

TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JULY 31, 2017
FROM:	KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEERING & ANNA LISA BARBON MANAGING DIRECTOR, CORPORATE SERVICES & CITY TREASURER, CHIEF FINANCIAL OFFICER
SUBJECT:	CORPORATE ENERGY MANAGEMENT PROGRAM UPDATE

RECOMMENDATION

That on the recommendation of the Managing Director, Environment & Engineering Services & City Engineer and Managing Director, Corporate Services & City Treasurer, Chief Financial Officer, the Corporate Energy Management Program Update report **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

Relevant reports that can be found at www.london.ca under City Hall (Meetings) include:

- Corporate Energy Management Program Update (August 22, 2016 meeting of the Civic Works Committee -CWC, Agenda Item #13)
- Updates: Corporate Energy Management Program and Conservation and Demand Management (CDM) Plan (July 21, 2014 meeting of the Civic Works Committee - CWC, Agenda Item #17)

STRATEGIC PLAN 2015-2019

Municipal Council has recognized the importance of managing energy costs, energy conservation, and climate change and other related environmental issues in its 2015-2019 - Strategic Plan for the City of London ([2015 – 2019 Strategic Plan](#)). Providing corporate energy use and associated greenhouse gas emissions data supports three of the four Areas of Focus as follows:

Building a Sustainable City

- Strong and healthy environment
- Robust infrastructure
- Responsible growth

Leading in Public Service

- Collaborative, engaged leadership
- Proactive financial management
- Excellent service delivery

Growing our Economy

- Strategic, collaborative partnerships
- Local, regional and global innovation

BACKGROUND

PURPOSE

The purpose of this report is to provide the Civic Works Committee (CWC) and Council with an overview of the updated *2016 Corporate Energy Consumption Report* and the *2016 Corporate Energy Management Activities Report*.

These reports (found on the Corporate Energy Management Program page on the City of London website www.london.ca) are key deliverables of the City of London's Corporate Energy Conservation and Demand Management (CDM) Plan and the Corporate Energy Management Program.

CONTEXT

In August 2011, the provincial government introduced Ontario Regulation 397/11 under the *Green Energy Act*, which requires municipalities, municipal service boards, schools boards, universities, colleges and hospitals to report on facility energy consumption and associated greenhouse gas (GHG) emissions annually beginning in 2013. The scope of this mandatory report was limited to those facilities that:

- are heated or cooled and the public agency is issued the invoices and is responsible for making the payments for the energy consumptions; or
- are related to the treatment or pumping of water or sewage and the public agency is issued the invoices and is responsible for making the payments for the energy consumptions.

London's Corporate Energy Conservation and Demand Management (CDM) Plan was approved by Council in July 2014. The scope of the CDM Plan covers all forms of energy used in activities undertaken by the Corporation of the City of London. The CDM Plan established a goal to reduce total corporate energy use by ten percent from 2014 levels by 2020.

The Ontario Regulation 397/11 reporting requirement does not include significant corporate energy users such as streetlighting and corporate fleet fuel use, nor other needs such as sports field lighting. These energy needs and impacts are included within the scope of the annual *Corporate Energy Consumption Reports* which the City started reporting since 2015 as it is imperative that all energy uses and impacts within the City's control are continuously examined for reductions, containment and opportunities.

Energy Management activities and reporting of City of London's agencies, boards and commissions is handled by the individual organizations. City staff provides assistance when requested.

DISCUSSION

This report contains details in two key sections highlighted below and separate reports found on the City's website:

- Part A - 2016 Corporate Energy Consumption Report – an update on the City's energy consumption and cost with emphasis placed in the period 2007 until 2016. Previous pertinent reports are available on the [Corporate Energy Management](#) website.
- Part B - 2016 Energy Management Activities – an update on the program with emphasis on energy reduction initiatives undertaken by the City since 2016.

These reports assist in tracking the City of London's performance to the CDM Plan's goal.

Why is this Important and How Will Londoners Benefit?

Providing corporate energy use and associated greenhouse gas emissions data helps to inform City staff and Londoners on what progress is being made to manage rising energy prices and deliver services more efficiently. The City spent about \$21 million on energy in 2016, which represents about two percent of the operating budget. On a per-person basis, the City spent \$54 on energy to deliver services to Londoners in 2016.

It is also important for the City of London to lead by example in corporate energy management in order to promote sustainable energy practices that reduce greenhouse gas-emitting activities that we do have direct control over.

What is the Connection with Other City of London Programs?

The corporate energy use and greenhouse gas inventory data is connected to many City of London programs and initiatives such as the London Plan and London's Community Energy Action Plan (CEAP).

How is the Data Acquired and Information Reported?

Corporate utility data – electricity, natural gas, steam, and chilled water – is maintained in-house by Facilities staff using the Energy Cap utility bill management system software. Corporate fleet fuel data – diesel and gasoline – is maintained in-house by Fleet Services staff using the PetroVend software system. Environmental Programs staff compile the data, prepare the greenhouse gas (GHG) analysis and prepare the corporate reports on behalf of a number of City services.

PART A - 2016 Corporate Energy Consumption Report

The *2016 Corporate Energy Consumption Report* can be found on the City of London website (www.london.ca). Similar to 2015 report, the total energy consumption in 2016 is compared with two reporting periods, 2007 and 2014. The tracking and monitoring of utility data for City was made possible in 2007 through EnergyCap software and is used here for comparison. 2014 is the baseline year for the CDM Plan and is being tracked. Highlights include:

- **Total energy use in 2016 was almost seven percent lower than it was in 2014 (Figure 1).** This is on track with the CDM Plan goal for a ten percent reduction from 2014 levels by 2020. Over the longer term, total energy use is now 11 percent lower than it was in 2007. It is important to note that year-to-year comparisons can be influenced by weather conditions whereas a longer view smooth out weather spikes that influence energy consumption.
- **Energy use per person was 18 percent lower in 2016 than it was in 2007.** Dividing the corporation's total energy use by London's population provides an indication of improvement in energy efficiency for service delivery:
 - Wastewater treatment energy use per person has decreased by 26 percent,
 - Water pumping energy use per person has decreased by 24 percent,
 - Building energy use per person has decreased by 16 percent,
 - Vehicle Fleet energy use per person decreased by one percent, and
 - Streetlights energy use per person decreased by 15 percent for the first time due to recent LED upgrades in 2015 and 2016.
- **Total energy cost in 2016 increased to almost \$21 million (Figure 2),** with the increase primarily due to rising electricity prices. Total electricity costs have risen by 84 percent since 2007 (unadjusted for inflation) even though total electricity use actually dropped by two percent over that period. It is important to note that:
 - energy costs would have been \$2.1 million higher in 2016 compared to 2007 if the energy efficiencies noted above were not in place, and
 - more than \$6.9 million in avoided energy costs have been accumulated since 2007.

Figure 1 – Total Corporate Energy Use since 2007 by Commodity

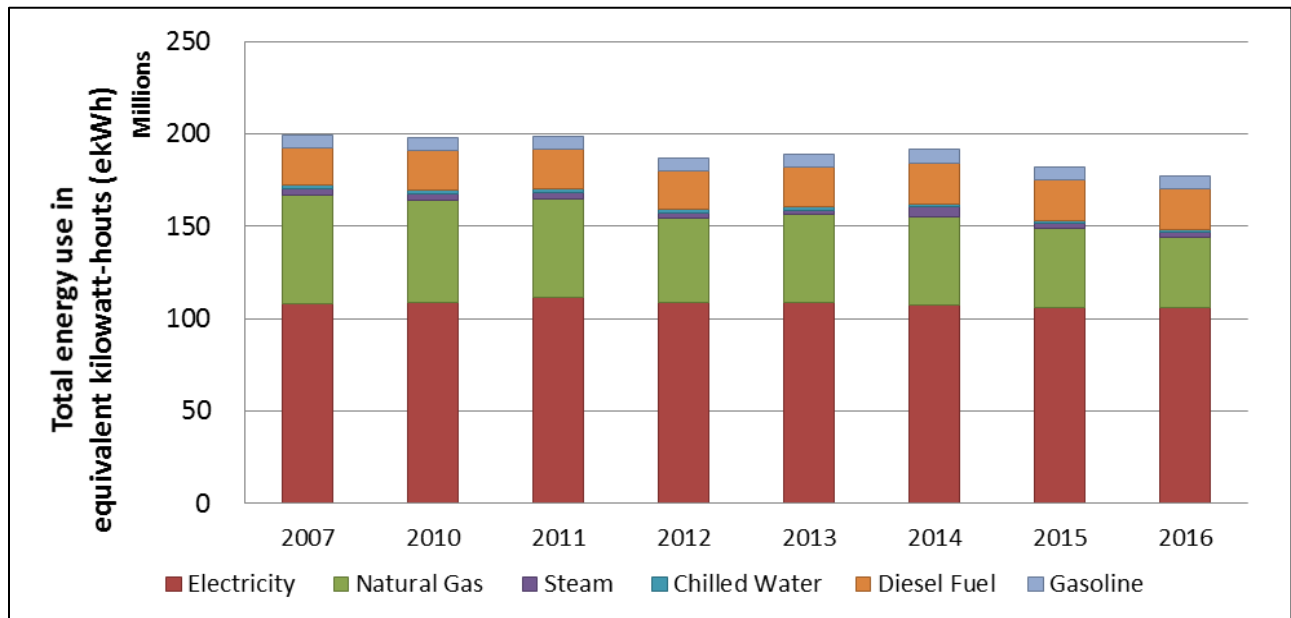
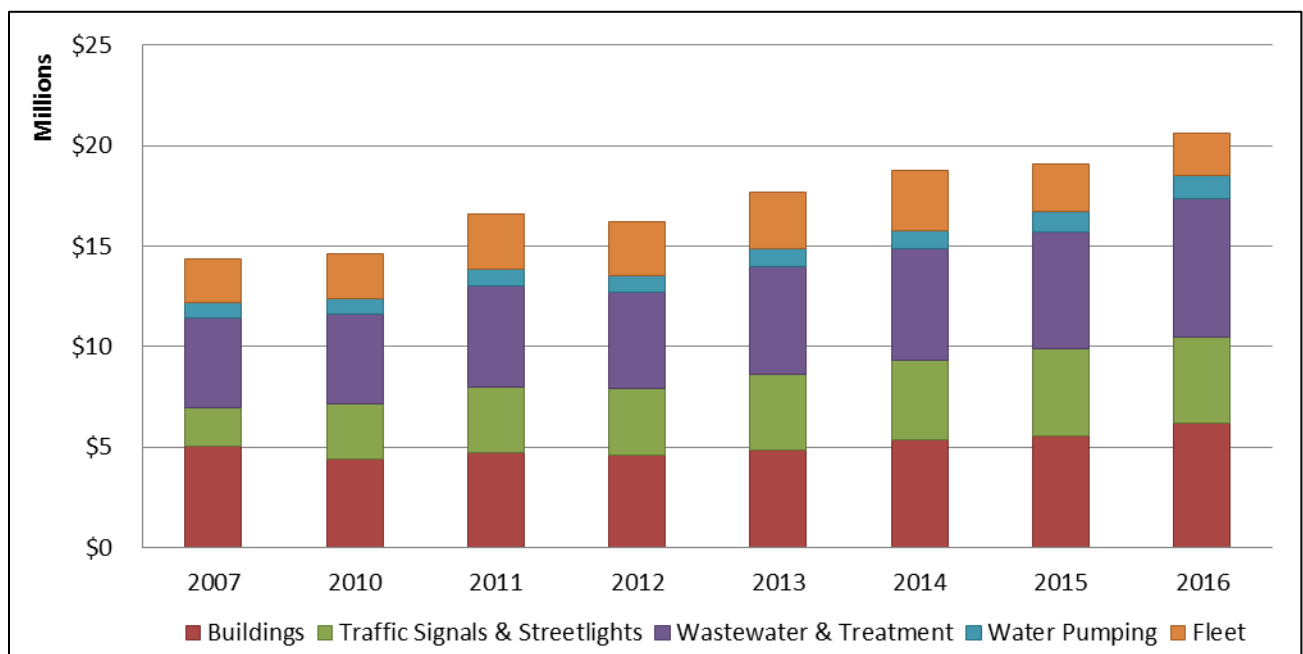


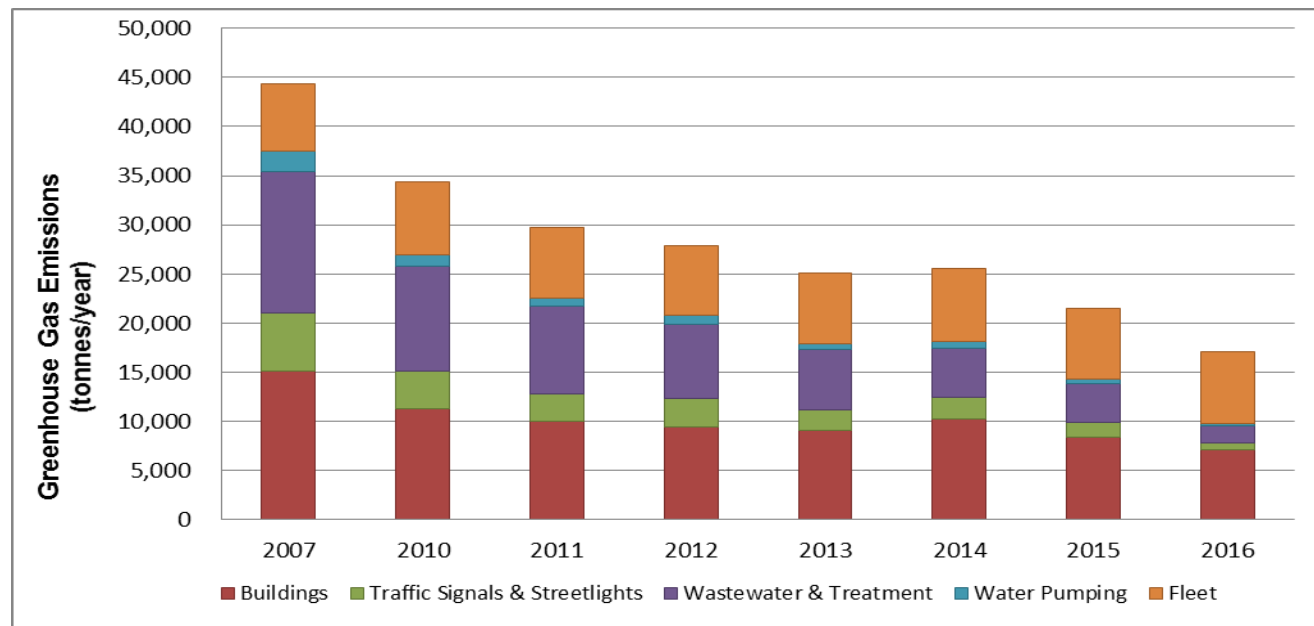
Figure 2 – Trends in Corporate Energy Costs (\$ Millions) by Municipal Service Categories



- **Energy related greenhouse gas emissions in 2016 were 60 percent lower than 2007 (Figure 3).** The City of London's improvement in energy efficiency accounts for about 25 percent of this reduction. In particular, the new centrifugal sludge dewatering system at the Greenway wastewater Treatment Plant's sludge incinerator, installed in 2014-2015, resulted in a significant reduction in natural gas at that facility.

The remaining 75 percent of the reduction comes from Ontario's actions to replace coal-fired power plants with cleaner forms of power generation. About 90 percent of Ontario's electricity is now generated from emissions-free sources, such as nuclear, hydro-electric generating stations, wind and solar. In 2016, every 1,000 kilowatt-hours of electricity generated in Ontario produced about 30 kilograms of carbon dioxide emissions. This is significantly better than it was in 2007, when 1,000 kilowatt-hours of electricity produced around 240 kilograms of carbon dioxide emissions.

Figure 3 – Trends in Corporate Greenhouse Gas Emissions by Municipal Service Categories



PART B - 2016 Energy Management Activities

The *2016 Energy Management Activities* report can be found on the City of London website (www.london.ca). Highlights of recent activities include:

- **Wastewater treatment** electricity efficiency and renewable energy measures such as examining waste heat utilization for electricity generation at Greenway, aeration blowers with energy efficient turbo blowers at Oxford and Adelaide and installation of new efficient lighting systems;
- **Water supply** pump optimization and replacement; variable frequency drive (VFD) installations as a best practice on the existing and new pumps and investigation for more energy savings opportunities through complete energy audit at Arva pumping station;
- **Streetlighting** upgrades to LED lighting on all the remaining streets and intersections not covered in phase one and other streets with “cobra head” style streetlight infrastructure;
- **Building retrofits**, including larger projects such as the installation of the combined heat and power generation unit at the Canada Games Aquatic Centre, as well as heating and ventilation system upgrades and lighting upgrades in other City facilities;
- A review of additional **electric vehicle charging** options for City of London employees and visitors; and
- **Culture of Conservation** activities such as participation in employee engagement event, sending energy reminders for long weekends, creating energy dashboard pilot program as well as creating and implementing new building temperature and space heater policy for the City of London employee buildings.

SUMMARY

Good progress is being made towards achieving the CDM Plan’s goal for a ten percent reduction in total corporate energy use by 2020. In particular, actions undertaken and planned by Wastewater Treatment Operation, Water Engineering, Roadway Lighting and Traffic Control, and Facilities have made significant contributions towards performance to date.

ACKNOWLEDGEMENTS

This report was prepared by Sneha Madur, Steve Macdonald and Jamie Skimming with assistance from the following areas:

Environment, Fleet & Solid Waste – Mike Bushby
 Facilities Division – Jim Klingenberger
 Parks & Recreation – Bill Coxhead, Lynn Loubert
 Purchasing Division – John Freeman
 Roads & Transportation – Edward Soldo, Shane Maguire
 Water & Wastewater – John Lucas, Geordie Gauld, Mark Spitzig, Scott Mathers

PREPARED BY:	PREPARED BY:
JAY STANFORD, M.A, M.P.A. DIRECTOR, ENVIRONMENT, FLEET & SOLID WASTE	TIM WELLHAUSER DIVISION MANAGER, FACILITIES
RECOMMENDED BY:	RECOMMENDED BY:
KELLY SCHERR, P.ENG., MBA, FEC MANAGING DIRECTOR, ENVIRONMENTAL & ENGINEERING SERVICES & CITY ENGINEER	ANNA LISA BARBON, MANAGING DIRECTOR, CORPORATE SERVICES & CITY TREASURER, CHIEF FINANCIAL OFFICER

Documents found on the City of London website (www.london.ca) are:

2016 Corporate Energy Consumption Report
 2016 Energy Management Activities