



Indoor Air Quality



Francis Dietz
VP, Public Affairs Affairs



For Discussion Today

- Topic Introduction – Francis Dietz, AHRI
- Available federal funding for IAQ improvements (schools)
 - Alex Ayers, HARDI
- Available federal funding for IAQ improvements (buildings)
 - Chuck White, PHCC
- Finding qualified installers and technicians – Chuck White, PHCC
- IAQ best practices – Tyler Mancl, Greenheck Fan Co.

SIX STEPS FOR SAFER SCHOOLS





Issue Summary

- Schools and commercial buildings should prioritize building assessment, through which qualified technicians conduct tests and assessments to determine appropriate air flows and if spaces within the are achieving those air flows
- A properly installed, properly maintained system, with adequate ventilation using outside air, proper filtration, and appropriate humidity control – all of which are accomplished through readily available technologies -- can go a long way toward mitigating potential viral spread

Alex Ayers
Director, Govt. Affairs

HARDI
Heating, Air-conditioning & Refrigeration Distributors International



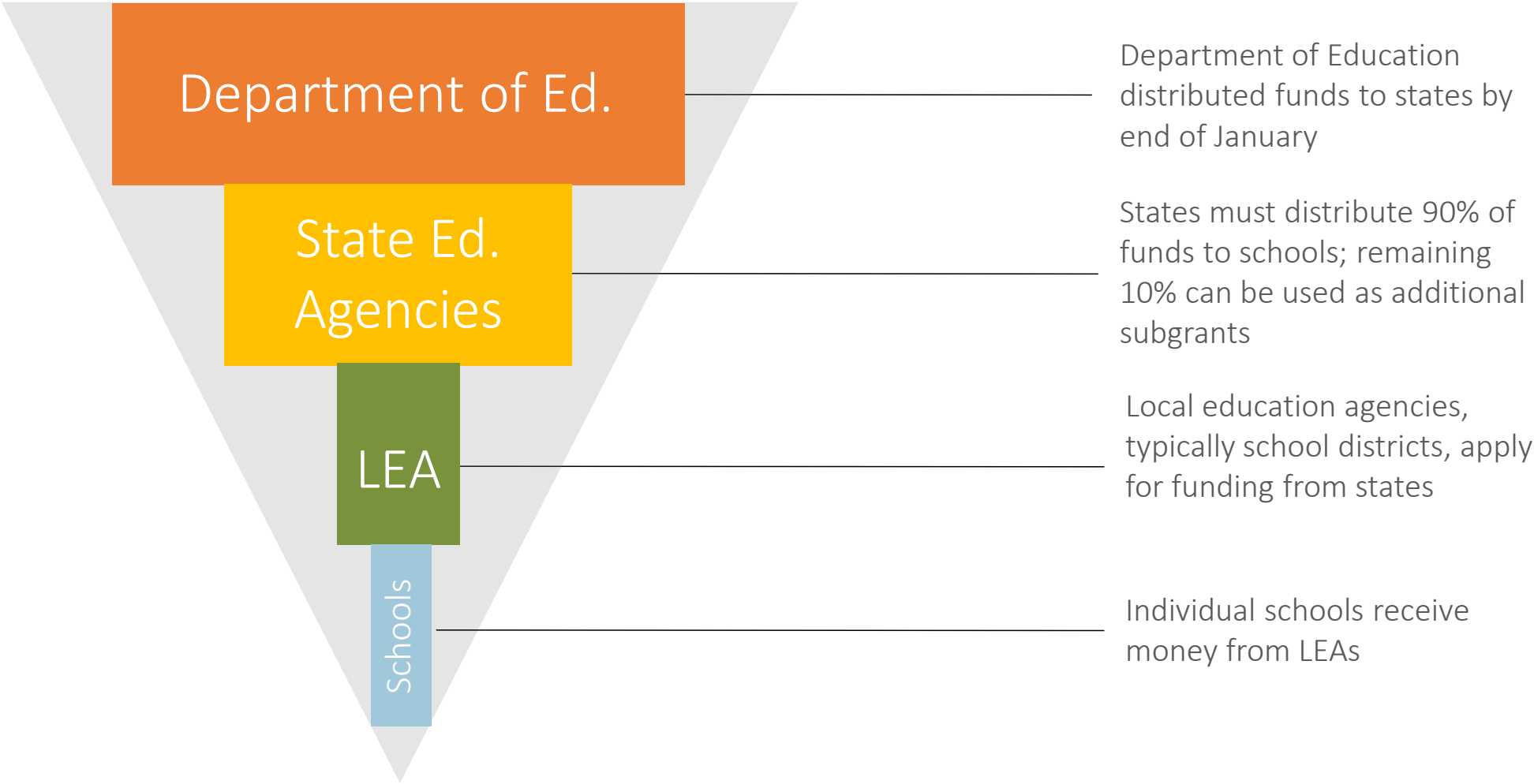
Many Schools Need New HVAC Systems

- GAO report:
 - ½ of school buildings in 40% of school districts need to replace HVAC systems
 - Outdated building systems have led to mold and poor IAQ
 - Additional infrastructure improvements including lighting and roofing also needed in over 25% of schools

Great News for Schools from Congress

- Elementary and Secondary School Emergency Relief Funds
 - \$189.5 billion for schools to address COVID-19
 - Allowed for a broad number of purposes including PPE, cleaning and sanitizing materials, support for remote learning, and HVAC upgrades and repairs
- HVAC upgrades and repairs
 - Schools can use the funds to inspect, test, maintain, repair, replace, or upgrade their HVAC systems with the intention to improve indoor air quality in school facilities
 - Eligible upgrades: HVAC systems, filtering, purification and other air cleaning, fans, control systems, and window and door repair and replacements

Distribution of Funds



Budget for States to Send to LEA

Alabama	\$810M	Hawaii	\$165M	Massachusetts	\$733M	New Mexico	\$392M	South Dakota	\$153M
Alaska	\$143M	Idaho	\$176M	Michigan	\$1.490B	New York	\$3.602B	Tennessee	\$996M
Arizona	\$1.034B	Illinois	\$2.025B	Minnesota	\$529M	North Carolina	\$1.442B	Texas	\$4.976B
Arkansas	\$502M	Indiana	\$799M	Mississippi	\$652M	North Dakota	\$122M	Utah	\$246M
California	\$6.038B	Iowa	\$310M	Missouri	\$784M	Ohio	\$1.792B	Vermont	\$114M
Colorado	\$467M	Kansas	\$332M	Montana	\$153M	Oklahoma	\$598M	Virginia	\$845M
Connecticut	\$443M	Kentucky	\$835M	Nebraska	\$218M	Oregon	\$449M	Washington	\$742M
Delaware	\$164M	Louisiana	\$1.044B	Nevada	\$429M	Pennsylvania	\$2.002B	West Virginia	\$305M
Florida	\$2.820B	Maine	\$164M	New Hampshire	\$140M	Rhode Island	\$166M	Wisconsin	\$617M
Georgia	\$1.702B	Maryland	\$781M	New Jersey	\$1.107B	South Carolina	\$846M	Wyoming	\$121M

This is 90% of the money the states received from Dept. of Ed.

How School Districts Receive Funds

- LEAs must “apply” for funding from state education agency
 - Application is essentially the school agreeing to receive the funding
- Funding is based on Title I formula used for other federal funding
 - Roughly based on number of children aged 5-17 living below poverty level
- Some states will ask for list of expenses for tracking purposes, not to determine funding
- Schools have a deadline of 9/30/23 and 9/30/24 to obligate funds

Equitable Services Requirement

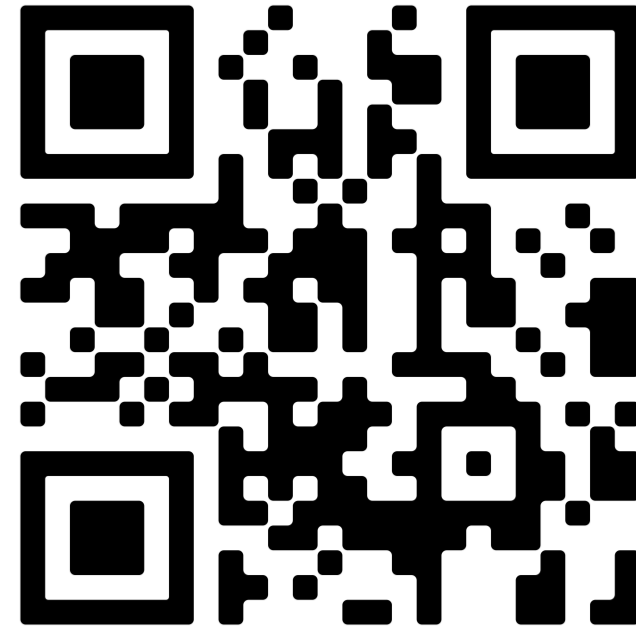
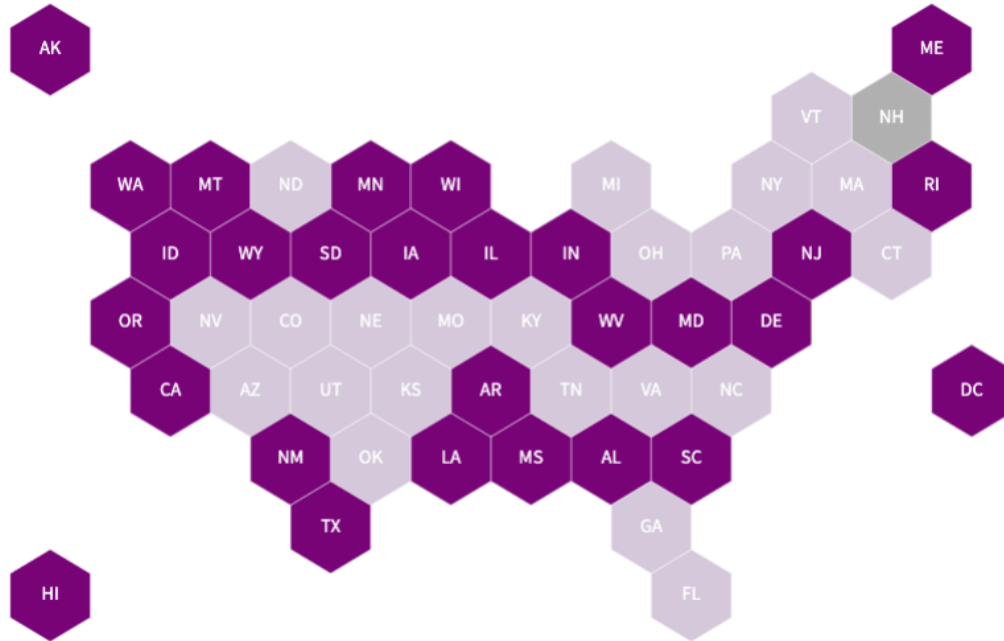
- Funding is based on number of children aged 5-17 in a school district, not number of students registered in LEA jurisdiction
- Private schools can request funding from LEA for the number of student from that jurisdiction
- Department of Ed. guidance requires LEAs to give equitable services to public and private schools
- Some charter schools are their own LEA

Public Data on Remaining Funds

Edunomics is tracking ESSER spending at the school district level

<https://edunomicslab.org/esser-spending/>

■ State Reports Total Spending + Details
■ State Reports Total Spending Only



Warning: District data doesn't load well on mobile
I encourage you to email the link to yourself for later viewing on desktop

Additional Funding for Schools in IRA

- The Inflation Reduction Act included \$50 billion for schools in low-income and disadvantaged communities to apply for grants and technical assistance to reduce air pollution and greenhouse gas emissions.
- This funding can move schools from high-GWP refrigerants to low-GWP refrigerants as equipment becomes available.

Charles R. White

VP, Regulatory Affairs



Energy Efficient Commercial Buildings Deduction

- Provides a tax deduction for 179D energy efficiency improvements to commercial buildings, including ventilation
- New rules generally begin in 2023
- Owners and long-term lessees
- Designers, tax-exempt owners (guidance pending)

- Base level: \$0.50-\$1 per square foot, depending on increase in efficiency, 4-year cap at \$1 per square foot. (Or deduct adjusted basis in “qualified retrofit plans” w/ minimum 25% saving.)
- Bonus: 5 times the base amount if the project meets prevailing wage and use of registered apprentice requirements.

Green and Resilient Retrofit Program

- Provide grants and loans to HUD-assisted properties
- The law provides up to \$4,000,000,000 in loan authority and \$837,500,000 in grants
- Available until September 30, 2028
- Improve energy or water efficiency,
- enhance indoor air quality or sustainability,
- implement the use of zero-emission electricity generation, low-emission building materials or processes, energy storage, or building electrification strategies, or
- address climate resilience
- Details TBD

How to Get it Installed

Contractors are anxious to help improve IAQ.

There are numerous professional associations including PHCC that can help locate qualified contractors

Factors to consider before an RFI:

- How big is the facility or project scope?
- Type of construction
- Renovation or Rehab?
- Your knowledge of your facility
- How much assistance can you offer



How to Get it Installed

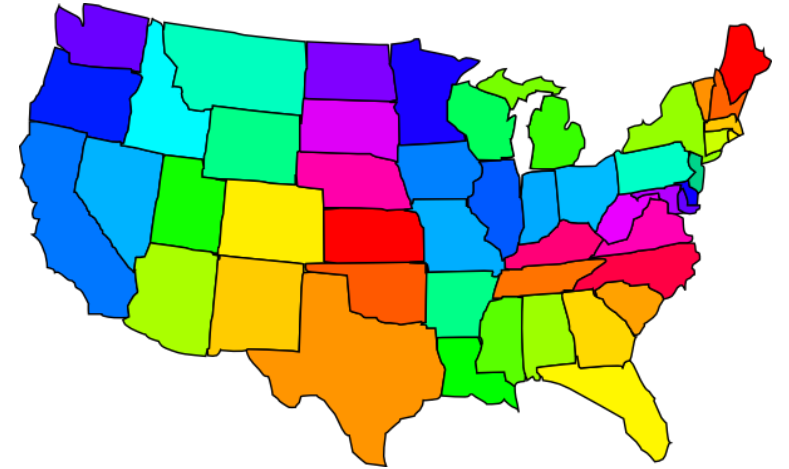
Project location will dictate requirements:

- Adopted codes and standards
- Requirements for plan release
- Engineering requirements

Contractors are like buildings, they come big and small, pick the scale that fits your project.

Contractors may have engineering staff in-house.

Experience matters, ask about past projects.



Tyler Mancl, P.E
Principal Application
Engineer

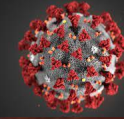


Improving Indoor Air Quality

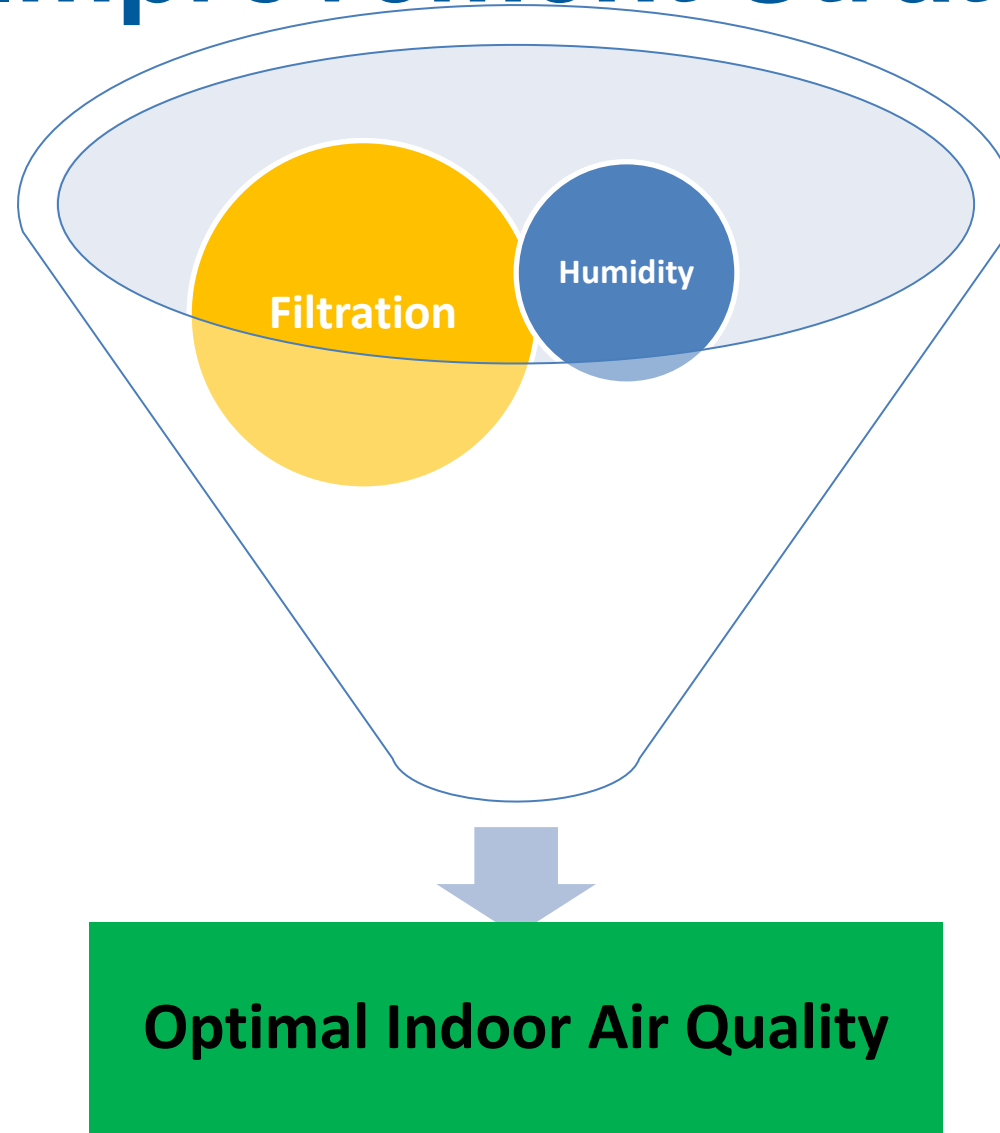
Best Practices

What's The Deal With Our Air?

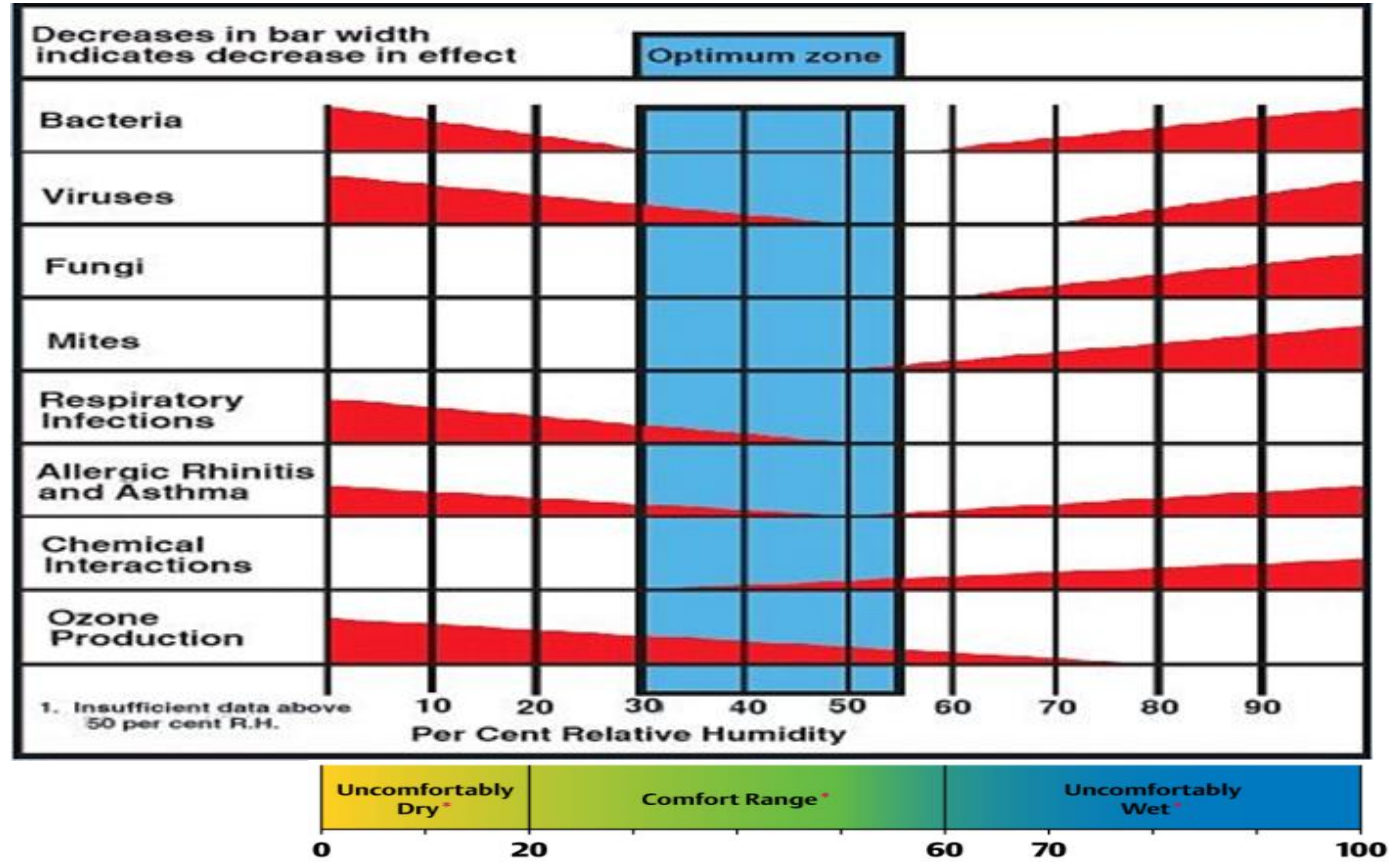
- COVID is not the only target
- Other IAQ offenders
- Understand other sources



IAQ Improvement Strategies



#3 Humidity Control



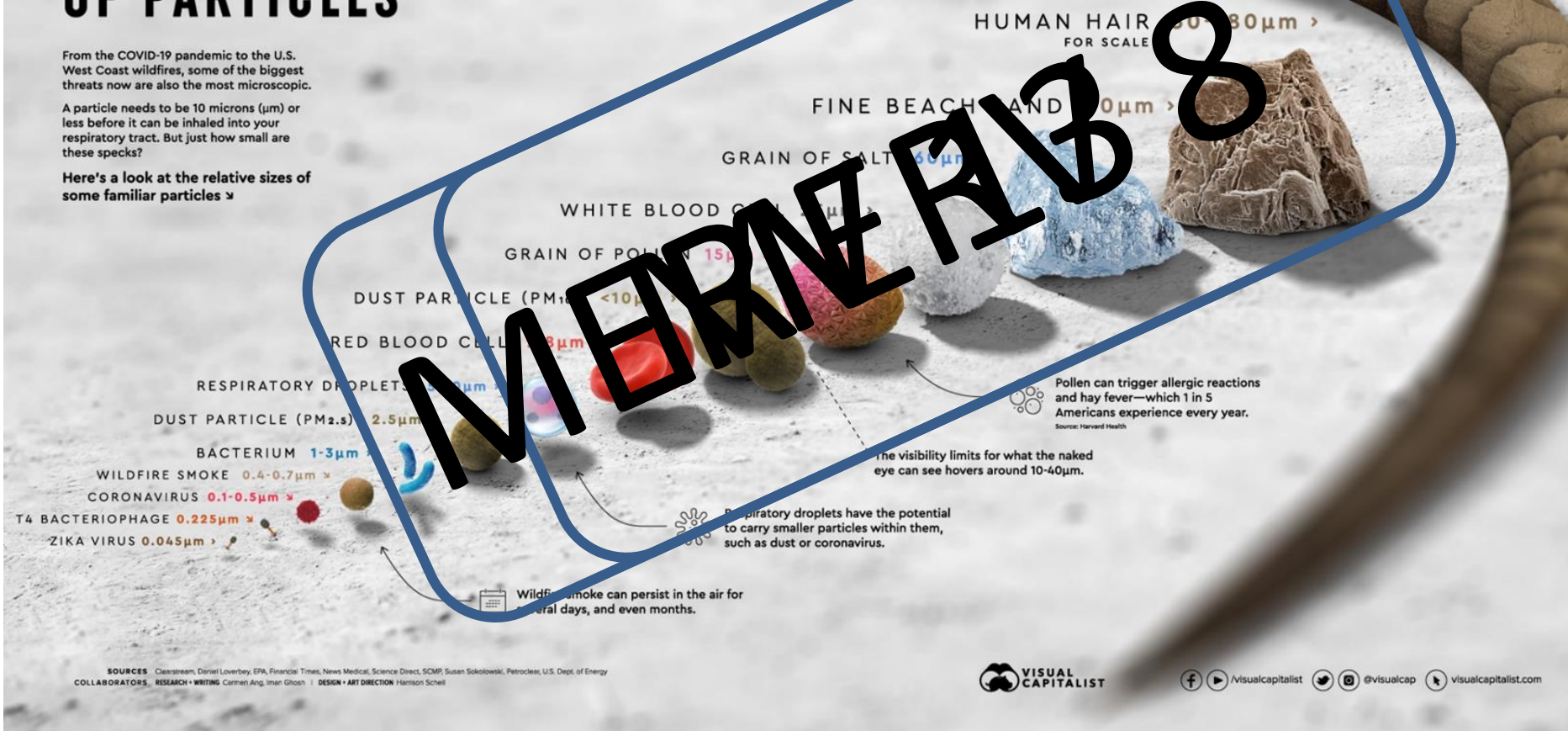
#2 Filtration

THE RELATIVE SIZE OF PARTICLES

From the COVID-19 pandemic to the U.S. West Coast wildfires, some of the biggest threats now are also the most microscopic.

A particle needs to be 10 microns (μm) or less before it can be inhaled into your respiratory tract. But just how small are these specks?

Here's a look at the relative sizes of some familiar particles \gg



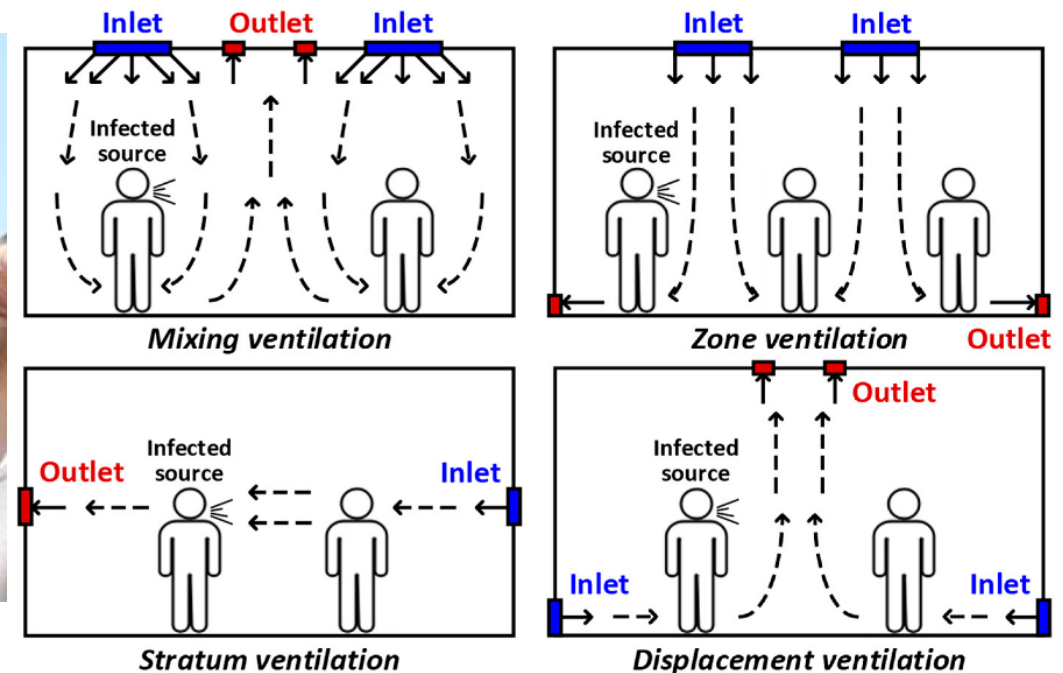
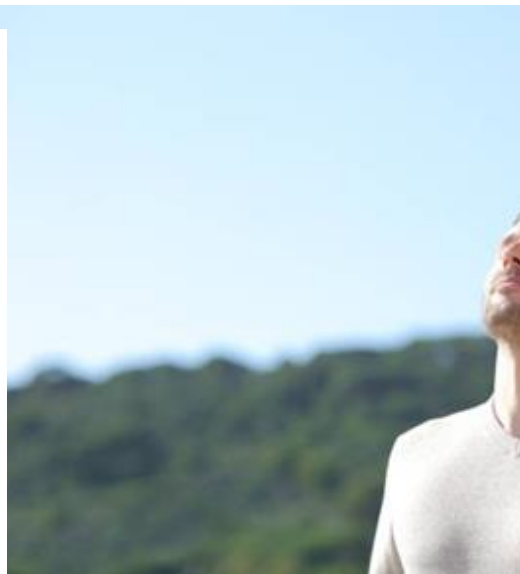
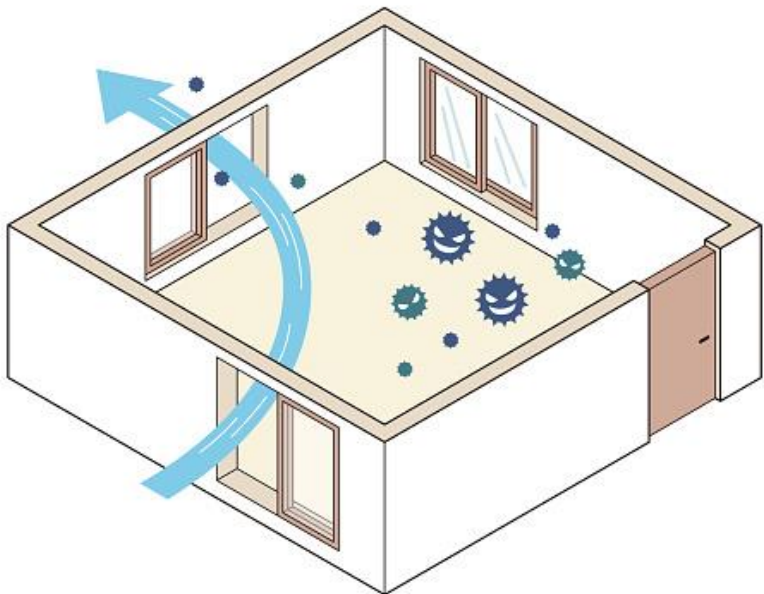
SOURCES: Clearstream, Daniel Loverbey, EPA, Financial Times, News Medical, Science Direct, SCMP, Susan Sokolowski, Petroclear, U.S. Dept. of Energy
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VISUAL CAPITALIST

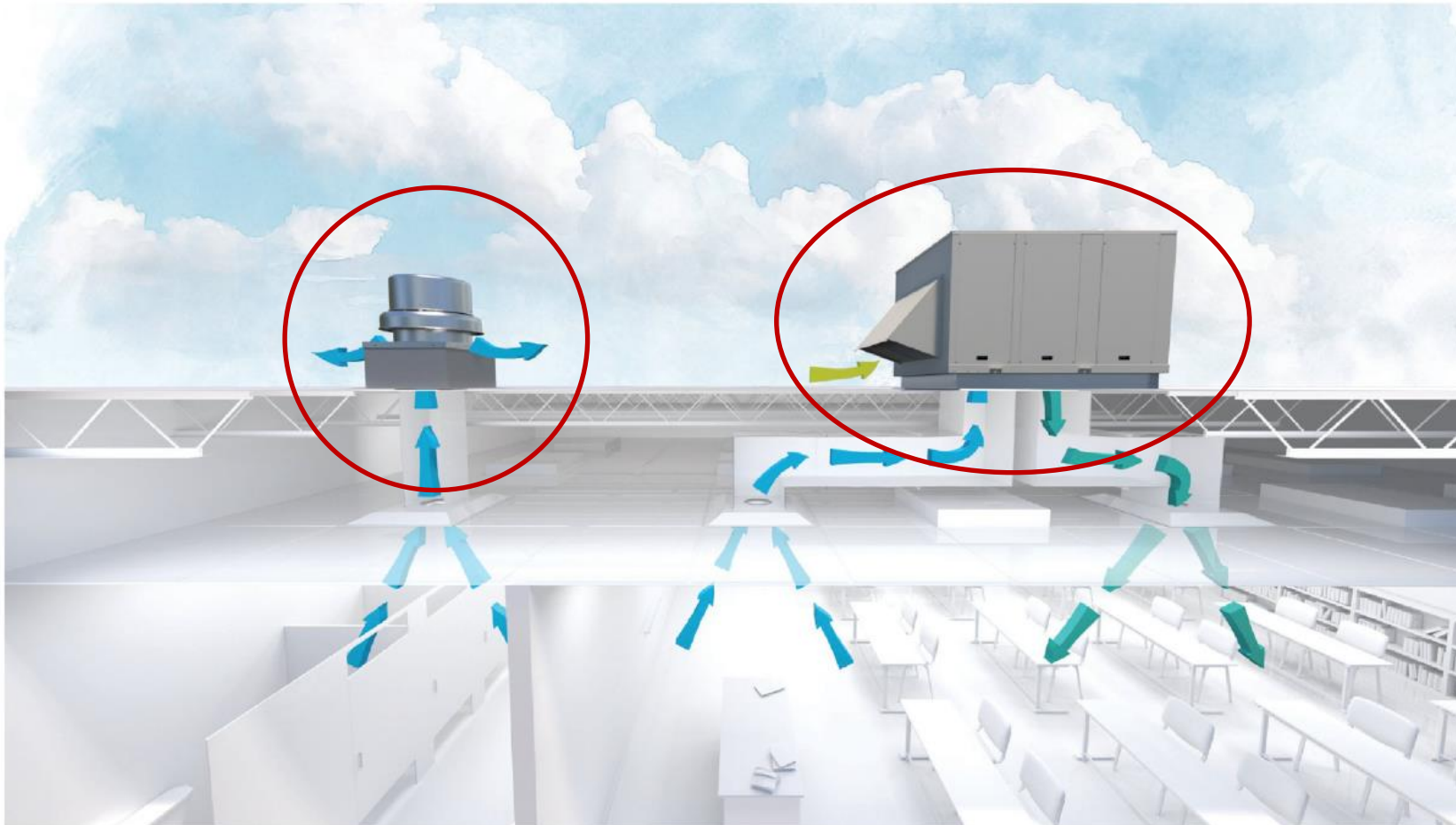
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#1 Ventilation

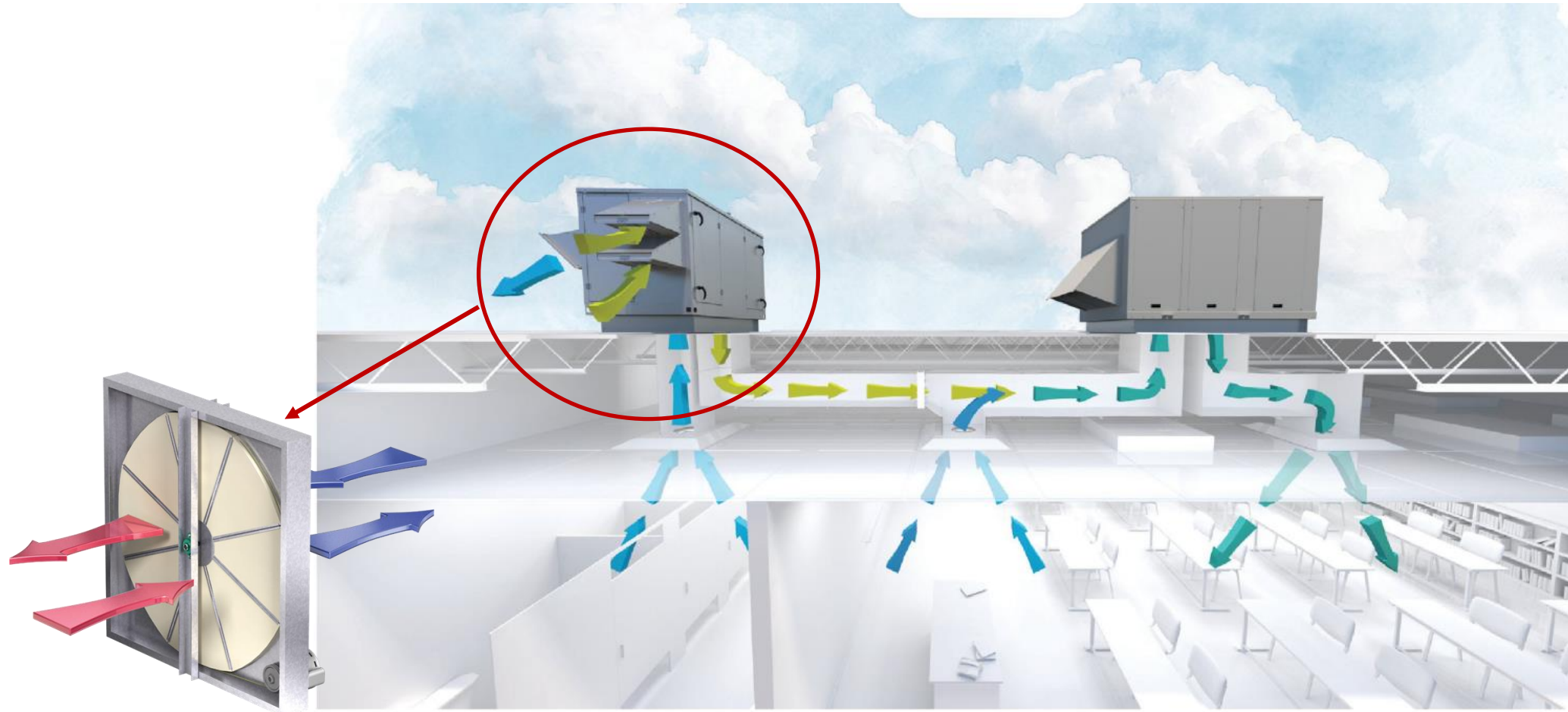
- Most studied and proven to improve IAQ overall
- Reduce absenteeism and increase productivity
- Improve overall health and comfort



How do we get more ventilation?



Retrofit Ventilation Increase



Retrofit Ventilation Increase

Atlanta, GA				
	OA CFM	Cooling Cap (tons)	Heating Cap (btu/h)	Energy Recovery Performance
Existing System	1,000	6.5	74,844	0%



Any
Questions