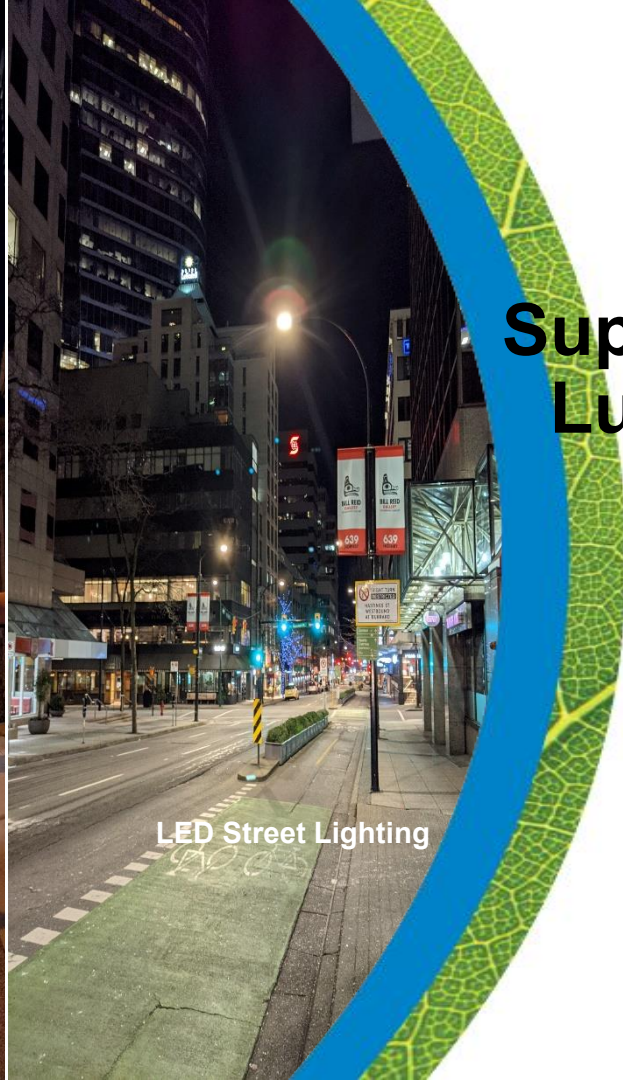




HPS Street Lighting



LED Street Lighting

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

Presentation to Standing Committee  
May 19, 2021

## 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 are not part of current scope and will be considered for later phase.

**Energy Savings and CO<sub>2</sub> 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<sub>2</sub> 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.

## **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)

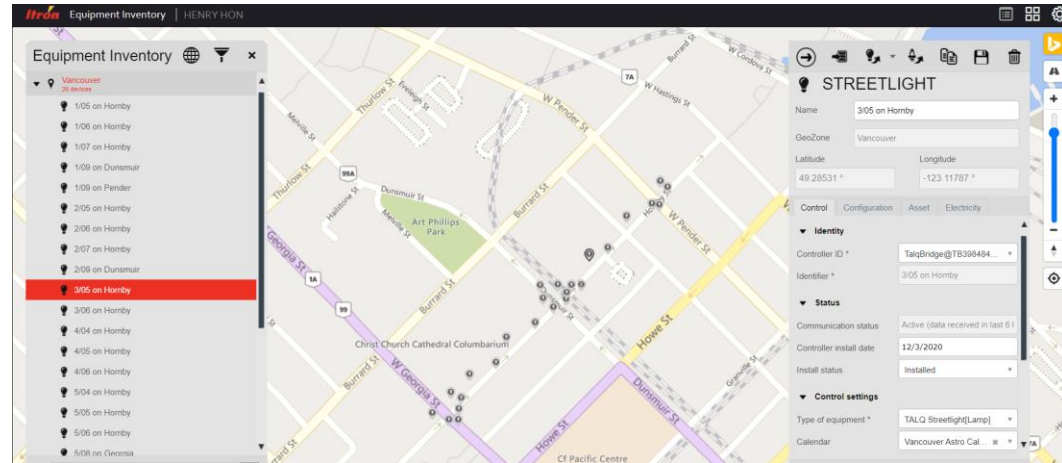
## Control Node



## Control Gateway



DSN 127 BK 0 G USM8 DSTY PLT

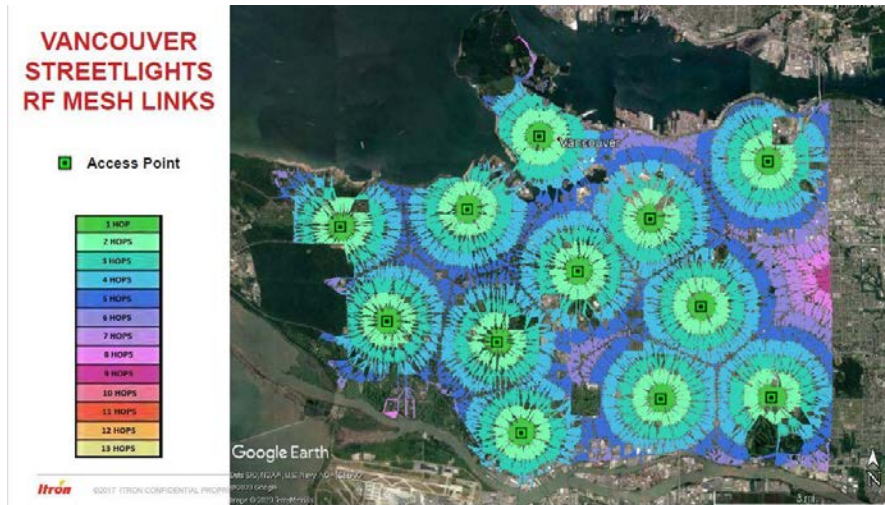


Control Management Software

**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.

## Thank You

Questions?

