



# HVAC for Curators

# Presenters

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Shana Hawrylchak

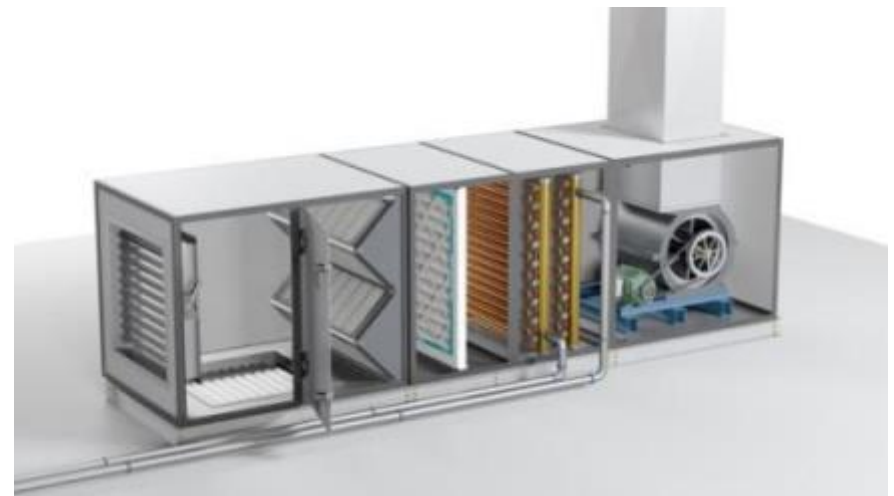
Facilities Project and Operations  
Manager

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# Fresh Air

- What do you have, what is it susceptible to, do your collections affect air quality (Shana)
- Where is your air coming from and going to (Larry)
- Fresh air change over – Keeping RH (Larry)
- Filter types –UV, ionization (Zach)
- Filter types, gas phase cardboard, box (Mike)
- Merv ratings, identifying appropriate filters (Mike)



# MERV Ratings

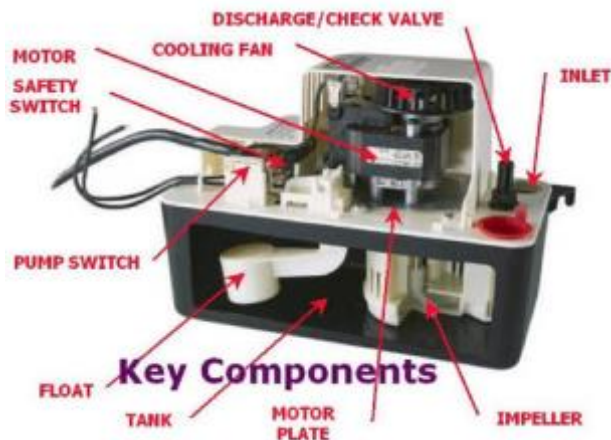
MERV Rating	Air Filter will trap Air Particles size .03 to 1.0 microns	Air Filter will trap Air Particles size 1.0 to 3.0 microns	Air Filter will trap Air Particles size 3 to 10 microns	Filter Type ~ Removes These Particles
MERV 1	< 20%	< 20%	< 20%	Fiberglass & Aluminum Mesh ~ Pollen, Dust Mites, Spray Paint, Carpet Fibres
MERV 2	< 20%	< 20%	< 20%	
MERV 3	< 20%	< 20%	< 20%	
MERV 4	< 20%	< 20%	< 20%	Cheap Disposable Filters ~ Mold Spores, Cooking Dusts, Hair Spray, Furniture Polish
MERV 5	< 20%	< 20%	20% - 34%	
MERV 6	< 20%	< 20%	35% - 49%	
MERV 7	< 20%	< 20%	50% - 69%	Better Home Box Filters ~ Lead Dust, Flour, Auto Fumes, Welding Fumes
MERV 8	< 20%	< 20%	70% - 85%	
MERV 9	< 20%	Less than 50%	85% or Better	
MERV10	< 20%	50% to 64%	85% or Better	Superior Commercial Filters ~ Bacteria, Smoke, Sneezes
MERV 11	< 20%	65% - 79%	85% or Better	
MERV 12	< 20%	80% - 90%	90% or Better	
MERV 13	Less than 75%	90% or Better	90% or Better	HEPA & ULPA ~ Viruses, Carbon Dust, <.30 pm
MERV 14	75% - 84%	90% or Better	90% or Better	
MERV 15	85% - 94%	95% or Better	90% or Better	
MERV 16	95% or Better	95% or Better	90% or Better	
MERV 17	99.97%	99% or Better	99% or Better	
MERV 18	99.997%	99% or Better	99% or Better	
MERV 19	99.9997%	99% or Better	99% or Better	
MERV 20	99.99997%	99% or Better	99% or Better	

Illustration Provided by LakeAir / [www.lakeair.com](http://www.lakeair.com)



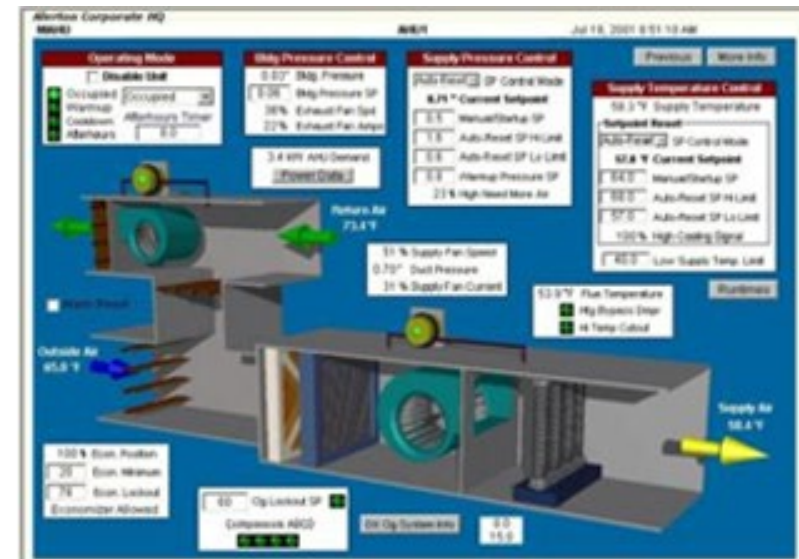
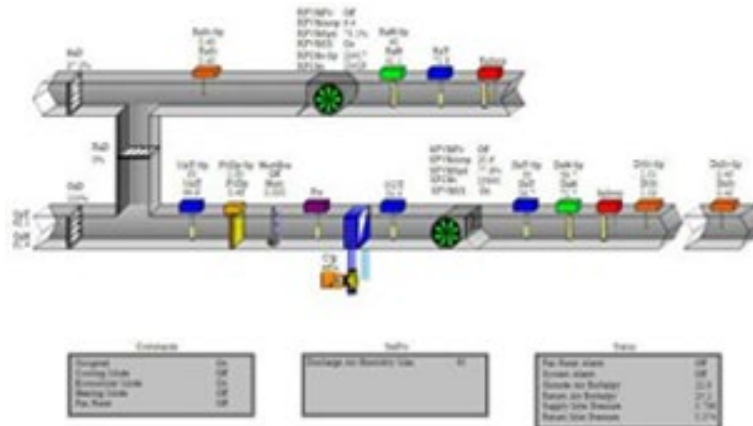
# Hitting the Magic Numbers

- RH50 +/-5% and temp 65+/- 2 (Shana)  
(AAM best practices and loan standards)
- RH regulation requires heating and cooling (Mike)
- What can your current system take?  
Stability over hitting the numbers (Mike)
- Building envelope – beware of condensation (Shana)



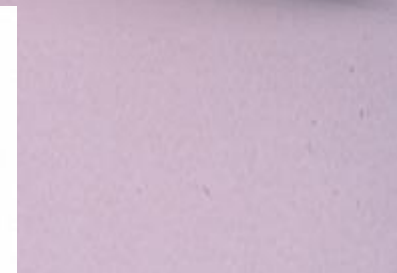
# Controls Systems

- What are HVAC controls systems automated vs manual (Chris)  
occupancy settings (Shana)
- Sensor locations and airflow (Chris)
- Local/remote alarms (Chris)
- Wifi alarms (Zach)



# Temporary Upgrades

- Creating Microclimates (Shana)
- Desiccants/ Artsorb (Shana)
- Dehumidifiers (Mike)
- Spot Coolers – heat rejection (Zach)



# Upgrading

- Changing a room function means you must adjust your HVAC!
- Do you need an upgrade, is balancing and option? (Zach)
- What can your building take? (Shana)  
Envelope issues
- Ductwork and options (Larry)
- Placing and disguising equipment (Larry)





# Support Facilities Staff

- BOMA replacement timeframes vs non-profit reality (Shana)
- Advocate for system PMs – Filter changes!!!! (Shana)
- Deficiency lists – making your money stretch (Mike)
- System risk analysis – core vs secondary systems, high value areas (Shana)
- Work with your facilities team to prioritize limited HVAC resources (Shana)

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