



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. 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 following operating procedures have been developed in alignment with the February 9, 2022 Ready Schools, Safe Learners Resiliency Framework.

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 are MERV 13 or higher.

HVAC Enhancement

While embracing these three tenets will result in improvements to the indoor air quality, not all district schools have full HVAC capability.

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

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.

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).