Comfortable Performance
Retro-Commissioning Building Operations

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Building owner’s challenges

• Tenant comfort
• Operating cost
• Equipment Condition and Life Cycle
• Environmental impact
Building owner’s challenges

• **Tenant comfort**
• Operating cost
• Equipment Condition and Life Cycle
• Environmental impact
NRCan - RCx Definition:

• “The main RCx goal is to improve the overall building operation and system interaction while meeting current’s occupant’s needs”
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Comfort + Building Performance = Comfortable Performance
Building Operators

• Successful Building Operator requires:
  1. Knowledge
  2. Time
  3. Tools

• RCx will
  ▫ develop tools
  ▫ improve knowledge
Knowledge

- Problem troubleshooting
- New controls strategies
- Equipment schedule optimization
- Comfort improvements
Tools

- Actuator and system testing
- Sensor Calibration
- Use of Building Automation trends
- Use of data-loggers
BAS Contractor

- BAS Service Contractor = Operations Staff responsible for “Comfortable Performance”
Example 1

- **Problem**
  - Monday morning “too cold” complaints

- **Solution**
  - Heating system start-up on Sunday at 2:00pm
Example 1

Over the 15 hours of shutdown the space temperature dropped continuously, from a high of 20.6°C to an extreme low of 4.2°C.
Example 1

Continuous system operation for 20 hours prior 07:00 AM Monday morning.
Example 1

- **Problem**
  - Monday morning “too cold” complaints
- **Solution**
  - Heating system start-up on Sunday at 2:00pm

- **RCx Investigation**
  - Tenant MAU running 24x7 with no heat (space temperature dropped to 5°C)
- **Solution**
  - Advise tenant and repair defective unit
  - Implement Optimum Start / Stop
Example 2

• Problem
  ▫ Constant indoor air quality complaints

• Solution
  ▫ Increased fresh air volume
Example 2

Night time temperature 26°
Example 2

- **Problem**
  - Constant indoor air quality complaints
- **Solution**
  - Increased fresh air volume
- **RCx Investigation**
  - Overnight over-heating the space to 26°C
- **Solution**
  - Repair faulty heating valves
Example 3

- **Problem**
  - Indoor air quality failure and too hot complaints

- **Solution**
  - Increased MAU fresh air volume
Example 3
Example 3

- **Problem**
  - Indoor air quality failure and too hot complaints
- **Solution**
  - Increased MAU fresh air volume

- **RCx Investigation**
  - VFD running at low speed, Static Pressure sensor faulty
- **Solution**
  - Replace faulty sensor and rebalance fresh air
Comfortable Performance

- Operator training plan:
  - Investigation of comfort problems
  - Energy efficient control strategies
  - Sequence of operation
  - Equipment testing
  - Sensor Calibration
Comfortable Performance

• BAS Service Contracts
  ▫ Preserve comfort and improve performance
  ▫ Building and system specific
  ▫ Open for amendments as required
  ▫ Detailed scope of work, task description and frequency

• Requirement for Continuous Improvement
Comfortable Performance

• Focus on building operator
  ▫ Knowledge
  ▫ Tools
  ▫ Time

• BAS contractor involvement
Thank you!

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