



Lighting Controls 101

Utilize lighting controls to lower your energy bills

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Uli Chorny
Energy Technologist
uli@kambo.com



Angela Foster
Marketing & Communications Manager
angela@kambo.com



About Kambo



ROI driven business cases that deliver real change to utility bills



Holistic approach that delivers tip-to-tail energy efficiency upgrades



Leverage technology to deliver real-time monitoring and create long-term value



Kambo **generates cash-flow** for building owners and operators through implementing **financially focused** energy efficiency projects



Our Process



Evaluate

Quantify your energy saving opportunities. Learn how much money you qualify for in utility rebates to improve building performance.

Calculate

Get prioritized recommendations on how to reduce your energy costs and maximize your return on investment.

Install

Kambo completes installations with certified contractors and maximizes utility rebates on your behalf.

Validate

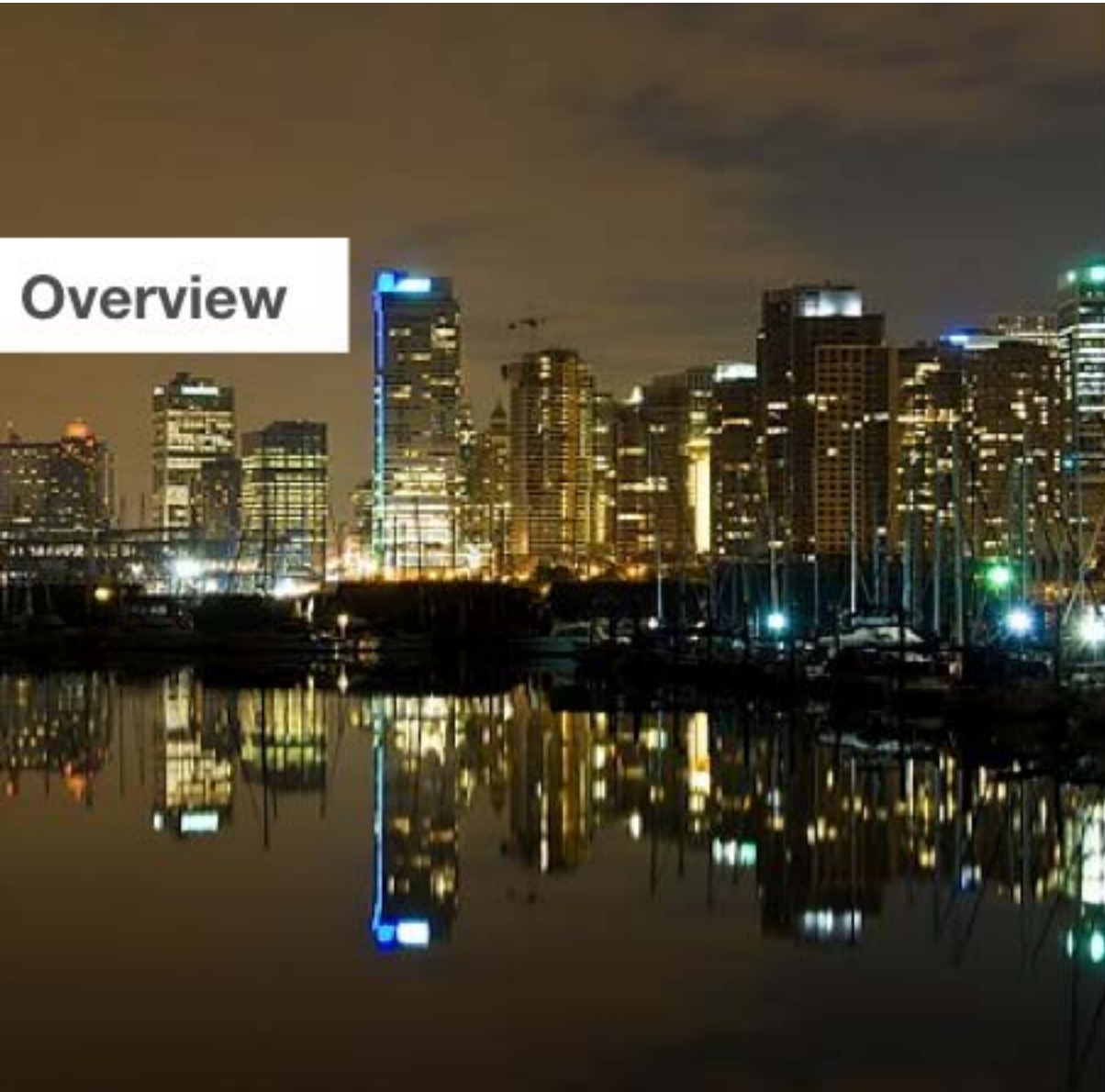
After installation we validate your savings with a web based real-time monitoring dashboard.



Uli Chorny
Kambo Energy Technologist



Overview



- Parkade Case Study
- How to spot opportunities for lighting controls
- Different lighting controls available
- How to calculate energy savings from lighting controls



What is a Lighting Control?

Light control is the ability to regulate the level and quality of light in a given space for specific tasks or situations automatically. Controlling light properly not only enhances the experience, it helps to save energy by using light when and where it is needed most.

Energy Savings vs. Practicality & Safety

- Always consult with building occupants
- Check your local building codes
- Consider leaving 'pilot' lights for safety
- Adjust timed delay and sensitivity settings



Success Story: Chinatown Parkade



OCCUPANCY SENSORS



REAL DATA ANALYSIS

\$7,200

PROJECT COSTS

7

FLOORS

\$3,950

ANNUAL SAVINGS

1.8 Year

PAYBACK PERIOD



Chinatown Parkade

1. Installed data loggers on parkade lights and installed occupancy sensors on one floor
2. 50% projected reduction in consumption from installing occupancy sensors
3. Factored each floor's varying traffic flow into energy reductions

How to spot opportunities for lighting controls in your facility

Areas with
intermittent use



Areas with a
lot of lights



Selecting a Lighting Control



Occupancy Sensor

Storage Rooms | Bathrooms | Parkades | Stairwells

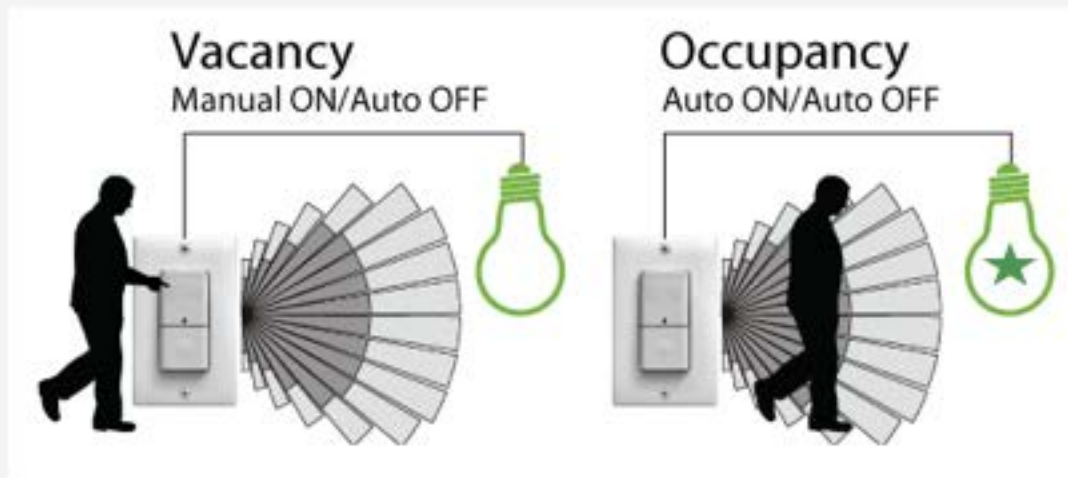
- Infrared (detects heat)
- Ultrasonic (detects sound)
- Dual





Vacancy Sensor

Boardrooms | Staff Kitchen





Daylight Harvesting

Offices & Spaces with Natural Light | Classrooms





Dimmers

Boardrooms | Offices | Hallways

Can be used in conjunction with other technologies

Dimmers alter the power flow - reducing both brightness and energy consumption





Photocells & Timers

Outdoor Areas





Rebates

- BC Hydro Lighting control rebates are available with approved lighting projects - but not stand alone
- Always check the approval process before implementing changes or purchasing products

Calculating the Business Case for Lighting Controls



Information Required

- Wattage
- Number of light fixtures
- Electricity Cost (/kWh)
- Annual Light-On Time

Example:

*100x 50-Watt Fixtures
On 4,000 hours per year*

*(100 fixtures X 50W) ÷ 1000 = 5kW
5kW X 4000hr X 0.1CAD/kWh = \$2,000 per year*



*Install Occupancy Sensors
50% energy savings (50% = \$1,000)*

\$1,000 annual savings



Poll

Do you think you could lower your BC Hydro bills by implementing lighting controls?



Questions?

kambo.com hello@kambo.com

