



## Code of Ethics Commitment

*In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests.*

## Diversity Commitment

*ASHRAE is committed to providing a welcoming environment. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of each individual. We proactively pursue and celebrate diverse and inclusive communities understanding that doing so fuels better, more creative and more thoughtful ideas, solutions and strategies for the Society and for the communities our Society serves. We respect and welcome all people regardless of age, gender, ethnicity, physical appearance, thought styles, religion, nationality, socio-economic status, belief systems, sexual orientation or education.*

**ASHRAE Puget Sound Chapter does not endorse any of the products, services, or technologies demonstrated or presented in this meeting.**

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# Upcoming Events

## December Chapter Meeting: 2021 Seattle Construction Codes

### Details

**Date:** Wednesday, December 11, 2024 from 5:30 pm to 7:30 pm

The "2021" Seattle construction codes, including the energy code, were just approved by City Council and will become mandatory for all permit applications starting November 15, 2024.

This presentation will cover provisions relevant to mechanical engineers within the "2021" Washington state and Seattle energy codes, now both in effect, as well as considerations stemming from recent legal and legislative actions. Topics will include C406 efficiency options, energy modeling, commissioning, metering, and alterations to existing buildings.



**Duane Jonlin** is Seattle's "Energy Code and Energy Conservation Advisor." Nationally, he serves on the ASHRAE 90.1 committee and chaired the 2024 IECC commercial code committee. Duane is a member of the AIA College of Fellows and a Senior Fellow at the New Buildings Institute.



# Energy Efficiency Through Machine-Based Commissioning

Providence-Swedish and Puget Sound Energy

Presenter: Brad Shaw, CEM  
Senior Building Automation Engineer, Puget Sound Region  
[bradley.shaw@swedish.org](mailto:bradley.shaw@swedish.org) C 206-251-8629



## What We Set Out To Do



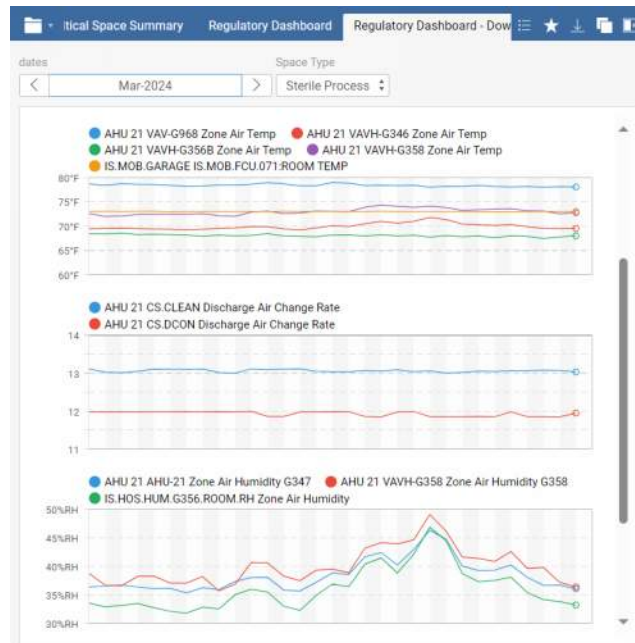
- ▶ Use data analytics to reduce EUI from 112 to 100.
- ▶ Providence-Swedish Issaquah partnered with Puget Sound Energy and UMC on a machine-based commissioning grant.
- ▶ The grant covered the MBCx install and start up cost, along with two performance-based incentives, based on meter savings.
- ▶ The initiative complemented concurrent analytics projects with MacDonald Miller and Siemens.

# Install SkySpark MBCx Hardware and Software

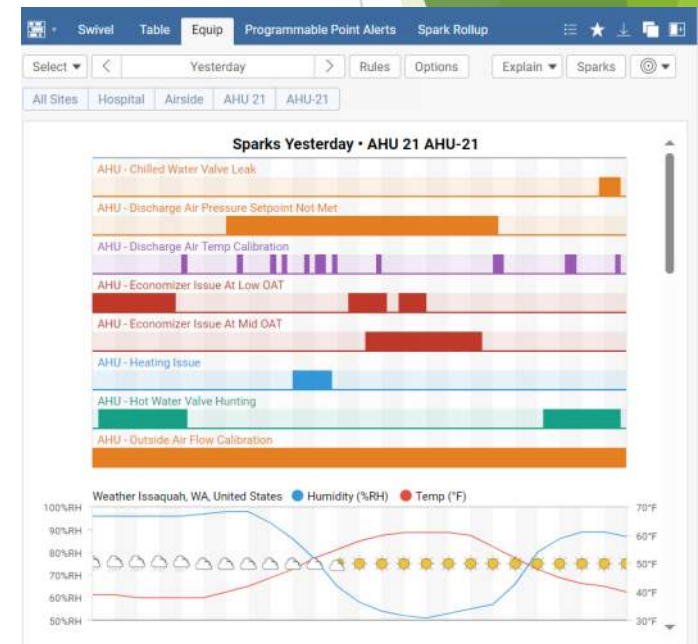
Minimal hardware



Regulatory Dashboard



Fault Detection 'Sparks'



# What We Learned

## Top 5 ways to get the most out of your MBCx Project

1. Collaboration & Prioritization
2. Scheduling, Scheduling, Scheduling
3. Unoccupied CFM and Temperature Setbacks
4. Avoid Simultaneous Heating and Cooling
5. AHU Temperature and Pressure Resets

## Collaboration & Prioritization



**Data doesn't do the work for you.**

- ▶ Engage the right team, key business partners: PSE, UMC, MacDonald Miller & Siemens
- ▶ Meet monthly to prioritize top issues and track progress
- ▶ Avoid duplication of efforts, ensure complementary work across stakeholder teams



# Scheduling, Scheduling, Scheduling



The only cost is your time



Audit:  
walk space to verify schedules



Smaller zones = greater control



Stay current:  
quarterly stakeholder reviews

## Unoccupied CFM & Temperature Setbacks



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### Starting Point

Most controllers have night heating and cooling temperature setbacks.

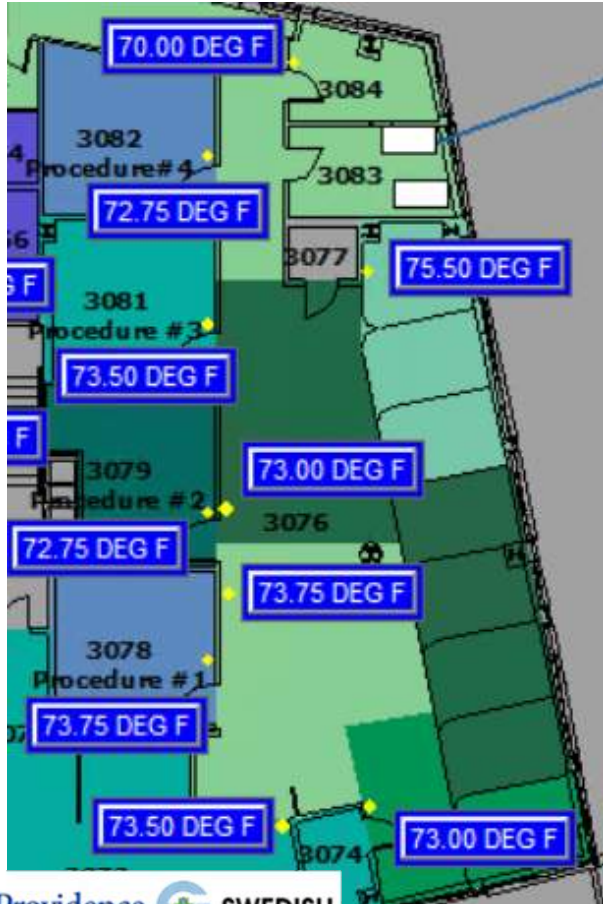
### Aha! Moment

We can setback our controllers CFM flow % setpoint.

### Easy Button

Write a program to setback an entire floor with the push of a button

## Identify Simultaneous Heating & Cooling



Find areas with multiple terminal units, enabling conflicting set points.

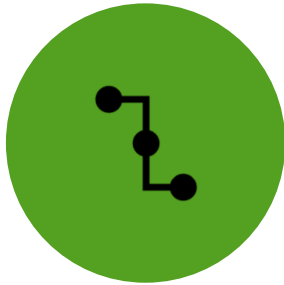


Group all terminal units in the area.

Establish a primary unit to control the rest.

Command all the heat/cool points to change together.

# AHU Temperature & Pressure Resets



VERIFY THE CORRECT  
TERMINAL UNITS ARE TIED  
TO THE CORRECT AIR  
HANDLING UNITS.

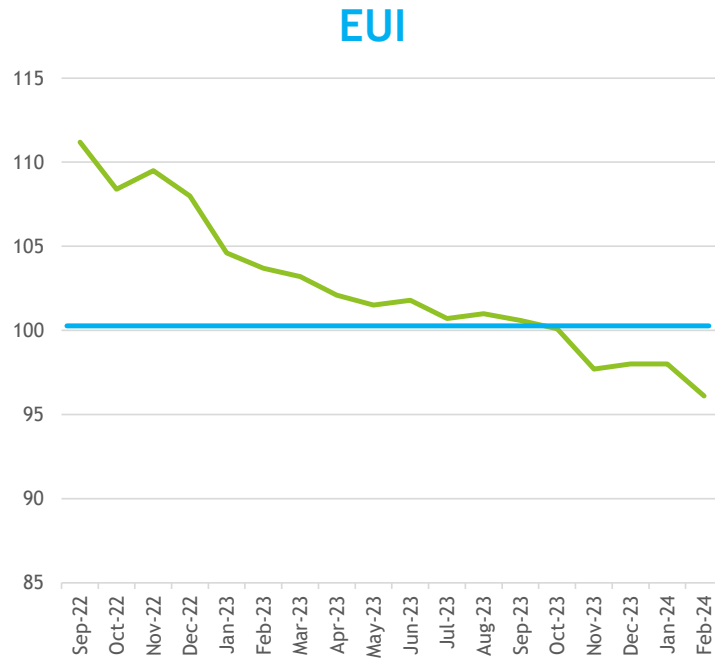


MAKE SMALL CHANGES  
OVER TIME TO FIND THE  
MINIMUM STATIC  
POSSIBLE.



DON'T LET AN  
UNDERPERFORMING TERMINAL  
UNIT DRIVE A RESET.

# The Result: We Did It!



Exceeded our EUI target, earned 100% of program incentives, reduced energy costs, exceed clean building standards...we're reinvesting these incentives into projects to further lower our energy usage.

As of 2021

## Energy savings at a glance



ELECTRIC SAVINGS  
**1,481,909 kWh**

That's enough to power  
**123 homes** for a year.



PSE INCENTIVES PAID  
**\$130,091**



ENERGY COST SAVINGS  
**\$95,000**

Metrics and incentive amount are cumulative from July 2021 to April 2023.

## The Results: We kept it going!

**EUI Low of 94.7 (June 2024)**

ED CT construction project started July

**EUI October 2024: 96.9**

- 100% PSE Grant for MCX for 2023/2024 (\$77,139)
- Continued PSE partnership on project based and HSEM grant programs

## Keeping it going

- Capital projects: Request tie into CW loop (Starbucks, Linac, Morgue expansion)
- Addressing “too hot / too cold” areas into HW/CW loops (Chapel, P-tube room)
- Investing in HRC reliability (e.g. critical spares)
- HotStart - heat pumps for generator block warming
  - Existing thermosiphon block heaters (2x6kW): annual kWh = 71,500kWh
  - HE-24 installed in series with existing block heaters: annual kWh = 12,300kWh
  - Savings 59,200kWh or 83%
  - Anticipate \$17,706 annual utility cost savings (3 generators)
- EcoAzur for kitchen exhaust controls (in progress)
  - Estimated to save 31,023 kWh / YEAR
  - Anticipate \$8,574 annual utility cost savings
- Maintenance: Sensor calibration annually

# Questions



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