

# SAVING ENERGY WITH TECHNOLOGY

- SAFETY
- PRODUCTIVITY
- PATIENT EXPERIENCE
- QUALITY
- VALUE

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## Define Problem/Set Aim

### Opportunity for Improvement

One Reporting number Centre (ORC) has no direct visibility of the outdoor conditions resulting in lightings not switch on/off appropriately and timely according to the weather.

### Background

Everyday, staff and public are using the Level 2 link bridges and common walkway areas to move between Towers A, B and C. The scheduled timing for the lighting control of these areas are programmed into our Building Management System (BMS). The lighting is turned off during daytime at 7am and turned on in late evening at 7pm.

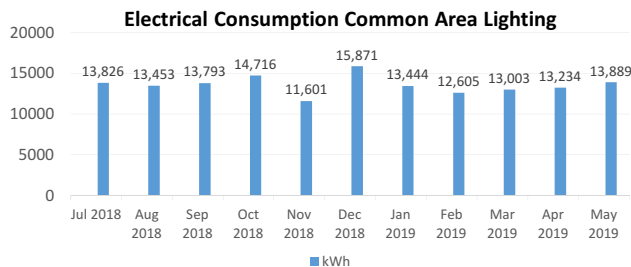
When the weather pattern changes from cloudy to sunny day, the BMS is unable automatically switch off the lighting. ORC is dependant on feedback received to remotely turn on the lighting in these areas during bad weather and to turn them off when the bad weather passes.

### Aim

The team aimed to save energy and cost through the use of technology and improve work efficiency via automation.

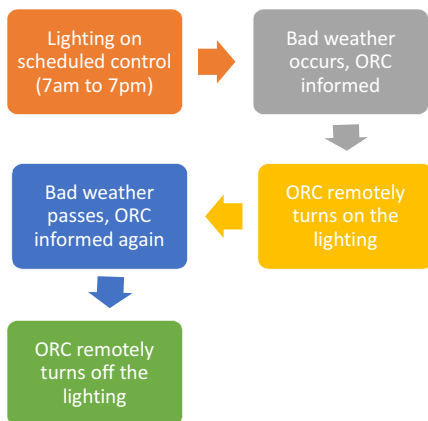
## Establish Measures

### Current performance



## Analyse Problem

### Current Process



### Probable Root Cause

Currently, BMS is using a time schedule program to control the lighting. This method does not take into consideration the outdoor lighting level.

## Select Changes

### Probable solutions

- Hourly updates of the weather conditions by ORC personnel
- Use of technology to monitor and control the lighting

Option 2 was chosen as this was less costly and would not require additional manpower.

## Test & Implement Changes

### Implementation

#### 1. Installation of Photo control sensors

These sensors are able to detect how much light there is in an area. One is mounted at the rooftop and the other sensor indoors. These sensors are then connected to our BMS through cabling.

#### 2. Verification & testing of the sensors

The sensors were then tested on the site both indoors and outdoors by using equipment which are able to measure lighting levels. This was compared to the readings obtained by our BMS.

#### 3. Programming of the logic and scheduling control

Our BMS is then programmed to recognize the difference in light signal between the areas where the sensors are mounted. It will then send a signal to turn on or off the lighting.

### Results after implementation

Electricity used in areas with these lighting	kWh	* \$	** CO <sub>2</sub>
Before implementing (May)	13,889	\$3,364	1,410
After implementing (June)	13,059	\$3,163	1,326
Savings	830	\$201	84

\* Electricity Tariff Rate = 24.22 cents / kWh

\*\* Operating Margin = 0.4192 kgCO<sub>2</sub> / kWh

## Spread Change/Learning Points

### Key learnings

Making good use of external natural lights for indoor lighting use is one great way to conserve energy usage. Advance in technology had enable us to constantly monitor and control the lights which enhance productivity and save cost. Every single kW of electricity and kg of CO<sub>2</sub> saved counts.