



BACK TO SCHOOL 2021

Prioritizing a healthy in-person learning experience
for every PPS student and educator.

Portland Public Schools Ventilation

COVID-19 Standard Operating Procedure

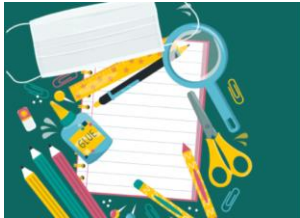
Prepared by PBS Engineering and Environmental Inc.

Recognized Standards/Guidelines: Portland Public Schools (PPS) is committed to providing a safe and productive learning environment for staff and students throughout the district. PPS will work toward optimizing building ventilation systems in order to best manage and mitigate risk associated with transmission of the COVID-19 virus. PPS is currently assessing the heating, ventilating, and air conditioning (HVAC) systems in all PPS buildings to maximize the performance of these existing systems. This Standard Operating Procedure (SOP) has been developed per standards and guidelines presented in the following documents with a primary focus on the American Society of Heating, Refrigerating and Air-Conditioning Engineer (ASHRAE) guidance, Oregon OSHA, Multnomah County consultation and additional relevant publications:

- ASHRAE Standard 62.1-2019 “Ventilation for Acceptable Indoor Air Quality”
- ASHRAE Journal: Guidance for Building Operations During the COVID-19 Pandemic, May 2020
- ASHRAE: Guidance for the Re-Opening of Schools, August 2020
- EPA Supports Healthy Indoor Environments in Schools During COVID-19 Pandemic
- Temporary Oregon OSHA COVID-19 Rule - Section 3(f) Ventilation
- Harvard: Schools for Health-Risk Reduction Strategies for Reopening Schools, June 2020
- Operating schools during COVID-19: CDC’s Considerations, September 2020
- CDC: Ventilation in Buildings, December 21 2020

The ASHRAE guidance document on reopening schools presents three basic tenets of best management practices regarding HVAC operations and maintenance. These include inspection and maintenance, ventilation, and filtration. They are discussed below.

Purpose: Operate building ventilation systems in a manner that optimizes indoor air quality in schools *and* mitigates potential for the transmission of COVID-19 virus. The



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following operating procedures have been developed in alignment with the April 2, 2021, *Ready Schools, Safe Learners* version 6.4.2 from the Oregon Department of Education.

Scope:

Inspection and Maintenance

All building HVAC systems will be inspected regularly to verify that they are functioning properly. All systems in need of repairs will be given priority status in PPS' work order system. Routine ventilation inspections will be performed in accordance with ASHRAE Standard 180-2018 "Standard Practice for the Inspection and Maintenance of Commercial HVAC Systems."

Ventilation

Building HVAC outside air dampers will be adjusted such that their minimum damper setting meets recommended outside air infiltration rates per ASHRAE Standard 62.1-2019 "Ventilation for Acceptable Indoor Air Quality." Introducing outside air will both dilute and displace airborne contaminants including airborne viruses inside the school buildings. HVAC programming will be adjusted to provide a minimum of two hours of purging before and after normal occupied hours using mechanical means. Additionally, HVAC systems will be operated continuously while the school buildings are occupied during these times; this may require temporary disabling of demand control ventilation (DCV) systems.

Ventilation for each unique school will be optimized on a case-by-case basis. PPS will also utilize non-mechanical methods such as opening doors and windows where reasonable to increase air circulation. Do not prop open doors that can pose a safety or security risk to students and staff (e.g., exterior doors and fire doors that must remain closed).

Filtration

PPS will maintain regular filter changeout schedules and conduct periodic filter inspections. Minimum Efficiency Reporting Value (MERV) values will range from MERV 8 to MERV 16.

HVAC Enhancement

While embracing these three tenets will result in improvements to the indoor air quality, not all district schools have full HVAC capability. There are building spaces within the PPS system that will need to have HVAC systems upgraded. PPS is currently in the



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process of identifying these building spaces in order to develop a comprehensive plan and timeline to upgrade these HVAC systems.

Symptom spaces, classrooms/instruction spaces and other selected rooms will be provided with a portable high-efficiency particulate air (HEPA) room ventilators. These HEPA room ventilators provide ultrafine-particle filtration.

As part of an optimization of HVAC performance, PPS will continuously review available technology that is being developed to help further mitigate the risk related to the transmission of airborne viruses in buildings. Currently, technologies being reviewed and considered include upgrading filtration systems targeting a MERV rating of 13 and adapting germicidal technologies including ultraviolet air disinfection devices. Supply of MERV-13 filters may be limited due to demand and installation of MERV-13 filters could reduce the performance of existing HVAC systems in some PPS buildings, limiting the use of these filters.

Responsibility: Senior Manager of Mechanical Maintenance Department.

Instructions: Perform regular inspections of all HVAC systems. These inspections shall be documented and recorded using a PPS standardized field form. During these inspections perform the following:

- Check area surrounding HVAC system for potential contaminant sources
- Verify general operational status of system (i.e., is it running)
- Check filters for cleanliness and fitment
- Clean filter housings and accessible ductwork as required
- Check and repair or replace drive belts
- Check and lubricate all bearings
- Verify that damper controls are functioning
- Verify outdoor air damper settings
- Inspect and clean/maintain outside air intake ports
- Inspect housings for damage and facilitate repairs

For all facilities, HVAC systems shall run in occupied mode from 6 am until 6 pm, Monday through Friday. Staff will use operable windows and doors to help increase ventilation as needed.



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Use of portable fans or space heaters is prohibited where they pose a safety or health risk, such as increasing exposure to pollen/allergens or exacerbating asthma symptoms.

Supplies & Materials: Filters, belts, lubricants, PPS checklist, hand tools.

Monitoring: Monitoring is accomplished by regular inspection and maintenance by maintenance staff. Filter changeouts will adhere to contract schedule and specifications. Contract manager will ensure compliance.

Corrective Action: Senior Manager of the Mechanical Maintenance Department will monitor inspection reports and take corrective action as necessary. If filter changes are needed outside of the established filter changing schedule, staff will direct contractors to replace filter(s).