City of Peterborough's
Corporate Energy Management Plan

1. Introduction

Successful energy management depends on the integration of energy efficient practices into the "business as usual" conduct of the organization, is based on a regular assessment of energy performance, and requires the implementation of procedures and measures to reduce energy waste and increase efficiency. Successful energy management in a municipality hinges on the allocation of staff and resources to continually monitor and improve energy performance.

2. Our Commitment

a. Declaration of Commitment and Council Resolution:

That the City of Peterborough use existing resources and leverage outside agencies, where appropriate, to implement the strategic Corporate Energy Management Plan that will reduce our energy consumption and its related environmental impacts.

b. Vision:

The City of Peterborough will strive to continually reduce our total energy consumption and associated carbon footprint through wise and efficient use of energy and resources, while still maintaining an efficient and effective level of service for our clients and the general public.

3. Current State

a. Stakeholder Needs

i. Internal Stakeholders

The City of Peterborough understands that its' internal stakeholders (Council, Committees of Council, CAO, staff) needs include:

a) an up-to-date and relevant Corporate Energy Management Plan with clear vision, goals, and targets to clearly communicate the corporate commitment to energy efficiency;
b) timely, regular reports and information to maintain awareness of energy use; and,
c) training and support to develop the skills and knowledge required to implement energy management practices and measures.

ii. External Stakeholders

The City of Peterborough understands that its' external stakeholders (residents, community organizations, businesses, Province) needs include:

a) That the City of Peterborough be accountable for energy performance and to minimize the energy component of the costs of municipal services; and,

b) That the City of Peterborough will reduce the carbon footprint associated with its corporate energy use.

b. Energy Consumption and Demand:

Ontario Regulation 397/11 – the Green Energy Act requires that the City of Peterborough report their annual energy consumption and associated greenhouse gas emissions for designated City facilities effective July 1, 2013, and annually thereafter.

For the purpose of reporting, designated facilities for municipalities include buildings that the municipalities pays the energy bills for and that are heated and cooled, including:

- Administrative offices and related facilities;
- Public libraries;
- Cultural facilities including indoor recreation facilities, gyms, and community centres; art galleries; performing art facilities; auditoriums; indoor sport & ice arenas indoor swimming pools;
- Fire stations, associated offices and facilities;
- Police stations, associated offices and facilities;
- Storage facilities where equipment and vehicles are maintained, repaired or stored;
- Buildings and facilities related to the treatment and pumping of water or sewage; and
- Parking garages that are heated or cooled.

The 2011 data is summarized in the chart below and attached in detail in Attachment A. Staff are finalizing the 2012 data for the 2014 Green Energy Act reporting cycle. This data will form the baseline framework for a comprehensive database of energy consumption, cost and GHG emissions by facility. The database will be updated annually for tracking and comparison purposes.

Energy Consumption	2011
Annual Electricity Consumption for required City Facilities as per Green Energy Act**	25,331,395 kWh
Annual Natural Gas Consumption for required City Facilities as per Green Energy Act**	1,753,374 m3
Associated Greenhouse Gas Emissions for required City Facilities as per Green Energy Act**	5,356,471 kg

** Note this data is not reflective of the entire Corporation's energy consumption, but only the required reporting elements as listed above.

c. Energy Initiatives:

A summary of energy conservation and demand management programs, policies, services include:

i. Renewable Energy:

LFG Generation Facility

The City and County of Peterborough in partnership with Peterborough Utilities Inc. implemented a Landfill Gas (LFG) Generation Facility. Peterborough Utilities Inc. was awarded a 20-year Feed-In-Tariff Contract with the Ontario Power Authority to generate 1.6 MW of electricity from the methane generated from the Peterborough County/City Waste Management Facility. The Facility officially opened May 11, 2013. LFG generates 1.6 MW of electricity.

Wastewater Treatment Plant Generation Facility

Peterborough Utilities Inc. in partnership with the City of Peterborough is building a 400 kW generation facility using the biogas generated from the Peterborough Wastewater Treatment Plant. The facility is in the pre-construction phase.

Kinsmen Civic Centre Rooftop Solar Photovoltaic Project

Peterborough Utilities Inc. in partnership with the City of Peterborough has applied to the Ontario Power Authority under FIT 3.0 to install a 438 kW solar photovoltaic system on the twin pad arena. The application is still under review, with an outcome expected summer 2014.

ii. Green Energy:

There are no current or proposed systems that harness energy by ground source, thermal air, or thermal water, at this time.

d. How Energy Is Currently Managed:

The management of energy consumption and the energy performance of our facilities and equipment are the responsibilities of Corporate Services for payment, maintenance and scheduled replacement, as well as the facility/department managers for the general operations.

The management of our energy is a combination of energy data management, energy supply management, and energy use management. Our municipal energy data is managed through the Property and Energy Manager. Peterborough Utility Distribution Inc. provides access to the City of Peterborough consumption data where Energy Cost Reports are generated. Reports are generated as required, tracked, and/or monitored. The Sustainability Manager submits the annual data for the Green Energy Act reporting requirements.

e. Energy Supply Management:

Our corporate energy is supplied via a number of providers as outlined below:

- Electricity is supplied by Peterborough Utilities and Hydro One on an as needed basis and is priced at a hedging rate provided by the Association of Municipalities of Ontario (AMO) Local Authority Services (LAS) through their electricity purchasing program.
- Natural gas is supplied by Enbridge gas to select facilities on an as-needed basis and is priced at the standard rate offered by the provider at the time of delivery.
- Propane is supplied by local propane providers on an as-needed basis and is priced at the standard rate offered by the provider at the time of delivery.
- The City of Peterborough participates in a cooperative bulk purchasing program for vehicle fuel.

f. Energy Use Management:

Day to day management of energy has been primarily the responsibility of facility managers.

4. Our Plan

a. Goals

The goals of our plan are:

- To improve the energy efficiency of our facilities by utilizing best practices to reduce our operating costs, energy consumption and greenhouse gas emissions.
- To implement a comprehensive energy management program to reduce consumption, achieve cost savings, and meet greenhouse gas emission targets.
- To create a culture of conservation.
- To increase the comfort and safety of staff and patrons of the City of Peterborough's facilities.
- To improve the reliability of the City of Peterborough's equipment and reduce maintenance.

b. Objectives:

The objectives of our plan are:

- Increase staff awareness and motivate staff to use energy more efficiently.
- Improve awareness of climate change and greenhouse gas emissions.
- Complete energy audits on all municipal facilities during the next five years.
- Improve the efficiency of energy use through low–cost opportunities by implementing the following:

- Sound operating and maintenance practices.
- Employee training, and staff awareness.
- Monitoring and tracking system.
- Re-commissioning of buildings.
- Energy procurement through fixed rate contracts.
- Energy Demand Management program.

- An energy reduction target of 5% be set to guide energy saving in municipal facilities and operations from 2013 to 2018, using 2013 as the baseline. This is an internal corporate target only.

c. Strategic Direction:

The following section represents potential areas of focus and their associated strategies/policies.

- **Long-term strategic issues**: The City will develop and implement an Energy Policy, organize for energy management, develop the required skills and knowledge, manage energy information, communicate with our stakeholders, and invest in energy management measures.

- **Links with other municipal plans and management processes:** As an integral component of the management structure, the Corporate Energy Management Plan will be incorporated into the municipality's budget planning, the purchasing by-law, asset management plans, preventative maintenance plans, and policy developments, as required.

- **Departmental responsibilities:** The City will incorporate energy budget accountability into departmental responsibilities.

d. Energy management leader and team:

- **Energy Leader:** The Sustainability Manager has been designated as our energy leader with overall responsibility for corporate energy management.

- **Energy teams:** Staff who carry significant responsibility for energy performance or who can make essential input to energy management have been selected to act as departmental energy efficiency team members. Three teams have been developed, as follows:

  - **Facilities Management Team:**
    - Melanie Kawalec, Sustainability Manager
    - Ken Doherty, Director Community Services
    - Mac MacGillivray, Facility and Energy Manager
    - Phoebe Eccles, Wastewater Treatment Plant Chief Operator
    - Sue Warrington, Arenas Manager
    - Kevin Jones, Transportation Manager
    - Brian Jobbitt, Public Works Manager

- **Corporate Green Team:**
  - Melanie Kawalec, Sustainability Manager
  - Mac MacGillivray, Facility and Energy Manager
  - Voluntary staff interested in helping to green the Corporation

- **Fleet Management Team:**
  - Sustainability: Melanie Kawalec, Sustainability Manager
  - Transit & Public Works: Bryan Powers, Assistant Manager Fleet Services
  - Fire: Chris Snetsinger, Acting Fire Chief
  - Police: Phil Carson, Fleet Facility Coordinator

- **Staffing Requirements and duties:** The City will incorporate energy efficiency into standard operating procedures and the knowledge required for operational jobs.

e. Staff Training and Communication:

- **Communication programs:** The City will develop a communication strategy that creates and sustains awareness of energy efficiency as a corporate priority among all employees and conveys our commitment and progress to our stakeholders.

- **Energy Awareness Training:** The City will develop and deliver training focused on the energy use and conservation opportunities associated with employees' job functions, where possible.

- **Energy Skills Training:** The City will develop and deliver skills training for operators, maintainers and other employees that have "hands-on" involvement with energy consuming systems in order to improve the team's ability to achieve energy efficiency improvements.

- **Business Procedures:** The City will carry out a comprehensive review of all business processes and modify them as necessary in order to incorporate any energy efficiency considerations.

f. Development of Energy Projects:

- **Internal assessments:** The City will develop a methodology for the internal assessment of energy performance of municipal facilities and their energy loads. In addition, a process will be developed for identifying and cataloguing energy efficiency improvements.

- **Energy audits:** The City will establish the criteria for energy audits for the requirement and frequency of municipal facility energy audits. The energy audits will be carried out based on the Energy Policy.

g. Investment in Energy Projects:

- **Investment criteria:** Investment analysis and prioritization of proposed energy projects will be considered, taking due consideration of the priority given to energy efficiency projects versus other investment needs (life cycle versus simple payback).

- **Consideration of energy efficiency for all projects:** Life cycle cost analysis will be incorporated into the design procedures for all energy projects.

- **Budgetary resources for energy projects:** Energy projects will be considered through our capital budget process. Savings and incentives will be considered when preparing energy efficiency projects.

- **Other sources of funds for energy projects:** The Energy Team will investigate, document, and communicate funding sources for energy projects, including government funding, grants and incentives.

h. Procurement:

- **Energy purchasing:** The City will consider using cooperatives or bulk purchases for energy sources. Opportunities to jointly procure other energy commodities will be investigated. This investigation will include the analysis of cost considerations, available energy services, energy quality and reliability, and other performance factors.

- **Consideration of energy efficiency of acquired equipment**: The City's Purchasing By-law will be modified to incorporate energy efficiency into the criteria for selection and evaluation of materials and equipment.
- **Standards for new buildings:** The City will consider energy performance factors in the design and/or acquisition of new buildings the principles embedded in performance standards such as LEED and the Model National Energy Code for Buildings.

5. Action List

The following is an action list. Each action is classified as a program, process, or project. In addition, each action can be linked back to a particular objective , which in turn supports the goals, moving the City towards its vision.

No.	Type	Objective	Action	Cost / Savings Estimate	Owner	Target Date
1.	Program	Awareness	Energy reports to be distributed to Directors/Managers on a regular basis		Sustainability Manager	Q4-2014
2.	Program	Training	Part of Orientation Program – provide new staff with energy management training		Corporate Green Team	Q4-2014
3.	Program	Awareness	Improve staff education and awareness by showing staff the implication of current behaviours.		Corporate Green Team	Q4-2014
4.	Process	Energy Efficiency	Vacuum back of all vending machines & put on programmable power bars, if possible	Reduce Phantom Load	Operations Managers & Cleaning Staff	Q3-2014
5.	Process	Energy Efficiency	Run dishwashers in off peak hours	Reduce Phantom Load	Operations Managers & Cleaning Staff	Ongoing
6.	Process	Energy Efficiency Awareness	Use programmable power bars on all computers	Cost ~$5 per power bar, OPA Incentive available to Dec 31/14	Facility and Energy, Manager; Operational Manager's; PTS	Q4-2014
7.	Process	Procurement	Incorporate life-cycle costing into procurement process		Facility and Energy, Manager; Asset Management; Procurement Process	In progress

No.	Type	Objective	Action	Cost / Savings Estimate	Owner	Target Date
8.	Project	Energy Efficiency	Enhance Building Envelope—window replacement program, window sealing in winter, caulking, weather-stripping	Cost: to be reviewed Savings: based on facility	Facility and Energy, Manager Facility Manager	In progress
9.	Project	Energy Efficiency	Update all lighting and put on motion or carbon dioxide sensor	Cost: use incentive programs	Facility and Energy, Manager	In progress
10.	Program	Awareness	Employee participation program: Identification of improvement		Corporate Green Team	Q4-2014
11.	Program	Awareness	Have different staff walk through facilities		Corporate Green Team	Q4-2014
12.	Project	Energy Efficiency	Identify unnecessary loads such as plug-in phantom loads		Corporate Green Team	Q4-2014
13.	Project	Energy Efficiency	Fleet Replacement Plan – long term planning to ensure useful life of vehicle; assign appropriate equipment for intended use; consider alternate uses for equipment		Public Works – Assistant Manager, Fleet Services	In progress
14.	Project	Energy Efficiency	Traffic Signals - new installations will take into account new technologies and industry trends; consider upgrades during maintenance		Transportation Manager	In progress

No.	Type	Objective	Action	Cost / Savings Estimate	Owner	Target Date
15.	Project	Energy Efficiency	Street Lights - new installations will take into account new technologies and industry trends; on-going maintenance will consider upgrades		Manager Infrastructure Planning	In progress
16.	Project	Energy Efficiency	Upgrade heating and cooling systems		Facility and Energy, Manager	In progress
17.	Program	Procurement	Fleet Procurement - Select vehicle engines with better fuel economy under our operating conditions; specify fuel efficient transmissions; set specifications to right size the equipment and the vehicles		Fleet Management Team	In progress
18.	Program	Energy Efficiency Awareness	Fleet Preventative Maintenance - program to schedule routine maintenance and inspection; operator awareness training; equipment idling procedures; use LED light for vehicles/ equipment; use of inverters over generators		Fleet Management Team	In progress

No.	Type	Objective	Action	Cost / Savings Estimate	Owner	Target Date
19.	Program	Procurement Awareness	Fleet Awareness Programs - Consider flex fuels/ biodiesel; consider operational applications for hybrid and electric vehicles; research new technologies; participate in Green Fleet Programs		Fleet Management Team	In progress

6. Our Evaluation

The results of City's Corporate Energy Management Plan will be evaluated by monitoring the progress towards our targeted performance, and by reporting the findings to our various stakeholders. In addition, the evaluation will include a review and update of the energy plan as necessary. The evaluation process is ongoing and provides the critical feedback that leads to continuous improvement.

a) Monitoring Progress

- Ongoing monitoring of consumption: An energy monitoring and targeting system will be implemented and maintained as an integral component of our management information system.
- Measurement and verification of energy projects: Standard methods for savings verification will be adopted and a measurement and verification plan will be incorporated into all energy projects.
- Consumption: The City's energy consumption will be measured and evaluated annually.
- GHG Emissions: Greenhouse gas emissions will be measured and evaluated annually.

b) Review & Reporting

- Reporting for the Green Energy Act: Reporting requirements for the Green Energy Act and other pertinent provincial legislation will be met.
- Reports to Council: Annual energy performance summary reports will be generated to apprise Council of the progress made towards our corporate energy goals and objectives.
- Reports to stakeholders (community): The general public will be apprised of energy performance of municipal facilities and the impact of implemented energy management measures where appropriate.
- The City will review and evaluate our energy plan on an annual basis and revise and update as necessary.

Attachment A:	City of Peterborough Energy Consumption and Greenhouse Gas Emissions Reporting - for 2011					
Operation Name	**Operation Type**	**Address**	**City**	**Total Floor Area of the Indoor Space in which Operation is Conducted**		**Average # Hours Per Week**
Peterborough Sport and Wellness Centre	Indoor recreational facilities	775 Brealey Drive	Peterborough	5,416.00	Sq. meters	112
City Hall	Administrative offices and related facilities	500 George Street North	Peterborough	3,935.00	Sq. meters	72
Memorial Centre	Indoor ice rinks	151 Lansdowne Street West	Peterborough	11,150.00	Sq. meters	119
Northcrest Arena	Indoor ice rinks	100 Marina Boulevard	Peterborough	2,293.00	Sq. meters	67
Evinrude Centre	Indoor ice rinks	911 Monaghan Road	Peterborough	7,899.00	Sq. meters	125
Kinsmen Civic Centre	Indoor ice rinks	1 Kinsmen Way	Peterborough	5,017.00	Sq. meters	140
Queen Alexandra Community Centre	Community centres	180 Barnardo Avenue	Peterborough	2,787.00	Sq. meters	42
Art Gallery of Peterborough	Art galleries	250 Crescent Street	Peterborough	604.00	Sq. meters	36
Delafosse Branch Library	Public libraries	729 Park Street South	Peterborough	929.00	Sq. meters	15
Peterborough Economic Development	Administrative offices and related facilities	210 Wolfe Street	Peterborough	557.00	Sq. meters	40
Fire Station #1	Fire stations and associated facilities	210 Sherbrooke Street	Peterborough	1,744.00	Sq. meters	168
Police Station	Police stations & associated facilities	500 Water Street	Peterborough	3,252.00	Sq. meters	168
Provincial Offences Office	Administrative offices and related facilities	99 Simcoe Street	Peterborough	132.00	Sq. meters	50
Public Works Operations	Equipment or vehicles repair or storage	182 Townsend Street	Peterborough	2,265.00	Sq. meters	168
Peterborough l Museum & Archives	Cultural facilities	300 Hunter Street East	Peterborough	929.00	Sq. meters	50
Peterborough Main Library	Public libraries	345 Aylmer Street North	Peterborough	3,716.00	Sq. meters	57
Sewage Treatment Plant	Facilities related to the treatment of sewage	425 Kennedy Road	Peterborough	3,841.00	Sq. meters	168
Fire Station #2	Fire stations and associated facilities	161 Carnegie Avenue	Peterborough	353.00	Sq. meters	168
Fire Station #3	Fire stations and associated facilities	721 Monaghan Road	Peterborough	538.00	Sq. meters	168
Eastgate Park PCSA Office	Community centres	2150 Ashburnham Road	Peterborough	173.00	Sq. meters	60
Peterborough & Kawarthas Visitor Centre	Community centres	1400 Crawford Drive	Peterborough	372.00	Sq. meters	43
Morrow Building	Community centres	155 Lansdowne Street West	Peterborough	2,327.00	Sq. meters	46
Street Lights	Community centres	500 George Street North	Peterborough	7,673.00	Sq. meters	84
City Hall Annex	Administrative offices and related facilities	500 George Street North	Peterborough	1,625.00	Sq. meters	40
Simcoe Street Bus Terminal	Administrative offices and related facilities	190 Simcoe Street	Peterborough	4,024.00	Sq. meters	67
Public Works Fleet Garage	Equipment or vehicles repair or storage	182 Townsend Street	Peterborough	1,325.00	Sq. meters	40
Transit Operations Building	Equipment or vehicles repair or storage	182 Townsend Street	Peterborough	4,045.00	Sq. meters	168

Facility	Electricity		Natural Gas		Renewable?	GHG Emissions (Kg)	Energy Intensity (GJ/m2)	Energy Intensity (GJ/Mega Litres
PSWC	1,572,543	*kWh*	171,899	Cubic meter	No	452,269.34785	2.26509	
City Hall	636,429	kWh	73,577	Cubic meter	No	190,650.56157	1.30087	
Memorial Centre	3,102,495	kWh	649,507	Cubic meter	No	1,481,725.95176	3.24049	
Northcrest Arena	411,387	kWh	8,473	Cubic meter	No	49,002.08640	0.78789	
Evinrude Centre	2,039,617	kWh	130,177	Cubic meter	No	410,397.19966	1.56294	
Kinsmen Civic Centre	1,119,559	kWh	88,730	Cubic meter	No	258,078.19514	1.48307	
Queen Alexandra	230,089	kWh	26,541	Cubic meter	No	68,813.12645	0.66321	
Art Gallery	96,284	kWh	22,103	Cubic meter	No	49,680.31128	1.98031	
Delafosse Library	45,726	kWh	10,047	Cubic meter	No	22,738.28768	0.59282	
Peterborough Economic Development	94,591	kWh	7,191	Cubic meter	No	21,225.16945	1.10757	
Fire Station #1	231,649	kWh	47,041	Cubic meter	No	107,871.60826	1.51484	
Police Station	729,171	kWh	44,340	Cubic meter	No	142,542.20658	1.33122	
Provincial Offences	35,138	kWh	2,652	Cubic meter	No	7,847.67033	1.73047	
Public Works Ops.	17,905	kWh	61,674	Cubic meter	No	196,649.09089	1.77262	
Museum & Archives	178,721	kWh	8,915	Cubic meter	No	31,228.24479	1.06137	
Peterborough Library	377,532	kWh	27,292	Cubic meter	No	82,034.09921	0.64801	
Sewage Treatment Plant	7,260,525	kWh	138,146	Cubic meter	No	843,204.30879	8.18725	1.82021
Fire Station #2	32,014	kWh	11,626	Cubic meter	No	24,641.75273	1.59232	
Fire Station #3	38,905	kWh	11,951	Cubic meter	No	25,809.37714	1.11407	
Eastgate Park Office	51,689	kWh			No	4,135.12000	1.07561	
Visitor Centre	260	kWh	3,464	Cubic meter	No	6,600.18196	0.36043	
Morrow Building	164,007	kWh	70,540	Cubic meter	No	147,088.49859	1.41878	
Street Lights	5,525,193	kWh			No	442,015.44000	2.61136	
City Hall Annex	74,780	kWh			No	5,982.40000	0.16567	
Bus Terminal	779,060	kWh	18,666	Cubic meter	No	97,774.05625	0.87525	
Public Works Garage	208,956	kWh	41,116	Cubic meter	No	16,716.48000	0.56773	
Transit Operations	277,170	kWh	77,706	Cubic meter	No	169,750.27174	0.98499	