OVERVIEW
The Office of Budget, Finance, and Management’s Office Facilities and Logistics Management (OFLM) has examined various guidance on ventilation in alignment with Centers for Disease Control and Prevention (CDC), General Services Administration (GSA), and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) publications (see Appendix A) to determine possible ventilation enhancements that we can implement for our facilities’ reposturing efforts. This paper documents the role of ventilation in a COVID environment, CDC and GSA recommendations, how these recommendations may apply to the agency, and BFM’s recommendations for delegated facilities.

VENTILATION IN THE COVID ENVIRONMENT
Ventilation plays an important role in how organizations respond to the current COVID-19 environment. Mechanical system adjustments are not a method of prevention; however, implementing the set of ventilation recommendations that are appropriate and feasible for a given mechanical system will support mitigating the risk of COVID-19 transmission.

It’s important to note that recommendations to systems cannot be implemented across the board. There are multiple variables to consider, such as climate, office/room size, current filtration system in place, location of offices and/or hearing rooms (interior vs. exterior), number of occupants, etc. which vary by location across the agency. Making a general statement or recommendation is not a practical approach, as each facility should be evaluated individually to understand the existing mechanical system and assess the quantity of air supplied to the individual rooms.

CDC RECOMMENDATIONS
The CDC has issued recommendations that offer different approaches to attempting to reduce the transmission of aerosols through adjustments to the mechanical system and its components. The CDC has three main areas of focus in their recommendations related to mechanical systems: outside air, airflow, and air filtration. A particular mechanical system may not have the capability to optimize all three areas of focus, but all three should be evaluated concurrently to arrive at the options feasible for that system. The CDC recommends giving consideration to adjusting the building mechanical system, to include some or all of the following activities:

- Increase ventilation rates.
- Ensure ventilation systems operate properly and provide acceptable indoor air quality for the current occupancy level for each space.
- Increase outdoor air ventilation, using caution in highly polluted areas. With a lower occupancy level in the building, this increases the effective dilution ventilation per person.
- Disable demand-controlled ventilation (DCV).
- Further open minimum outdoor air dampers (as high as 100%) to reduce or eliminate recirculation. In mild weather, this will not affect thermal comfort or humidity. However, this may be difficult to do in cold or hot weather.
- Improve central air filtration to the MERV-13 or the highest compatible with the filter rack, and seal edges of the filter to limit bypass.
- Check filters to ensure they are within service life and appropriately installed.
- Keep systems running longer hours, 24/7 if possible, to enhance air exchanges in the building space.

**GSA GUIDANCE**

GSA is following the CDC’s COVID-related guidance in terms of ventilation recommendations and reopening after prolonged shutdown recommendations. GSA is following the CDC recommendations, where feasible, and documenting the specific actions taken and planned for each Government-owned, non-delegated building to share with occupant agencies. For leased facilities, GSA issued a letter (Appendix B) to its lessors to ensure they are following current industry practices by considering the application of the latest CDC guidance with respect to building ventilation. GSA plans on revising its lease language related to HVAC enhancements for all new leases going forward.

If there is a COVID-19 incident in GSA-controlled federal buildings, before performing cleaning and disinfection, GSA runs heating, ventilation, and air conditioning systems to increase ventilation and maximize outside air as much as possible. GSA will continue to flush GSA-controlled federal building mechanical systems for a minimum of 24 hours to prepare for re-occupancy to remove any stale air and confirm that the systems are operating properly. GSA will then evaluate the systems for filtration capacity and upgrade, as feasible.

**BFM RECOMMENDATIONS**

BFM can only recommend enhancements for delegated facilities where the agency has been given operations and maintenance authority; the building management staff in leased facilities must work with GSA and the lessor to implement recommendations in leased facilities. Understanding that a particular mechanical system may not have the capability to optimize all three main areas of focus in the CDC’s recommendations, all three should be evaluated concurrently to arrive at the options feasible for a particular system.

**Ventilation in Leased Facilities**

The range of mechanical systems used in leased buildings, and the variables involved in their implementation and configuration, do not allow for the agency to make standard ventilation recommendations for leased facilities. Because mechanical systems will need to be reviewed holistically to propose individualized options, the recommendation is that GSA engages with the lessor on the agency’s behalf.

The review should be broached with the regional Center for Materiel Resources, who can interface with GSA at the regional level. GSA can then conduct evaluations at a local level using their engineering resources, and from the standpoint of their recommendations. GSA has sent a letter to lessors (see Appendix B) recommending that they follow “current industry practices by considering the application of the latest CDC guidance with respect to building ventilation and water systems.” If the lessor is in compliance with the lease/contract in place they are not obligated to apply any CDC, GSA, or ASHRAE recommendations and implementing the findings of GSA’s evaluation, as long as it is not a deficiency, may be at the agency’s expense.
Ventilation in Delegated Facilities

Per the delegations agreement, the agency has the authority to implement more specific and standardized recommendations in delegated facilities.

Increased Outdoor Air

To increase the ratio of outdoor air to recirculated air, the recommendation is to:

- Set outdoor air dampers to allow a minimum of 10 percent more outdoor air above the predetermined set point, up to 100 percent, dependent on outdoor humidity.
- Provide consistent rather than reactionary ventilation using strategies such as disabling demand-controlled ventilation and overriding occupancy sensors as applicable.

Enhanced Filtration

To improve central air filtration, the recommendation is to:

- Use the highest value minimum efficiency reporting value (MERV) filter compatible with the equipment, and seal the edges of the filter to limit bypass air, where feasible.
- Use filters with a minimum value of MERV-13 whenever possible.

Longer Running Times

To increase the air changeover rate, the recommendation is to:

- Set mechanical systems to operate longer and up to 24 hours per day, 7 days per week.
- Begin maximum operating times approximately 3 days prior to Opening Up America Again Phase 1 reconstitution to provide continuously conditioned air.

Ramifications

These reconstitution ventilation guidelines will have corresponding repercussions:

- Energy efficiency may be compromised by running systems longer and disabling reactionary ventilation.
- Continuous operation may result in higher than average wear and tear on equipment.
- Increased use of mechanical systems will result in higher utility costs as long as these guidelines remain in effect.

CONCLUSION

The health and safety of our employees and visitors is of paramount importance to the agency. BFM will continue to keep abreast of appropriate CDC, ASHRAE, and GSA ventilation recommendations and employ appropriate and feasible enhancements, where possible. It is important to note that determining the best course of action for mitigating risk of exposure in each facility requires an independent assessment of its mechanical system.
APPENDIX A: CITABLE REFERENCES

**CDC GUIDANCE**

- [COVID-19 Employer Information for Office Buildings](#) (July 9, 2020)
- [Interim Guidance for Businesses and Employers Responding to Coronavirus Disease 2019 (COVID-19)](#) (May 6, 2020)
- [Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operation](#) (May 7, 2020)

**GSA GUIDANCE**

- [Returning to GSA Facilities: HVAC Guidance](#) (September 9, 2020)

**ASHRAE GUIDANCE**

- [Position Document on Infectious Aerosols](#) (April 14, 2020)
- [Guidance for Building Operations During the COVID-19 Pandemic](#) (May 2019)
- [Filtration / Disinfection](#)
APPENDIX B: GSA LETTER TEMPLATE TO LESSORS

RE: Coronavirus (COVID-19) Response: Building Systems - HVAC and Water

Dear [Lessor]:

This notice is being provided for your reference in regard to Lease Number [Lease_No] for the [Agency_Name] located at [Building_Address], [Bldg_City], [Bldg_State] [Bldg_Zip] and in no way should be construed as a change to your Lease.

The health and safety of tenants and visitors in buildings where the U.S. General Services Administration (GSA) leases space remains GSA’s top priority.

To stem the spread of COVID-19 and to protect tenants and visitors in the building, GSA trusts that, as landlord for the aforementioned leased location, you are following current industry practices by considering the application of the latest Centers for Disease Control and Prevention (CDC) guidance with respect to building ventilation and water systems. These guidelines are set forth in the Interim Guidance for Businesses and Employers Responding to Coronavirus Disease 2019 (COVID-19), May 2020, under sections “Consider improving the engineering controls using the building ventilation system” and “Ensure the safety of your building water system and devices after a prolonged shutdown.”

As identified in the CDC guidance, lessors should consider modifying the engineering controls using the building ventilation system, which may include some or all of the following activities:

- Increase ventilation rates.
- Ensure ventilation systems operate properly and provide acceptable indoor air quality for the current occupancy level for each space.
- Increase outdoor air ventilation, after taking into account the outdoor air quality of the surrounding area.
- Disable demand-controlled ventilation (DCV).
- Further open minimum outdoor air dampers (as high as 100%) to reduce or eliminate recirculation. In mild weather, this step should not affect thermal comfort or humidity. However, this may be difficult to do in cold or hot weather.
- Improve central air filtration to the MERV-13 or the highest compatible filter with the filter rack and seal edges of the filter to limit bypass.
- Check filters to ensure they are within service life and appropriately installed.
- Extend operating hours of systems to increase air exchanges in the building space.

Additionally, to ensure the safety of your building water system and devices after a prolonged shutdown, lessors should consider following CDC Guidance for Building Water Systems.

Thank you for your cooperation in supporting the GSA response to COVID-19.

Sincerely,

GSA Public Buildings Service, Office of Leasing