HVAC System Changes Q&A in Response to COVID-19

Please use this information to answer customer questions regarding HVAC system changes to reduce viral possibilities. We give special thanks to Coffman Engineers for their expertise in this matter.

What is the required percentage of outside air supply (OSA) according to code?

Minimum OSA rates are based on type of usage and square footage; however, outside air rates are limited to 10% above design air flow. As COVID-19 is a special case, facility operators could choose to take emergency measures for the safety of staff.

If you choose to increase outside air rates, we recommend that you ensure the equipment and building are operating properly. All equipment should be operating within their respective design envelopes, and building pressure is to be maintained by an equal amount of exhaust/relief air leaving the building. Special pressurization and operating conditions also must be maintained for labs, hospitals, restrooms, workspaces, etc.

Will increasing the flow of outside air improve the air quality in office settings?

Increasing the OSA rate may improve air quality (subject to the limitations noted below), and we would encourage increased outside air flow if possible to better dilute contaminants. Air flow should only be increased to the level that the HVAC equipment is rated. Increasing outside air flow beyond the equipment limits can cause insufficient building heating/cooling, as well as damage to HVAC equipment and possibly the building. Outside temperatures can also dip below freezing, so you need to guard against the possibility of freeze damage from cold outside air.

Fan speeds should not be increased above rated speeds or fan bearings may be damaged. We do not recommend adjusting individual room diffusers, since that could cause balance issues in the overall building. Building pressure should be maintained by an equal amount of exhaust/relief air exiting the building.

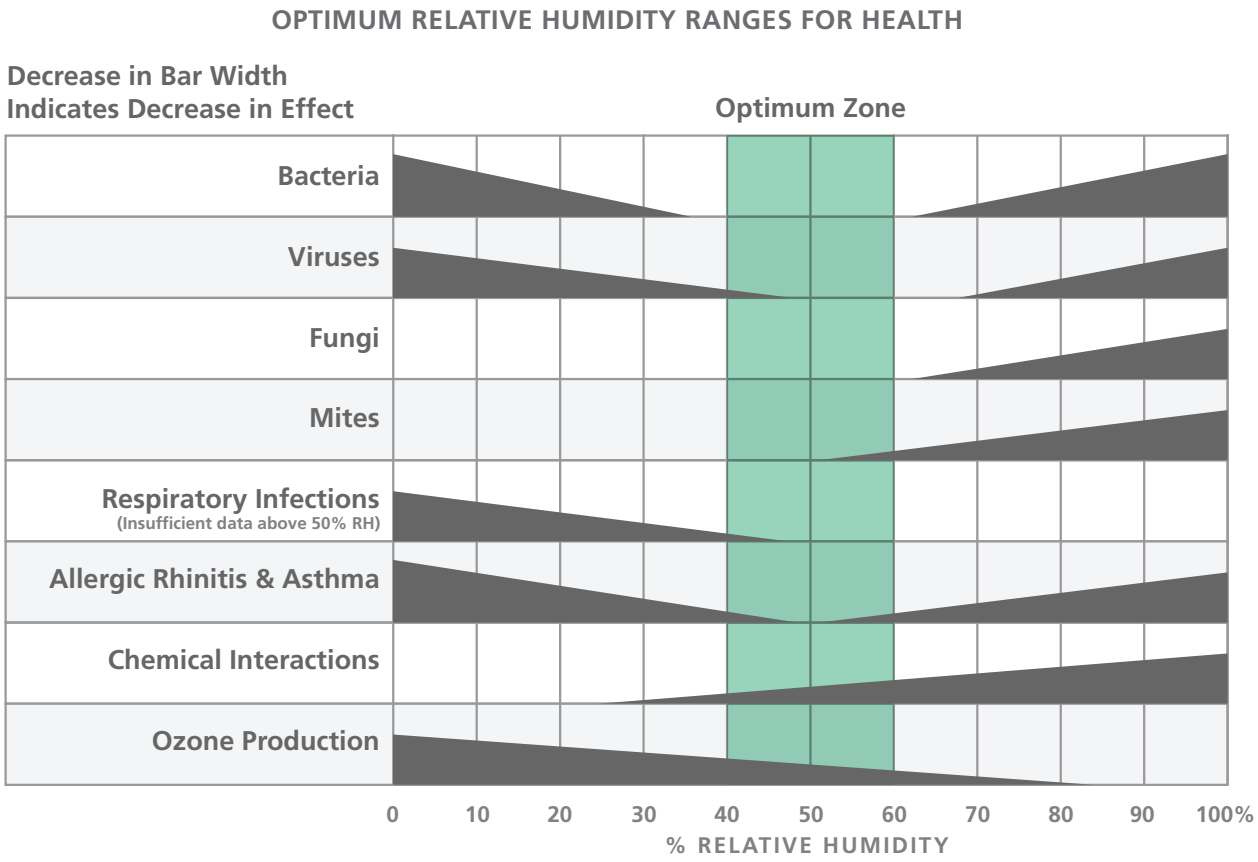
What would be the impact to our utility costs if we set the outside air flow at 100%?

Utility costs would increase based on additional fan use and natural gas usage to heat OSA to room temperature. Based on an average outside air temperature of 40°F, we estimate natural gas use could double.

HVAC System Changes Q&A in Response to COVID-19

What recommendations do you have to ease concerns of staff about supply air?

The supply and ventilation air rates of commercial HVAC systems are designed to mitigate the transmission of cold and flu viruses, but there is no way to completely eliminate the risk. Air humidity plays a large role in stopping the transmission of bacteria and viruses through the air.



E.M.Sterling, Criteria for Human Exposure to Humidity in Occupied Buildings, 1985 ASHRAE.
Information provided by Coffman Engineers

As shown in the graph above, there is a sweet spot around 55-60% humidity that reduces viruses and respiratory infections while still keeping other agents, such as fungi, in check. We encourage increasing building humidification or having employees keep a humidifier in their work area.

Avista recommends following the CDC guidelines for businesses:
cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html

Should we install a special HEPA filter on RTUs/AHUs?

Increased filtering on the return/supply air can improve air quality and safety (more filtering on the outside air will not help). High-efficiency filters, like HEPA filters, would increase the pressure drop in air ducting, which could impede air flow. Poor air flow could defeat the purpose of providing fresh ventilation and could also damage natural gas heating elements in the HVAC equipment. We recommend that you improve filtering if possible, but follow the equipment manufacturers' filter guidelines.