

## MAINTENANCE & OPERATION

### **What is the approximate cost of maintaining the HEPA air filters in classrooms?**

For the Coway Airmega 400 units, the filters are expected to last 12 months under 8 hours/day of operation. Replacement filters retail for \$45 on Amazon. Thus, the estimated annual filter replacement costs will be around \$2k total (\$45 per set of two filters on Amazon\* 45 portable HEPA units = \$2,025). Replacement cost would equate to \$1-2/child/year with class sizes of 17-30+. Running one of these units eight hours per day on school days would add about \$1 per month in electricity costs.

### **What additional effort will be required from teachers/staff/volunteers to maintain and operate the HEPA portable air filters?**

Maintenance consists of rinsing the pre-filters with water (estimated frequency every two weeks) and replacing the HEPA filters approximately one or two times per year. These tasks could be assigned to PTA volunteers.

### **Are the filters quiet enough so as not to distract students?**

Coway Airmega 400 has five fan modes: Smart, Sleep, Low, Medium and High. Noise level is nearly silent at lower speeds. Maximum noise at the highest setting is 43.2 dB. As a reference, a whisper is about 30 dB, normal conversation is about 60 dB, and a motorcycle engine running is about 95 dB. (Source: CDC, click [here](#) for more information.)

### **How would we replace broken units?**

Fundraising organized by the PTA and donations, as it is often done for other school improvements.

### **How could we ensure teachers are actually using them?**

Honor system with frequent reminders from the administration.

### **What about larger spaces like the band room and the library and cafeteria?**

Larger HEPA air filter would be needed, such as the one already in the cafeteria.

Current cafeteria HEPA filter at TCE:

<https://alen.com/products/alen-breathesmart-75i-air-purifier?variant=13172054491203>

## ALTERNATIVE APPROACHES

### **Are there alternative approaches that should be considered?**

The addition of portable HEPA filtration units would complement and augment other mitigation measures, including mask wearing, eating lunch outdoors, and opening windows and doors to increase outdoor airflow.

### **What are the benefits of alternatively having HVAC systems with UVC sterilization and filtration?**

Currently, there is limited published data about the wavelength, dose, and duration of UVC radiation required to inactivate the SARS-CoV-2 virus. In addition to understanding whether UVC radiation is effective at inactivating a particular virus, there are also limitations to how effective UVC radiation can be at inactivating viruses, generally. There have been reports of skin and eye burns resulting from improper installation of UVC lamps in rooms that humans can occupy. (Source: FDA, click [here](#) for more information.)

**WCPSS has updated the maintenance on its HVAC units, stepped up the level of filter used, and increased the frequency of filter replacement. Why do we need additional improvement in ventilation for the classrooms through portable HEPA air filters?**

You can have great filtration, but if you are only moving small amounts of air, you are not removing significant portions of aerosols, which may include virus. In these cases, internal filtration adds significant value. For instance, Johns Hopkins School of Public Health made a clear statement recently about how HEPA filters reduce covid transmission in classrooms and will improve the health and safety of children. (Source: John Hopkins University, click [here](#) for more information.)

**Are there disadvantages of installing HEPA portable air filters that are not commercial level?**

The HEPA portable air filter units provide much better performance per cost than commercial level units with the added benefit that they can be deployed very quickly.

**WCPSS INVOLVEMENT**

**To what degree are WCPSS central office personnel involved in decision making about portable HEPA air filters?**

Principal Small reached out to the WCPSS who researched air purification units. To ensure that any potential donations were effective, practical, and sustainable they asked that we consider that the unit is sized appropriately for volume of air in the classrooms, the need for ongoing maintenance such as filter changes, and the noise of the units. Based on these considerations, the following units have been proposed for TCE and are currently being used across Wake County Public Schools:

Proposed classroom HEPA filter:

<https://www.amazon.com/AIRMEGA-AP-2015F-Smart-Purifier-Graphite/dp/B0722YZ1R1>

Current cafeteria HEPA filter:

<https://alen.com/products/alen-breathesmart-75i-air-purifier?variant=13172054491203>

**If additional filtration updates are needed, then these should be responsibility of the Wake County School Board and not the parents via the PTA**

Parents have a unique, **time-sensitive** opportunity to help protect our TCE community and support a safer environment for in-person learning. Support from the WCPSS is being sought in

parallel. A group of researchers from NC State University, including experts in air quality, are currently putting together letters to officials of the WCPSS and planning to reach out to local news outlets to raise awareness on the importance of improved ventilation and filtration in our schools.

## **USEFUL LINKS**

### **Delta Concerns of U.S. School Reopenings and Reducing Airborne Transmission**

<https://www.gospeakupamerica.com/deltaschools>

### **Summary of Resources on transmission & prevention of COVID-19**

<https://bit.ly/3fzmB16>

### **Benefits of HEPA filters**

<https://www.facebook.com/JohnsHopkinsSPH/photos/a.10150145061586245/10158149293236245/>

### **Harvard-CU Boulder Portable Air Cleaner Calculator for Schools.v1.3**

[https://docs.google.com/spreadsheets/d/1NEhk1IEdbEi\\_b3wa6gl\\_zNs8uBJjISS-86d4b7bW098/edit#gid=1882881703](https://docs.google.com/spreadsheets/d/1NEhk1IEdbEi_b3wa6gl_zNs8uBJjISS-86d4b7bW098/edit#gid=1882881703)

### **Delta Variant**

<https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html>

### **Level of Community Transmission in Wake County, North Carolina**

<https://covid.cdc.gov/covid-data-tracker/#county-view>

### **Effects on unvaccinated people**

<https://www.cdc.gov/coronavirus/2019-ncov/variants/delta-variant.html>

<https://www.nytimes.com/2021/08/09/health/coronavirus-children-delta.html>

<https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/how-the-covid-19-delta-variant-is-impacting-younger-people>