



Save Money. Reduce Building Emissions. Improve Indoor Air Quality.  
**With Sorbent Ventilation Technology (SVT).**

A4LE Energy, Carbon, and Sustainability Symposium | June 24, 2025

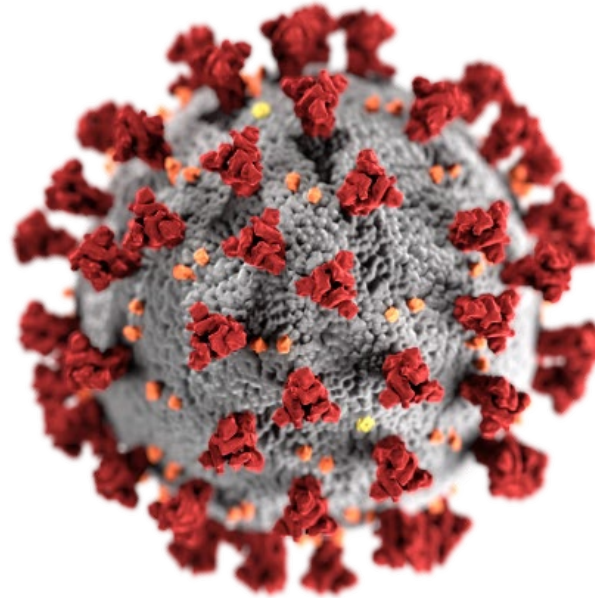
# New ventilation methods are needed to achieve efficient IAQ

## Sustainability Goals



*Hot, humid outside air is expensive to condition*

## Airborne Viruses



*New strategies are needed to remove aerosols from indoor air*

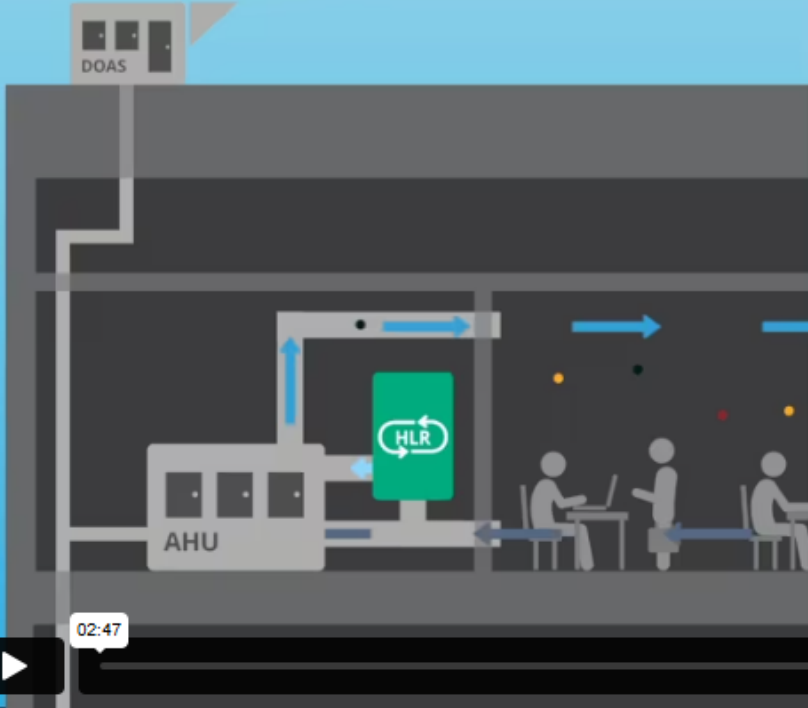
## Wildfire Smoke




*Outside air is not always "fresh" air*

# Introducing Sorbent Ventilation Technology

**How enVerid Sorbent Ventilation Technology® Cleans Air and Reduces Energy Use**  
enVerid Systems, Inc.



**Reduced Energy Consumption**



**40%**

02:47

Video player controls: play, volume, settings, full screen, refresh.

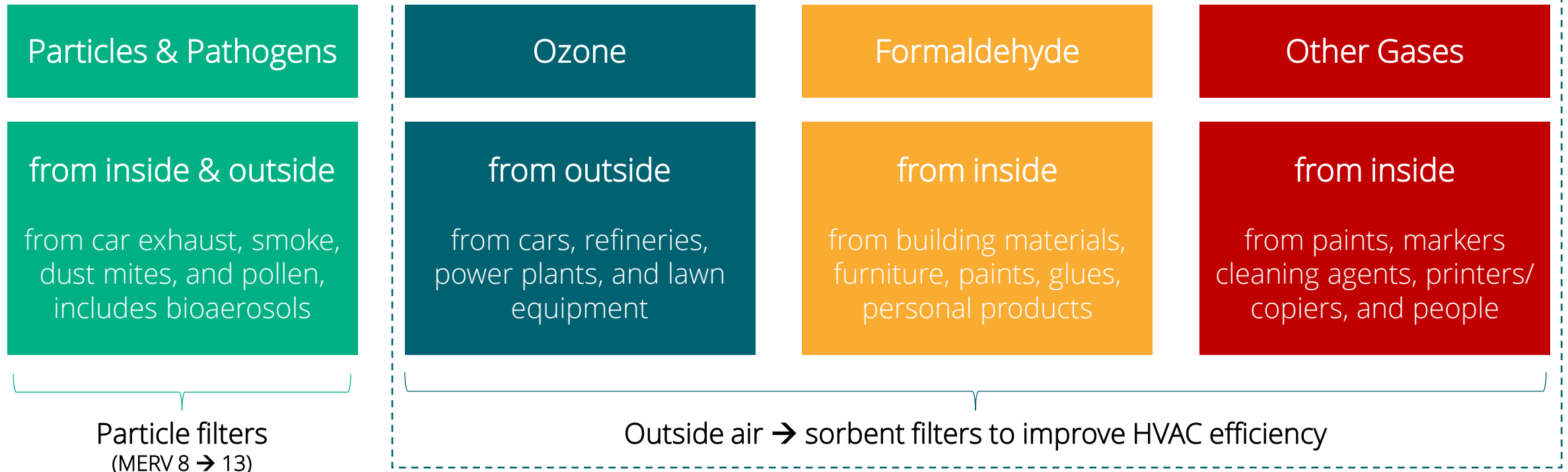
# We ventilate buildings to maintain indoor air quality (IAQ)

Why we ventilate buildings:

“...to provide indoor air quality (IAQ) that is acceptable to humans and minimizes adverse health effects”  
(from ASHRAE Standard 62.1, Ventilation and Acceptable Indoor Air Quality).

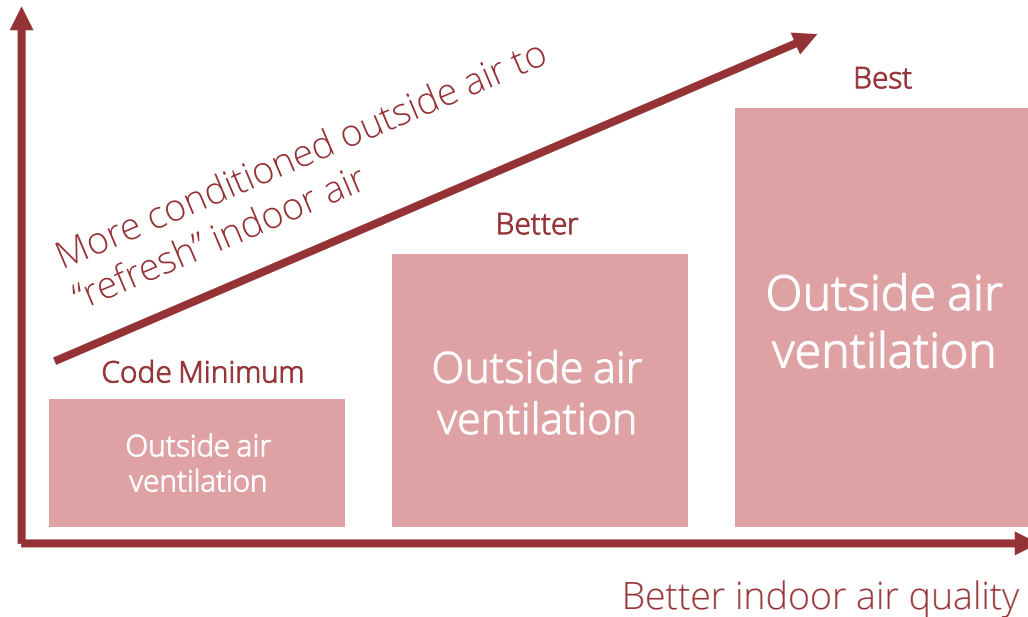
Indoor air pollutants we need to control for health and safety:

Sorbent Ventilation Technology Scope



# The problem: Dilution ventilation is not sustainable or cost effective

*How most buildings maintain indoor air quality today...*



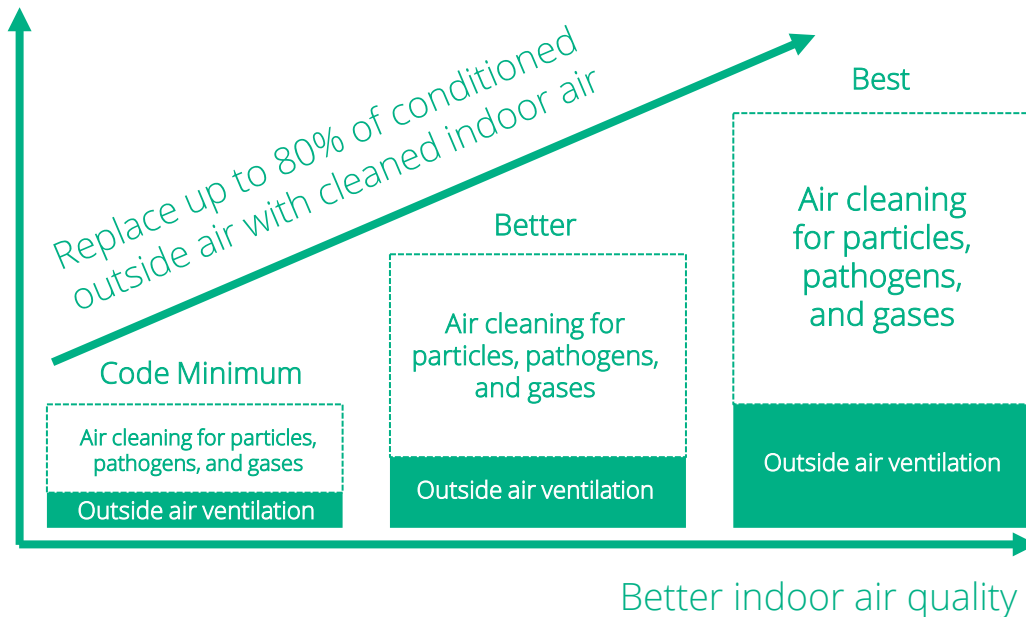
*results in more cost & higher emissions*

1. Larger and more expensive HVAC systems
2. Higher energy use and carbon emissions
3. Increased operating costs
4. What if the outside air is polluted?

*Relying on outside air ventilation to deliver good indoor air quality is energy intensive and costly.*

# The solution: Hybrid ventilation to achieve IAQ, carbon & cost goals

*Hybrid ventilation with air cleaning maintains IAQ...*



*and reduces costs & lowers emissions*

1. Smaller and less expensive (all electric) HVAC systems
2. Lower energy use and carbon emissions
3. Lower operating costs
4. Increased resilience to polluted outside air

*“To create high-IAQ, low-energy, climate resilient buildings for the future, we need to embrace alternatives to outside air ventilation to maintain healthy indoor environments.”* Dr. Bill Bahnfleth, former ASHRAE President

# Sorbent Ventilation Technology enables hybrid ventilation/IAQP

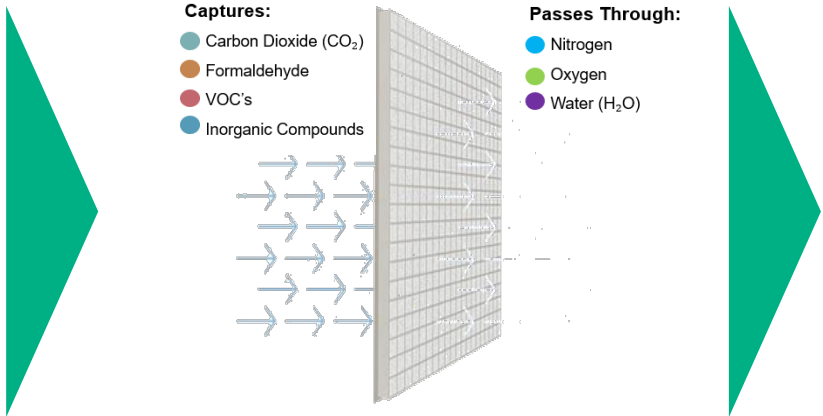


## Sorbent Media Blend



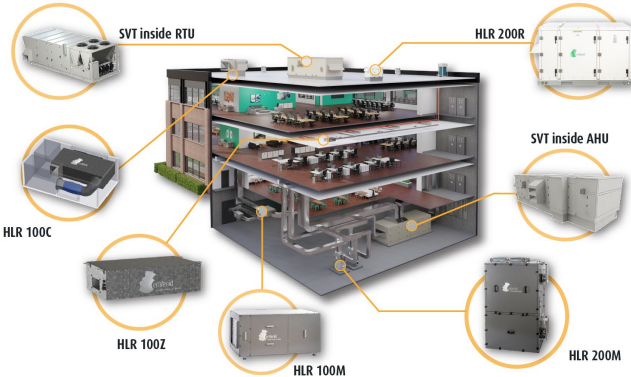
Sorbent media blend addresses all ASHRAE defined contaminants

## Sorbent Filters



Media is loaded into sorbent filters used in air cleaning systems

## HVAC Systems with SVT



Fan filter boxes containing sorbent filters clean and recycle indoor air

*Performance against all the ASHRAE defined contaminants has been demonstrated in third-party labs according to the **ASHRAE 145.2 test method** for gas-phase air cleaners and field validated by the U.S. Dept. of Energy.*

# SVT has been deployed in over 65 buildings in DC, MD & VA

Alice West Fleet School (VA)  
MEP: CMTA



William Wirt Middle School (MD)  
MEP: Salas O'Brien / GES



Malcolm X Elementary (DC)  
MEP: Design America Engineering



Princess Ann Middle (VA)  
MEP: Thompson Consulting Engineering



Dorothy Heights ES (DC)  
MEP: Engenium Group



Thoroughgood Elementary (VA)  
MEP: exp



Diener School (MD)  
MEP: GPI



British International School (DC)  
MEP: Bowman



# Case Study: Thoroughgood Elementary School



## PROJECT GOALS

- **LEED Gold certification**
- **Improved indoor air quality**
- **Peak cooling and heating load reduction**

## Project Details

Location	Virginia Beach, VA
Owner	Virginia Beach City Public Schools
MEP	exp.
Contractor	Conrad Brothers
Project Type	New Construction
Year Installed	2020
Total Floor Area	91,913 ft <sup>2</sup>
Air Cleaning Units	6 Rooftop & 1 Indoor
LEED/WELL	LEED Gold

## Partners




# Case Study: Thoroughgood Elementary – VRP vs. IAQP Design

## Equipment Sizing – Classroom Application

	Dilution Ventilation VRP Design*	Hybrid Ventilation IAQP Design**
Air Cleaning Units	-	7
Cleaned Return Air	0 CFM	7,000 CFM
Outside Air	17,755 CFM	10,052 CFM
Outside Air Reduction	-	43%
Cooling Sizing	1,600 MBH (131 tons)	1,030 MBH (86 tons)
Annual Ventilation Energy	137,488 kWh	90,439 kWh

## Optimized Equipment Package

- Optimized design used the IAQ Procedure with 7 air cleaning units to convert 100% OA units to smaller energy recovery ventilation units with reduced OA levels.
  - Reduced ventilation load allowed for reduction in number of geothermal wells needed for heating/cooling.
- HVAC Load Reduction (HLR) air cleaning units



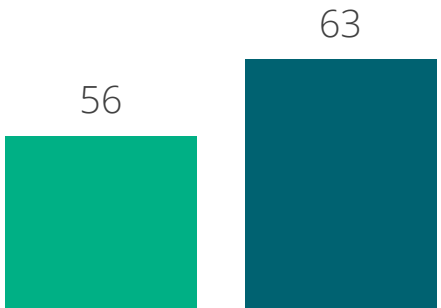
\* VRP stands for Ventilation Rate Procedure.

\*\* IAQP stands for Indoor Air Quality Procedure. The VRP and the IAQP are the two ways to calculate minimum ventilation rates under ASHRAE Standard 62.1 and the International Mechanical Code.

# Case Study: Thoroughgood Elementary – Project Outcomes



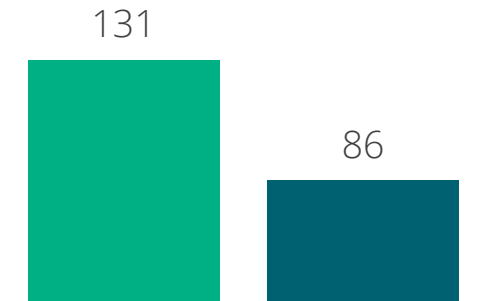
LEED Points



From LEED Silver to LEED Gold rating



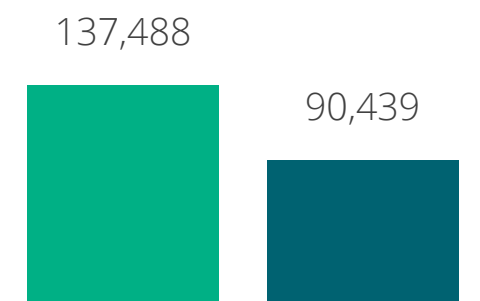
Peak Cooling Load (tons)



\$60k first cost savings on new HVAC system



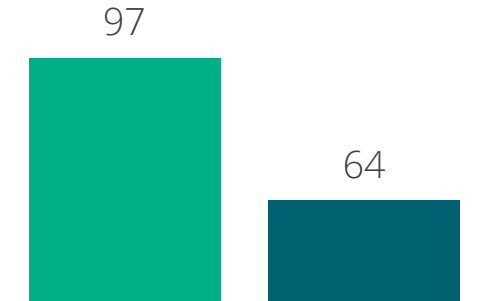
Ventilation Energy (kWh/yr)



\$100k utility bill lifetime savings



Metric Tons CO<sub>2</sub>/yr



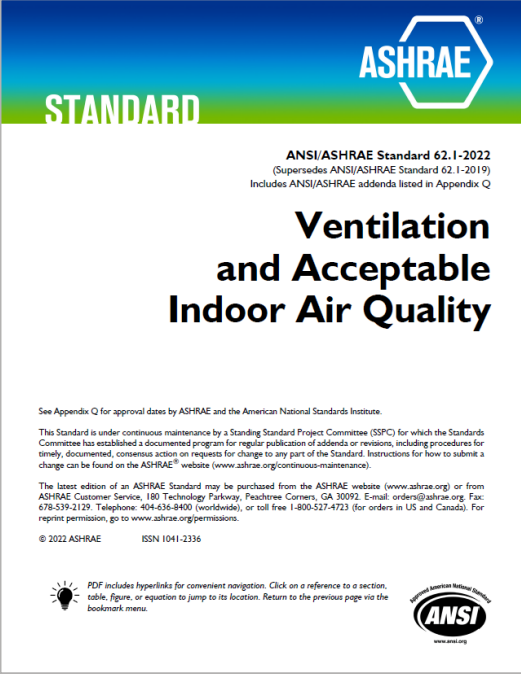
Reduced 42 metric tons CO<sub>2</sub> annually

These outcomes were achieved while maintaining indoor air quality well below LEED limits

# ASHRAE updates support new methods to achieve efficient IAQ



## Sustainability Goals



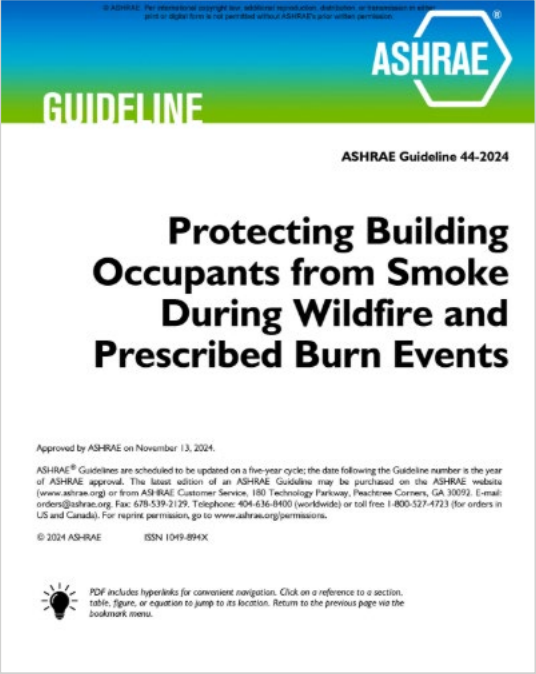
*10 addenda to Standards 62.1 and 90.1 since 2022 to enable energy efficient clean air using the IAQP*

## Airborne Viruses



*New standard in 2023 based on the concept of “equivalent clean air” rather than more outside air*

## Wildfire Smoke



*New guideline in 2024 emphasizes the importance of air cleaning when outside air may be polluted*

# Thank you

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