

# Heating, Ventilation, and Air Conditioning Systems (HVAC) Coronavirus FAQs

June 9, 2020  
Version 3.0

A UVA HVAC Standing Task Force comprised of registered professional engineers, a certified industrial hygienist, and building code officials was charged with (1) compiling and responding to a list of frequently asked questions concerning building HVAC systems for non-healthcare facilities at UVA and (2) continuing to monitor any changes in industry recommendations for managing these systems in response to the coronavirus pandemic. This UVA HVAC Standing Task Force is conducting ongoing reviews of CDC recommendations, industry best practices and standards concerning the design, maintenance, and operation of building heating, ventilation, and air conditioning (HVAC) systems for the duration of the pandemic.

## FAQs

### 1. What is Facilities Management doing to prepare building HVAC/mechanical systems for reopening?

Facilities Management is using its computerized maintenance management system (CMMS) to ensure that critical work such as air filter changes and mechanical systems maintenance is completed on schedule. In addition, FM has structured its CMMS so that it incorporates manufacturers' recommendations, industry best practices, and ASHRAE 180: *Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems*. The CMMS generates automatic work orders that ensure maintenance is state-of-the-art and completed on schedule.

FM is also using robust building automation systems to continuously monitor and maintain the mechanical systems to ensure that the HVAC systems are operating as designed and fresh air requirements are being met.

### 2. How do I know if my building HVAC/mechanical system provides enough ventilation and fresh air?

All buildings are designed to meet or exceed building mechanical code and ASHRAE recommendations. In addition, the *UVA Facilities Design Guidelines* provide rigorous prescription requirements for building HVAC/mechanical systems design, construction, commissioning, and turnover for maintenance to meet or exceed these requirements.

By design, all mechanical systems are required to provide enough ventilation for **maximum occupancy** of spaces. With reduced numbers of staff and students on Grounds, most building mechanical systems will have **excess capacity**.

### 3. How do I know if enough ventilation is being provided in my building, which has had its mechanical system "set back" to save energy?

All building mechanical systems are turned on up to two hours before occupancy and left running for up to two hours after buildings are closed even when buildings mechanical systems have been programmed to "set back" during unoccupied hours.

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## 4. Does UVA ever exceed mechanical code or ASHRAE standards?

The *UVA Facility Design Guidelines (FDG)* include several requirements, many associated with LEED Certification, that exceed code and standards. For instance, the FDG requires that all air handling unit filters meet a minimum of MERV 13, which is 75% effective in removing particles as small as 0.3 microns such as those contained in a sneeze. Typically, filters need only meet a minimum of MERV 8, which is effective against much larger particles (3 to 10 microns).

## 5. Should only one person at a time be allowed in a restroom even if the restroom has six stalls?

There is no prescriptive CDC guidance or recommendation for limiting restroom occupancy to protect against the transmission of the coronavirus. The *Virginia Mechanical Code* prescribes exhaust rates per fixture, and by design, bathroom exhaust fans tend to have a higher number of air changes per hour to remove humidity and odors. The *Virginia Mechanical Code* also prescribes the number of bathroom fixtures that must be available for use at all times to be code compliant. Many bathroom doors are rated and any modification to the door may void its rating. Finally, stalls by default, provide physical separation.

**Conclusion.** Limiting the number of users in a restroom to the number of stalls may be good practice for those buildings with reduced occupancy levels, but would need to be approved, on an interim basis, by the UVA Building Official.

## 6. I have been reading a lot about air purifiers. Do I need an air purifier in my workspace?

No, these are not needed as air purifiers alone do not provide protection from COVID-19.

### What about ionization and ozone purifiers?

Ionization and ozone purifiers are also not recommended. Rigorous peer-reviewed scientific studies do not demonstrate their effectiveness, and many produce ozone which is an indoor pollutant with adverse health effects. In addition, ozone generators do not remove viruses and other pollutants at concentrations that are considered safe.

## 7. Does my building need an ultraviolet (UV-C) light disinfection system?

While upper room UV-C disinfection systems can be effective at inactivating viruses and can be found in high risk environments such as an infectious disease healthcare unit, these are not recommended for general use as they can cause eye and skin irritation through inadvertent exposure or over-exposure.

## 8. Will someone be monitoring changes in CDC and industry recommendations for managing HVAC/mechanical systems in response to the coronavirus pandemic?

A UVA HVAC Standing Task Force comprised of registered professional engineers, an industrial hygienist, and building code officials will be conducting ongoing reviews of CDC recommendations,

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industry best practices and standards concerning the design, maintenance, and operation of building heating, ventilation, and air conditioning (HVAC) systems for the duration of the pandemic.

## 9. **While this is not an HVAC question, I would like to know if the water in my building is safe to drink after it has been unoccupied?**

Facilities Management proactively manages building water systems and follows CDC guidance and ASHRAE Standard 188 for testing and flushing building water systems. In addition, the COVID-19 virus has not been detected in drinking water.

## 10. **Who do I contact if I have additional questions?**

Please contact your building coordinator or other point of contact for the coronavirus for your area who will ensure the question is sent to the UVA HVAC Standing Task Force.

## Resources and References

### 1. CDC Background

The Center for Disease Control (CDC) *Considerations for Institutes of Higher Education* lists the following information concerning the transmission of COVID-19:

- The virus is thought to spread mainly from **person-to-person**. Transmission occurs between people who are in close contact with one another (within about 6 feet) through respiratory droplets that are produced when an infected person coughs, sneezes, or talks. The infected person may not be showing symptoms.
- It **may** be possible for a person to get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. However, this is not thought to be the main way the virus spreads as the CDC is still learning more about how it spreads.

### 2. Relevant Links

[www.cdc.gov/coronavirus/2019-ncov/about/transmission.html](http://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html)  
<https://sustainability.virginia.edu/sites/sustainability/files/2019-10/UVA-Green-Building-Standards-October-2019.pdf>  
<https://up.codes/viewer/virginia/imc-2015/chapter/4/ventilation#4>  
<https://www.epa.gov/coronavirus/will-air-cleaner-or-air-purifier-help-protect-me-and-my-family-covid-19-my-home>  
<https://www.epa.gov/coronavirus/will-ozone-generator-protect-me-and-my-family-covid-19>  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2099326/>  
<https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html>  
<https://www.epa.gov/coronavirus/drinking-tap-water-safe>  
<https://www.cdc.gov/coronavirus/2019-ncov/community/colleges-universities/considerations.html>  
<https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html>  
<https://www.ashrae.org/about/news/2020/ashrae-offers-covid-19-building-readiness-reopening-guidance>  
[https://www.ashrae.org/file%20library/technical%20resources/ashrae%20journal/2020journaldocuments/72-74\\_ieq\\_schoen.pdf](https://www.ashrae.org/file%20library/technical%20resources/ashrae%20journal/2020journaldocuments/72-74_ieq_schoen.pdf)

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