



APS Indoor Air Quality and Ventilation Health and Safety Fact Sheet

APS follows a holistic risk mitigation approach recommended by the U.S Centers for Disease Control and Prevention (CDC) and Harvard School of Public Health. Ventilation is part of an overall layered approach to reduce risk of virus transmission. Mitigation strategies include:

- Strong mask requirement
- Daily health screening and COVID response procedures
- Strategies to reduce classroom sizes and limit mixing of students
- Physical distancing, including desks spaced six feet apart
- Good hand hygiene
- Improved ventilation

ASSESSING AIR QUALITY

To assess and improve ventilation in our buildings, APS contracted with independent consultant, CMTA. CMTA provided an analysis of all classrooms designated for occupancy by employees and students and recommended necessary improvements to ensure all classrooms meet the standards for air quality and ventilation, in accordance with the Harvard School of Public Health [5-Step Guide to Checking Ventilation in Classrooms](#):

- Target of 4–6 air changes per hour (ACH) allows classrooms to be at full capacity
- Focused on classrooms, not large spaces (auditoriums, gyms, etc.)
- Strategies for providing more outside air to meet the 4–6 ACH target include:
 - » Opening windows and doors
 - » Adding Certified Air Cleaning Devices (CACDs) with True HEPA filters

APS follows the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) guidelines for heating, ventilation and air conditioning. ASHRAE establishes standards and guidelines for members and industry professionals for the design and maintenance of building environments. ASHRAE guidelines are the basis of construction codes for all APS buildings.

BY THE NUMBERS

\$500,000+ spent on upgrades, new filters, and equipment

4–6 ACH target for classrooms

1,777 classrooms being used by students

100% of occupied instructional classrooms meet 4–6 ACH using outside air and CACDs

2,008 CACDs purchased/installed in classrooms



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CMTA has taken measurements in every school to get the correct ceiling heights to convert the ASHRAE ventilation data to air changes per hour. Correct classroom volume is critical in converting APS ASHRAE design ventilation data to ACH. Based on the CMTA assessment, as of Feb. 25:

- 100% of occupied classrooms meet the 4 - 6 ACH target. This calculation excludes any recirculated air which contributes to improved ventilation.
[See the ventilation reports for more detail](#)
- All 2,008 purchased CACD units will be installed and functioning in classrooms where they are needed **prior to employee and student occupancy.**
- Using outside air and CACDs brings all APS occupied classrooms to 4-6 ACH, allowing full occupancy.

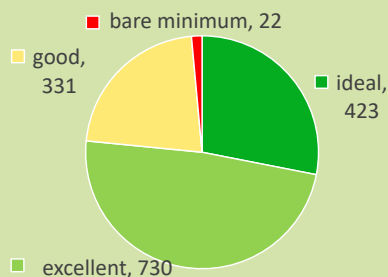
ACTIONS TAKEN

- ✓ Checked ventilation equipment, controls, and filter fit
- ✓ Maximized outside air ventilation wherever possible
- ✓ Encouraging staff to open windows if available to provide additional outside air
- ✓ Set a target of 4-6 ACH (air changes per hour) for classrooms based on the recommendation from the Harvard T. H. Chan School of Public Health
- ✓ Purchased 2,008 CACDs and provided one for every classroom identified in the [Return to School Classroom Capacity Matrix](#) to meet the 4 - 6 ACH target.
- ✓ Classrooms will be provided with two CACDs when needed to meet the 4 - 6 ACH target.

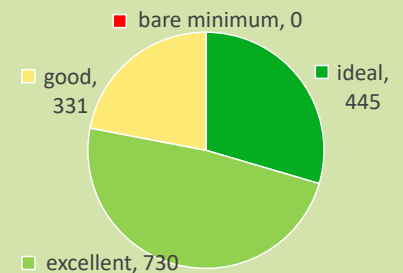
TEST RESULTS (AS OF 2.14.21) FOR OCCUPIED CLASSROOMS

Harvard Standard (using only outside air (OA) and CACDs) target of 4-6 ACH

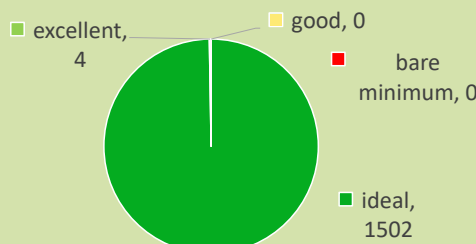
OA and 1 CACD/
classroom;
98.5% meet target



OA and 1 CACD/
classroom with
2 CACDs in 22
classrooms;
100% meet target



**ASHRAE Equivalent
Outside Air Calculation**
(using OA, 1 CACD/
classroom and 2 CACDs
in 22 classrooms, & air
recirculated through filters);
100% meet target



Ideal	6 ACH
Excellent	5-6 ACH
Good	4-5 ACH
Bare Minimum	3-4 ACH
Low	<3 ACH