

# COVID-19 Guidance for Multifamily Building Owners/Managers

## Introduction

This guidance focuses on HVAC system operation and maintenance, related ventilation, and air flow. Other aspects of building operations such as appropriate PPE to protect workers or cleaning procedures are covered in the guidance documents of [OSHA](#), [CDC](#), [HUD](#), and other agencies.

Depending on the demographic characteristics of a building's occupants, stay-at-home orders and related changes can significantly increase the occupant density during the day. Generally speaking, increased density can increase the potential for transmission of the SARS-CoV-2 virus. Try to implement Immediate Actions as soon as possible to reduce potential transmission.

## Guidance for Immediate Actions

Beginning with the measures likely to provide most effective and immediate mitigation, ASHRAE suggests steps that owners and managers of multifamily buildings should consider for reducing the risks of community transmission of COVID-19:

1. Take positive and continuous actions that inform and encourage residents to wear face masks or face shields, and to keep at least 6 ft. away from others when in common spaces. Provide face masks or face shields for all staff members and contractors who serve the facility and require that they wear them when in proximity to others. Display COVID-19 guidance in all common areas. Promote communication with and among building residents related to COVID-19 protection and management. For detailed guidance regarding resident and staff safety, common rooms in your building, and preventing the spread of COVID-19, refer to the Centers for Disease Control and Prevention (CDC) "[COVID-19 Guidance for Shared or Congregate Housing](#)".
2. Assist residents with covering or sealing heating/cooling air vents in rooms in dwelling units with infected or higher-risk occupants. Ensure that any forced-air heating or cooling system that serves more than one dwelling unit is blocked off from any dwelling unit occupied by either an infected or at-risk resident. To avoid potential heat stress and the buildup of airborne infectious particles in spaces blocked off from these central systems, provide portable cooling or heating and HEPA air filtration air cleaning units for the use of residents and improvise a system to exhaust air directly from the space to the outdoors.
3. Select combinations of ventilation, filtration, and air cleaners that provide the reduced exposure desired.

4. Place portable [air cleaners](#) equipped with HEPA filtration or UV disinfection in common spaces such as meeting rooms, laundry rooms, lobbies, and exercise rooms. Avoid the use of ozone-generating air-cleaning devices by following the advice in the “[ASHRAE Position Document on Filtration and Air Cleaning](#)”. Appropriate devices will have been tested according to UL standard 2998, documenting ozone emission of less than 50 ppb. The California Air Resources Board maintains a [list of many such low-ozone emitting devices](#).
5. Ensure that all ventilation systems and related equipment are operating to maximize dilution of potentially infectious airborne particles.
  - a. Inspect for common deferred maintenance items, including filters, fan belt condition and tolerances, and outdoor air intakes. Refer to “[HVAC System Maintenance and Filter Replacement during the COVID-19 Pandemic](#)” at [ashrae.org](#).
  - b. Open outdoor-air dampers as much as possible, while being mindful of the thermal comfort of residents.
  - c. Evaluate any centralized systems, including ERV equipment, to ensure it is well-maintained. Refer to “[The Practical Guidance for Epidemic Operation of Energy Recovery Ventilation Systems](#)” at [ashrae.org](#).
  - d. Consider closing recirculation dampers to minimize or eliminate air transfer from one space to another.
  - e. Maintain required minimum outdoor air flow rates as specified by applicable codes and standards. Increase ventilation rates in elevators and other public spaces, if possible.
  - f. In public toilet and laundry rooms, ensure that exhaust ventilation is operating continuously.
  - g. Operate air-side economizers while maintaining normal thermal comfort conditions.
  - h. Consider hiring an indoor air quality (IAQ) specialist to diagnose the IAQ in your building.
6. Eliminate short-circuiting of air between dwelling units that share common air and plumbing venting systems.
  - a. Some high-rise multifamily buildings are equipped with central bathroom or kitchen exhaust systems that connect to several dwelling units through a common vertical shaft. Because these ventilation system shafts have been identified as a way infected transfer air can move from one dwelling unit to another, they should be inspected to ensure that air is not entering the dwelling unit from the shaft. Use the [tissue test](#) to confirm that air is leaving—not entering—the apartment through each exhaust grille. If there is evidence of air flowing into the dwelling unit through an exhaust grille, seal it temporarily with cardboard and tape. Then contact an HVAC professional to fix that exhaust system.
  - b. Inspect all backflow dampers in venting systems; replace or fix if needed.
  - c. Run water for at least 10 seconds in sinks, tubs, and showers in common areas to prevent sewer gas entry; encourage residents to do the same.

6. Install high-efficiency filters in ventilation and central heating/cooling systems in public areas and dwelling units.
  - a. Consider installing replacement filters rated at the highest efficiency compatible with the physical constraints of the filter rack, and the air flow and pressure requirements of each system needed for adequate equipment function and thermal comfort. The minimum filter efficiency should be MERV 13 according to ASHRAE 52.2 (or classified ePM1 according to ISO16890, MPR 1900, or FPR 10). Used filters should be considered contaminated. Personnel should be properly protected and spent filters should be sealed in plastic bags for disposal.
  - b. Ensure that filters are installed tight to the frame to minimize air bypass around them according to manufacturer's instructions.
  - c. For further details, consult "[HVAC System Maintenance and Filter Replacement during the COVID-19 Pandemic](#)" at [ashrae.org](#).
7. Operate installed UltraViolet Germicidal Irradiation (UVGI) if present. However, avoid operating any UVGI devices that generate ozone (refer to [UL 2998](#) for more information). The "[ASHRAE Position Document on Filtration and Air Cleaning](#)" has more advice on this topic. Note that this only applies to UVGI systems installed in HVAC ducts or engineered ceiling-mounted systems. UVGI systems must be designed and installed by licensed professionals. Refer to "[UV-C In-Duct Surface Disinfection](#)" at [ashrae.org](#).

For guidance that is specific to [residents infected with COVID-19](#) (isolation spaces) and [high-risk residents](#) (protected spaces), refer to the ASHRAE Task Force's [Technical Guidance for Residences](#).

## Resident Education

1. Distribute instructions and give demonstrations of how to correctly use building mechanical and passive ventilation systems.
2. If the building is equipped with a ventilation system, ask residents to open windows as little as possible, particularly windows within 10 feet of a neighboring window or an outdoor location where people gather.
3. If residents maintain their own systems, recommend they consider upgrading their filters to MERV 13 according to ASHRAE 52.2 (or classified ePM1 according to ISO16890, MPR 1900, or FPR 10). Systems should be inspected by a professional to ensure the system and its equipment will operate effectively with the upgraded filters.
4. Recommend that any residents at risk (and those who choose to prepare for risks) obtain and operate room air cleaners equipped with HEPA filtration and/or UV disinfection. For guidance on selection and use, consider the information available from U.S. EPA: "[Guide to Air Cleaners in the Home](#)".
5. Make EPA-approved surface disinfectants available to residents or suggest they purchase them in order to limit the potential for chemical exposure of other residents and building staff. Refer to EPA "[List N: Disinfectants for Use Against SARS-CoV-2](#)".
6. Suggest residents close toilet lids when flushing and ensure that plumbing drain traps are water-filled by running water for at least 10 seconds.

7. Refer to the Centers for Disease Control and Prevention (CDC) "[COVID-19 Guidance for Shared or Congregate Housing](#)" for detailed guidance regarding resident safety and education for preventing the spread of COVID-19.
8. Refer to the ASHRAE Epidemic Task Force's [Technical Guidance for Residences](#) and the related [Frequently Asked Questions \(FAQ\)](#) for more information.

## Guidance for Longer-Term Upgrades

Immediate actions may significantly reduce the transmission of COVID-19, but owners and managers might wish to consider investing in improvements that may reduce the risk of transmission of viruses over the long-term. Upgrades to HVAC equipment, distribution, and controls; and tightening building envelopes, especially common walls and ceilings, might lead to lower virus transmission rates.

1. Install or upgrade ventilation systems in order to exhaust contaminants at their source and dilute dwelling-unit air with outdoor air.
  - a. Install new exhaust ventilation systems in bath and toilet rooms in dwelling units and public areas while meeting the requirements of ASHRAE 62.2.
  - b. Add controls to ventilation systems to better isolate individual dwelling units. For example, controls for a balanced ventilation system could be temporarily changed to exhaust-only mode for an individual unit occupied by an infected resident.
  - d. Provide and maintain at least the required minimum outdoor air flow rates for ventilation as specified by current codes and applicable standards. Increase ventilation rates in elevators and other public spaces, if possible.
2. Consider permanent upgrade of fine particle filtration efficiency for systems serving public areas. The risk of community transfer of COVID-19 increases in common areas where people gather in groups and where unrelated individuals come into regular contact. The recommended minimum filter efficiency is MERV 13 according to ASHRAE 52.2 (or classified ePM1 according to ISO16890, MPR 1900, or FPR 10). While many systems can accept MERV 13 filters without modification, some systems may have difficulties maintaining air flow and pressure requirements. Such systems should definitely be upgraded. Also consider changing the controls and equipment so that the filtration system can operate continuously, or at least for a minimum amount of time each hour to remove the fine particles generated (and re-suspended) by transient occupancy, without using excessive energy. Used filters should be considered contaminated. Personnel should be properly protected and spent filters should be sealed in plastic bags for disposal. For further details, refer to "[HVAC System Maintenance and Filter Replacement during the COVID-19 Pandemic](#)" at [ashrae.org](https://www.ashrae.org).
3. Minimize transfer air between dwelling units, dwelling units and corridors, dwelling units and common areas, and dwelling units and utility areas/mechanical chases. Transfer air can be reduced by improving compartmentalization and the overall air tightness of dwelling units.

- a. *Prescriptive guidance for improving compartmentalization.* Air sealing including, but not limited to, these common penetrations<sup>1</sup>:
    - i. Vent and pipe penetrations, including those for water piping, drain waste and vent piping, HVAC piping, and sprinkler heads;
    - ii. Electrical penetrations, including those for receptacles, lighting, communications wiring, and smoke alarms;
    - iii. HVAC penetrations, including those for fans and for exhaust, supply, transfer, and return air ducts.
  - b. *Performance guidance for improving compartmentalization*
    - i. Aim for a leakage of less than 0.2 cfm/sq. ft. at 50 Pa of interior surface area as measured by a blower door fan pressurization test. If planning a new building this target should be reduced to < 0.1 cfm/sq. ft. at 50 Pa.
  - c. When dwelling-unit ventilation is provided through a common corridor, ensure that the system is operating as designed and that the required dwelling-unit door undercuts are large enough to allow adequate air flow to enter each dwelling served.
4. Some high-rise multifamily buildings are equipped with central bathroom or kitchen exhaust systems that connect to several dwelling units through a common vertical shaft. Because these ventilation system shafts have been identified as a way infected transfer air can move from one dwelling unit to another, they should be inspected for safety. If there is no exhaust fan at the top of the ventilation shaft and no back-flow damper at each dwelling exhaust grille, the system should be renovated to include these features.
5. Install UltraViolet Germicidal Irradiation (UVGI) in appropriate common areas. Follow manufacturer's operation instruction for appropriate protection of residents. Research shows that UVGI, both upper-room and in-duct configurations, can inactivate some viruses. Ensure that the units selected have been tested and meet requirements for a claim of zero ozone emission (UL 2998). For detailed guidance, refer to "[ASHRAE Position Document on Filtration and Air Cleaning](#)" and *2019 ASHRAE Handbook – HVAC Applications*, Chapter 62, Ultraviolet Air and Surface Treatment.
6. In public areas, install toilet lids on all fixtures. Refer to "[Transmission through Air in Toilet Rooms](#)" at [www.ashrae.org](http://www.ashrae.org).

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<sup>1</sup> ANSI/ASHRAE Standard 62.2-2019, *Ventilation and Acceptable Indoor Air Quality in Residential Buildings*, Section A5. Dwelling-Unit Air Sealing.