538 MWh between 2004 and 2018.

London Hydro has increased its electricity consumption by 103 MWh or 370 GJ between 2013 Base Year and 2018. The additional employees, activities, degree days and electric vehicles contributed to the increased energy use. By the end of 2018, London Hydro had eleven EV chargers on site and ten Plug in Hybrid Electric Vehicles (PHEV). It was estimated that in 2013 the two PHEV used approximately 6.5 MWhs and in 2018 the ten PHEV used approximately 23 MWh of electricity.

3.3 Reductions in energy requirements of products and services

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

Distribution Losses

Distribution Losses	2013 Base Year	2014	2015	2016	2017	2018
Percent Distribution Loss	4.01	2.90	2.76	3.01	2.97	2.97
Distribution Loss Quantity (kWh)	134,034,727	95,899,706	90,392,517	99,138,098	94,959,222	98,870,583
Distribution Loss Quantity (GJ)	482,525	345,239	325,413	356,897	341,853	355,934

Distribution energy losses have been reduced by 26% or 126,591 GJ since 2013.

Conservation Demand Management Programs

CDM Program Savings	2013 Base Year	2014	2015	2016	2017	2018
Energy Saved - CDM Programs (kWh)	15,838,399	17,955,984	33,662,000	43,593,000	47,338,000	34,845,654
Joules Saved - CDM programs (GJ)	57,018	64,642	121,183	156,935	170,417	125,444

The annual CDM energy savings listed represents the yearly summation of the programs implemented. Since 2013, London Hydro's CDM programs have reduced customers' consumption of electricity by 193,233MWh or 695,639 GJ.

3.4 Energy Intensity

In 2015, London Hydro created an energy intensity model in order 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) from section 1.1.

London Hydro's Energy Intensity

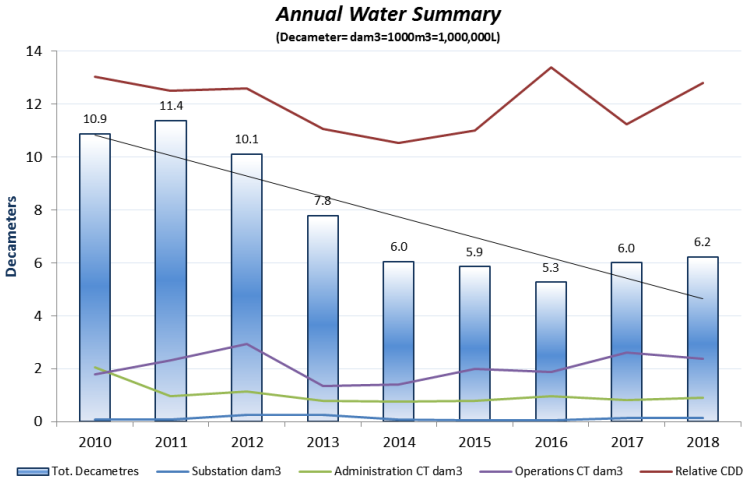
Variable	2013 Base Year	2014	2015	2016	2017	2018
Energy (GJ)	27,359	28,366	26,417	27,143	26,226	27,481
Customers & Metering Points (C&MP)	188,281	190,145	191,730	193,814	196,116	197,872
Energy Intensity (GJ/C&MP)	0.145	0.149	0.138	0.140	0.134	0.139

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

London Hydro's water use is illustrated in the chart below.



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

In 2018, water use increased by 218 m^3 (3.6%) when compared to 2017. Increases were related to faulty fixtures and an increase in the number cooling degree days in 2018.

London Hydro implements Environmental Management Programs to reduce water consumption 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 46% since 2011 and by 1,549 m^3 (19.9%) when compared to 2013. 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 consumption;
- The introduction of a notification program to log and repair leaky fixtures;
- The planting of outdoor perennials to minimize maintenance and water consumption; and
- Monitoring and efficient use and control of HVAC process water and cooling tower water.

4.2 Water Emissions

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, UTRCA and the community. The Thames River has a freshwater biodiversity with several endangered or concerned species.

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 Effluent Management

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.

As our city grows, 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. Water reduction strategies further concentrate sanitary sewer effluents as employee numbers and activities increase.

There was a slight exceedance in the last two quarters of 2018 resulting in $72 of waste water surcharges in 2018. Exceedances have been determined to be related to the increased number of employees, reduced water use, floor and vehicle cleaning and thawing of snow/slush accumulation in the winter.

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 2018 was 17,261 litres.

4.2.2 Storm Water Effluent Management

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 2018, London Hydro properly disposed of an estimated 150,000 litres of Non-Hazardous Waste Oily Water during dewatering and /or cleaning.

5. Releases on Land

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 action 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 related to London Hydro activities can stem from the approximate 15,980 transformers in use, from the fleet and equipment or from facility operations. In 2018 there were 23 distribution equipment spills and 8 vehicle spills. Properly trained and equipped employees immediately respond to spills to protect health and safety and contain and cleanup the spills to mitigate any potential effects on the environment. In 2018, as a result of a catastrophic transformer failure incident that was caused by external factors, insulating mineral oil entered the storm sewer and entered into a nearby water courses. London Hydro's Spill Response and Environmental staff responded with Emergency Spill Contractors and Environmental consultants to manage the spill response, restoration, remediation and regulatory communication responsibilities.

London Hydro has incorporated 38 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.

6. Air Emissions

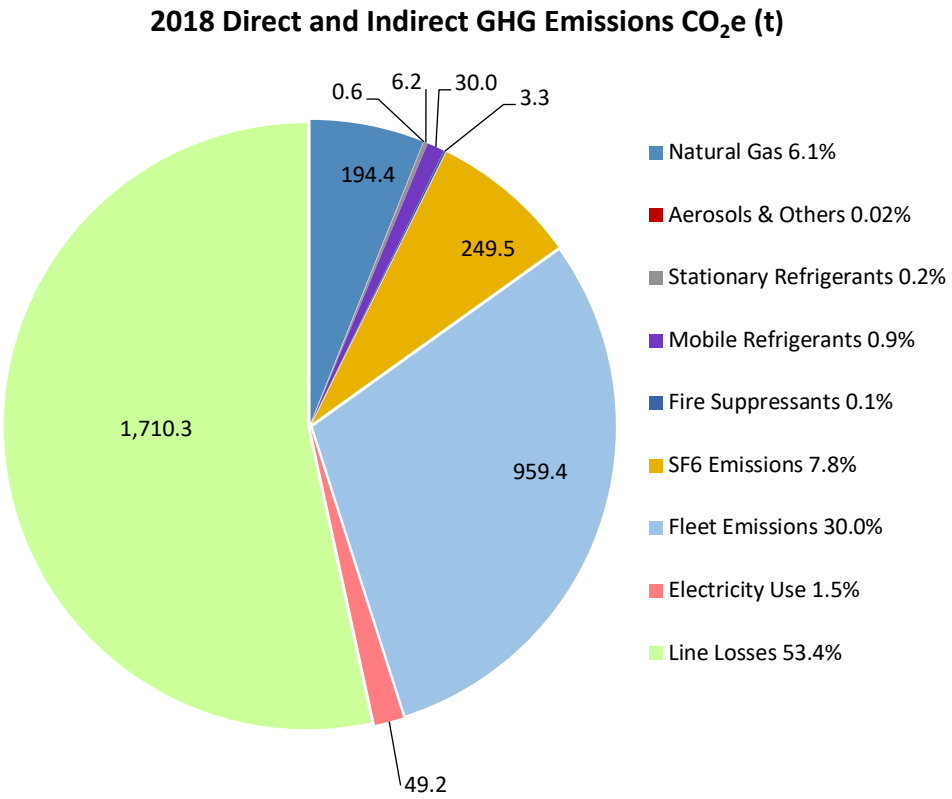
The management of air emissions is a key component of the London Hydro's Environmental Management System (EMS). The annual carbon footprint report provides the medium for communicating Greenhouse Gas (GHG) emissions both internally and externally. This sustainability-related activity focuses on reducing 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 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 452 for greenhouse gas emissions, London Hydro does complete 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. 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. London Hydro's GHG inventory includes Direct and Indirect emissions (Scope 1 and Scope 2). 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's electricity reductions attributed to Conservation and Demand Management (CDM) accomplishments.

The greenhouse gas emissions are noted 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 CO2. It is calculated by multiplying the greenhouse gas's emissions by its 100-year global warming potential.

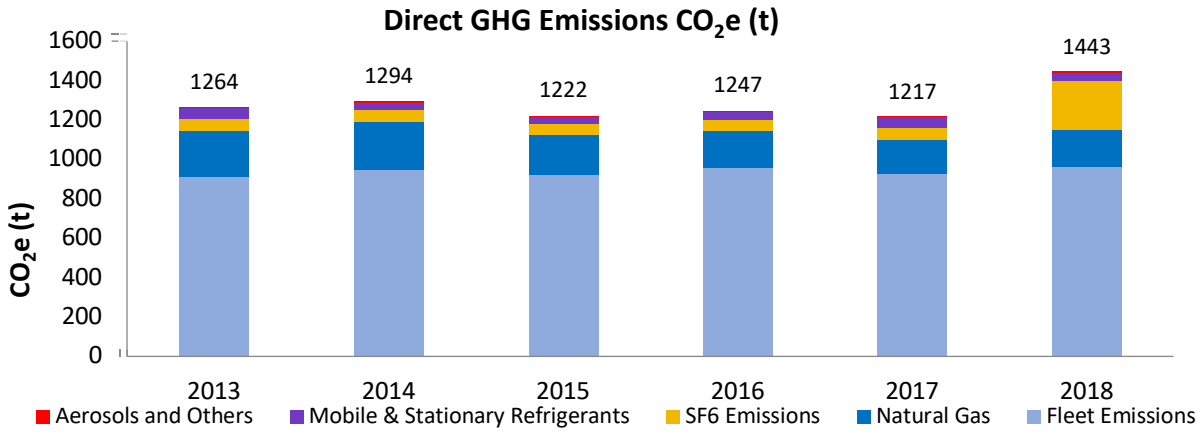
6.1 Greenhouse Gas Emissions at a Glance



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
Natural Gas from heating, tools and emergency generators.
Fuel volumes include portable equipment.
Gasoline volumes include onsite fueling (E10) and purchased for offsite business (E5).
Electricity consumption includes charging of electric vehicles and 1 satellite substation.
Emission factors from Canada's annual submission to UN.

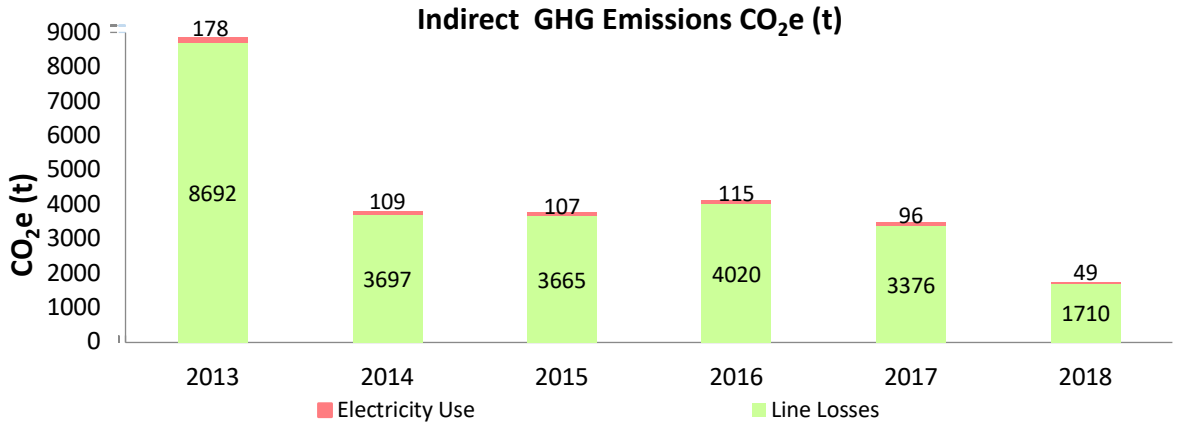
In 2018, the indirect emissions, which include emissions from line losses and electricity use, represent 55% of the total emissions reported. The direct emissions which represents all other emission sources, is 45% of the total emissions reported.

6.2 Direct (Scope 1) Greenhouse Gas Emissions



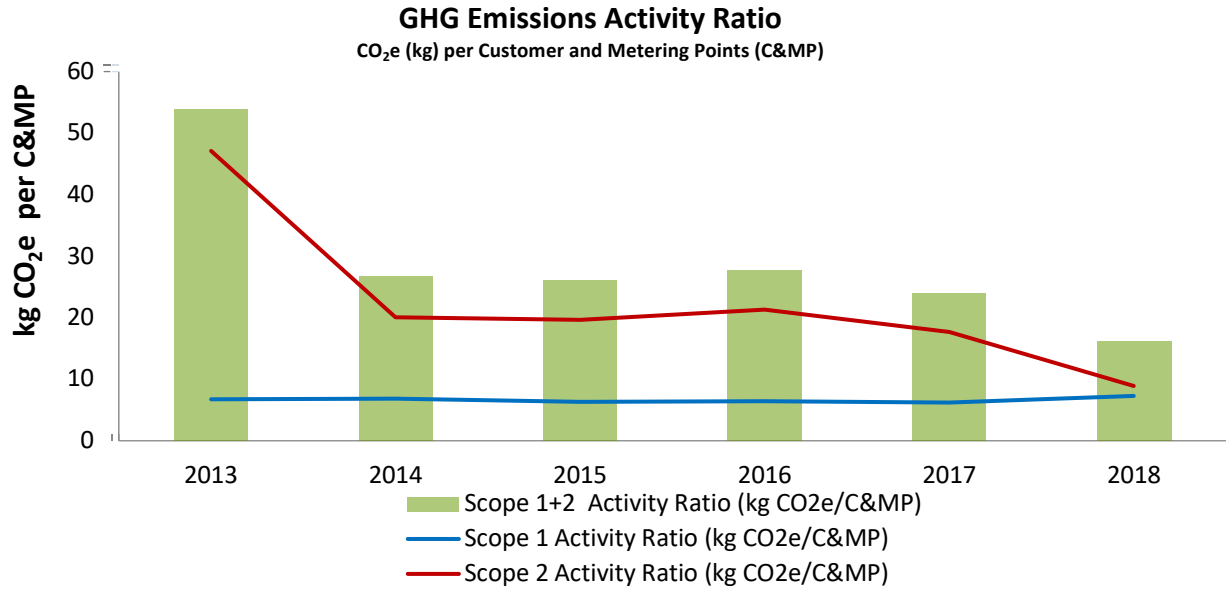
In 2018, the fleet emissions represent 66.5% of the direct emissions. Sulfur hexafluoride emissions represent 17.3% and natural gas emissions represent 13.5% respectively. The direct GHG emissions increased by 226 t (or 19%) between 2017 and 2018 and by 179 t (or 14%) since the 2013 base year. In 2018, Fleet emissions increased by 35 t due to a 7.2% increase in the distance travelled and natural gas emissions were reduced by 21.4 t. Other direct emissions combined increased by 169 t. This increase was mostly due to an isolated SF_6 leak that occurred in one failed piece of equipment. Year over year business activity volumes affect direct emissions.

6.3 Indirect (Scope 2) Greenhouse Gas Emissions



In 2018, London Hydro's indirect greenhouse gas emissions were reduced by 1,712 tonnes (49%) when compared to 2017 and 80% when compared to the 2013 base year. 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. Electricity consumption 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 consumption, 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
CDM kWh Saved	15,838,399	17,955,984	33,662,000	43,593,000	47,338,000	34,845,654
Equivalent # of Homes Powered for 1 Year from CDM Savings	1,991	2,258	4,233	5,481	5,952	4,381
Reduction of Greenhouse Gas t CO_2e	1,027	692	1,365	1,768	1,683	603
Equivalent Number of Cars Taken off the Road	263	178	350	453	432	155

London Hydro is one of the few LDCs in Ontario whose program is completely self-managed, which helps ensure that standard of service is never compromised and costs remain competitive. London Hydro

incorporates various Conservation Demand Management (CDM) programs to inform customers of their options when using electricity and purchasing energy consuming devices. London Hydro's incentive and turnkey energy-efficiency programs were the catalyst for undertaking and completing energy-efficiency projects within 1,010 medium to large businesses and 75 low income homes in 2018 under the saveONenergy™ RETROFIT PROGRAM.

6.6 Emissions of 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.

7. Raw Materials and Waste

In the impact category of raw materials, fuels and distribution system equipment are determined to be material, quantifiable and therefore many reduction and recycling initiatives have been established. For reduction of fuel initiatives please see section 3 Energy.

London Hydro's primary business is to distribute electricity to its customers. In the process various materials are used, the most significant of which are reported below.

Material	2013*	2014*	2015*	2016*	2017*	2018*
Conductors (meters)	214,313	220,060	224,433	236,885	279,949	245,297
Poles (number)	548	436	559	461	583	432
Switches (number)	20	25	23	15	29	32
Transformers (number)	540	504	609	461	437	459

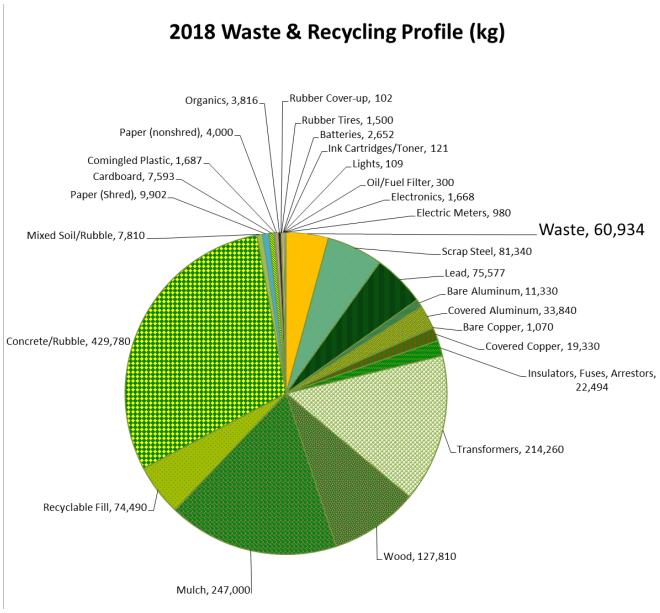
** These figures represent materials issued (minus returned to stock) to fulfill work orders in each year.*

The management and reduction of waste is a key component of London Hydro's Environmental Management System (EMS) and the mechanism to minimize raw material consumption related to all parts of its operation. The sustainability-related activity focuses on reducing the adverse environmental impacts by reducing the rate of waste to landfill and delaying the rate of consumption of natural resources.

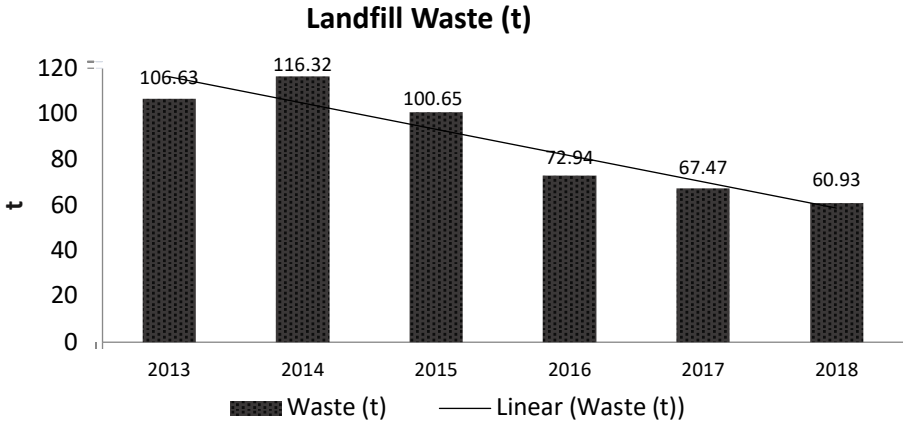
7.1 Waste and Recycling

The total amount of waste in 2018, including the 268,234 kg of hazardous waste noted in section 7.3, and the landfill waste of 60,934 kg was 329,168 kg.

London Hydro monitors its waste and recycling profile closely and its waste diversion programs have significantly reduced the amount of waste that enters the landfill and material resource consumption. On average (2013 to 2018) only 6% of the non-hazardous material leaving London Hydro is deposited into a landfill annually. In 2018, the total landfill waste stream was 9.7% less than 2017 and represented 4% of total material discarded by London Hydro. The other 96% or 1,380,171 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 daily monitoring of volumes to derive waste and recycling data.

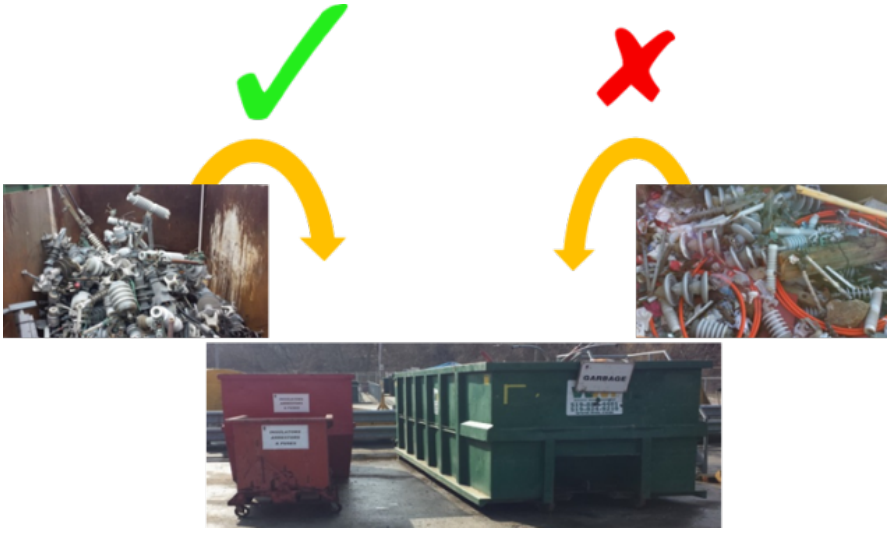


Note: 1 tonne (t) equals 1000kg

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 43% 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 Insulator Recycling



For example, in the spring of 2016, London Hydro was able to remove insulators, fuses and arresters materials from the waste stream to be sold as a commodity. This activity has diverted approximately 80,000 kg from landfill since 2016.

7.2.2 Think Before You Print Campaign

London Hydro's Think Before You Print campaign has been running for five 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 24.5% using a total of 615,631 fewer sheets of paper. Over the last five years London Hydro has saved 74 trees through the Think Before You Print campaign.

7.2.3 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 use 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. In 2018, 7,207 customers registered for paperless billing.
By the end of 2018 a total of 56,134 customers were participating in electronic billing. This translates to an annual paper reduction of 7,600 kg. As a result of this initiative, London Hydro has facilitated the preservation of over 101 trees for 2018 *.

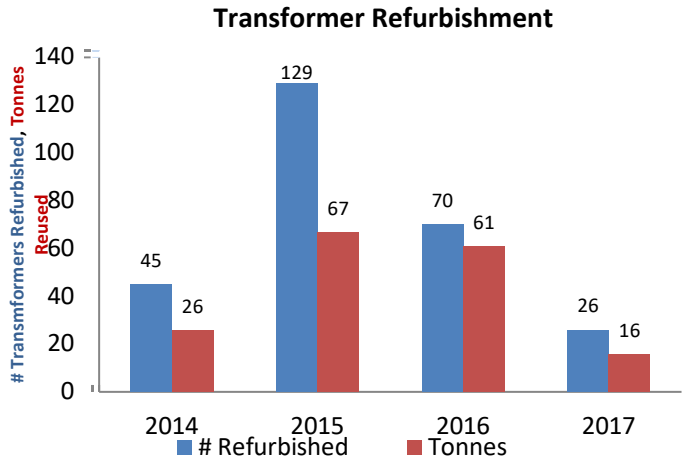
*1 ton (2000 lbs) of paper reduction saves 12 trees (conservatree.org)

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

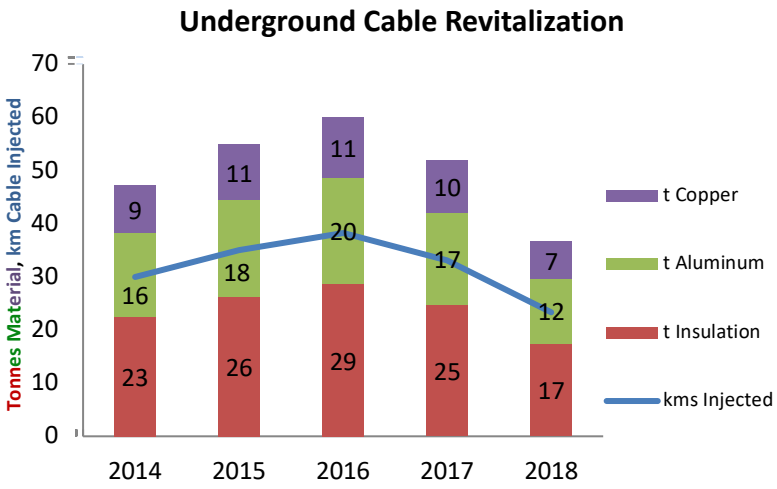
7.2.4 Equipment Refurbishment/Reuse

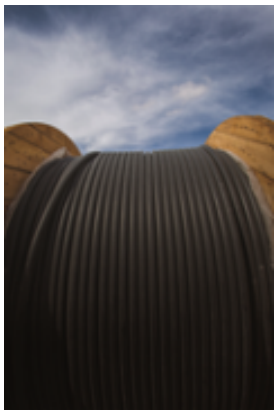
Transformers and other distribution equipment are manufactured using new and recycled metal components. London Hydro is committed to refurbishing equipment instead of replacing it whenever practicable and has refurbishment programs in place for transformers and underground cable.

As part of the voltage conversion from 4 kV or 13.8 kV to 27.6 kV, London Hydro embarked on a transformer refurbishment program to rewind the transformers for use on the 27.6 kV system. Refurbishments began in 2014 and ended in 2017.



This equipment refurbishment activity has resulted in 270 transformers that were refurbished instead of recycled since the program began. This initiative has resulted in 170 tonnes of material that did not need to be processed to make new transformers or that did not need to be recycled.





London Hydro has also been able to generate sustainable savings and have a positive impact on the environment through the life extension of residential underground primary conductors. Rather than replace this type of cable when it reaches end of life and starts to fail, London Hydro uses silicone injection to defer the replacement. In the past five years, 160 km of cable was revitalized ensuring that 251 tonnes of raw-material would not need to be manufactured and postponing the deposition of 120 tonnes of cable insulation into the landfill for an estimated 25 years.

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 2018

Hazardous Waste	Mass (kg)
Parts Washer Petroleum Distillates	174
PCB Waste Articles (>50 ppm PCB)	2,013
Waste Oily Water	161,139
Waste Transformer Oil (<2 ppm PCB), Oily Water	87,703
Waste Transformer Oil (<50 ppm PCB)	12,443
Waste Oil & Grease	4,638
Asbestos (Lead Secondary Cables)	82

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 Poly Chlorinated Biphenyl (PCB) legislation and has developed a Transformer Maintenance Program with that goal in mind. All London Hydro transformers (15,980) 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 64% of the transformers with PCB concentrations between greater than 2 and less than 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. 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 Cable (PILC) 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 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 2018, PCB waste (>50 ppm) totalled 2,013 kg of Paper Insulated Lead Conductor (PILC) splices.

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 (EMS) 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 Consumption 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, reducing fuel consumption, 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, office and operational use areas. The Thames River is considered to have a high biodiversity value by the City of London, UTRCA, and the community. The Upper Thames River Conservation Authority (UTRCA) 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 the ESA are overhead primary and secondary electrical distribution infrastructure.

When the requirement for an electrical installation 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. In the planning stages, consultations and where necessary authorizations are achieved through the appropriate regulatory body. 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 was completed, indicating that 85 species (7 Critically Endangered, 48 Endangered and 30 Vulnerable) are at risk in Ontario and possibly in the London area.

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.

London Hydro hires licensed pesticide operators to apply a vegetation control plan for the 51 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.

8.5 Vegetation Management

London Hydro has maintained a proactive vegetation maintenance plan for decades and employs or retains registered arborists and specialized forestry workers to maintain safe clearances of trees and other vegetation from electrical distribution structures. The goal of the program is to ensure that the vegetation that could impact distribution structures is maintained on a regular cycle.

In terms of the health of the trees, there are limits to the amount of foliage that can be removed without having a negative impact. London Hydro manages vegetation growth according to Utility Pruning Standards described in ANSI Standard A300 and Dr. Alex Shigo's field pocket guide entitled "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 to review vegetation management activities.

As a result of the favourable weather conditions, the rates of vegetation and tree growth have increased. This increase, in turn, increases the potential risk to reliability and safety. 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 in 2018 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 facilitated 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 2018 Tree Power Program. This program has facilitated the inexpensive purchase (app. 80% off) of 4,800 native hardwood trees in the last eight years.

The goal of this very successful partnership with UTRCA is to encourage homeowners to plant native shade trees to reduce energy consumption 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 consumption, 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:

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

10. Community Engagement

Annually London Hydro sponsors an Earth Day Cleanup Event. In 2018, London Hydro held its 6th 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.

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 $19 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 2018 SAIDI and SAIFI reliability performance (0.82 and 1.40 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, Community Energy Action Plan, Rethink Energy London, Trees and Forests Advisory Committee and through proactive programs such as CDM initiatives and the school electrical safety program. Through participation in these programs, London Hydro works towards reducing energy consumption 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 disaster/severe weather – tornado and floods, pandemic planning, gas leaks (inergen, nitrogen, CO2, SF6), material or chemical spills – such as gasoline, insulating fluid, PCBs and emergency employee rescues from confined spaces, 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 121 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, in 2018, London Hydro underwent a third part environmental regulatory review relative to our business activities at our 111 Horton St. site. As a result of this review, revisions and improvements were made to the Environmental Certificates of Approval, documentation and storage locations.