

**2. PROPOSED STREET LIGHTING PREFERRED PARTNERSHIP BETWEEN
THE CITY OF OTTAWA AND ENERGY OTTAWA INC. (“ENERGY OTTAWA”)**

**PARTENARIAT PRIVILÉGIÉ PROPOSÉ ENTRE LA VILLE D’OTTAWA ET
ÉNERGIE OTTAWA INC. (« ÉNERGIE OTTAWA ») CONCERNANT
L’ÉCLAIRAGE DES RUES**

COMMITTEE RECOMMENDATIONS

That Council approve that:

- 1. Energy Ottawa Inc. (“Energy Ottawa”) carry out the conversion of the City of Ottawa’s street lighting infrastructure to light emitting diode (LED) technology as per the implementation schedule outlined in this report**
- 2. Energy Ottawa undertake the ongoing maintenance of the City’s existing and future street lighting infrastructure, as described in this report; and,**
- 3. The General Manager, Public Works Department be granted delegated authority to negotiate, conclude, and execute, with the concurrence of the City Clerk and Solicitor, legal agreements with Energy Ottawa, as described in this report.**

RECOMMANDATION DU COMITÉ

Que le Conseil approuve:

- 1. qu' Énergie Ottawa Inc. (Énergie Ottawa) assure la conversion aux diodes électroluminescentes (DEL) de l'infrastructure d'éclairage des rues de la Ville d'Ottawa, conformément au calendrier de mise en œuvre présenté plus loin dans ce rapport;**
- 2. qu' Énergie Ottawa soit responsable de l'entretien continu de l'infrastructure municipale d'éclairage des rues existante et future, comme le décrit le présent rapport;**
- 3. que le directeur général des Travaux publics se voit déléguer le pouvoir de négocier, de conclure et de signer, avec l'accord du greffier municipal et chef du contentieux, des ententes juridiques avec Energy Ottawa comme il est décrit dans le présent rapport.**

DOCUMENTATION / DOCUMENTATION

- 1. Acting Deputy City Manager's report, City Operations, dated 30 September 2015 (ACS2015-COS-PWS-0037)**

Rapport de la Directrice municipale adjointe par intérim, Opérations municipales, daté le 30 septembre 2015 (ACS2015-COS-PWS-0037)

**Report to
Rapport au:**

**Transportation Committee
Comité des transports
7 October 2015 / 7 octobre 2015**

**and Council
et au Conseil
14 October 2015 / 14 octobre 2015**

**Submitted on September 30, 2015
Soumis le 30 septembre 2015**

**Submitted by
Soumis par:
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Acting Deputy City Manager/Directrice municipale adjointe par intérim,
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Ward: CITY WIDE / À L'ÉCHELLE DE LA VILLE File Number: ACS2015-COS-PWS-0037

**SUBJECT: Proposed Street Lighting Preferred Partnership between the City of
Ottawa and Energy Ottawa Inc. ("Energy Ottawa")**

**OBJET: Partenariat privilégié proposé entre la Ville d'Ottawa et Énergie
Ottawa Inc. (« Énergie Ottawa ») concernant l'éclairage des rues**

REPORT RECOMMENDATIONS

That the Transportation Committee recommend Council approve that:

- 1. Energy Ottawa Inc. (“Energy Ottawa”) carry out the conversion of the City of Ottawa’s street lighting infrastructure to light emitting diode (LED) technology as per the implementation schedule outlined in this report;**
- 2. Energy Ottawa undertake the ongoing maintenance of the City’s existing and future street lighting infrastructure, as described in this report; and,**
- 3. The General Manager, Public Works Department be granted delegated authority to negotiate, conclude, and execute, with the concurrence of the City Clerk and Solicitor, legal agreements with Energy Ottawa, as described in this report.**

RECOMMANDATIONS DU RAPPORT

Que le Comité des transports recommande au Conseil d’approuver :

- 1. qu’Énergie Ottawa Inc. (Énergie Ottawa) assure la conversion aux diodes électroluminescentes (DEL) de l’infrastructure d’éclairage des rues de la Ville d’Ottawa, conformément au calendrier de mise en œuvre présenté plus loin dans ce rapport;**
- 2. qu’Énergie Ottawa soit responsable de l’entretien continu de l’infrastructure municipale d’éclairage des rues existante et future, comme le décrit le présent rapport;**
- 3. que le directeur général des Travaux publics se voit déléguer le pouvoir de négocier, de conclure et de signer, avec l’accord du greffier municipal et chef du contentieux, des ententes juridiques avec Energy Ottawa comme il est décrit dans le présent rapport.**

BACKGROUND

The City of Ottawa is committed to innovative and efficient energy management as a key component of its operations and is striving to deliver improvements in an environmentally and fiscally responsible way. A key component of this commitment includes the use of energy efficient street lighting technology.

On September 9, 2015, Council approved the Right of Way Lighting Policy Update Report ([ACS2015-COS-PWS-0013](#)), which included directing staff to use light emitting diode (LED) technology for all City of Ottawa street lighting infrastructure and the application of the Illuminating Engineering Society of North America's (IESNA) standards, where possible, in order to better comply with the *Accessibility for Ontarians with Disabilities Act* (AODA). The Right of Way Lighting Policy is the City standard for street lighting design and specifications for municipal street lighting infrastructure.

Furthermore, as part of the 2015-2019 Energy Management and Investment Strategy ([ACS2014-COS-PWS-0004](#)), approved by Council on May 14, 2014, the Public Works Department presented the City's first Conservation and Demand Management Plan (CDMP), which outlined a significant investment to convert the City's street lighting infrastructure from high-pressure sodium (HPS) and metal halide (MH) lighting to LED technology. This investment also forms part of the 2015-2018 City Strategic Plan.

The City of Ottawa street lighting network consists of 67,000 street lights and uses approximately 51.9 Giga Watt-hours (GWh) of electricity annually. That number grows with every new development built in the City. Street lighting accounts for 17% of the electricity used by the City. LED technology offers the opportunity to reduce the energy use by over 50%. Since street lighting costs in 2014 were \$7.2M, the potential savings are significant.

The City has implemented a number of pilot projects to test the efficiency of LED technology over the past few years. The intent of the projects was to confirm that the City's street lighting infrastructure could be converted to LED technology in a cost effective manner. Advantages of the conversion projects included:

- Over 50% reduction in energy use
- Approximately 50% reduction in maintenance costs

- Improved colour rendering of fixtures which improves safety
- Ability to use a more balanced colour temperature for lighting which improves ambiance
- Reduction in trespass light and light pollution
- Controls and monitoring that allow staff to more precisely design lighting, providing daily reports of failed fixtures and more accurate energy tracking and monitoring

As indicated in Table 1: LED Pilot Project Details, the project along Carling Avenue was the largest LED test area with more than 750 fixtures converted to LED technology. Energy Ottawa, a subsidiary of the city's local hydro utility, Hydro Ottawa Holding Inc., designed and managed the pilot project and Black and McDonald Limited installed the fixtures. The Carling Pilot Project demonstrated energy savings of 638,453kWh, which equates to approximately \$72,464 in annual savings (using 2014 rates).

Table 1: LED Pilot Project Details

Project	No. of Fixtures	Energy Savings
Carling	754	638,453 kWh
Beausoleil	85	36,291 kWh
Caldwell	17	9,772 kWh
Glebe Annex	29	7,272 kWh
Holitman	11	9,892 kWh

Similar to Ottawa, municipalities across Ontario are quickly realizing the immediate efficiency savings inherent in LED technology and, as a result, many are investigating options for converting their street light networks. Several Ontario municipalities that have been actively updating their street lighting portfolios include Mississauga, Kingston, Hamilton, Markham, Windsor, Thunder Bay, and North Bay.

Furthermore, many municipalities are partnering with their local hydro utility company to carry out LED conversion projects. While local utility partnerships varied among different municipalities, most worked collaboratively with their local hydro utility on LED conversion projects for their street lighting networks. The varied use is mainly based on the local hydro utility's level of street lighting expertise. Generally, the more expertise the local hydro utility has, the more involved they are in LED conversion projects. Document 1 provides a breakdown of some of the LED conversion projects taking place in Ontario municipalities.

The City of Ottawa is taking a similar approach to the City of Windsor in partnering with its local hydro utility. Energy Ottawa, which is wholly owned by Hydro Ottawa Holding Inc., has the in-house expertise to provide a full turn-key LED conversion project, including engineering, design, project management, installation, and assisting with incentive applications. Furthermore, the City of Ottawa has a [Council directive](#), approved June 14, 2006 (Ref N°: ACS2006-PGM-POL-0047) that states that Energy Ottawa is its preferred partner in the pursuit of initiatives to reduce energy costs.

As a result of this directive, the City of Ottawa has partnered with Energy Ottawa to complete energy retrofit projects, including 15 energy retrofit projects in the past three years at a total cost of \$2.1M with annual energy savings for the City of nearly \$535,000 upon completion of the projects.

Energy Ottawa also has the knowledge and expertise to maintain the City's street lighting infrastructure on behalf of the City as Hydro Ottawa Limited, another wholly-owned subsidiary of Hydro Ottawa Holding Inc., carried out these duties until 2005. At that time, Black and McDonald was awarded a contract to maintain the City's street lighting infrastructure pursuant to the Ottawa Option Policy for unsolicited proposals.

Hydro Ottawa Holding Inc. is a corporation established under the *Ontario Business Corporations Act* and is wholly owned by the City and is subject to a unanimous shareholder's declaration in favour of the City. The declaration, among other matters, sets out the policy directions established by City Council that the Corporation must adhere to. By extension, Energy Ottawa, as a subsidiary of Hydro Ottawa Holding Inc., is subject to this declaration as well.

DISCUSSION

In 2013, the Ontario Ministry of Energy released the Long-Term Energy Plan that outlines the estimated rate at which energy costs will increase in the province of Ontario. The Province has predicted that energy costs will increase by 7% annually over the next three years. Balancing increasing energy demand and fiscal responsibility, the City of Ottawa continually strives to find innovative and sustainable ways to invest in its infrastructure and assets.

Converting all existing street lights to LED technology will allow the City of Ottawa to realize annual energy savings of approximately \$4M upon completion of the conversion. In order to maximize efficiencies and savings, the City of Ottawa proposes entering into an agreement with Energy Ottawa to undertake the LED conversion project and ongoing maintenance of the City's existing and future street lighting infrastructure at a total annual savings of \$6M upon completion of the conversion project.

The City has negotiated an agreement in principle with Energy Ottawa that will:

- Allow Energy Ottawa to go out to the competitive market to find a suitable partner for the LED conversion project and maintenance of the City's street lighting infrastructure;
- Convert 58,000 street lights to LED technology over four years at a guaranteed fixed price to be financed by Energy Ottawa with a payback period of six years;
- Transfer the maintenance function for street lights to Energy Ottawa for a six year term to align with the six year payback period for the conversion project (with an optional extension of four years); and,
- Include an option for Energy Ottawa and the City to continue its partnership to find other innovative ways to save money and find additional energy efficiencies.

Benefits of City of Ottawa and Energy Ottawa Partnership

As per Council direction provided on June 14, 2006 (Ref N°: ACS2006-PGM-POL-0047), Energy Ottawa Inc. ("Energy Ottawa") is the City's preferred partner in the pursuit of initiatives to reduce energy costs and overall energy consumption through energy efficiency, conservation and demand management. Energy Ottawa is a wholly

owned subsidiary of Hydro Ottawa Holding Inc., whose sole shareholder is the City of Ottawa. The intent of the preferred partnership is to explore innovative ways for the City to reduce consumption, reduce greenhouse gas emissions, and create financial benefit for the City by reducing or avoiding costs and generating revenue and to allow Energy Ottawa to enhance its business success through service for fee contracting. Once street lighting maintenance is taken over by Energy Ottawa, partnering with Hydro Ottawa Limited ("Hydro Ottawa"), the City will share any profits generated by way of dividends. Energy Ottawa could also use the successful completion of the LED conversion project in Ottawa as a marketing tool to secure future work in other municipalities thereby potentially generating increased dividends for the City in the future. Furthermore, as the City's local hydro utility, Hydro Ottawa would need to be involved in any LED conversion project the City undertakes as they would be required to help manage unknowns such as energy consumption and technical implications of converting to LED technology.

Another major advantage of partnering with Energy Ottawa is that its related affiliate, Hydro Ottawa, is the City's power supplier, and has the detailed technical knowledge, experience and project management expertise required to assist with the LED conversion project.

The benefits go beyond the LED project as Energy Ottawa is able to leverage further maintenance savings by having Hydro Ottawa work combined with City work as the two are often at the same location at the same time since Hydro Ottawa construction crews are usually engaged in most City road widening and road betterment projects. With Hydro Ottawa as the City's street light maintenance service provider, these costs will be reduced as less crews will be onsite at the same time. Furthermore, as Hydro Ottawa maintains a 24/7 operation with staff on duty at all times, overtime costs can be reduced significantly. These types of synergies are estimated to result in approximately \$400,000 in annual maintenance savings upon completion of the conversion project.

Taking these synergies into account and considering that LED technology has a 50% lower maintenance cost than HPS and MH lighting, the total potential annual maintenance savings are estimated to be in excess of \$2M once the conversion project is fully implemented.

ELEMENTS OF THE PROPOSED AGREEMENT

Policy and Standards

Under the proposed agreement, the management of policies, standards and reviews would remain with the City. The recently approved Right of Way Lighting Policy forms the standards with which Energy Ottawa is required to comply where possible without adding new poles or changing pole spacing. The Policy outlines such details as lighting levels and fixture types, and guides staff and developers in the design and installation of street lights in the City. The Policy includes approved LED fixtures.

Capital Program

The City would retain ownership of the street lighting infrastructure as well as the Capital program to replace aging infrastructure and install new street lights. The 2015 budget for the Capital program is \$2.4M. The Capital budget would be controlled by the City and managed by City staff in the Street Lighting Unit of the Public Works Department.

LED Conversion Project and Maintenance

Under the proposed agreement, Energy Ottawa would manage the maintenance of all existing and future street light infrastructure for a period of 6 years, which is the forecast length of the financing for the LED conversion project, with a mutually agreeable option to renew for an additional 4 years. Energy Ottawa would also manage the implementation of a conversion project for the City's street lighting infrastructure from HPS and MH to LED technology, including the engineering and design, procurement and installation, project management, and financing.

Energy Ottawa will contract out the majority of the maintenance functions and LED conversion project work through a competitive process. The remaining work for maintenance and the LED project will be completed using Energy Ottawa and Hydro Ottawa staff.

Upon Council approval, the General Manager of the Public Works Department, subject to the concurrence of the City Clerk and Solicitor, will execute the agreements with Energy Ottawa on behalf of the City of Ottawa under delegated authority.

The LED conversion project will see the City's 58,000 standard street lights converted to LED technology and will result in substantial savings after the 4 year implementation phase. The conversion project will be financed by Energy Ottawa and will leverage energy savings, maintenance cost savings, provincial CDM financial incentives, and a small capital funding savings.

Table 2: Estimated Energy Savings outlines the estimated energy savings from converting the City's street lighting network to LED technology, including the estimated greenhouse gas reduction.

Table 2: Estimated Energy Savings

Estimated Fixtures	Energy Spent (based on 2013 numbers)	Potential Savings Based on energy consumptions savings of 50%	Greenhouse Gas Reduction
58,000 standard street light fixtures	51,926 MWh	22,475 MWh per year.	• 1,208 tonnes of CO₂ annually • Equivalent to 254 passenger vehicles
Estimated Net savings		18,626 MWh	• 1,000 tonnes of CO₂ annually • 210 passenger vehicles

Costs and Implementation Schedule for LED Conversion Project

As indicated in Table 3: Estimated Conversion Project Costs, the net cost of the conversion project is estimated to be \$26.7M (plus financing cost) to be financed by Energy Ottawa. Electricity savings will be realized as the LED street lights go live with annual savings of an estimated \$4M upon completion of the implementation, which will result in the entire project cost being offset by electricity and maintenance savings. The project cost has been reviewed against other LED conversion projects and market pricing and deemed to be competitive. There is no risk to the City as part of the conversion payback model as Energy Ottawa has guaranteed installation and

maintenance set prices for the duration of the agreement. Energy Ottawa bears full risk of bringing the project in on-time and on-budget.

Table 3: Estimated Conversion Project Costs

Financial Consideration	Costs
Fixed price, fully turnkey project cost	\$31.4M
Less CDM incentives	(\$4.7M)
Net Cost	\$26.7M
Estimated financing cost	\$1.2M
Total Net Project Cost	\$27.9M

The LED conversion project would begin in June 2016 and would be completed by June 2020. The implementation schedule would include approximately 4,000 installations in 2016, 15,000 installations in 2017, 2018, and 2019, respectively, and 9,000 installations in 2020.

Future Partnerships

The agreement between the City and Energy Ottawa includes the potential for future partnerships that could derive future cost and energy savings for the City as agreed to by Hydro Ottawa, including the following:

- 6,700 parks and pathway lights;
- 7,948 decorative street lights; and,
- 609 National Capital Commission-owned street lights

RURAL IMPLICATIONS

This is a City-wide report.

CONSULTATION

The City has undertaken extensive consultation with Energy Ottawa Inc. and Hydro Ottawa Holding Inc.

COMMENTS BY THE WARD COUNCILLOR(S)

This is a City-wide report.

ADVISORY COMMITTEE(S) COMMENTS

No advisory committees were consulted.

LEGAL IMPLICATIONS

For the reasons that are set out hereafter, it is permissible for the City to pursue the recommended preferred partnership with Energy Ottawa Inc. for the LED conversion project and ongoing maintenance of the City's existing and future street lighting infrastructure.

Pursuant to the report entitled, "Status Report on City Environmental Initiatives and Proposed Strategic Partnership with Energy Ottawa", approved by Council on June 14th, 2006 (Ref N°: ACS2006-PGM-POL-0047), Council previously approved a broad preferred partnership arrangement with Energy Ottawa Inc., a wholly-owned subsidiary of Hydro Ottawa Holdings Limited. This report identified "a new environmental partnership opportunity with Energy Ottawa" that was in pursuit of initiatives to reduce overall energy consumption and energy costs through energy efficiency, conservation, demand management and "smart" electricity procurement. A Master Services Agreement dated January 20th, 2007, was subsequently signed by the parties which provided for, among other matters, the supply by Energy Ottawa to the City of energy production, procurement and management services relating to City-owned and operated facilities.

Consequently, this particular initiative with Energy Ottawa is compliant with Subsection 22(g) of the City's *Purchasing By-Law*: "...the possibility of a follow-on contract was identified in the original bid solicitation", as it follows from the earlier report and the Master Services Agreement.

Supply Branch has also advised that Energy Ottawa has completed numerous projects for the City for "the pursuit of initiatives to reduce energy costs and overall energy consumption through energy efficiency, conservation and demand management", including, recently, projects totalling approximately \$506,265.00 in 2013, \$968,586.00 in

2014, and \$654,956.00 to date in 2015, which resulted in a total savings to the City of approximately \$534,226.00.

RISK MANAGEMENT IMPLICATIONS

There are no risks to the City associated with this report.

FINANCIAL IMPLICATIONS

There is no incremental budgetary cost as a result of the recommendations in this report. The City will fund the Project cost based on diverting annual savings related to the Electricity and Maintenance cost over the estimated 6 year payback period. At the end of the payback period the City will realize the full impact of the annual Electricity and Maintenance savings.

ACCESSIBILITY IMPACTS

There are no accessibility impacts.

TERM OF COUNCIL PRIORITIES

The recommendations of this report align to the 2015-2018 Strategic Priority – Sustainable Environmental Services, specifically Strategic Objective ES1 – Support an Environmentally Sustainable Ottawa. The recommendations of this report also align to the 2015-2018 Strategic Priority – Financial Sustainability, specifically Strategic Objective FS1 – Demonstrate Sound Financial Management.

SUPPORTING DOCUMENTATION

Document 1 – Large Ontario Municipalities' LED Conversion Projects

Document 2 – *Master Services Agreement* between Energy Ottawa Inc. and the City of Ottawa dated January 20, 2007, which is on file with the City Clerk and Solicitor (*Previously distributed and held on file with the City Clerk and Solicitor*).

DISPOSITION

Upon Council approval, the General Manager of the Public Works Department will execute agreements with Energy Ottawa to convert the City's existing street lighting

infrastructure to LED technology and for the management of the City's maintenance of said infrastructure.

Document 1

Large Ontario Municipalities' LED Conversion Projects outlines the details of some LED conversion projects across Ontario, including partnerships with local hydro utilities. As shown, the majority of projects are funded with municipal capital funding.

Table 4: Large Ontario Municipalities' LED Conversion Projects

Municipality	How LED conversion projects were completed	Funding for projects	Status
City of Windsor	Full turn-key project carried out by local hydro utility	Municipal Reserve Funding	24,000 to be completed
City of Mississauga	In partnership with local hydro utility through competitive process	Municipal Capital funding	43,000 of 50,000 complete
City of Kingston	Full turn-key project carried out by local hydro utility through competitive process	Municipal Capital funding	10,500 complete
City of Thunder Bay	In partnership with local hydro utility	Loan through Infrastructure Ontario	6,000 out of 10,000 complete
City of North Bay	In partnership with local hydro utility	Municipal Capital funding	5,000 complete
City of Markham	Without local hydro utility	Municipal Capital funding	12,000 complete
City of Hamilton	Without local hydro utility	Municipal Reserve funding	700 Pilot complete, 10,000 to be complete