



REALTERM
ENERGY



Case Study:

Pickering's LED Streetlight Conversion

Increased Safety & Decreased Carbon Footprint

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The City of Pickering is located in Ontario, Canada 50 kilometers east of Toronto, the provincial capital. Pickering is home to 91,771 residents spread out over 230 square kilometers along the shores of Lake Ontario, which forms Pickering's southern boundary.

OVERVIEW

- RealTerm Energy selected in 2016 for a full turnkey LED conversion
- Additional services included an evaluation of the condition of its wooden poles
- RealTerm Energy engaged in significant negotiations with the Ontario Electrical Safety Associations, saving millions of dollars in retrofit costs regarding legacy wiring issues
- A full assessment of all decorative fixtures was performed to ensure correct adaptors and fittings could be costed and ordered when authorized by the municipality
- A pilot project was also organized
- 7,265 fixtures were installed
- 63% reduction in energy consumption was realized
- 54% savings in energy costs
- Up to 80% in reduced maintenance costs
- Approximately 3,162 metric tonnes of greenhouse gas eliminated over the life of the luminaire, equivalent to the greenhouse gas emissions from 671 passenger vehicles driven for one year

BENEFITS OF AN LED UPGRADE

- Typically achieving between 50-70% savings in energy consumption
- Up to 80% maintenance reduction
- Improved visual acuity
- Reduced light pollution
- Reduced greenhouse gas emissions

OPPORTUNITY

In 2016, the Municipality of Pickering, Ontario wanted to significantly reduce its energy consumption, maintenance costs and the environmental impact associated with its network of streetlights. Once installed, the City realized that LED streetlights could not only achieve substantial energy and cost savings but also improve its overall lighting quality and roadway safety for both vehicle and pedestrian traffic.

RealTerm Energy was contracted to manage an upgrade of 7,265 existing streetlights, composed of approximately 4,430 cobra heads and 2,835 decorative fixtures.

The new LED fixtures cut Pickering's streetlight energy consumption by approximately 63%, as LEDs require significantly less electricity than the high-pressure sodium lights that were currently in place. The upgrade will also decrease annual streetlight maintenance costs by up to 80%, due to LED's solid-state technology (with no moving parts) which last up to four times longer than the City's existing streetlights. The new LED lights also include a 10-year warranty.

By moving forward with the conversion of Pickering's 7,265 streetlights to LED, the City has reduced its greenhouse gas emissions by

approximately 3,162 metric tonnes over the lifetime of the fixtures. This is equivalent to eliminating greenhouse gas emissions from 671 passenger vehicles driven for one year - thus significantly reducing Pickering's carbon footprint.

The design team created photometric plans for 4,430 Cree cobra head fixtures as well as 2,835 decorative fixtures. The design plans employed a hybrid approach to colour temperature, with a mix of 4000K along arterial local roads and warmer, 3000K lights along residential streets. It was determined that a combination of Cree, Acuity and King luminaires yielded the best balance of energy savings, cost efficiency and long-term performance. Preference was given to fixtures that would maximize available incentives to the municipality. It was calculated that after the upgrade, the City's annual electrical consumption would decrease by 63% and Pickering would see a decrease of 54% in their annual electricity costs.

CHALLENGES

The project was highly complex and required the coordination and collaboration of several parties outside the control of RealTerm Energy, particularly the Electrical Safety Association. Further, we were advised that although originally specifying 4000K lights to be installed, the municipality decided to revise this to 3000K lights in residential neighborhoods.

Lastly, while indicated as cobra head fixtures, our GIS survey discovered that 39% of these fixtures were actually decorative fixtures. The RealTerm Energy team responded rapidly to this scope of work change in collaboration with the City.

RESULTS

Pickering had requested that RealTerm Energy conduct a streetlight pole assessment on municipally-owned wooden poles and related infrastructure in two specific neighbourhoods within the City. RealTerm Energy's field

technicians, using specialized non-invasive boring equipment, conducted an on-site evaluation of approximately 400 poles and adjoining wires with the result being a comprehensive evaluation and estimate of replacement costs based on a phased implementation approach.

Several areas within the City contained fixtures that were historically and/or architecturally significant to the residents, so replacement was not an option. In response, RealTerm Energy sourced conversion kits, allowing for energy savings while maintaining the aesthetic value of the existing fixtures.

These issues delayed the project from its initial timeline and tested the contingency procedures but resulted in a very gratifying conclusion to a worthwhile project.

- All streetlights, both cobra and decoratives have been audited and updated in the GIS inventory
- All designs for the cobra heads and decoratives have been completed
- Poles that were deemed to require replacement, were replaced while others are on a phased timetable for eventual replacement

BENEFITS TO DATE

The new streetlights that have been installed to date have added a greater level of safety and security for Pickering while reducing the City's energy consumption and carbon footprint. This project is a classic win-win as going forward, the community will save thousands of dollars in reduced energy costs and provide environmentally-friendly lighting.



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