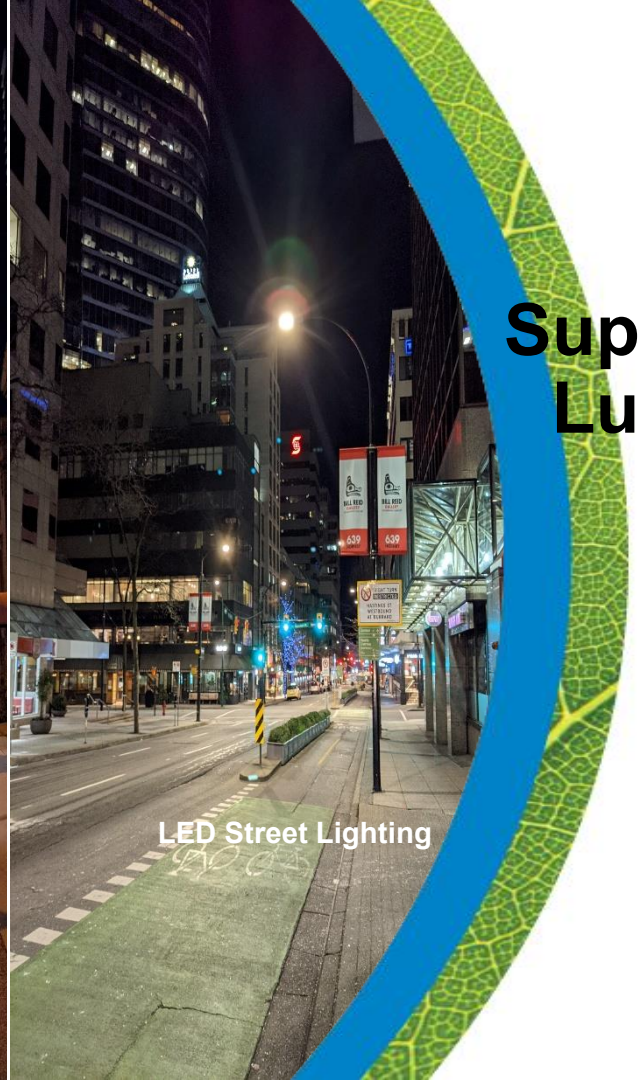


Supply and Delivery of LED Luminaires and Intelligent Street Light Control Systems – RTS 13942

Presentation to Standing Committee
May 19, 2021

CITY OF VANCOUVER

Background and Project Description

Background:

- The City operates and manages 44,000 high pressure sodium (HPS) “cobra head” roadway lights and 11,000 high pressure sodium (HPS) “decorative” luminaires.
- Street lighting is one of the largest energy consumers of municipal electricity.
- The City spends **approximately $3.8M annually** on electricity charges for street lighting.
- In Q1 2020, council approved a project to replace the HPS lighting with energy efficient LEDs and the supporting infrastructure.

Project Description:

- Replace all HPS “cobra head” roadway lights with modern LED luminaires.
- Install Intelligent Street Light Controls for centralized monitoring and future IoT applications.
- Timeline of 5 years to allow spread of capital spend and work to be done by internal crews.
- Note: Decorative luminaires <u>are not</u> part of current scope and will be considered for later phase.

Project Objectives

Energy Savings and CO_2 Reduction: LEDs **reduce energy consumption by 40-50%** and associated carbon emissions. Analysis indicates **$2.3M in energy cost savings** will be achieved after full HPS to LED deployment, which is equivalent to **224 tonnes* in CO_2 emissions reduction**.

Reduction in Maintenance: Life expectancy of LED luminaires is significantly longer than HPS lamps. Combined with more reliable technology, fewer failures are observed with LED luminaires.

Improved Safety and Security: LEDs are proven to provide better colour rendering and illumination uniformity to improve object detection for road users and enhanced traffic safety.

Reduced Light Pollution and Trespass: LED lighting can be produced with optics that provides directionality, allowing lighting to be targeted to reduce trespass and sky glow.

Smart City / IoT Framework: Concurrent to the LED street light deployment, Intelligent Street Light Controls will set up the network for managing all street light devices and provide a framework for future Smart City/IoT devices. (Energized pole detection feature will be implemented with the LED rollout).

* Based on BC Hydro carbon emissions of 11 tonnes/GWh generated, and expected energy savings of 20.4 million kWh.

Selection Process

Multi-Stage Vendor Selection Process

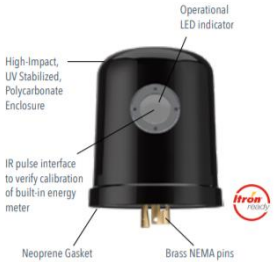
- Evaluated submissions of specifications in response to City requirements **by Engineering and Technology Services.**
- Shortlisted candidates based on virtual demonstration of control software and equipment.
- Further shortlisting of candidates to perform a live demonstration on Hornby St.
- Final selection based on performance of demonstrated equipment and overall scoring.

Vendor Recommendation: Acuity Brands

LED Street Lights

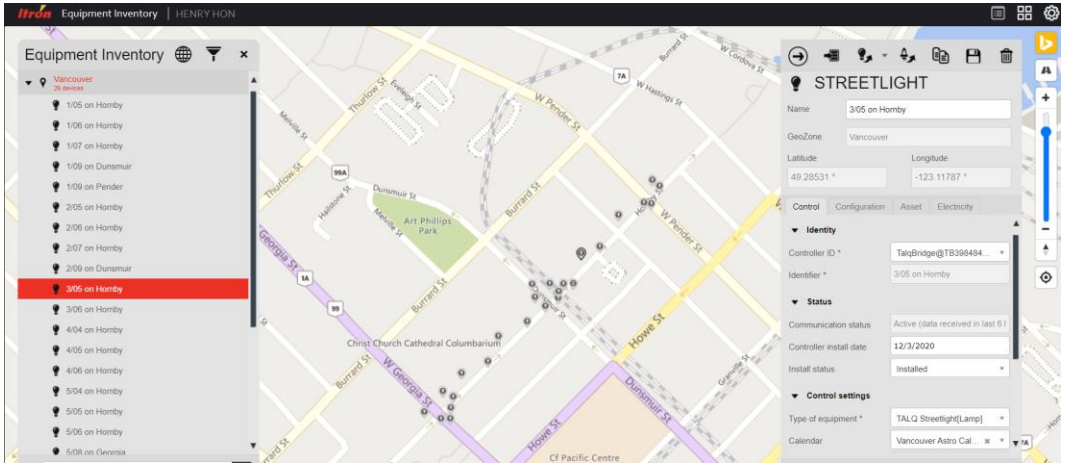
American Electric Autobahn ATB0 (LED luminaires)

Control Node



Control Gateway

DSN 127 BK 0 G USM8 DSTY PLT

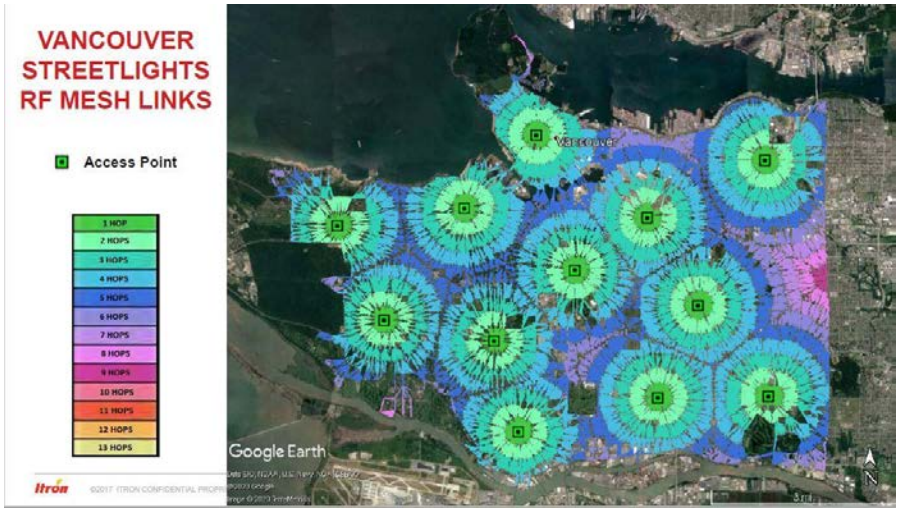


Control Management Software

Future Opportunities

A Smart City Lighting system uses the lighting controls and various sensors to collect data, then uses insights gained from this data to manage assets, resources and services more efficiently.
Through a wireless data management system various Internet Of Things (IOT) sensing devices can be added to the system.

MESH Network Coverage Map



Potential Smart City Sensors

- Energized Pole Detection (included in LED rollout)
- Traffic Monitoring
- Pedestrian Counting
- Smart Parking
- Road Temperature
- Air Quality
- Noise
- Water Level Sensors
- Digital Signage/Display
- Traffic Signal apps
- Waste Bin Capacity
- Sewer Overflow Sensors
- Water Level Sensors
- Water & Gas Meters

Participating vendors were evaluated on demonstrating their LED streetlight products and control hardware, and control management software and any mobile applications for current and future needs.

Questions

Thank You

Questions?