London Hydro

Advisory Committee on the Environment (ACE) Communication

October 6th, 2021

Overview

- About London Hydro
- System Planning
- Ontario's Electricity Supply & GHG Emissions
- Enabling Locally Generated Electricity
- Customer Engagement Solutions/Green Button
- Environmental Sustainability at London Hydro

About London Hydro

- London Hydro Inc. is a wholly-owned subsidiary of the Corporation of the City of London
- Owns and maintains the electrical distribution grid.
- 162,000 residential and commercial customers.
- Employs over 300 employees.
- Delivers highly reliable and safe electricity to its customers.
- Procures wholesale market services from the IESO and transmission services from Hydro One at regulated prices.

See: https://www.londonhydro.com/about-us/about-london-hydro/strategic-plan

London Hydro's License to Operate

ED-2002-0557

The OEB's Mandate

- Setting natural gas and electricity rates and prices
- Monitoring the financial and operating performance of electrical utilities
- Providing consumers with the information they need to better understand energy matters
- Protecting energy consumers' interests
- Developing regulatory policy to meet emerging energy trends and challenges

Governing Legislation

- Ontario Energy Board Act, 1998, the Electricity Act, 1998 and the Energy Consumer Protection Act, 2010

Source: https://www.oeb.ca/oeb/_Documents/Documents/Energy_Sector_Regulation-Overview.pdf

IESO Regional Planning Overview

- IESO Coordinates Regional Plans every 5 years, with local distribution companies, Hydro One, and communities.
- Plans are 20 year outlook, and include projections of Distributed Energy Resources (DERs), Conservation and Demand Management, and adoption of Electric Vehicles.
- London Hydro has sufficient capacity for additional load for at least the next 10 years.
- Capacity for additional DERs is declining as new resources are connected.

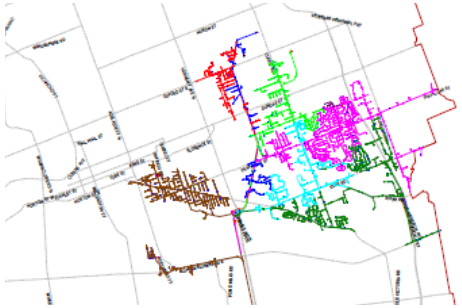
Ontario's 21 Planning Regions

Source: https://www.ieso.ca/en/Get-Involved/Regional-Planning/Southwest-Ontario/London-Area

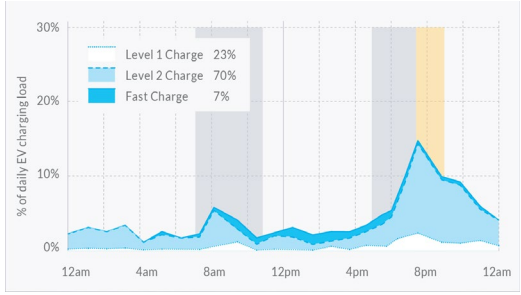
See the IRRP: https://www.ieso.ca/en/Get-Involved/Regional-Planning/Southwest-Ontario/London-Area

Capacity Planning

- Future Capacity by Area / Feeder – for new loads (residential, commercial, industrial) and load growth such as electrification of Heating and Transportation



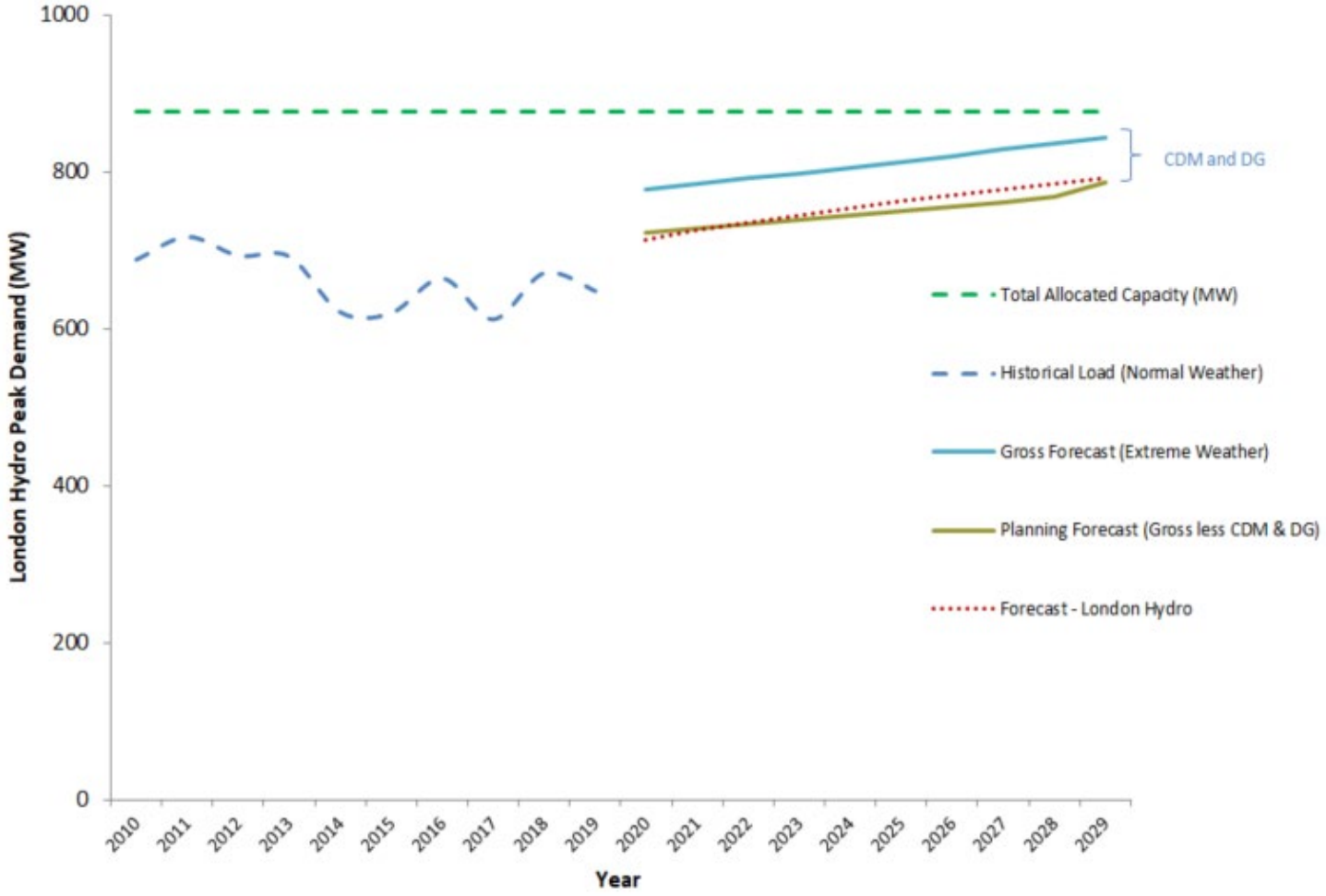
- Monitoring Loads – using Smart Meter data, transformer loads are reviewed, EV charging locations tracked



- Regular consultations with municipal planners, developers, large use customers

- Engaged with LTC regarding electrification of the transit system

Capacity Planning

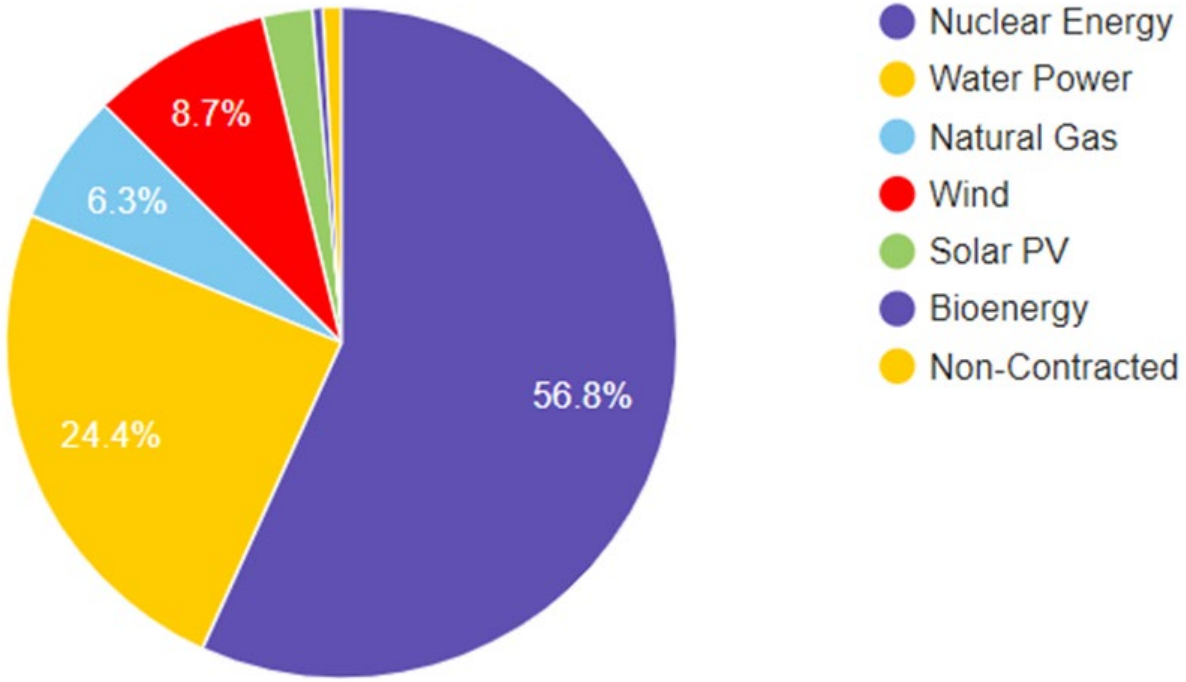


- Sufficient capacity for at least 10 years
- Margin for unexpected load growth due to EVs, fuel switching, new customers

Ontario's Electricity Supply

- 36.0% Renewable
- 92.8% non-emitting

Ontario System-Wide Electricity Supply Mix: 2020 Data



Electricity sources*	%
Nuclear Energy	56.8
Water Power	24.4
Natural Gas*	6.3
Wind	8.7
Solar	2.4
Bioenergy**	0.5
Non-Contracted***	0.9

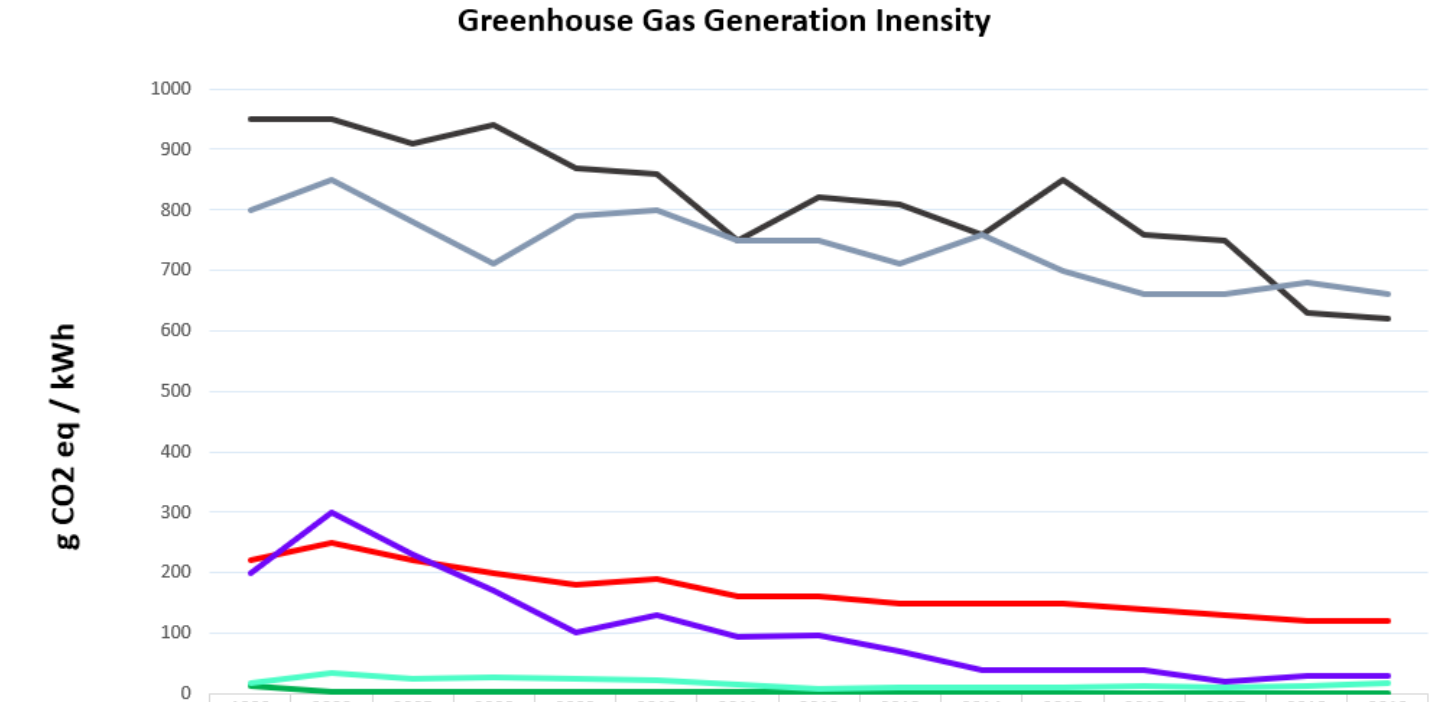
* Includes Lennox and dual fuel (natural gas/bioenergy) consistent with IESO.

** 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 from Local Distribution Companies (LDCs).

Source: https://www.oeb.ca/sites/default/files/2020-supply-mix-data-update.pdf

Ontario's Electricity Supply & GHG Emissions



	1990	2000	2005	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Canada (Ave)	220	250	220	200	180	190	160	160	150	150	150	140	130	120	120
Quebec	13	3.6	3.9	2.5	3.6	2.5	2.3	2.9	2	1.4	1.1	1.2	1.2	1.3	1.2
British Columbia	17	35	25	28	25	23	14	8.2	11	11	9.2	12	9.5	12.4	18.6
Ontario	200	300	230	170	100	130	93	96	70	40	40	40	20	30	30
Alberta	950	950	910	940	870	860	750	820	810	760	850	760	750	630	620
Saskatchewan	800	850	780	710	790	800	750	750	710	760	700	660	660	680	660

Source: Canada's Submission to the United Nations Framework Convention on Climate Change National Inventory Reports, 2014 and 2021
https://unfccc.int/documents?f%5B0%5D=country%3A867&f%5B1%5D=document_type%3A3517&f%5B2%5D=language%3AEnglish

Distribution Losses

- Electrical distribution system upgrades
- Voltage conversions
- Continuous improvement plans
- Losses reduced from ≈ 4% to 3% over the last 7 years
  - saved 233,150 MWh
  - reduced GHG emissions by 7,766 t CO_2e

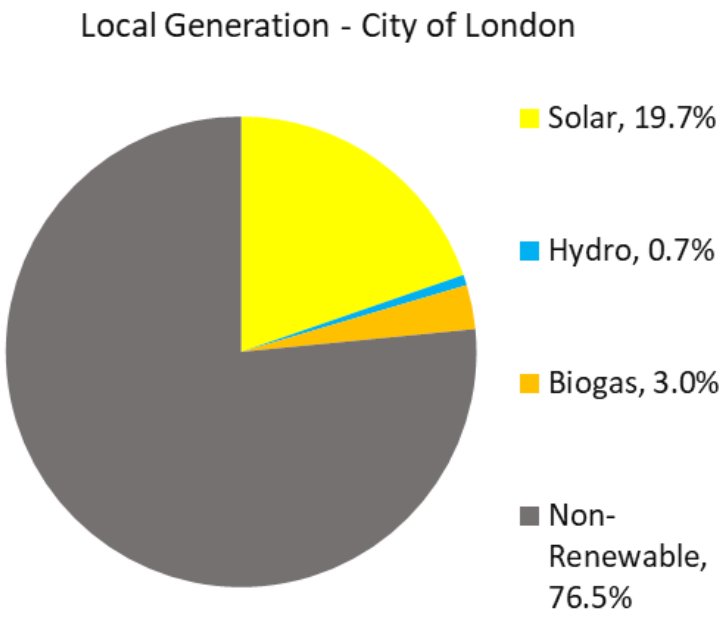
Locally Generated Electricity

Customer's Generation Connections

by the end of 2020,

- LH enabled 423 customer generation connections
  - 89,710 kW of local power
  - 21,348 kW (23.5%) from renewable energy sources

City of London Generation Types



Locally Generated Electricity

Thinking of becoming a Renewable Energy Generator?

Early Consultation is Key

When planning a project, consult London Hydro as early as possible in the planning phase.

(Restricted Feeders)

This could save you major headaches and money down the road.

https://www.londonhydro.com/accounts-services/generation
generation@londonhydro.com

Locally Generated Electricity

Thinking of becoming a Renewable Energy Generator?

Generation Size Categories

< 10kW

- No Connection Impact Assessment (CIA) study required

10kW to 500kW

- London Hydro CIA study required

500kW to 10,000kW

- London Hydro and Hydro One Distribution CIA required

>10,000kW

- London Hydro, Hydro One Dx, Hydro One TX and the IESO need to perform studies

https://www.londonhydro.com/accounts-services/generation
generation@londonhydro.com

Locally Generated Electricity

Thinking of becoming a Renewable Energy Generator?

Net Metering

- Must be renewable
- Can have batteries along with renewable
- Net Metering uses the LDC system as storage system
- Two-way flow

Load Displacement

- Behind the meter generation
- Can be any form of generation, however it is almost exclusively non-renewable
- Mainly natural gas
- Diesel backup
- Recently it has been BESS – ICI Program (IESO 5 peaks)
- Non-exporting

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Locally Generated Electricity

Thinking of becoming a Renewable Energy Generator?

ACCOUNTS & SERVICES | OUTAGES | PROJECTS & OPERATIONS | ABOUT US | SAFETY | CAREERS

ELECTRICITY RATES | GENERATION | CONSERVATION | WATER

Application to Connect

Fill out the application to connect a micro-generator to London Hydro.

FILL OUT THE APPLICATION

https://www.londonhydro.com/accounts-services/generation

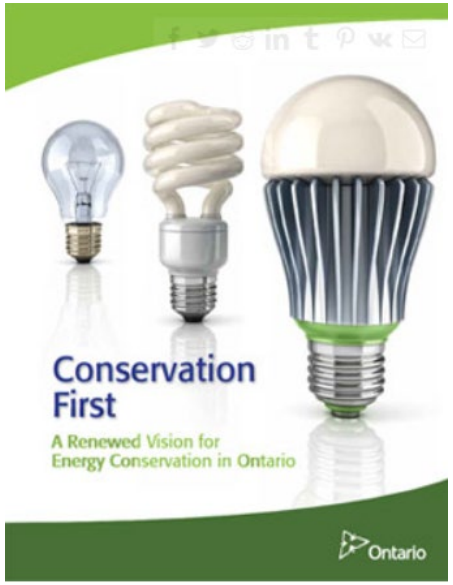
generation@londonhydro.com

Conservation Demand Management (CDM)

Since 2013 London Hydro CDM programs

- reduced customers' electricity use by 231,046 MWh
- Reduced customers' GHG emissions by 8,044 t CO_2e

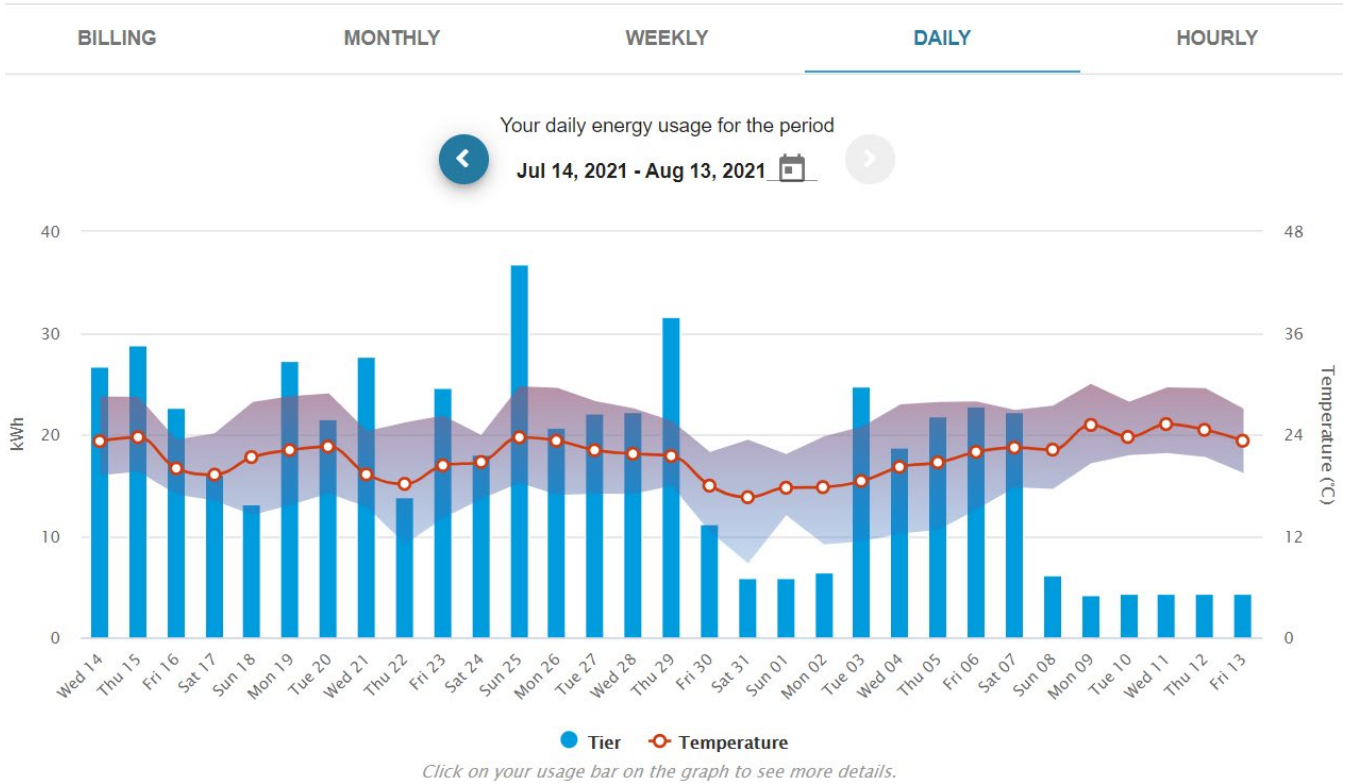
saveONenergy℠



Customer Engagement Solutions

MyLondonHydro

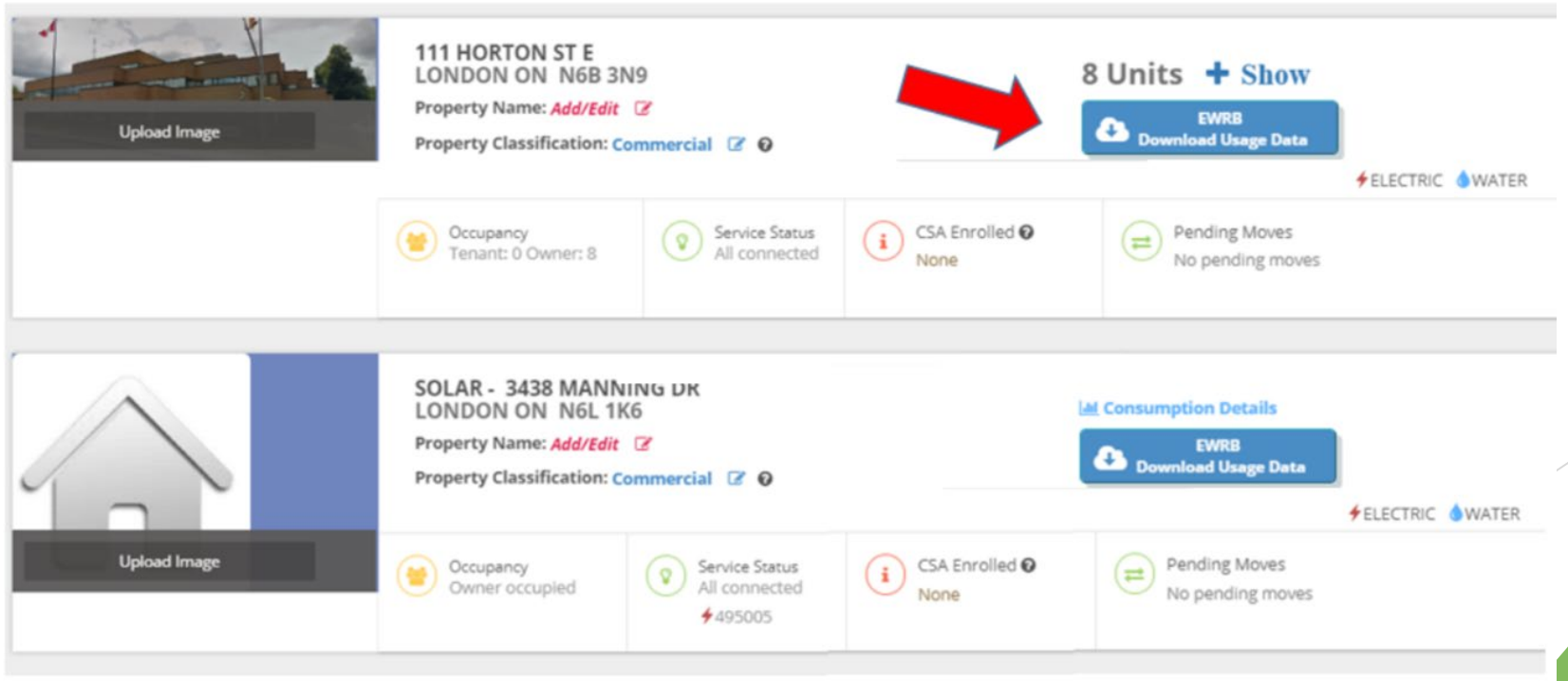
- Utility account portal for electricity and water consumption, billing and notifications



NOTIFICATION TYPE	EMAIL	SMS/TEXT	PHONE
Outage Where possible we will notify you if there is an outage affecting your electric service.	ON	ON	OFF
Outage Restoration Time Where possible, you will be notified of any changes in the expected time that power will be restored.	ON	ON	OFF
Overdue Payment Notifications When possible, you will be notified if $100 or more is past due	ON	ON	OFF
High Electricity Usage Alert You will be notified if your weekly usage is more than your notification threshold. Click here to configure the notification threshold. (Your current alert threshold is **1 times your weekly average**)	ON	ON	
Continuous Water Flow You will be notified if there is continuous flow of water. Click here to configure the notification threshold. (Your current alert threshold is **12 hours of continuous usage**)	ON	ON	
High Water Consumption You will be notified if your monthly usage is more than your notification threshold. Click here to configure the notification threshold. (Your current alert threshold is **13 m^3**)	ON	ON	
Low Water Consumption You will be notified if your monthly usage is less than your notification threshold. Click here to configure the notification threshold. (Your current alert threshold is **5 m^3**)	ON	ON	

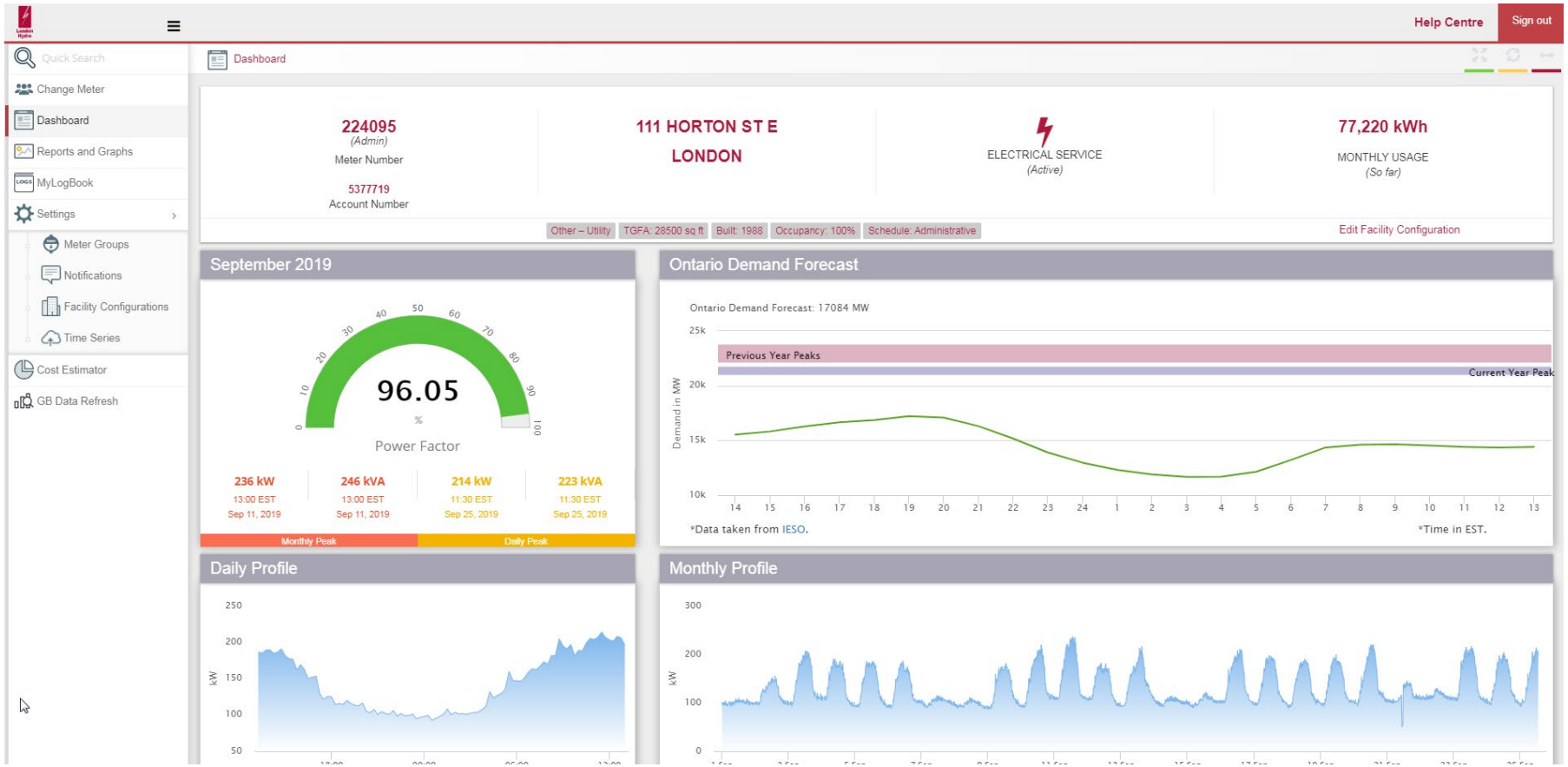
Property Management Portal

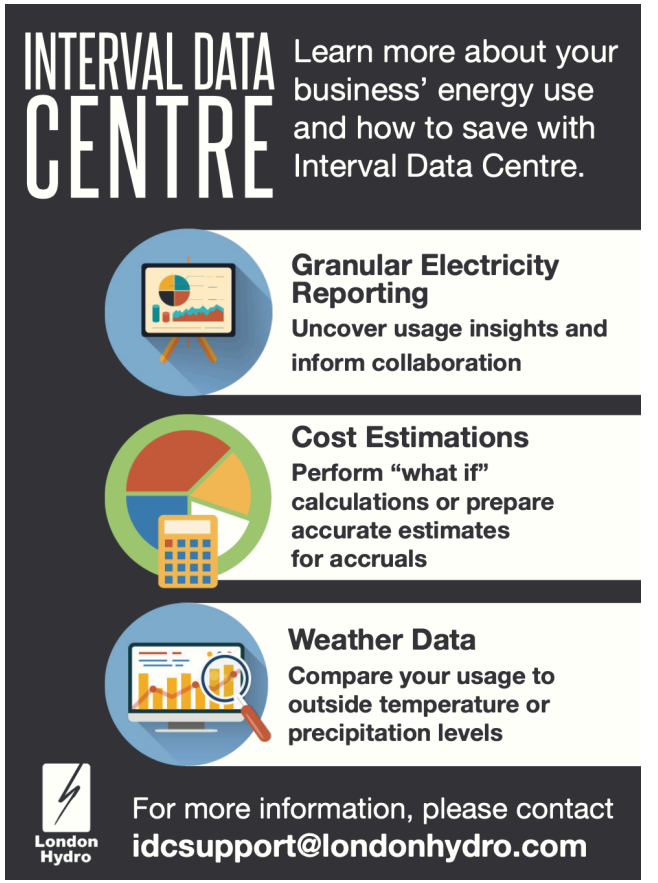
- Includes tools to assist Property Managers and their Delegates
- Supports Energy and Water Reporting and Benchmarking (EWRB)
  - 50,000 sq. Ft or larger commercial, industrial, multi-unit residential and other building types are required to annually report energy and water consumption to the Minister of Energy



Interval Data Center / Commerce

- Commercial and Industrial Customers

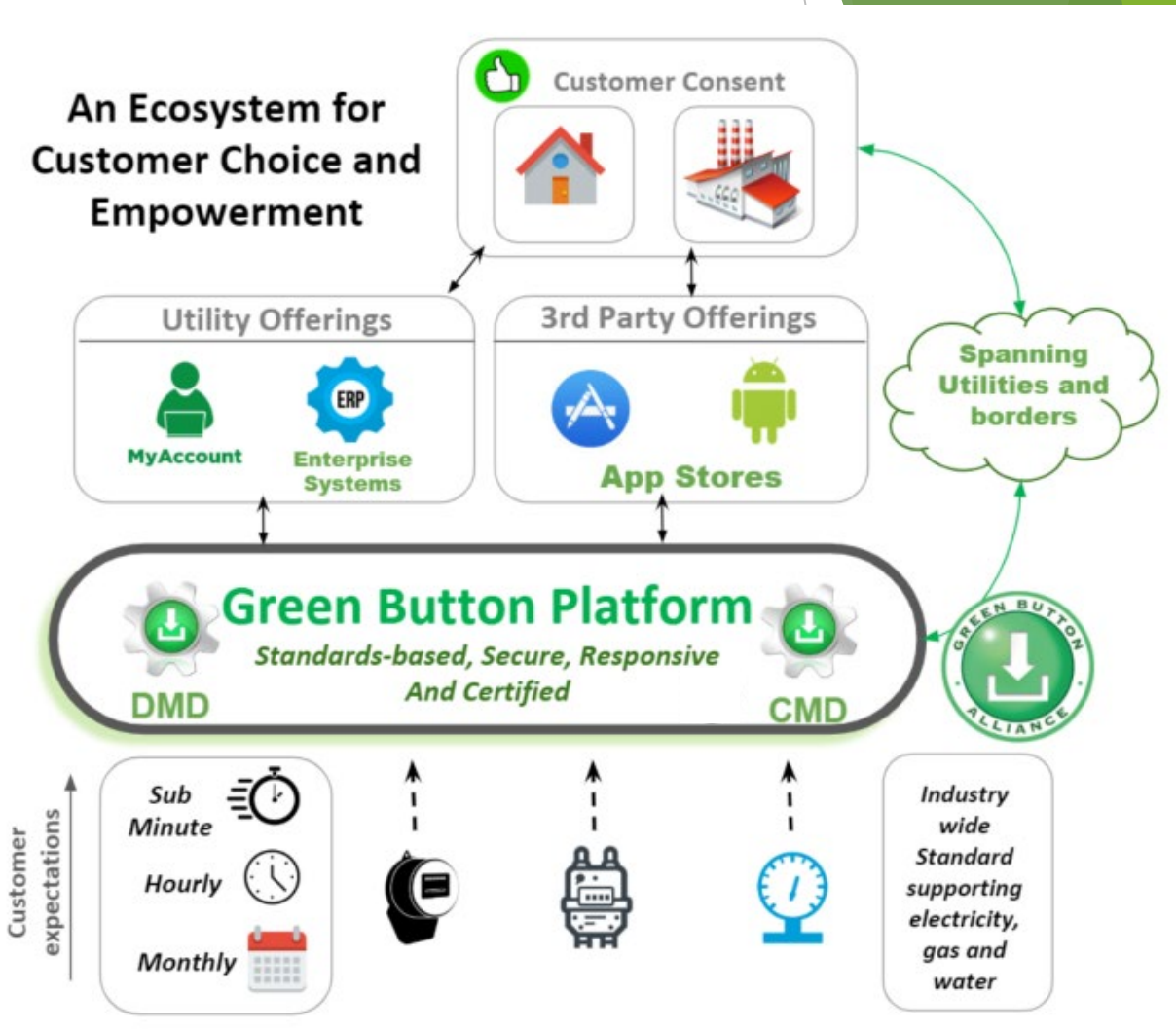




Green Button Required for Utilities by Nov 2023

The Green Button Initiative is an industry-led effort which:

- Enables **customer choice** of energy management software solutions, services and apps
- Enables **easy and secure access** to energy usage information in a consumer/computer friendly format
- Includes three types of data: **Electricity, Natural Gas, and Water Usage**
- Ensures customer **data privacy** & **secure transmission** of data
- Enables utility customers **better control** over energy usage, reduction of consumption, and lowering their costs



Sustainable Energy Pilots

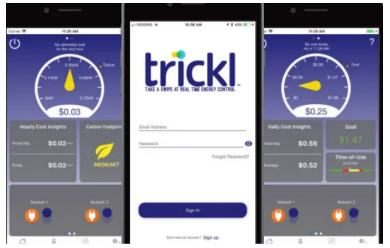
Empowering Sustainable Energy Actions

Piloted Innovative Electricity Price Plans

- real-time energy information program
- critical peak pricing program

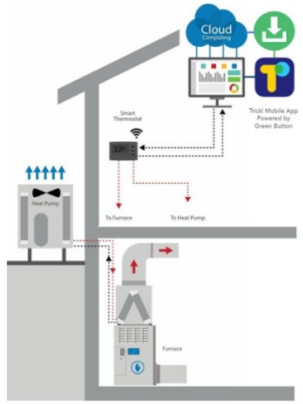
Plus Pilot energy conservation project

- smart home devices to test leading-edge energy management tools



London Hydro, Enbridge and City of London Pilot (2021)

- Advanced hybrid heating system
- high-efficiency gas furnaces and electric air-source heat pumps
- integrated smart controls integrates weather and fuel costs
- reduced energy costs and GHG emissions



Sustainable Transportation

EV charging pilot with Elocity informed customer actions

- real-time data for on/off control
- cost per charge & expected mileage per charge

London Transit Commission

- Engaged stakeholder
- Facilitating Electrification of Transit

EV Curbside Charging Stations

- Co funded, operate 6 downtown EV charging stations

Distributed Energy Resources

West 5 net-zero energy community – Utility Scale Smart Micro Grid

- Canada's first large-scale, fully integrated, net-zero energy community
- data management and communications
- electric vehicle infrastructure
- solar power generation
- battery storage

Sustainability at London Hydro

OUR WORKPLACE AND THE ENVIRONMENT

OUR WORK AND THE ENVIRONMENT

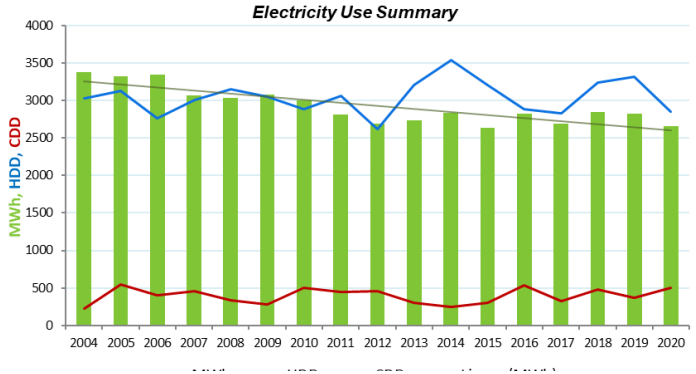
OUR TRANSPORTATION AND THE ENVIRONMENT

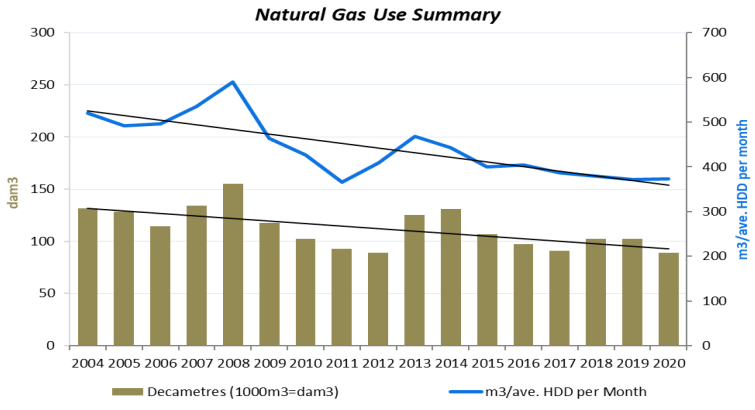
OUR COMMITMENT TO THE ENVIRONMENT

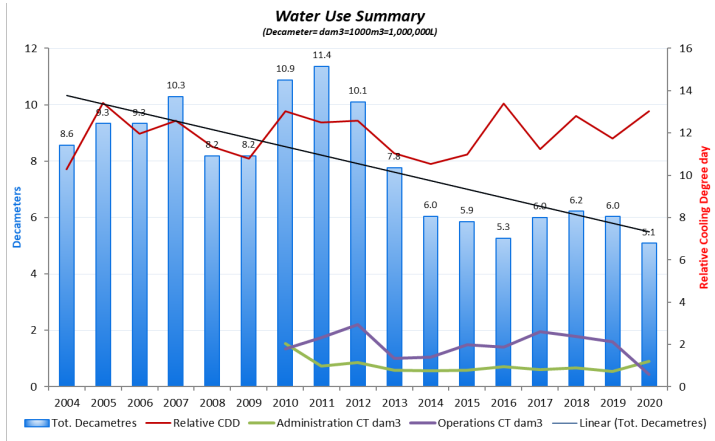
Where we Work

Our Workplace and the Environment

Energy and Water Resources







Since 2004, London Hydro has reduced

- Electricity Use by 21.4%
- Natural Gas Use by 28.2%
- Water Use by 40.2%

In 2020, London Hydro owned solar installations

- Generated 465,399 kWh
- Representing 17.5% of 2020 electricity use

The Way We Move

Our Transportation and the Environment

Fleet Management

Idling and Fleet Management Systems

- Idling management systems saved 42,000 l (99 t CO2e) in 2019 and 2020

Strategic Purchasing Plans

- 10 PHEVs, 17 Hybrids

Monthly Fuel Use Summary

Fleetio

The Way We Green

Our commitment to the Environment

Raw Material Use

Reduce

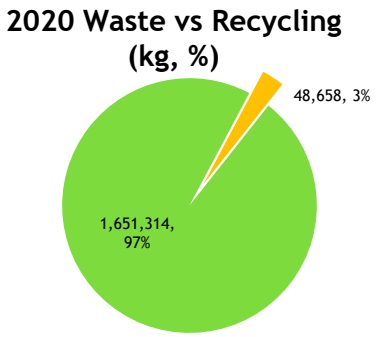
- Think B4U Print
  (215 trees since 2013)*
- Aeroplan® Paperless Billing (70,000 customers)
- (≈ 1,500 trees since 2014)
- Σ 1,715 trees saved (both programs)

* source: conservatree.org
1 tree =8,333 sheets
1 ton paper (907.2 kg) = 12 trees

Reuse

- 270 refurbished transformers (TE) in 5 years
  170 tonnes of raw materials
- 350 km of cable injected in last 10 years
  548 tonnes of raw material
- Total 718 t of raw material (TE & Cable)

Recycle



- App. 1,651 tonnes recycled

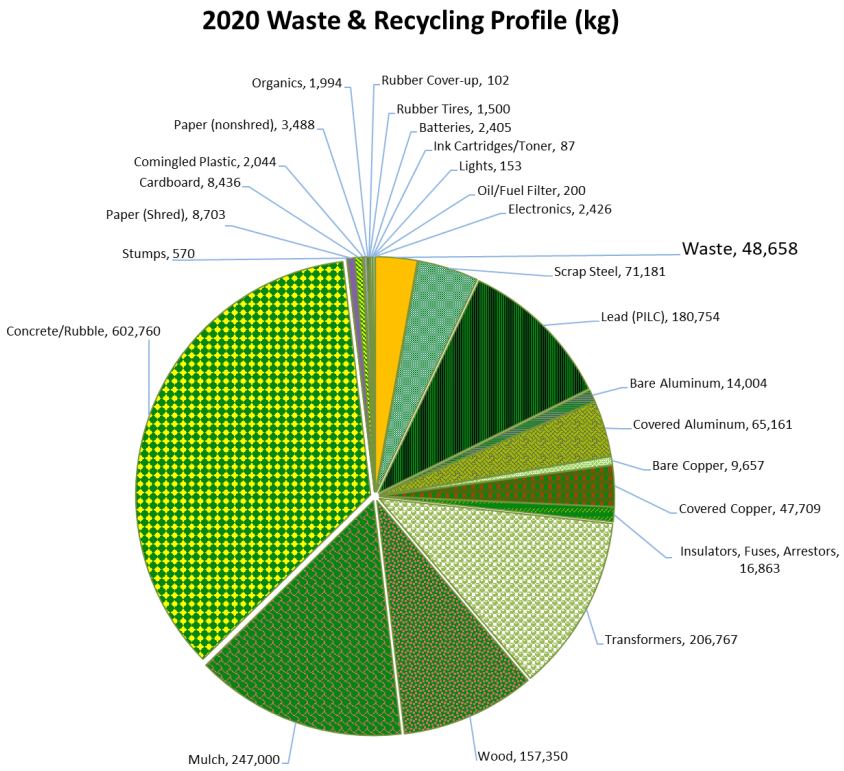
The Way We Green

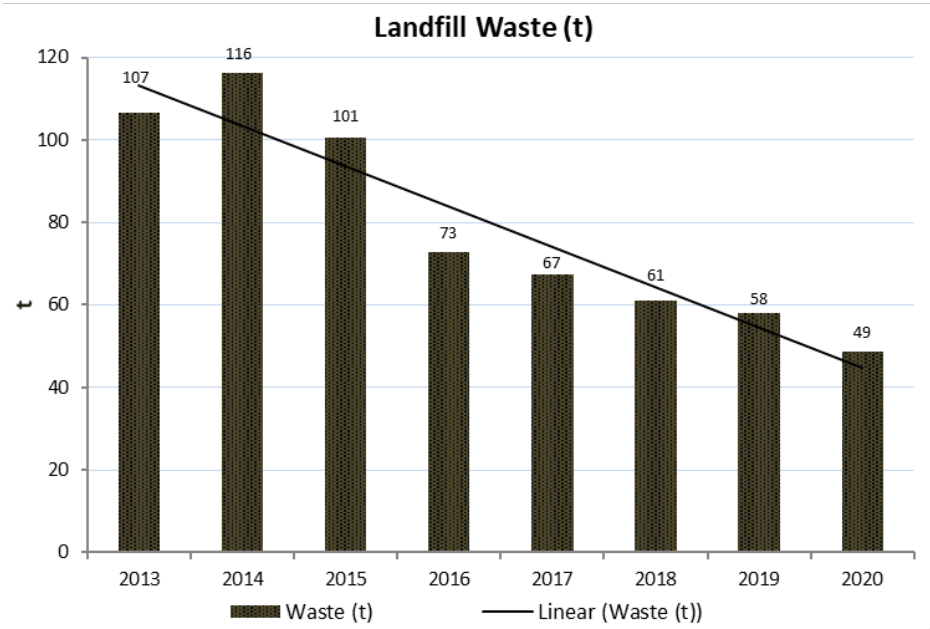
Our commitment to the Environment

Landfill Waste

Recycling to Reduce Waste to landfill

- 54% landfill waste reduction since 2013
- Insulator Diversion Program
  - 111.2 tonnes YTD since 2016



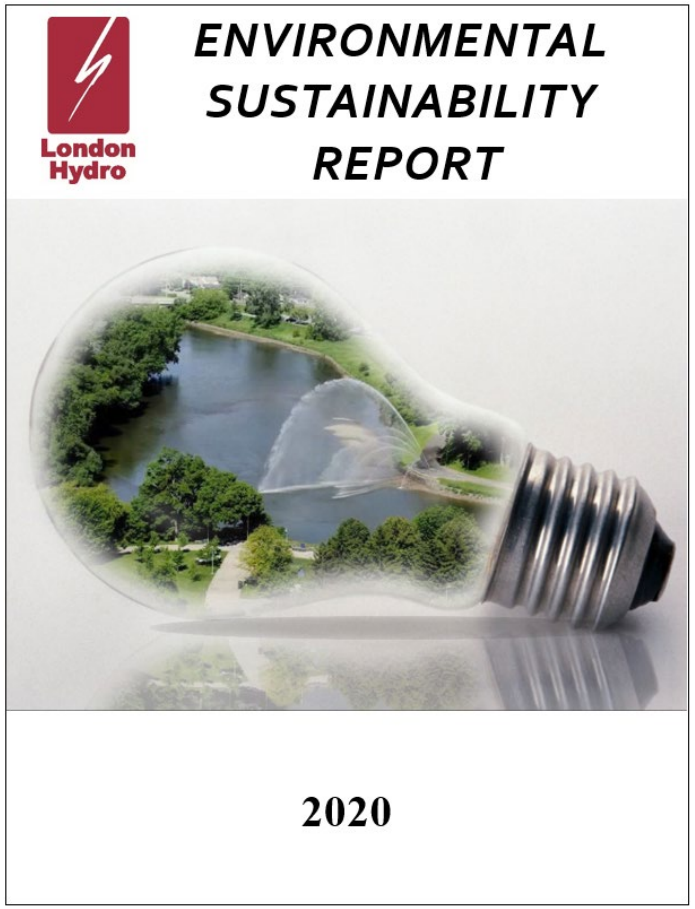


The Way We Green

Our commitment to the Environment

Community Engagement and Communications

- Annual Earth Day Cleanup Event
- Annual Environmental Sustainability Report
  - Annual Carbon Footprint

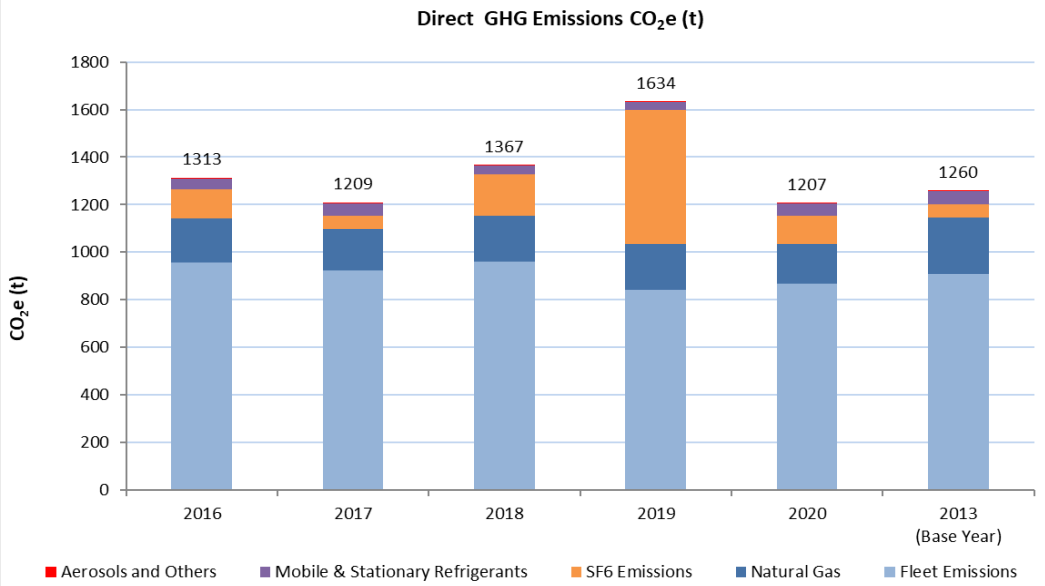


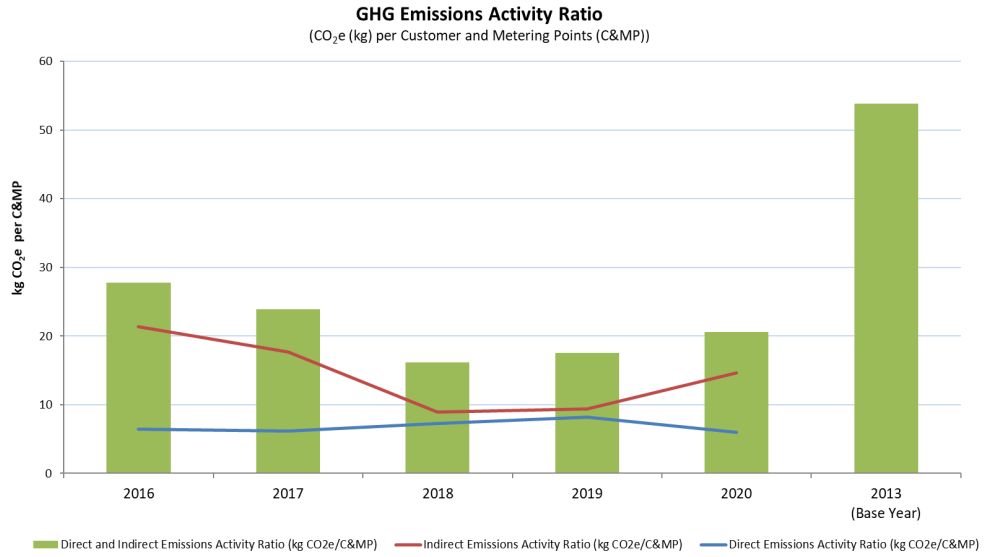
https://www.londonhydro.com/about-us/about-london-hydro/sustainability-reports

The Way We Green

Our commitment to the Environment

London Hydro's GHG Emissions





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QUESTIONS