

**GRENFELL**  
CAMPUS

**MEMORIAL**  
UNIVERSITY

**Welcome to Grenfell Campus**

**FIND YOUR CORNER<sup>7</sup>**

[findyourcorner.ca](http://findyourcorner.ca)

September 2017

**ENERGY AND FACILITY RENEWAL PROGRAM**

**Honeywell**

# Agenda



Introduction

What is an Energy Performance Contract



About the Program

What to Expect



Q&A







## Introductions



# Introduction

## Project Team

### Honeywell

- Kyle Whittle – Project Manager Overall Project
- Ernie Mallay – Project Manager Honeywell Controls
- Michael Appleby – Project Control Specialist
- Ken Menezes – Measurement and Verification Specialist
- Ben Chambers – PowerSecure Program Manager

### Memorial University

- Jason Daniels – Manager, Major Capital Projects
- Johnathan Roberts – EPC Project Lead
- Rayna Luther – Director, Facilities Management
- Grenfell Campus Unit Heads and User Groups





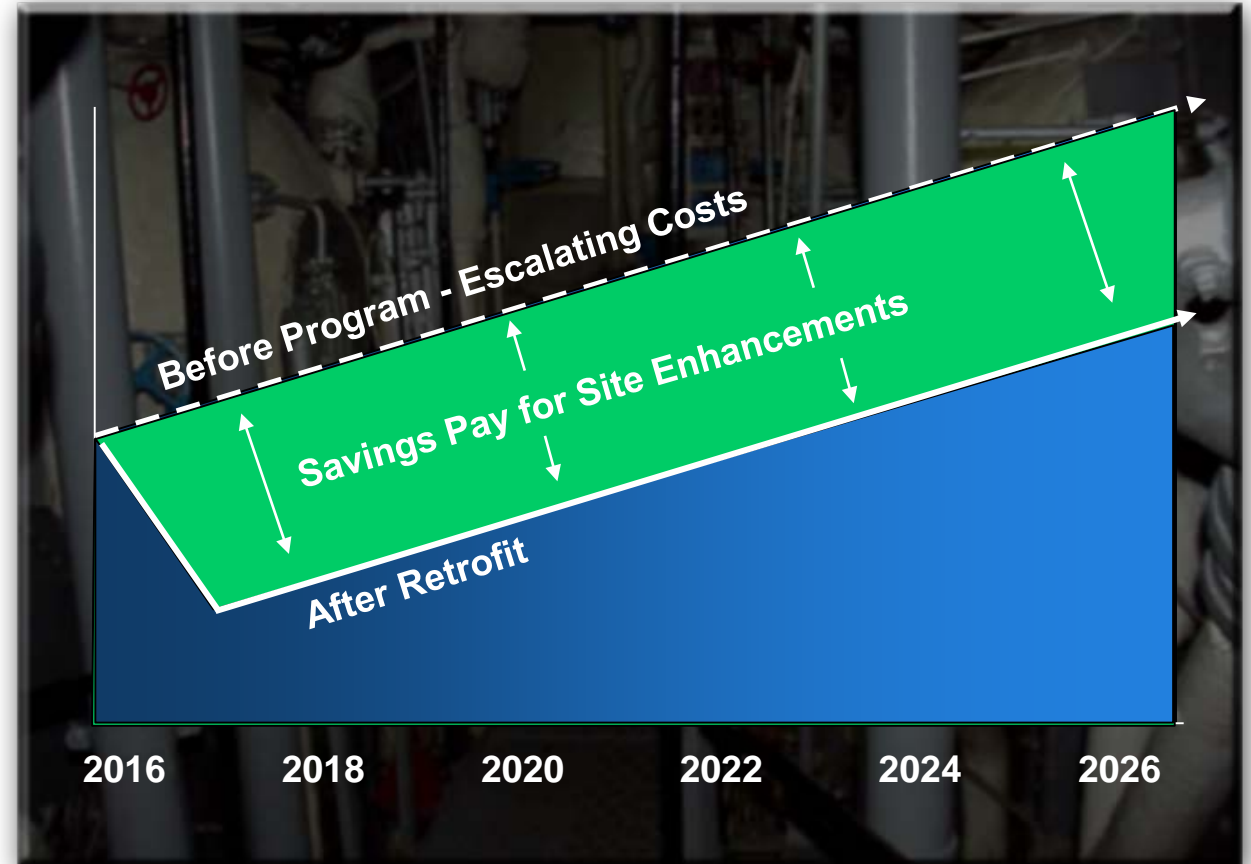
## **What is an Energy Performance Contract?**



# What is an Energy Performance Contract

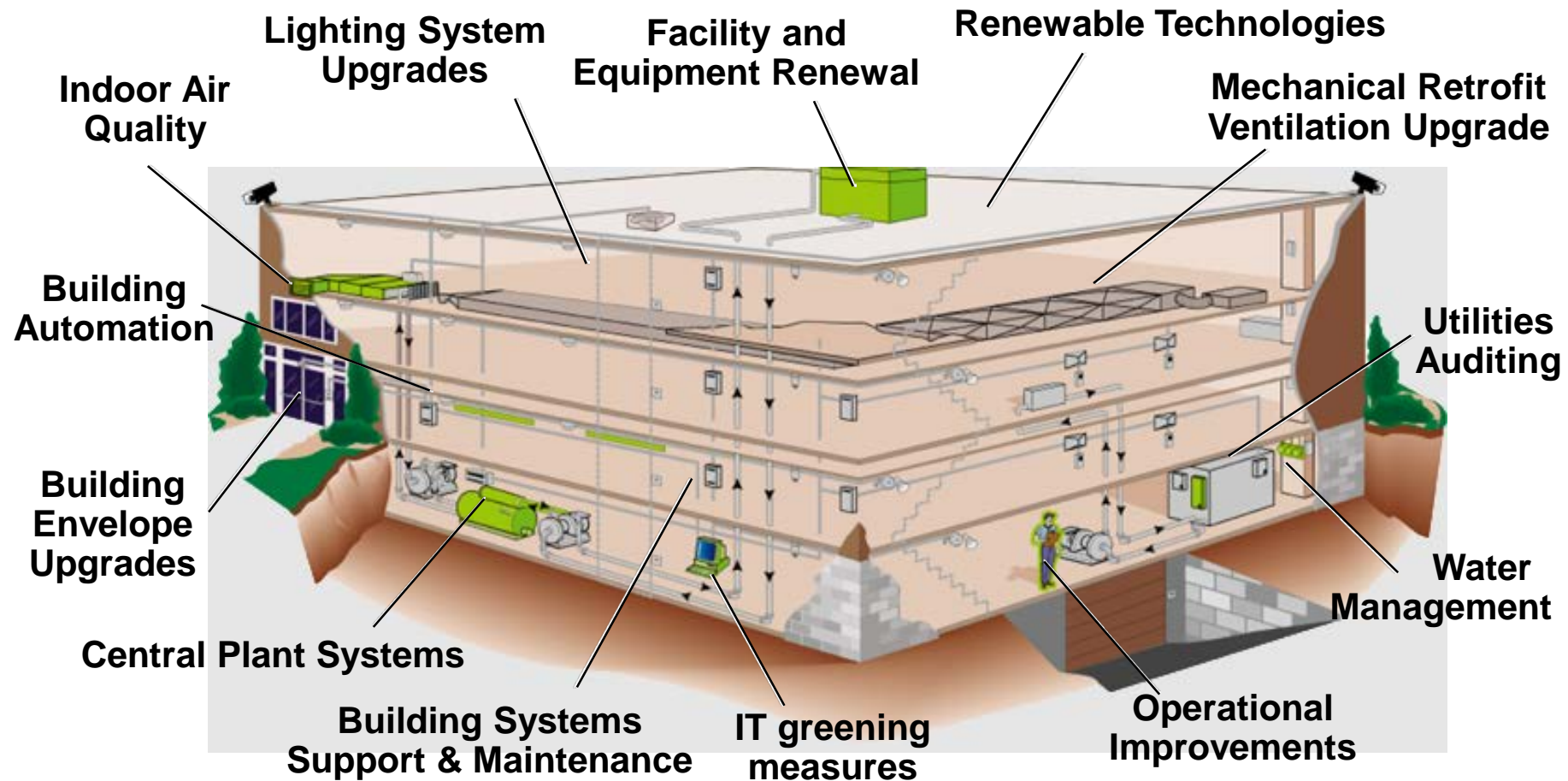
## The Value Proposition

An Energy Performance Contract (EPC) program is a comprehensive, **self-funded program** whereby the equipment and technology the energy services firm installs to modernize buildings and facilities is **paid by guaranteed energy, grants and operational savings.**



# What is an Energy Performance Contract

## Comprehensive Solution





## About the Program at Memorial University





# About the Program at Memorial University

## Overall Goals

- Upgrade facilities' infrastructure
- Tackle deferred maintenance and capital renewal requirements
- Enhance education
- Improve the learning environment
- Reduce energy consumption
- Lower utility spend
- Trim greenhouse gas emissions



# About the Program at Memorial University

## Benefits

- Facility upgrades funded with guaranteed savings
- Improved learning environment (ex: lighting, air quality, comfort) for students and staff
- Addresses deferred maintenance and capital renewal needs
- Renewable technology installation for engineering courses
- Guaranteed savings by Honeywell throughout the life of the program
- Program performance and cost burden placed on Honeywell
- Environmentally responsible program

# About the Program at Memorial University

## Phase 1 – St. John's Campus

- Completed Phase 1 in 2009 throughout 8 buildings
- \$13,253,001 program value
- \$1,574,771 guaranteed annual savings
- Over \$13M savings (2009 - 2015)
- 3,860 tonnes of greenhouse gas reduction per year
  - Equivalent to removing more than 1,292 cars from the road each year



# About the Program

## Phase 2 – St. John's and Grenfell Campuses

- Construction started in St. John's in November and will continue throughout 45 buildings across both campus locations
- \$28,400,000 program value
- \$1,557,788 guaranteed annual savings
  - \$52,997,133 cumulative cost savings (over 20 year guarantee term)
- 1,634 tonnes of greenhouse gas reduction per year
  - Equivalent to removing an estimated 547 cars from the road each year

# About the Program

## Phase 2 – Grenfell Campus Alone

- Construction scheduled to begin in late April
- \$4,000,000 approximate program value
  - (PM, Engineering, Development, M&V, excluded from value)
- \$306,444 guaranteed annual savings
- 57.2 tonnes of greenhouse gas reduction per year
  - Equivalent to removing approximately 20 cars from the road each year
  - Lower GHG Reduction/Cost than overall project due to less pure savings measures and more campus improvement/differed maintenance measures

# Scope of Work

## Grenfell Campus

- 5 sites included in the program
  - Arts and Sciences (AS)
  - Fine Arts (FA)
  - Forestry Centre (FC)
  - Library and Computing (LC)
  - Student Residence and Chalets
- Install high-efficiency lighting system and controls to improve provide better control of lighting and improved illumination
- Upgrade/expand building automation system to allow better control of indoor building environment





# Scope of Work

## Grenfell Campus

- Upgrade heating, ventilation and cooling equipment to improve overall indoor comfort conditions
- Replace various mechanical system components to high efficiency models
- Weather-seal buildings to reduce drafts and minimize heating/cooling losses
- Implement computer power management strategies



# Scope of Work – Remove?

## St. John's Campus

- 40 buildings included in program
- Install high-efficiency lighting system and controls to provide better control of lighting and improved illumination
- Upgrade/expand building automation system to allow better control of indoor building environment
- Upgrade heating, ventilation and cooling equipment to improve overall indoor comfort conditions



# Scope of Work – Remove?

## St. John's Campus

- Replace various mechanical system components to high efficiency models
- Weather-seal buildings to reduce drafts and minimize heating/cooling losses
- Replace electrical transformers to improve electrical distribution
- Implement computer power management strategies
- Reduce electrical power demand to lower utility costs
- Install wind turbine to produce energy







## What to Expect

# Hours of Work, Access, and Special Requirements

- Hours of Work

- Schedule to be provided based on input from this meeting

- Access

- Are there any “controlled access” areas?
  - What are the access protocols for these spaces?
- Are there any areas off of Master Key that will require special access?
- Are there any areas with standalone locks?
- Are there any areas with standalone security systems?
- What loading doors are currently used for external parties? (i.e. food service, deliveries, etc.)

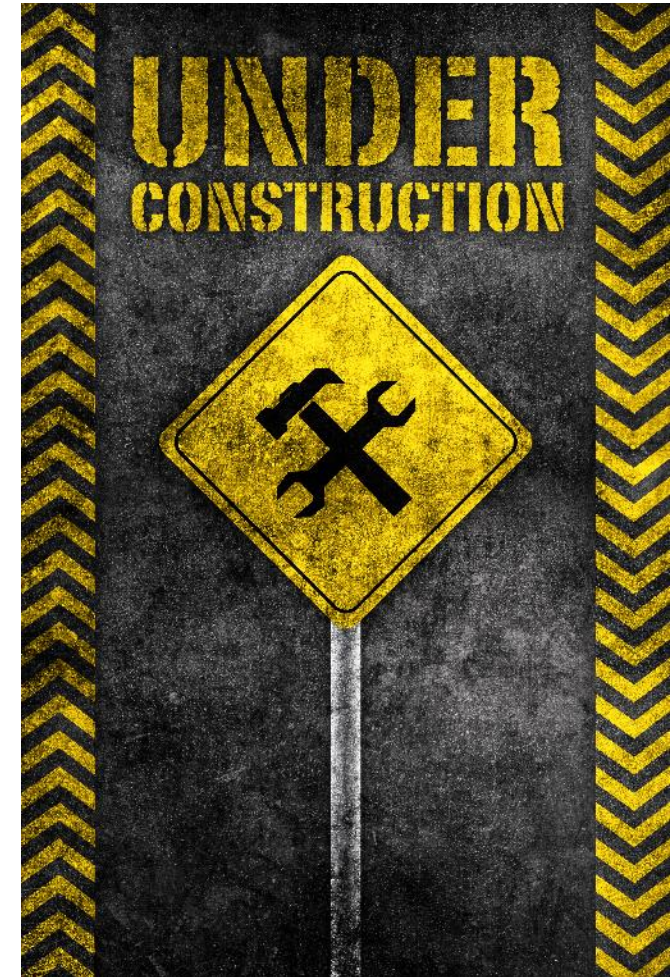
# Hours of Work, Access, and Special Requirements

- Special conditions and Installation requirements.
  - Are there any special areas that require technical attention and “non-standard” lighting? For example: Archives and Research Labs.
  - Are there any special safety requirements for access (Lab Orientation, etc.)?
  - Are there any accommodations currently being made (medical, light sensitivity, etc.), that should be noted?
  - Are there any existing or planned projects for certain areas of the buildings?



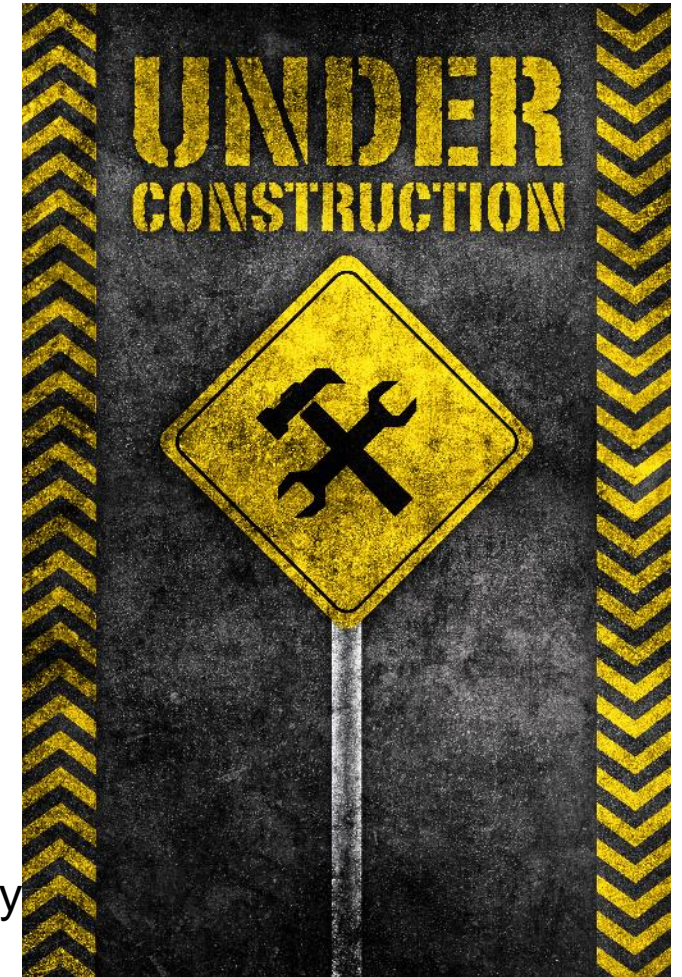
# What to Expect

- Project schedule
  - April 20<sup>th</sup> – Late August
  - Schedule to be provided based on input from this meeting
- Project implementation
  - Expect communication and planning
  - Extensive scheduling to minimize disruption
  - Advance communication in regards to major activities
- Improved buildings
  - Better indoor environment
  - Reductions in energy consumption and greenhouse emissions
  - Environmental responsibility
- Accelerated focus on sustainability
  - Sustainability events
  - On-going communication of project



# Scope of Work

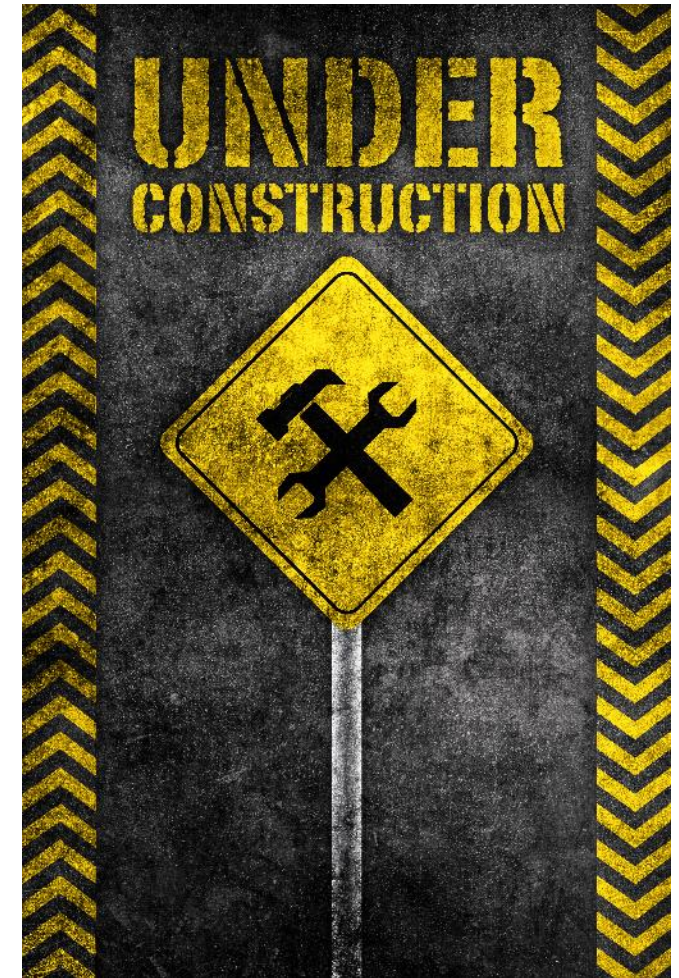
- Lighting Installation
  - Conversion of most lighting to LED
  - Improved lighting controls (occupancy and schedule based)
  - We will most likely be in your space at some point for this measure
- Building Envelope
  - Weather stripping and sealing of areas that allow mixing of conditioned and unconditioned air
  - Place
  - Place
- Kitchen Demand Ventilation
  - Runs exhaust fans only when hood is in operation
- IT Measure
  - Sets sleep mode parameters on computers remotely to save energy when computers are not in use.





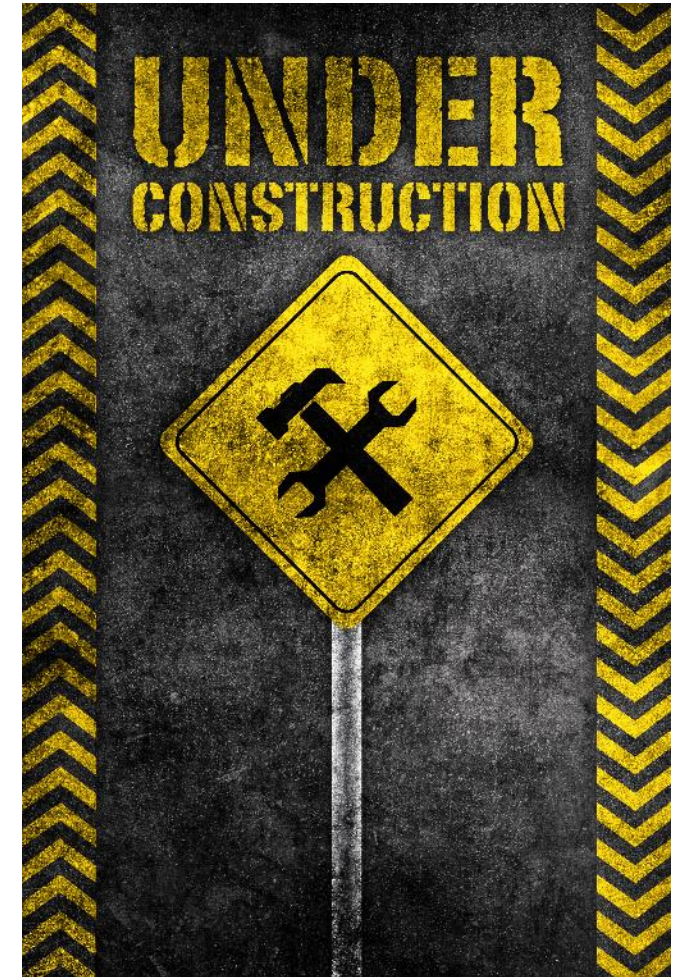
# Scope of Work

- Controls Measures
  - Upgrade/Expand Controls
    - Minimal disruption
    - More points and better control
    - Occupancy control of air volume boxes
  - Improve Sequence of Operation
    - Updating sequences to the current building conditions
  - Install Meters
    - Monitor power usage at buildings
  - Schedule Air Handling Units
    - Only have air handling units on when spaces are occupied
  - Demand Ventilation Control
    - Manage the fresh air coming into the space based on CO<sub>2</sub>

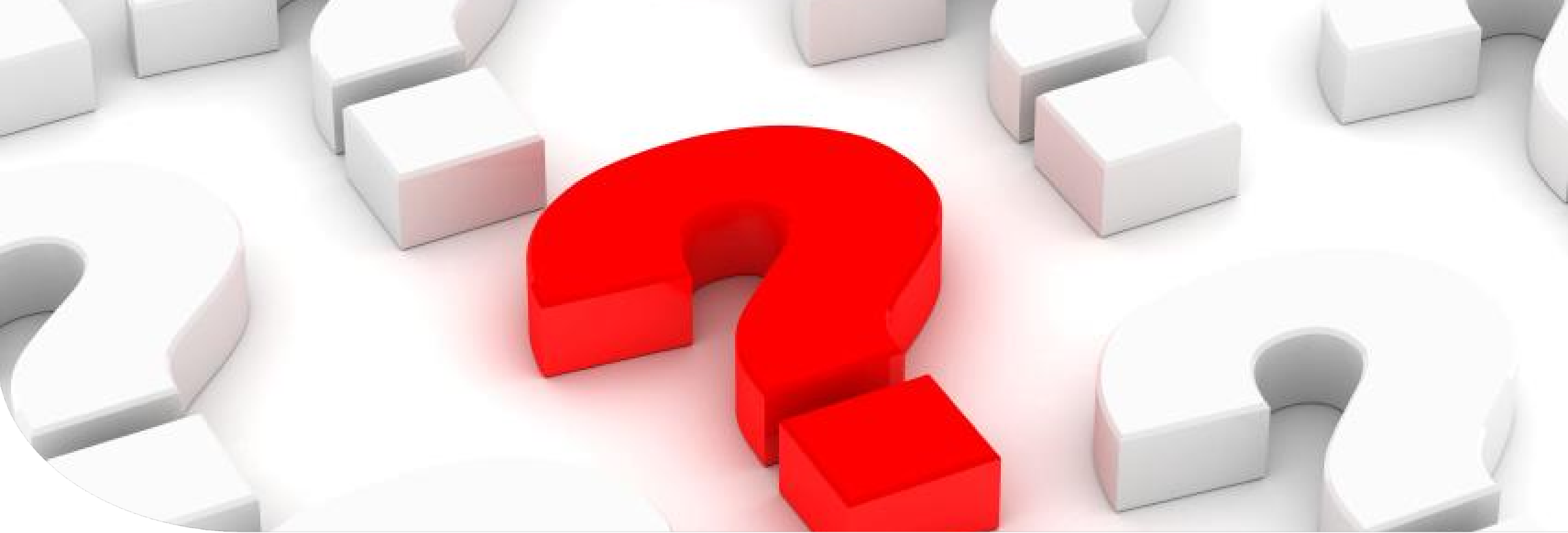


# Scope of Work

- Mechanical Measures
  - Fine Arts (FA)
    - Cap and seal unused ductwork.
    - Replace the gallery AHU with new system
    - Convert AHU-3 serving general areas on 1<sup>st</sup>, 2<sup>nd</sup>, & 4<sup>th</sup> floors from 100% fresh air to mixed air
  - Forestry Centre (FC)
    - Replace/Repair ventilation systems
    - Convert hot water and chilled water pumps from constant to variable flow
  - Library and Computing (LC)
    - Convert AHU-2 serving 2<sup>nd</sup> floor computer lab and 3<sup>rd</sup> floor classroom from 100% fresh air system to mixed air system







## Q&A