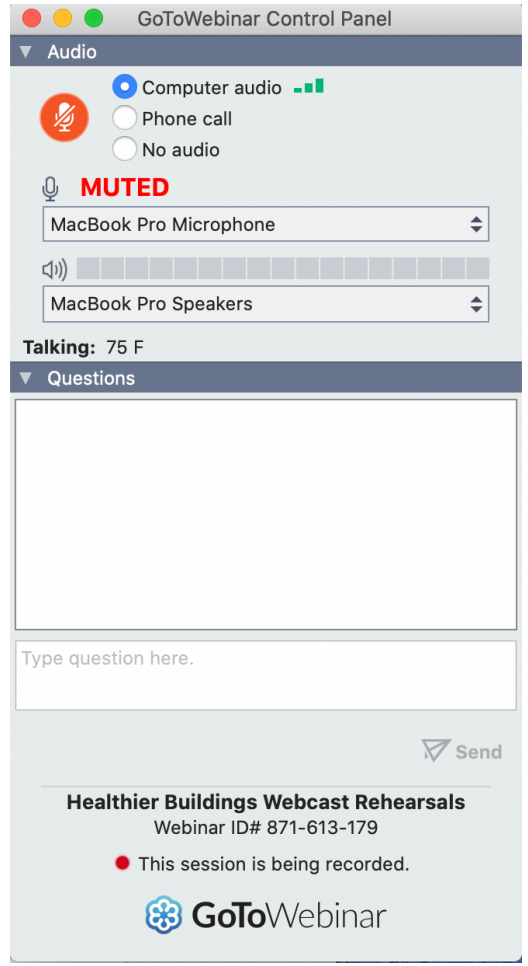
Healthier Buildings: Reopening Guidance for Safer Schools

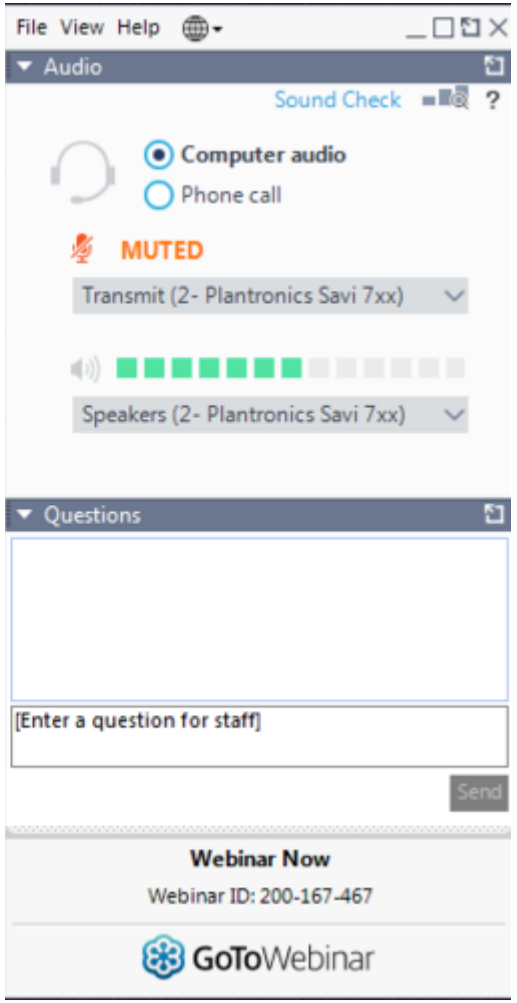
75F®

Audio Settings:

Make sure your output selection is your computer speakers.



To Ask a Question



TEMPERATURE CHECK

Reopening Guidance for Safer Schools

1. Science: How COVID-19 Spreads

2. Building Guidelines for Schools

3. Building Wellness Diagnostics and 75F Epidemic Mode

4. Guest Input: How are Schools Preparing for the Year?

5. Video: On the Roof With Bob

6. Q & A

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Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

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CDC: How COVID-19 Spreads

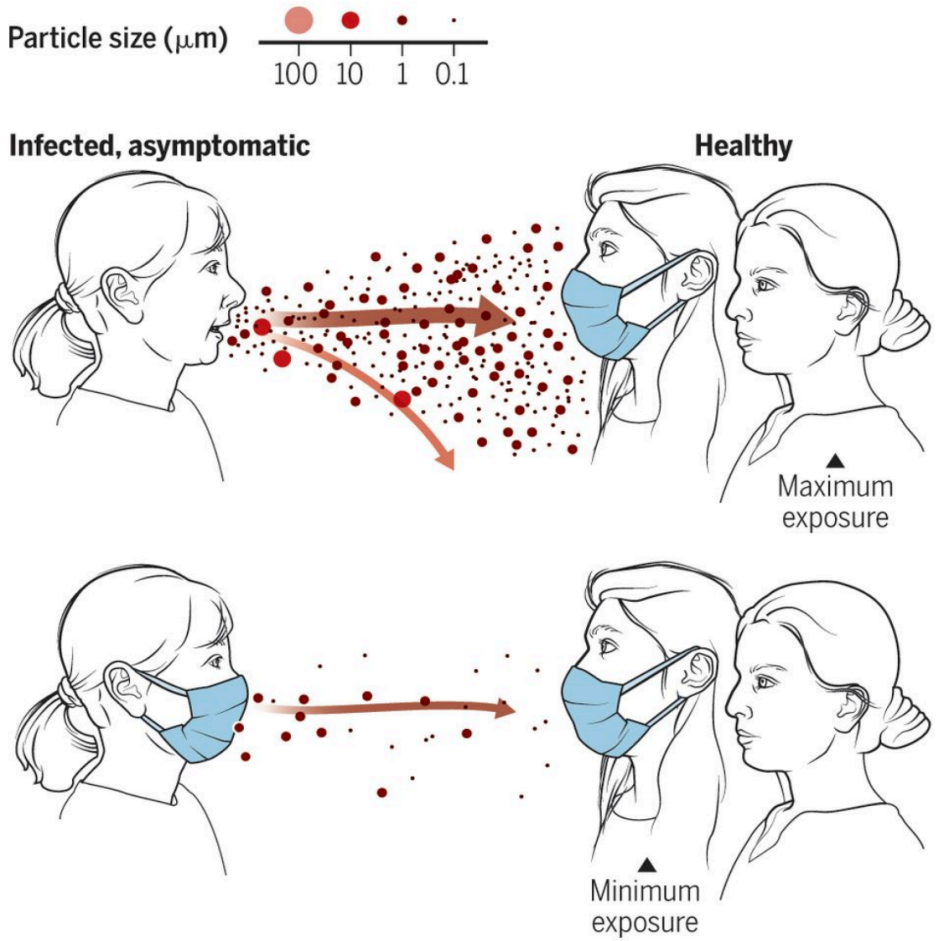
The virus is thought to spread mainly from person to person.

- Between people who are in close contact with one another (within about 6 feet).
- Through respiratory droplets produced when an infected person coughs, sneezes, or talks.
- These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.

The virus may be spread in other ways.

- Touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. This is not thought to be the main way the virus spreads.

Source: CDC



GRAPHIC: V. ALTOUNIAN/*SCIENCE*

CDC Examination of Outbreak in South Korean Call Center

Various CDC studies demonstrate why the built environment can pose a considerable risk.

- One infected employee managed to infect 94 other people on a single floor of this call center.
- “Indicates that the duration of interaction was likely the main facilitator for further spreading of COVID-19.”
- There is a measure of “viral load” or the concentration of virus particles per cubic foot of air.

Science Magazine: Viral Particles Linger in Air

- Article indicates six feet of distance indoors may not be enough and highlights the importance of ventilation.

Figure 2

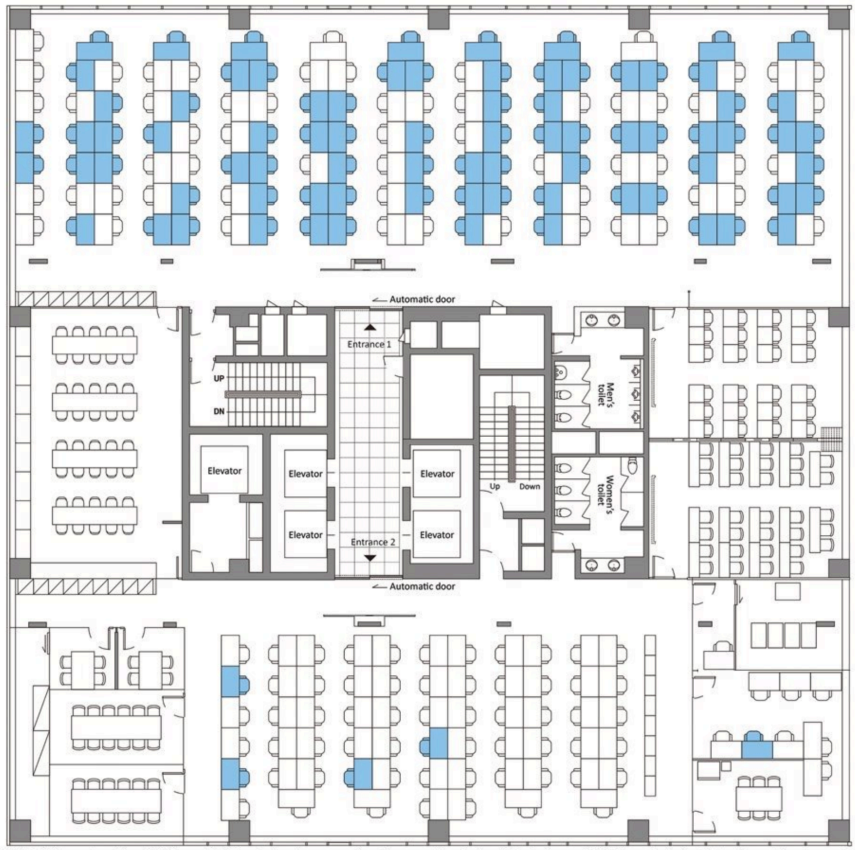


Figure 2. Floor plan of the 11th floor of building X, site of a coronavirus disease outbreak, Seoul, South Korea, 2020. Blue coloring indicates the seating places of persons with confirmed cases.

Graphic source: CDC

The New York Times

239 Experts With One Big Claim: The Coronavirus Is Airborne

The W.H.O. has resisted mounting evidence that viral particles floating indoors are infectious, some scientists say. The agency maintains the research is still inconclusive.

Coronavirus: WHO rethinking how Covid-19 spreads in air

The World Health Organization has acknowledged there is emerging evidence that the coronavirus can be spread by tiny particles suspended in the air.

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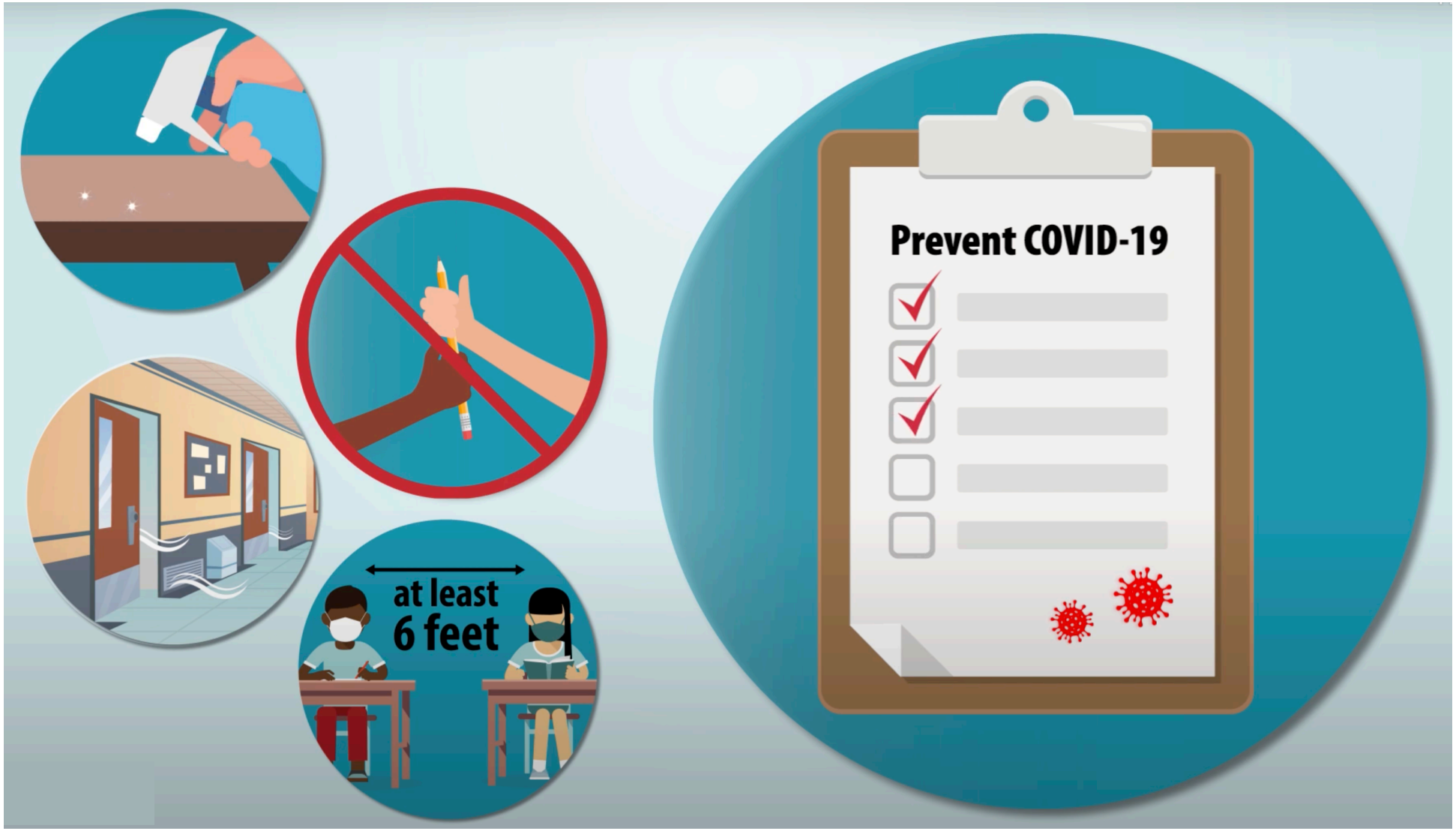
CDC: Operating Guidelines for Schools



CDC: Maintaining a Healthy School Environment

The CDC offers clear advice on how to prepare for and operate an in-person — or partially in-person — school year. Check their website for in-depth information and regular updates.

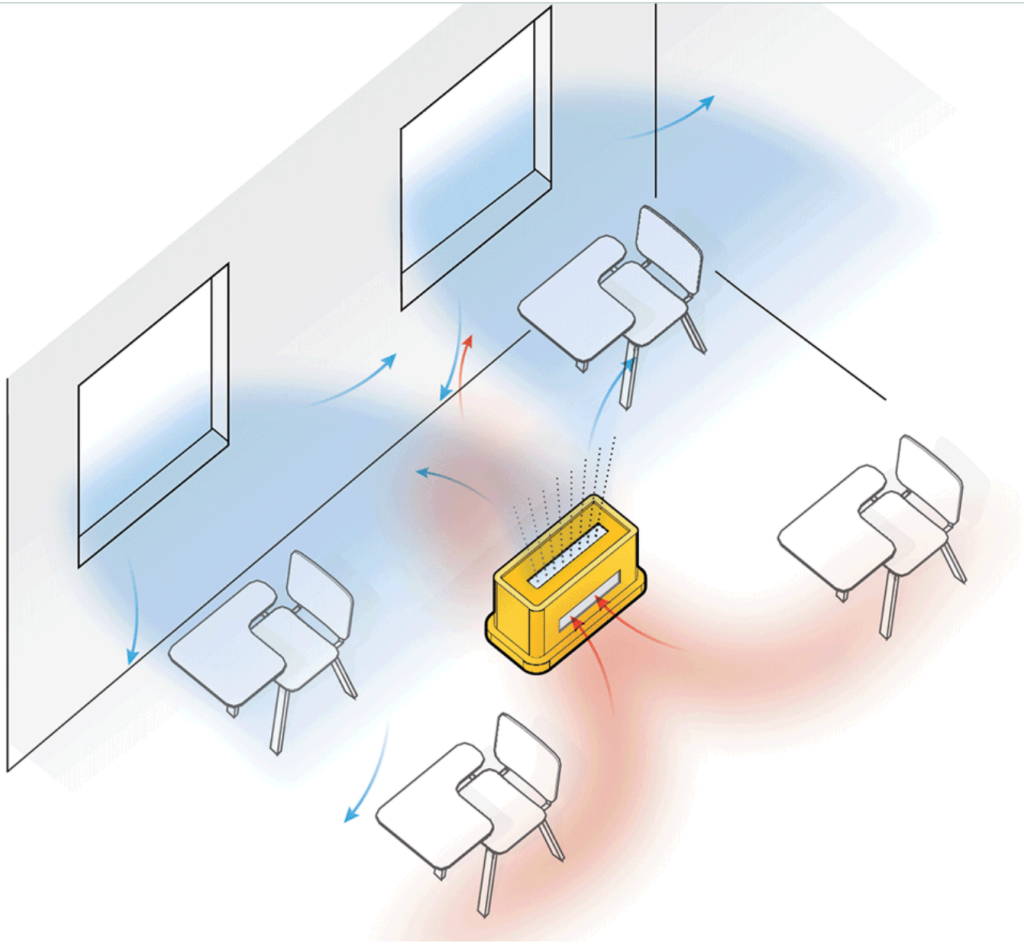
- Consistent cleaning and disinfecting of frequently touched surfaces.
- Discourage sharing of items that are difficult to clean and keep students' personal items separated.
- **Upgrade HVAC systems to increase outside air ventilation.**
- Check and flush water system after prolonged shutdown.
- Modify classroom layouts to encourage distancing.
- Install physical barriers and guides, such as sneeze guards and partitions, particularly in areas where it is difficult to remain six feet apart.
- Close communal-use shared spaces such as dining halls and playgrounds with shared equipment if possible, otherwise stagger use.

Source: CDC

HEALTH & WELLNESS

Key to Preventing Covid-19 Indoors: Ventilation

Reopening schools and businesses should upgrade air systems, open windows and take other measures to ensure clean air, scientists say



"Health scientists and mechanical engineers have started issuing recommendations to schools and businesses that wish to reopen for how often indoor air needs to be replaced, as well as guidelines for the fans, filters and other equipment needed to meet the goals."

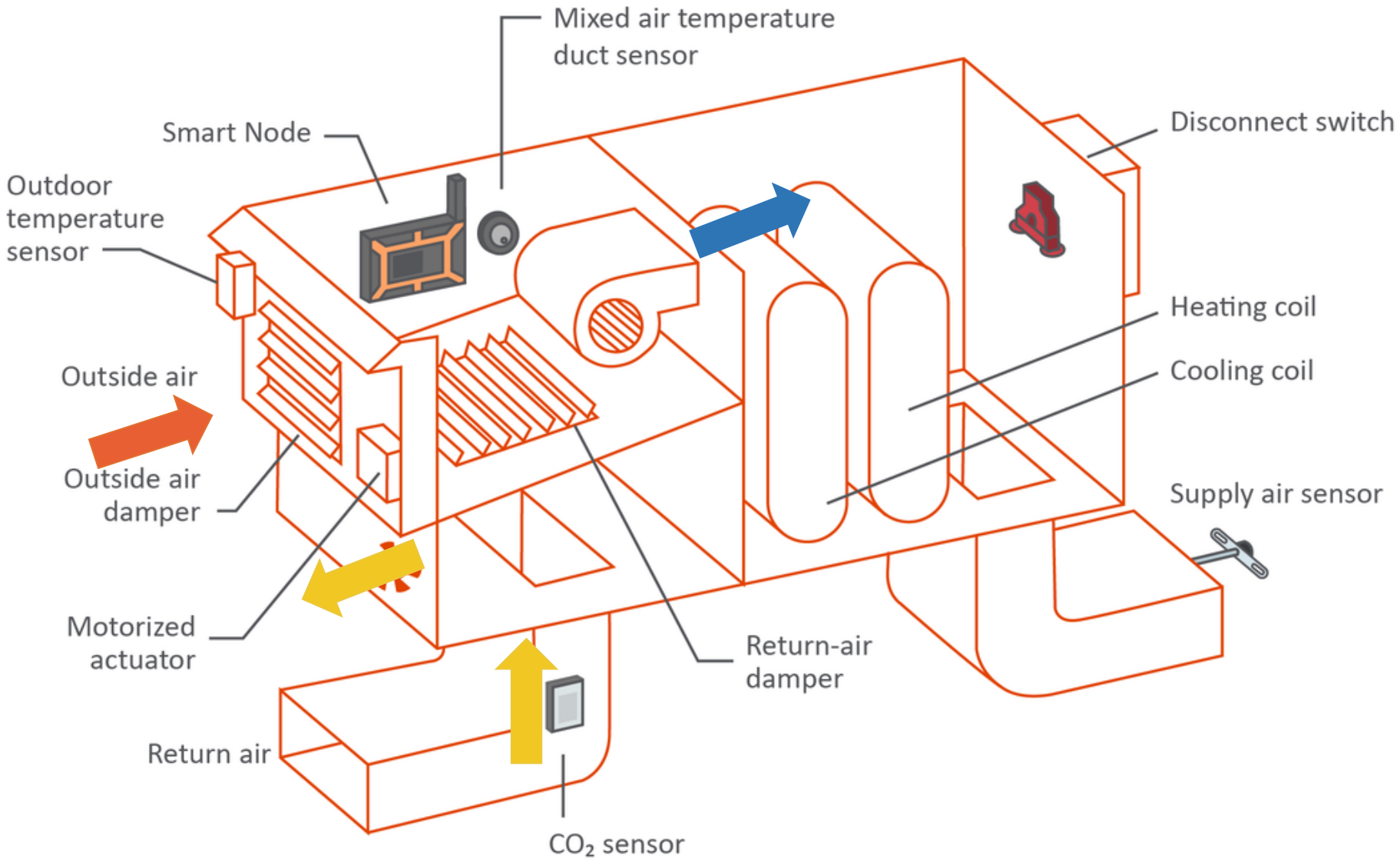
ASHRAE EPIDEMIC TASK FORCE

SCHOOLS & UNIVERSITIES | Updated 7-17-2020

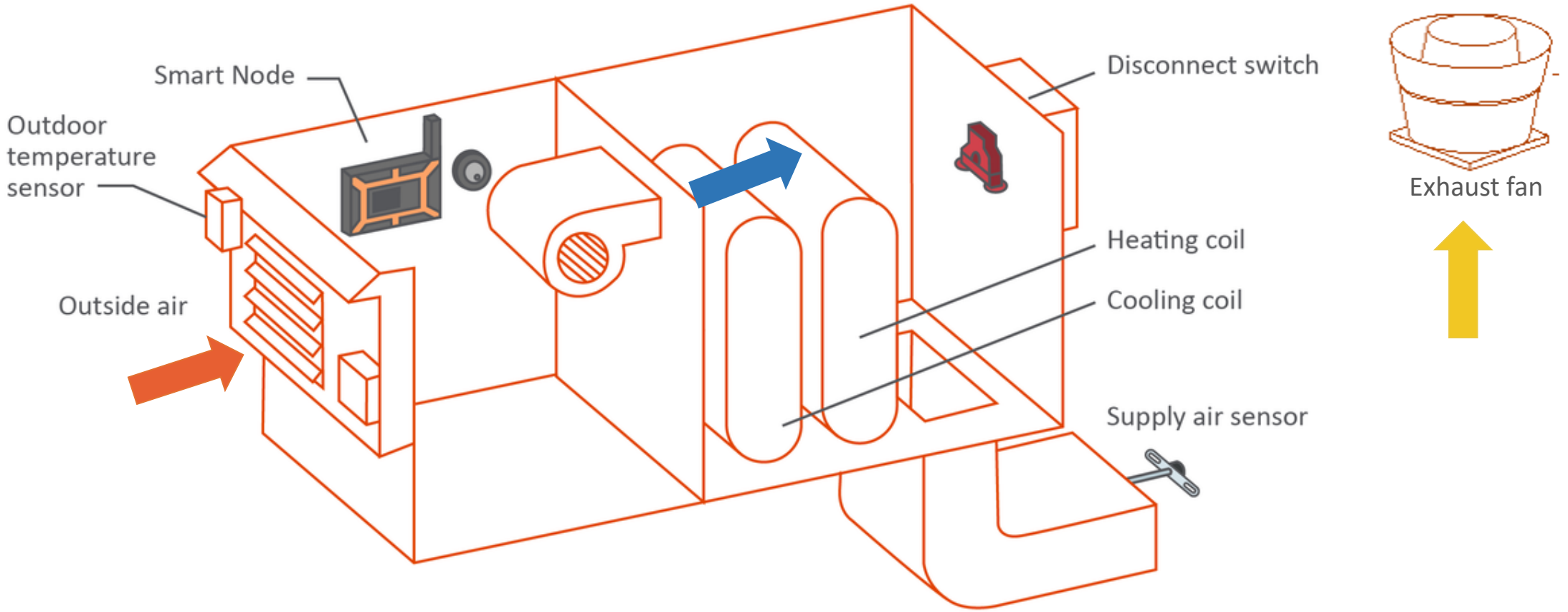
ASHRAE: Criteria for New/Modified Facility Design

- Follow Current ASHRAE 62 standard or local ventilation standards for minimum outside air requirements.
- For remodeling an existing AHU, increase outside air to maximum allowable per AHU without compromising indoor thermal comfort for learning environment or space IAQ.
- For Dedicated Outdoor Air Systems (DOAS) that are being replaced, size unit capacity for at least 150% of code minimum flow.
- During the pandemic, disable DCV and introduce the maximum possible OA flow 24/7 until further notice, including DOAS.
- Apply and utilize outdoor air quality sensors or reliable web-based data for outdoor pollution information as part of the new ventilation operation.

Packaged Rooftop Units and Air Handlers



Dedicated Outside Air Systems (DOAS)



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Q&A

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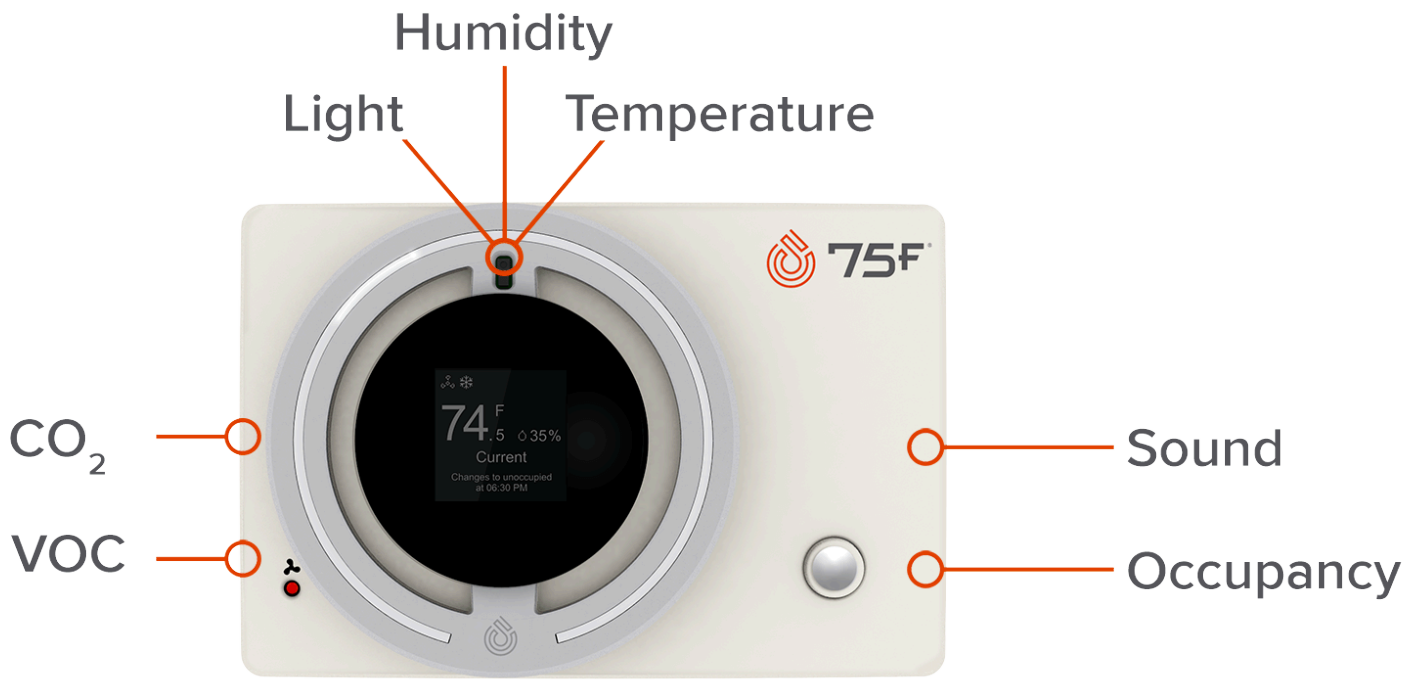
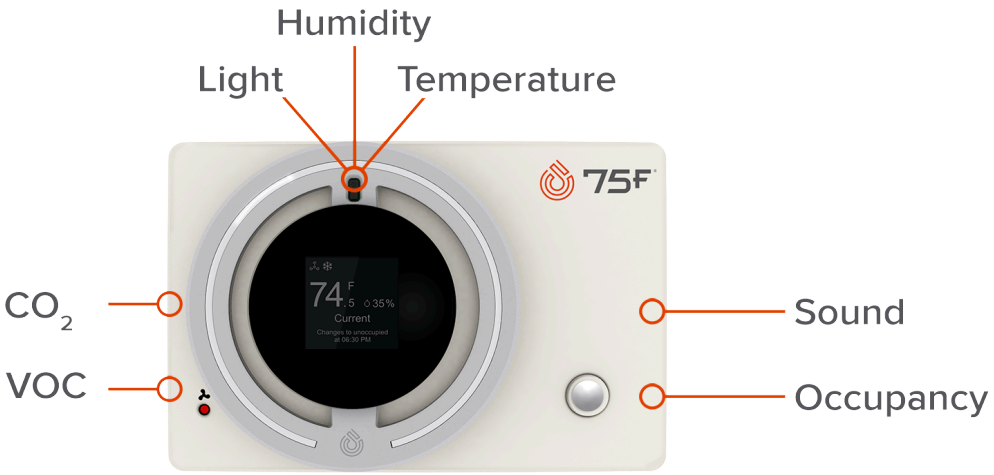
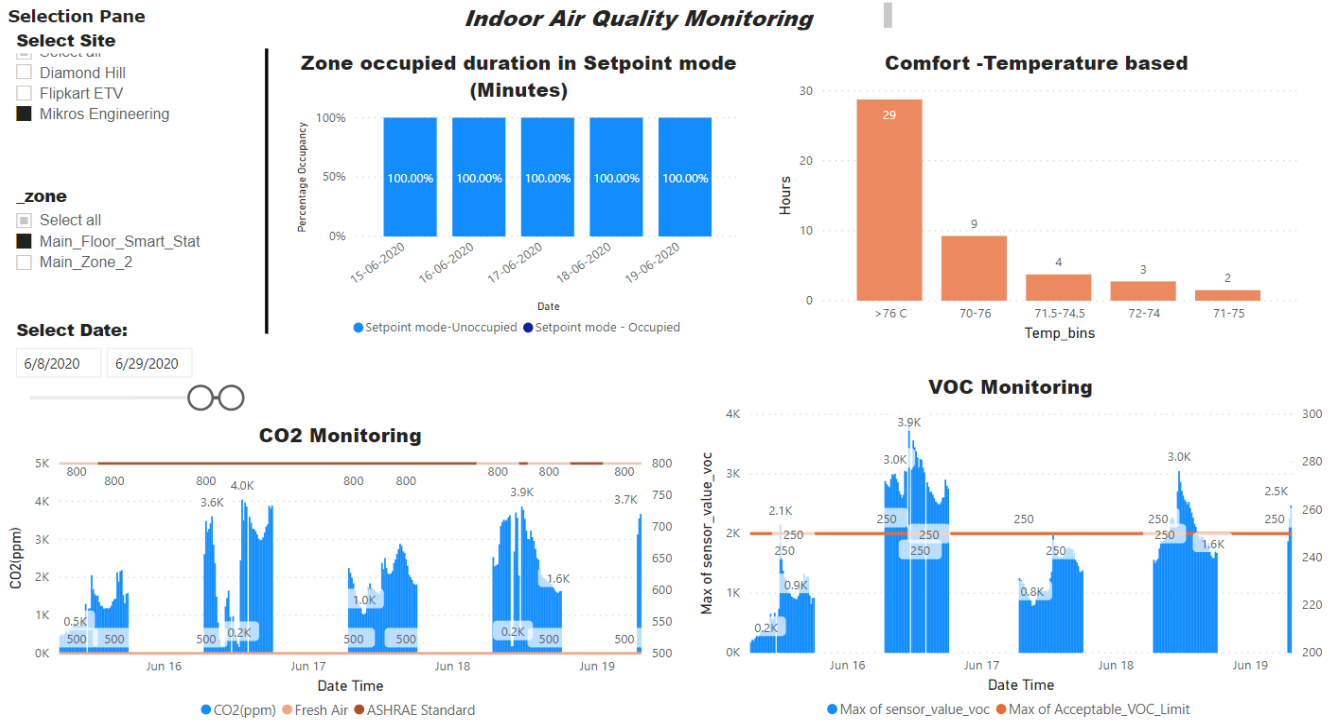
75F Sensing


Humidity
Light
Temperature
CO_2
VOC
Sound
Occupancy
75F
74.5 F
35%
Current
Changes to unoccupied at 06:30 PM

75F IAQ and Wellness Rapid-Results Test Kit



Streaming IAQ data in 15 minutes



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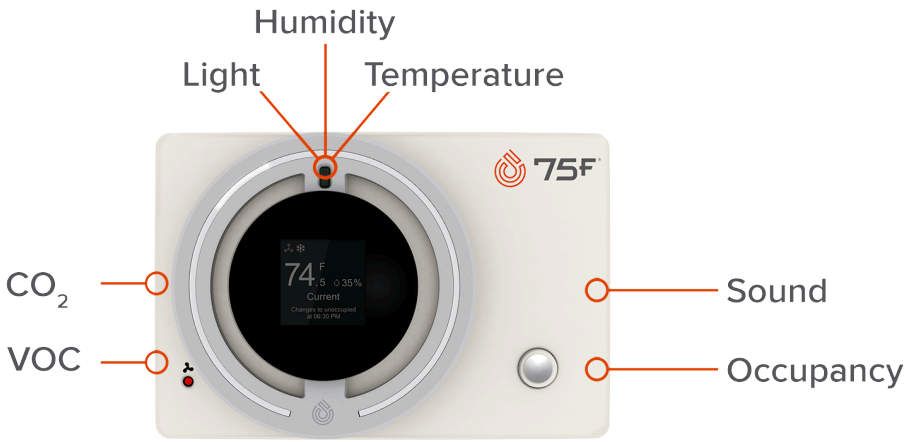
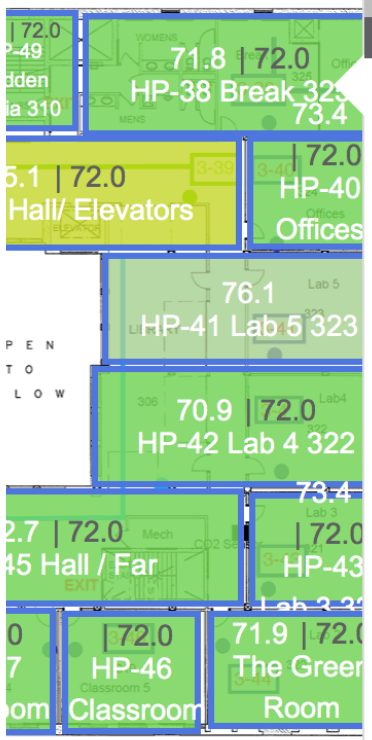
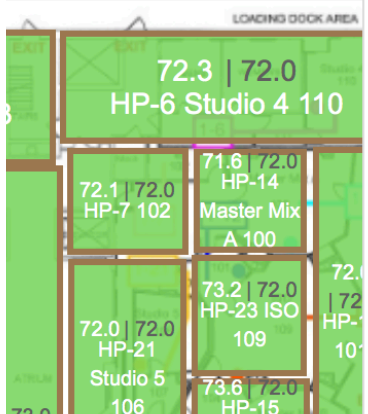
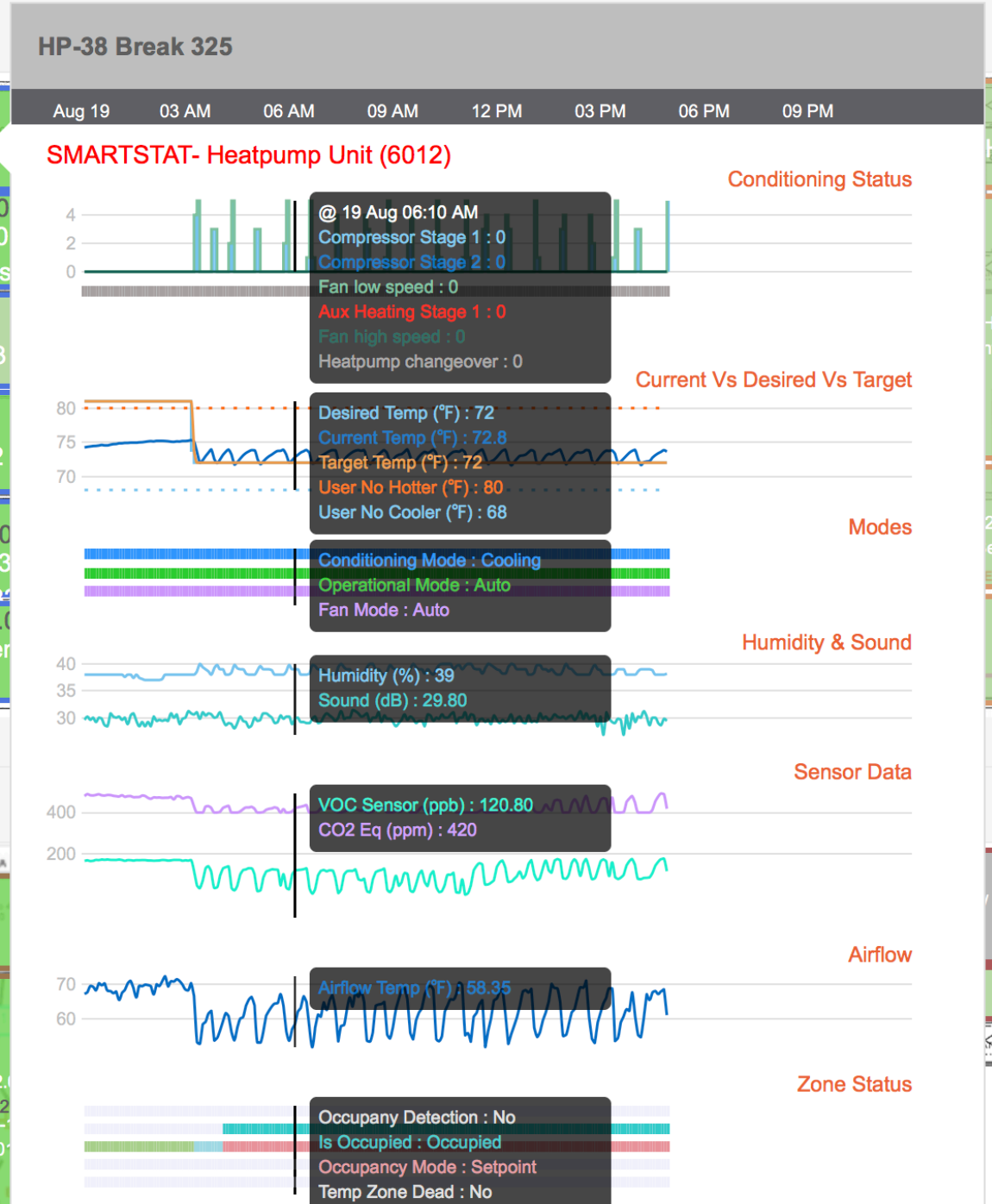
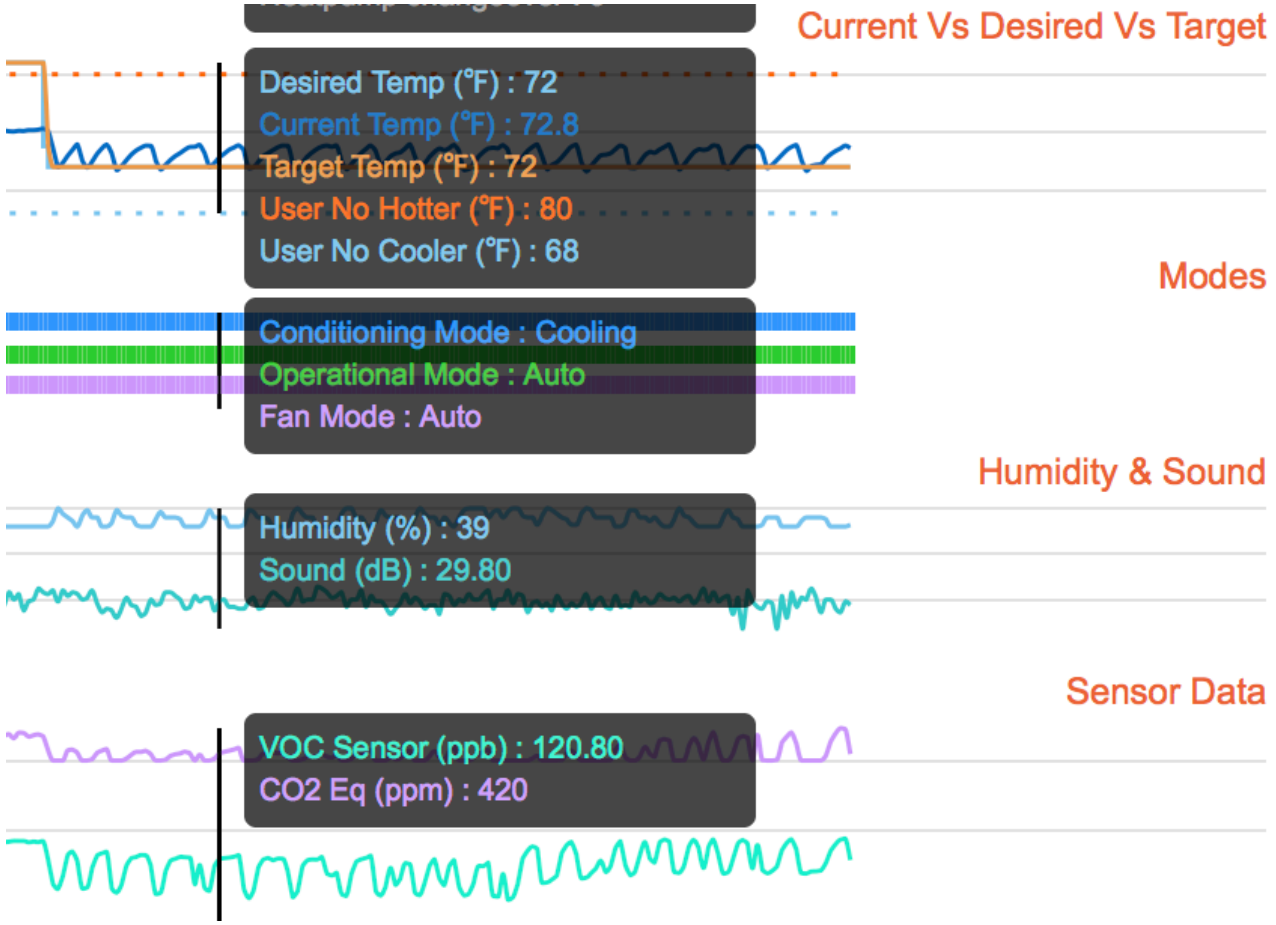

Humidity
Light
Temperature
CO_2
VOC
Sound
Occupancy


71.8 | 72.0
HP-38 Break 325
73.4
5.1 | 72.0
Hall/ Elevators
| 72.0
HP-40
Offices
76.1
HP-41 Lab 5 323
70.9 | 72.0
HP-42 Lab 4 322
73.4
2.7 | 72.0
45 Hall / Far
| 72.0
HP-43
| 72.0
HP-46
Classroom
71.9 | 72.
The Green
Room


LOADING DOCK AREA
72.3 | 72.0
HP-6 Studio 4 110
72.1 | 72.0
HP-7 102
71.6 | 72.0
HP-14
Master Mix
A 100
73.2 | 72.0
HP-23 ISO
109
72.0 | 72.0
HP-21
Studio 5
106
73.6 | 72.0
HP-15


HP-38 Break 325
Aug 19
03 AM
06 AM
09 AM
12 PM
03 PM
06 PM
09 PM
SMARTSTAT- Heatpump Unit (6012)
Conditioning Status
@ 19 Aug 06:10 AM
Compressor Stage 1 : 0
Compressor Stage 2 : 0
Fan low speed : 0
Aux Heating Stage 1 : 0
Fan high speed : 0
Heatpump changeover : 0
Current Vs Desired Vs Target
Desired Temp (°F) : 72
Current Temp (°F) : 72.8
Target Temp (°F) : 72
User No Hotter (°F) : 80
User No Cooler (°F) : 68
Modes
Conditioning Mode : Cooling
Operational Mode : Auto
Fan Mode : Auto
Humidity & Sound
Humidity (%) : 39
Sound (dB) : 29.80
Sensor Data
VOC Sensor (ppb) : 120.80
CO2 Eq (ppm) : 420
Airflow
Airflow Temp (°F) : 58.35
Zone Status
Occupany Detection : No
Is Occupied : Occupied
Occupancy Mode : Setpoint
Temp Zone Dead : No

75F Sensing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User No Cooler (°F) : 68
Modes
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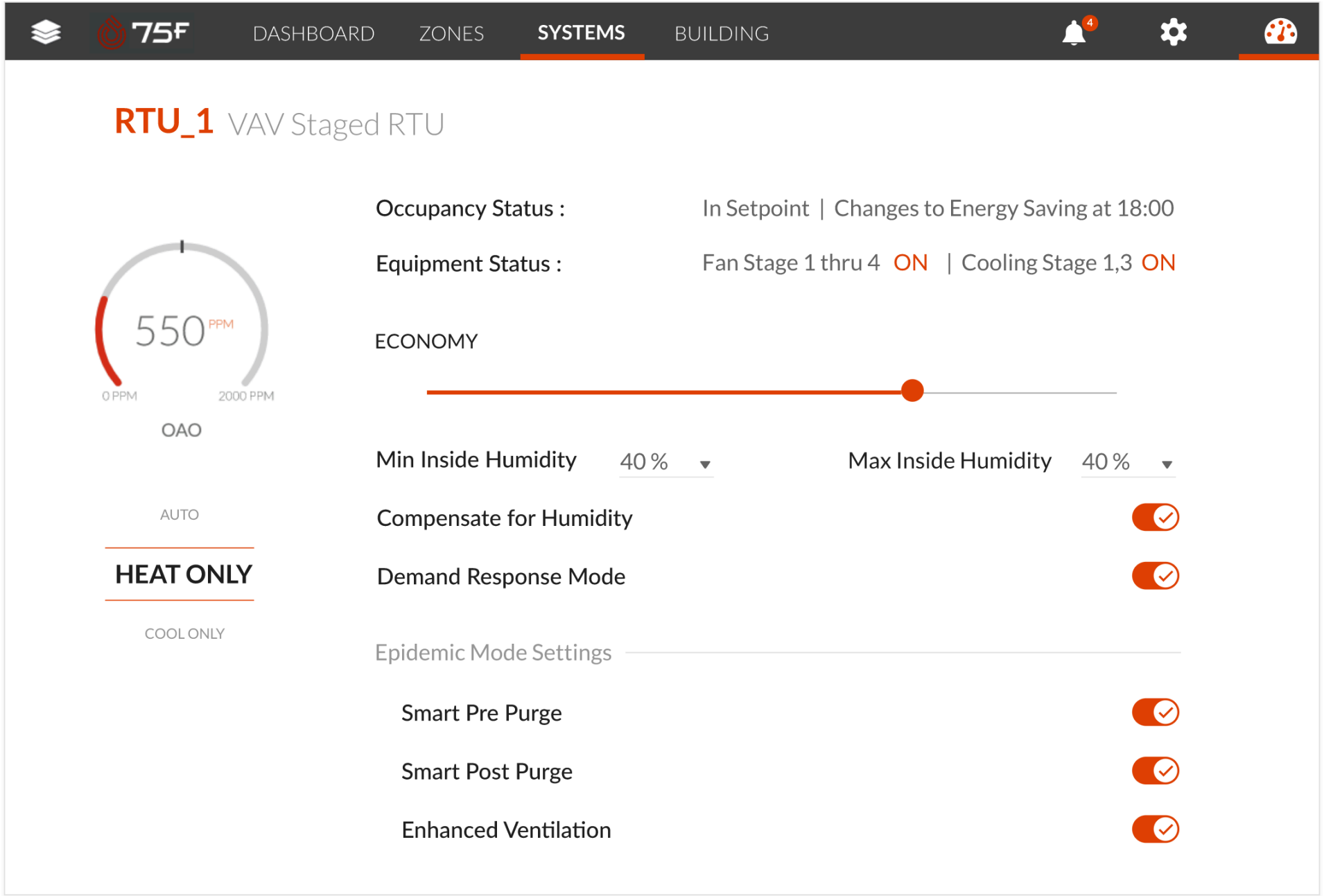
Operational Mode : Auto
Fan Mode : Auto
Humidity & Sound
Humidity (%) : 39
Sound (dB) : 29.80
Sensor Data
VOC Sensor (ppb) : 120.80
CO2 Eq (ppm) : 420

75F Epidemic Mode™

- **Smart Purge™** automatically flushes the air in the building prior to occupancy.
- Maximize outside air intake based on equipment and weather.
- Open up zone dampers or VAV boxes.
- Sequences are automatically updated as CDC and ASRAE guidelines change, or to meet state or federal regulations.


75F
DASHBOARD
ZONES
SYSTEMS
BUILDING
4
RTU_1 VAV Staged RTU
550 PPM
0 PPM
2000 PPM
OAO
AUTO
HEAT ONLY
COOL ONLY
Occupancy Status : In Setpoint | Changes to Energy Saving at 18:00
Equipment Status : Fan Stage 1 thru 4 ON | Cooling Stage 1,3 ON
ECONOMY
Min Inside Humidity 40 %
Max Inside Humidity 40 %
Compensate for Humidity
Demand Response Mode
Epidemic Mode Settings
Smart Pre Purge
Smart Post Purge
Enhanced Ventilation

OAO

AUTO

HEAT ONLY

COOL ONLY

Equipment Status : Fan Stage 1 thru 4 ON | Cooling Stage 1,3 ON

ECONOMY

Min Inside Humidity 40 %

Max Inside Humidity 40 %

Compensate for Humidity

Demand Response Mode

Epidemic Mode Settings

Smart Pre Purge

Smart Post Purge

Enhanced Ventilation

Enhanced IAQ Monitoring and Management:

- Monitor the temperature, humidity and occupancy and indoor air quality of each zone independently.
- Maintain space setback temperatures during unoccupied periods along with emergency building heating so relative humidity does not rise above critical levels.

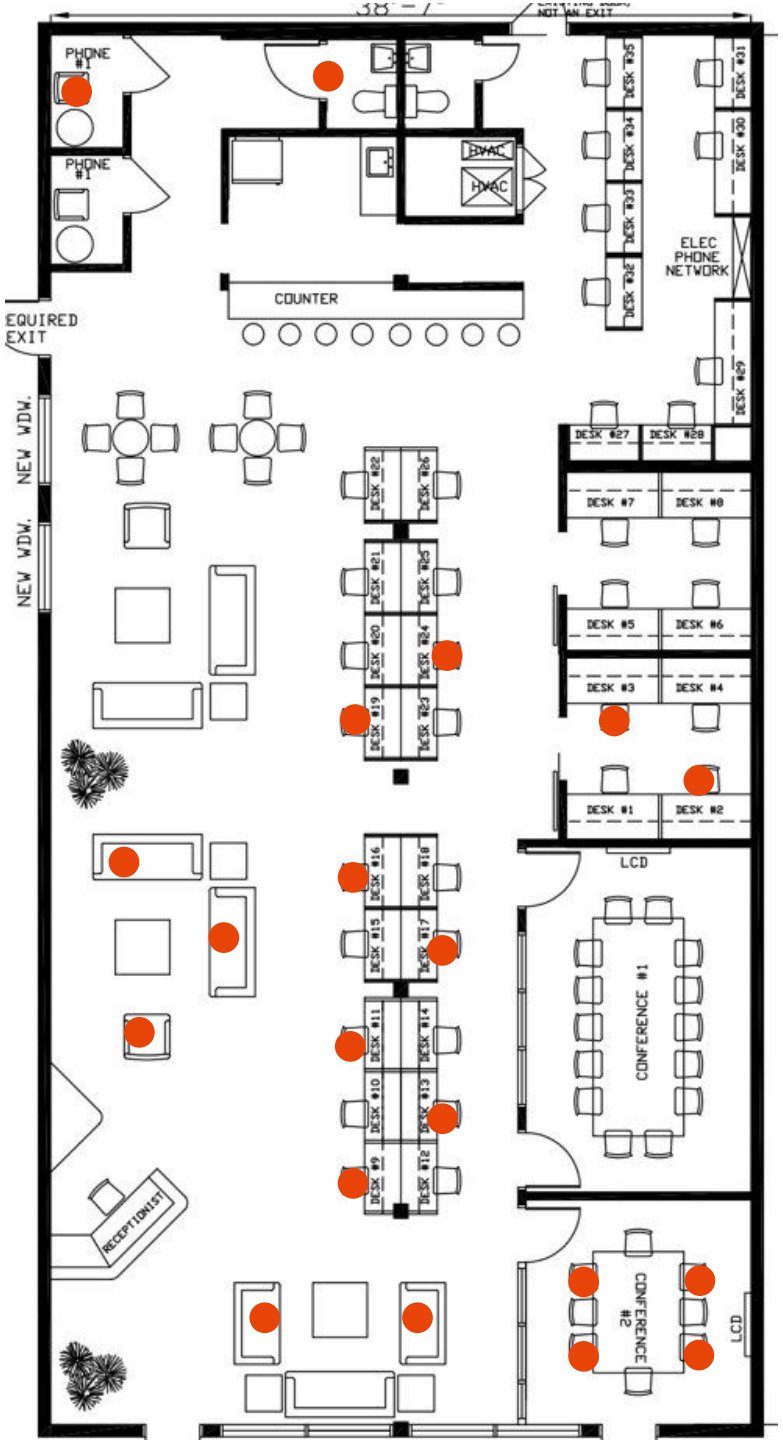
75F

Built-In Occupancy Sensors Track Building Utilization Rates:

- Dynamically rebalance airflow from partially occupied or unused spaces to increase outside air ventilation in all high occupancy areas.
- Reduce operating expense and equipment and maintenance costs from ventilating or cooling unoccupied indoor spaces.
- Review granular occupancy data for each building or office at a zone level to comply with policies or regulations.

No Occupancy Detection – Alternate Use

- Alternate occupancy of a space to every other day – this creates a 36 to 48-hour period for Coronavirus to deactivate.
- Program your BAS to direct air to the occupied zones by changing the unoccupied zones to setback.
- Change schedules on single-zone systems to condition occupied spaces.



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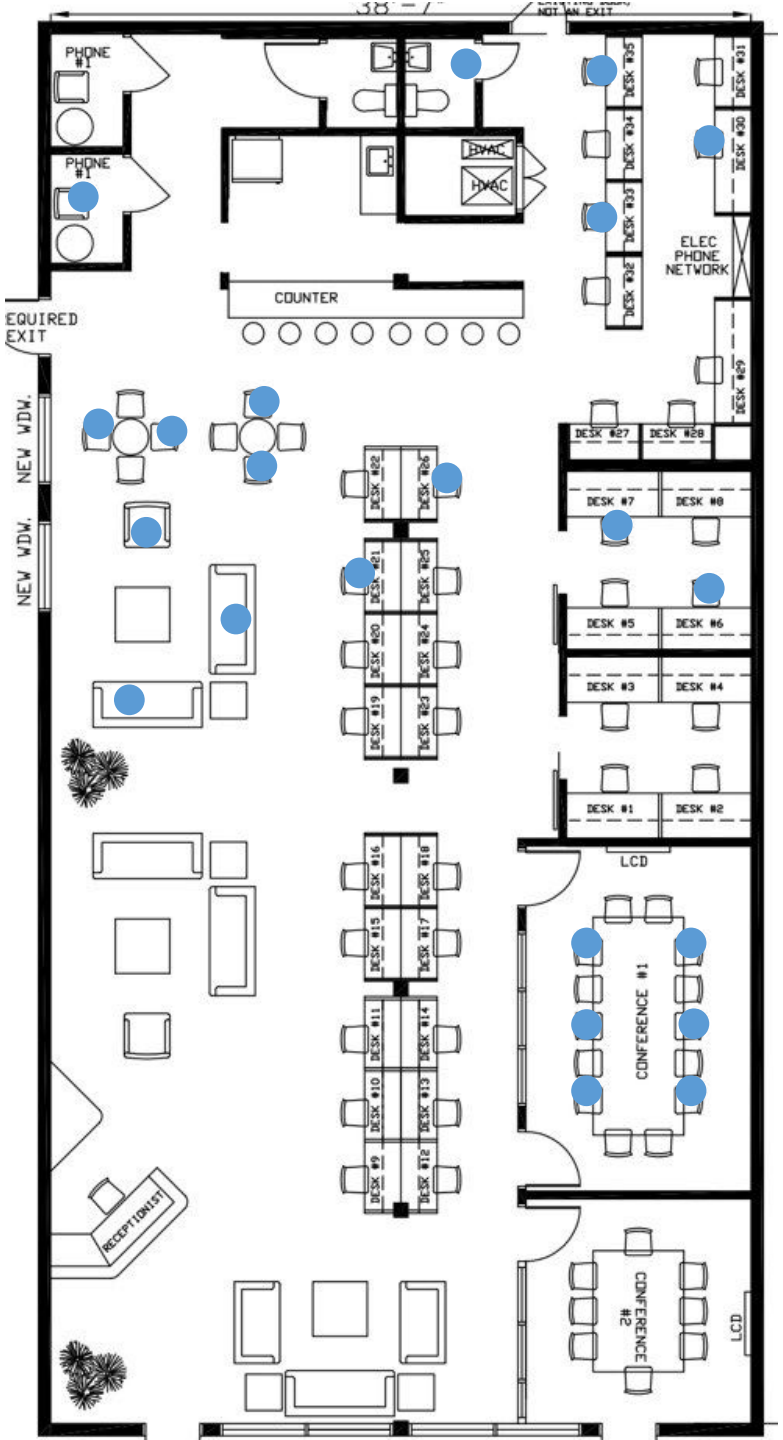
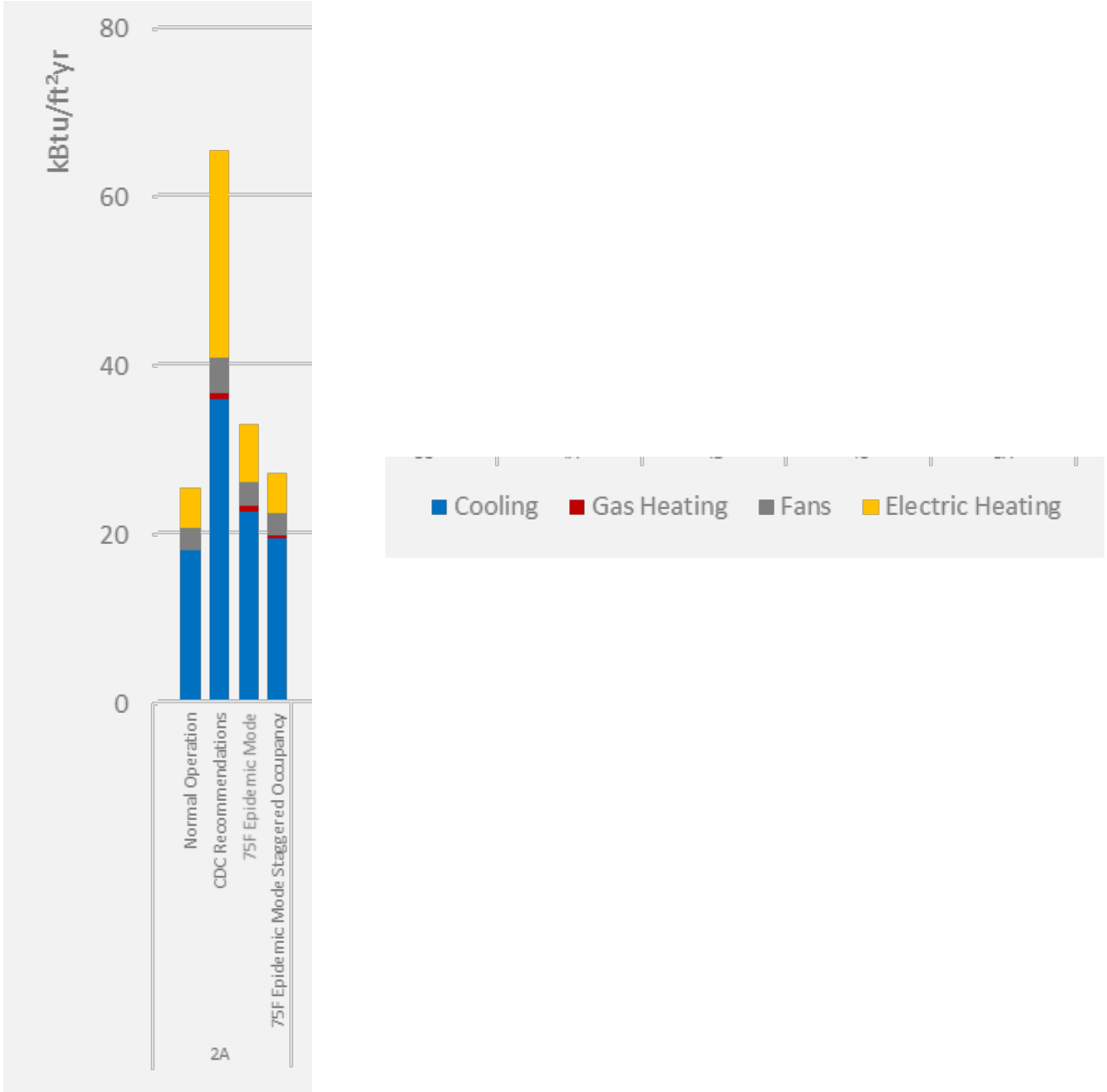
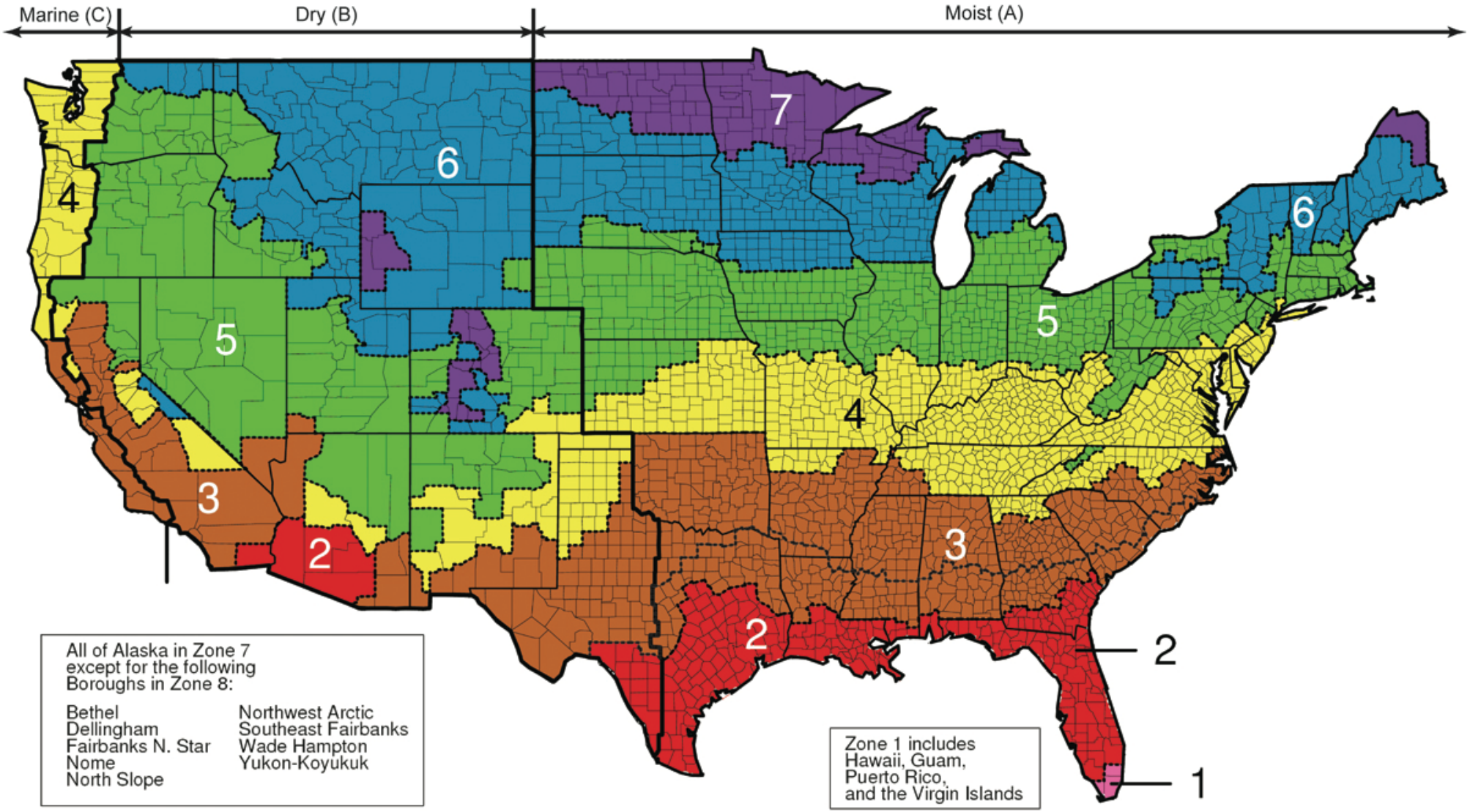


Annual Results by HVAC End Use



U.S. Climate Zone Map



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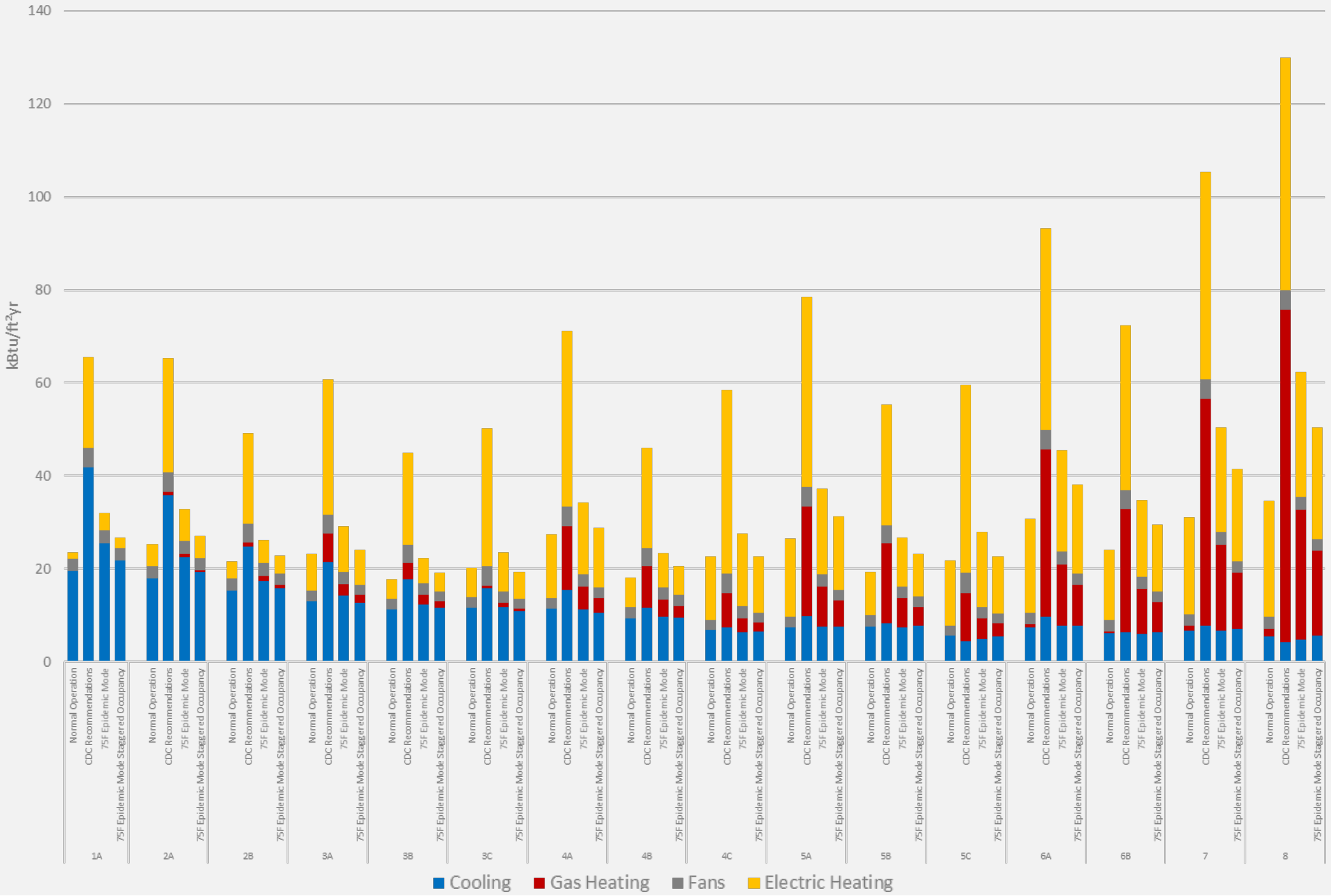
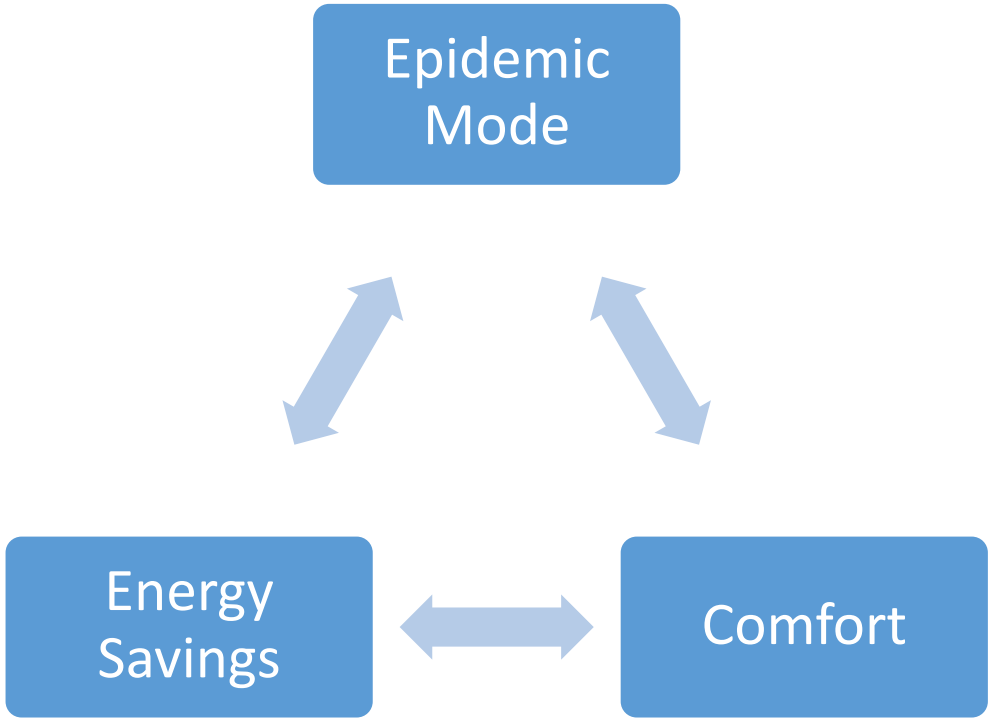


Protect your employees and customers today while saving energy

Save the planet with 30-50% energy savings



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Q&A