MISSISSAUGA, CANADA · 2012-2015

Mississauga: 50,000 streetlights with metering in every node

Mississauga converted 50,000 street lights to LED and put a utility-accepted revenue meter inside every node, so adaptive dimming could be billed on measured consumption.

PUBLISHED OUTCOMES

55%

REDUCTION IN ENERGY COSTS ↗ (HTTPS://WWW.MISSISSAUGA.CA/WP-CONTENT/UPLOADS/2020/03/05141330/LED-STREET-LIGHTING-CONVERSION-PROJECT.PDF)

$26M

PROJECT INVESTMENT (CAD) ↗ (HTTPS://WWW.MISSISSAUGA.CA/WP-CONTENT/UPLOADS/2020/03/05141330/LED-STREET-LIGHTING-CONVERSION-PROJECT.PDF)

50,000

STREETLIGHTS CONVERTED ↗ (HTTPS://WWW.MISSISSAUGA.CA/WP-CONTENT/UPLOADS/2020/03/05141330/LED-STREET-LIGHTING-CONVERSION-PROJECT.PDF)

The situation

Mississauga owned about 50,000 street lights on residential, collector and arterial roads. In 2011 those lights cost the City $6.1 million a year in electricity and $2.3 million a year in maintenance. Both lines were the target. The City approved a $26 million conversion, debt-financed, with $1.4 million in incentive eligibility. Work ran from November 2012 to December 2015.

Converting the fixtures to LED was the straightforward part. The harder question was how the City would prove what it actually consumed once the lights no longer drew a fixed, assumed load.

What was deployed

Every converted light received a networked node. Nodes communicate over a wireless mesh. Each network area, approximately 300 nodes, reports through a central gateway to the Dimonoff | SCMS platform, where groups, schedules and dimming profiles are defined.

The distinguishing element sits inside the node. Each node contains a built-in electrical meter, and the City worked with Enersource, the local

utility, to have those meters accepted as revenue meters. Mississauga installed a full-scale adaptive controls system with its LED conversion in 2014 and developed, with the utility, a method for demonstrating the metering integrity of the controls.

Results

The City reports a 55% reduction in energy costs against the 2011 baseline. Maintenance costs fell as well; the City describes that reduction as significant without publishing a figure.

Because the meter is in the node, the saving is measured rather than modelled. Under an unmetered street lighting tariff, the utility bills a city for an assumed load per fixture. Dimming does not change that assumed load, so the energy saved by adaptive control never reaches the invoice. Revenue metering in the node closes that gap.

Why it matters for your network

Most LED conversions capture the wattage reduction and stop there. Adaptive control, dimming late at night or trimming output on low-traffic roads, only pays back if the utility will bill on measured consumption. That requires a meter the utility accepts and a documented method for demonstrating its integrity. Mississauga did both, with its utility, across 50,000 lights. If your street lighting is billed on an unmetered tariff today, this is the precedent to bring to your utility before you scope the controls.

> The metering system within each node is accepted by our local hydro as an energy meter.
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> **Eric Menezes**, Streetlighting Supervisor, City of Mississauga ↗ (https://www.dimonoff.com/news/elster-solutions-teams-with-dimonoff-for-smart-street-lighting/)

DEPLOYMENT

Platform	Dimonoff | SCMS
Network	Wireless mesh, ~300 nodes per gateway
Metering	Utility-accepted revenue metering in each node
Roads	Residential, collector and arterial

PARTNERS

- Enersource

SOURCES

- City of Mississauga - LED street lighting conversion project (https://www.mississauga.ca/wp-content/uploads/2020/03/05141330/LED-street-lighting-conversion-project.pdf)
- IESO Save on Energy - LightSavers intelligent lighting report (https://saveonenergy.ca/-/media/Files/SaveOnEnergy/Industry/LightSavers-IntelligentLighting-Report.pdf)
- Dimonoff - Elster Solutions teams with Dimonoff for smart street lighting (https://www.dimonoff.com/news/elster-solutions-teams-with-dimonoff-for-smart-street-lighting/)