



# Smart Restart APS

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February 22, 2021

Senator Mark Warner  
Hart Senate Office Building #703  
Washington, DC 20510

*Via electronic mail*

## **Re: Request for Prioritized Funding for Critical Coronavirus Airborne Transmission Mitigation and Rapid Testing Measures in K-12 Schools**

Dear Senator Warner:

We write on behalf of Smart Restart APS (Arlington Public Schools), a coalition of 200 parents and teachers in Arlington, Virginia. Smart Restart advocates for a safe learning environment for students, teachers and staff in Arlington Public Schools (APS) during the COVID-19 pandemic.

Guidance from the Centers for Disease Control and Prevention (CDC) and other authorities emphasizes that effective mitigation is key to reducing the risk of COVID-19 transmission in schools.<sup>1</sup> Effective mitigation enables schools to open safely, and remain open.

We therefore urge the United States Congress to **provide funding for K-12 schools that prioritizes improvements to ventilation, air disinfection, safe school lunches, testing and premium masks** — rather than wasteful spending on items such as plastic barriers that will not be effective in preventing airborne transmission of SARS-CoV2 in our schools.

Please specify that these critical COVID-19 mitigation measures — which are recommended by the CDC, the Epidemic Task Force of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), The COVID ACTION GROUP, and leading public health experts and scientists — be prioritized in funding utilization among the school support package. Notably we ask that these school COVID safety expenditures for airborne transmission mitigation and rapid testing are legislatively prioritized ahead of other less effective school mitigation measures.

- 1) **First, we ask that you prioritize funding for upgrades to existing heating, ventilation, and air conditioning (HVAC) systems.** HVAC systems in schools need upgrades to enable them to use MERV 13 filtration or better.<sup>2</sup> And, school ventilation should be improved so rooms achieve 5 or more air exchanges per hour, and buildings meet or exceed ASHRAE Standard 62.1-2019,<sup>3</sup> according to ASHRAE's core pandemic guidance, if feasible to upgrade quickly to allow resumption of classes without excess renovation delays.

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<sup>1</sup> [CDC K-12 Operational Strategy](#)

<sup>2</sup> [ASHRAE EPIDEMIC TASK FORCE: Building Readiness Guide](#)

<sup>3</sup> [Ventilation for Acceptable Indoor Air Quality - ANSI/ASHRAE Standard 62.1-2019](#)

Because COVID-19 spreads through the air,<sup>4</sup> proper ventilation and filtration of the air in our schools is a critical mitigation measure.<sup>5</sup> Experts recommend<sup>6</sup> at least 5 clean air exchanges per hour (ACH) for COVID-19 mitigation in our classrooms, although 6 air exchanges<sup>7</sup> of outdoor air per hour would be ideal.<sup>8</sup> Higher air exchange rates are associated with the reduction of transmission risks for airborne diseases.<sup>9</sup> Better ventilation in schools is also associated with better health, higher student achievement, and lower absence rates.<sup>10</sup>

Too many schools in APS — as well as in countless other districts in Virginia and the United States — have aging buildings and HVAC systems that fall far below these goals. More than half of the classrooms in our school district in Arlington have low air quality, defined as 3 air changes or less of new, outdoor air every hour, according to APS records. Unfortunately, ventilation upgrades are expensive and beyond the reach of most school districts, without help.

- 2) **Second, because upgrades to schools' HVAC systems cannot always be adequately updated quickly to ensure minimum 5 ACH per hour in a timely manner, we ask that you also prioritize funding for Portable Air Cleaners (PACs)**<sup>11</sup> with either High Efficiency Particulate Air (HEPA) filtration, which is at least 99.97% efficient at capturing the tiny airborne viral particles associated with SARS-CoV-2 or germicidal UV, both recognized by the CDC for disinfection of the coronavirus. ASHRAE's core pandemic guidance recommends using air cleaners where any building has less than MERV 13 filtration.<sup>12</sup>

HEPA air cleaners are well-suited for rooms under 1,000 square feet, with ceiling heights of 8-10 feet.<sup>13</sup> While HVAC projects may require time to plan, air cleaners can increase the amount of clean air available to classrooms immediately. Experts recommend that schools look for a CADR (clean air delivery rate)<sup>14</sup> that is sufficient to ensure a room will have a minimum of 5-6 air changes,<sup>15</sup> via a combination of outdoor air ventilation and filtered air. Experts recommend<sup>16</sup> a minimum CADR of 300 if natural ventilation data is unknown for a space, or two HEPA filters for rooms where devices <300 CADR are used and natural ventilation ACH is unknown. For a classroom of 500 square feet, an air cleaner with a CADR of 300 would provide about 4 extra air changes of clean air per hour. Multiple units with a lesser CADR could also be purchased and placed in a room, because clean air amounts from each unit are added together.

Experts suggest that schools consider certified cleaners, whose performance is verified by a group such as the Association of Home Appliance Manufacturers,<sup>17</sup> and that utilize a “true HEPA” filter as defined by the nonprofit Institute of Environmental Sciences and Technology, rather than emerging technologies for which “scientifically-rigorous, peer-reviewed studies do not currently exist.”<sup>18</sup>

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<sup>4</sup> [Airborne transmission of SARS-CoV-2 to healthcare workers: a narrative review](#) | [Coronavirus is in the air — too much focus on surfaces](#) | [CDC: How COVID-19 Spreads](#) | [Airborne transmission of SARS-CoV-2](#)

<sup>5</sup> [HVAC systems in the context of COVID-19: first update](#) | [Role of Ventilation](#) | [SARS-CoV-2 Transmission SAGE-EMG](#) | [CDC Ventilation in Buildings](#)

<sup>6</sup> [Harvard “Schools for Health” - Guide to Checking Ventilation in Your School](#)

<sup>7</sup> [Ventilation and health in non-industrial indoor environments: report from a European Multidisciplinary Scientific Consensus](#)

<sup>8</sup> [How to use ventilation and air filtration to prevent the spread of coronavirus indoors](#)

<sup>9</sup> [Ventilation of general hospital wards for mitigating infection risks of three kinds of viruses including Middle East respiratory syndrome coronavirus](#)

<sup>10</sup> [The ventilation problem in schools: literature review](#)

<sup>11</sup> [Air cleaner report: Effectiveness of Air Cleaners for Removal of Virus-Containing Respiratory Droplets: Recommendations for Air Cleaner Selection for Campus Spaces](#)

<sup>12</sup> [ASHRAE EPIDEMIC TASK FORCE: Core Guidance](#)

<sup>13</sup> [Dr. Shelly Miller Schools Memo to Biden Transition Team](#)

<sup>14</sup> [EPA: Guide to Air Cleaners in the Home](#)

<sup>15</sup> [Harvard-CU Boulder Portable Air Cleaner Calculator for Schools.v1.3](#)

<sup>16</sup> [Dr. Richard Corsi's Recommendation for EVERY school classroom to have a portable HEPA cleaner with a CADR of 300](#)

<sup>17</sup> [Air Filtration Standards – AHAM Verifide](#)

<sup>18</sup> [ASHRAE: Filtration / Disinfection: Bipolar Ionization/Corona Discharge / Needlepoint Ionization and Other Ion or Reactive Oxygen Air Cleaners](#)

At a cost of \$300-\$500 each, many schools will not be able to purchase large numbers of PACs without assistance. This is the situation in Arlington, where our school system has purchased some units but not enough for all classrooms.

- 3) **Third, we ask that you prioritize funding for Upper-Room Germicidal Ultraviolet Fixtures** (“Upper-Room GUV”) for larger gathering rooms in schools. This is an additional air disinfection tool<sup>19</sup> to achieve 5 or more air exchanges per hour. Both the CDC and the U.S. Department of Education have recommended that schools consider using ultraviolet germicidal irradiation for air cleaning. Upper-room GUV fixtures are mounted on ceilings and are safe for humans because they do not expose UV to students and teachers. The units draw air upward, then disinfect the air above people who are in the room,<sup>20</sup> adding a high number of clean air exchanges to a room’s air supply.

Upper-Room GUV, that avoid or block specific wavelengths that cause excessive ozone, can be used in larger spaces, such as cafeterias, gymnasiums, indoor swimming pools, auditoriums, theater arts/music rooms, or any rooms that are too large (>1000 square feet) for effective filtration with portable HEPA units. Upper-Room GUV may also be an option for classrooms, at an estimated cost of about \$1,500 per classroom, per the CDC. Upper Room GUV are critical for large gathering rooms in all schools.

- 4) **Fourth, we ask that you prioritize funding for Outdoor Dining equipment**, so students can eat school meals outdoors if cafeterias cannot be made safe with air disinfection or ensured high ventilation. Safe dining is a major challenge for schools during the pandemic given the need to unmask while eating. Students eat lunch and breakfast (and sometimes snacks) at school daily. Indoor dining — particularly in communal spaces such as cafeterias — is widely recognized as a high risk activity.<sup>21</sup> The CDC recommends that students eat meals outdoors or in classrooms, as feasible.<sup>22</sup>

In order to hold outdoor dining, schools will need funding for equipment. This may include tents or other coverings so that students can eat outdoors when it rains. Schools may also need to purchase seats, tables, mats, etc. Where it is not feasible to hold outdoor dining, schools could use the air disinfection tools discussed above to provide a safer dining environment indoors, such as Upper-Room GUVs in cafeterias or air cleaners in classrooms. However, none of these items are in schools’ usual budgets, and thus we request their prioritization.

- 5) **Fifth, we ask that you prioritize funding for CO2 monitoring devices that can be placed in classrooms.** Experts recommend utilizing CO2 monitors<sup>23</sup> to check how a room’s ventilation system is working and to prompt the opening of windows if needed. CO2 levels can be used as a proxy to measure exhaled breath in a space, as a well-ventilated room will have around 800 ppm of CO2 or less, but optimally as close to 415 ppm of CO2 of current atmosphere.<sup>24</sup> Good monitors utilize nondispersive infrared sensor (NDIR) technology and will be accurate to within 50 ppm.

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<sup>19</sup> [Upper-room ultraviolet air disinfection might help to reduce COVID-19 transmission in buildings: a feasibility study](#)

<sup>20</sup> [CDC Ventilation in Buildings](#) | [Environmental Control for Tuberculosis: Basic Upper-Room Ultraviolet Germicidal Irradiation Guidelines](#) | [ED COVID-19 Handbook Volume 1: Strategies for Safely Reopening](#)

<sup>21</sup> CDC rates indoor dining “higher risk,” even if socially-distanced: [Considerations for Restaurants and Bars | COVID-19](#) | [Summary of Guidance for Public Health Strategies to Address High Levels of Community Transmission of SARS-CoV-2](#) | [Is Dining Out Safe During COVID-19? – Health Essentials from Cleveland Clinic](#) | [700 epidemiologists rank indoor dining as the #1 “most risky” activity](#) | [CDC School Guidance on communal dining spaces](#)

<sup>22</sup> “As feasible, have children eat meals outdoors or in classrooms, while maintaining social distance (at least 6 feet apart) as much as possible, instead of in a communal dining hall or cafeteria.” [Operating schools during COVID-19: CDC’s Considerations](#)

<sup>23</sup> [Harvard Healthy Buildings ACH-CO2 Tool](#)

<sup>24</sup> [Association of Ventilation Rates and CO2 Concentrations with Health and Other Responses in Commercial & Institutional Buildings](#)

- 6) **Sixth, we ask that you prioritize funding so schools can offer regular COVID-19 screening and testing.** When considering which tests to use for screening testing, schools or their testing partners should select tests that can be reliably supplied and that provide results within 24 hours, preferably rapid tests with results <15 min once they are widely available. For diagnostic testing, selection of tests should prioritize tests with accurate results with high sensitivity and specificity,<sup>25</sup> or for population screening with rapid antigen tests that is repeated regularly. High specificity is most critical.
  
- 7) **Seventh, we ask that you prioritize funding for schools to provide premium filtration masks for all teachers and school staff.** Premium filtration masks include KN95, KF94, FFP2, N95, or equivalent or better filtration masks. These have been already mandated in public by Germany and Austria, as well as demanded by many experts and scientists alike. Thus we urge funding prioritization for such high quality masks that enhance protection against the coronavirus.

Without funding for these mitigation efforts, this is what we are currently seeing in APS:

- An English Learner classroom has only 135 cubic feet per minute (CFMs) of outdoor air, and a clean air exchange rate of 1.4 per hour, both of which are well below recommended safety standards. By code, this classroom only has enough fresh outdoor air for 6 people. Yet, APS recently assigned 12 students to that room, and has not provided a HEPA air cleaner to improve the air quality. The teacher assigned to this room is contemplating resigning.
  
- A special education classroom, with four students assigned to it, will not receive a HEPA air cleaner because APS has limited resources for such cleaners and has prioritized higher occupancy rooms. This classroom has an hourly air exchange rate of less than 1, well below accepted safety standards. Using [the Safe Air Spaces estimator tool](#), there is a 60% infection risk in that room over one school day if one person shows up with COVID, even if everyone is wearing masks. The teacher is contemplating buying her own \$350 air cleaner to protect herself and her students, while she waits to see if the system will provide one.
  
- Some schools in Arlington - including secondary schools with older students who transmit the virus at close to the same rate as adults<sup>26</sup> - are currently planning to hold indoor lunch in poorly-ventilated cafeterias with 100 or more unmasked students. With our current amount of community spread, there will be a 52% chance that a student with COVID-19 will be present unmasked in each cafeteria shift of 100 students.<sup>27</sup> While other APS schools are trying to get students outside for lunch on nice days, there are no rain plans because there is no money for tents.
  
- Teachers and parents alike are deeply concerned for the students and teachers who will be in these spaces shortly when APS opens its school doors to thousands of students. There is also concern for the potential impact that the transmission of COVID-19 could have on their families if brought home. Some parents are electing not to return their children to school because effective mitigation is not in place. This includes at-risk students who could greatly benefit from in-person instruction.

Schools in Arlington — and across Virginia and the United States — need your help.

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<sup>25</sup> <https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/operation-strategy.html#testing>

<sup>26</sup> [Contact Tracing during Coronavirus Disease Outbreak, South Korea, 2020](#)

<sup>27</sup> [COVID-19 Event Risk Assessment Planning Tool](#)

**We urge Congress to provide the funding that K-12 schools need to implement the COVID-19 mitigation measures recommended by public health authorities and experts. We hope that this bill will prioritize the measures that are most important to open school buildings safely.**

If you have any questions, please feel free to reach out to us at [info@smartrestartaps.org](mailto:info@smartrestartaps.org). Thank you in advance for your support for providing a safe learning environment for students and educators in K-12 schools.

Sincerely,

Dr. Eric Feigl-Ding  
Christina Headrick  
Wendelyn L. Pizer

On behalf of Smart Restart APS  
Arlington, Virginia

cc:  
Senator Timothy M. Kaine  
Representative Don Beyer  
Representative Gerry Connolly  
Representative Jennifer Wexton  
Senator Majority Leader Chuck Schumer