



March 10, 2020

Dear Mr. Straw,

Thank you for your questions about HVAC in the Benicia Unified School District (BUSD). Please find our responses as follows:

1. What has been done to improve BUSD HVAC systems since passage of Measure S in 2014?
  - Measure S has funded HVAC improvements including the replacement of over 28 HVAC units, service and repairs to existing HVAC units, upgrades to HVAC economizers, which are the mechanical assembly that responds to the thermostat "demand" to allow fresh air intake. In addition to Measure S funding, BUSD received State Proposition 39 funding through the California Energy Commission for qualified energy improvements which included thermostat upgrades at all schools. The upgraded thermostats provide the ability to remotely access the thermostats including the ability to monitor fresh air intake and allow maintenance operators to increase and decrease the fresh air minimums based on ambient conditions. The minimums for fresh air intake are consistent with state building codes and during the COVID-19 pandemic, these minimums may be exceeded to introduce a larger amount of fresh air.
2. What improvements have been made to BUSD HVAC systems in direct response to the COVID-19 pandemic?
  - HVAC filters have been upgraded to MERV 13 filters. Air scrubbers and purifiers are used when window ventilation is limited. Rooms at the schools designated as a "sick room" have been equipped with UVC lights to eradicate air born particulates. The Demand Control Ventilation (DCV) have been set to 100% for additional fresh air intake. The HVAC system is monitored and adjusted for "low outside air" measurements.
3. Has the BUSD received specific federal and state guidance on HVAC recommendations and requirements in order to provide safe space as we emerge from the COVID-19 pandemic, and if so, what are those recommendations and requirements?
  - BUSD refers to the guidelines provided by the CDC, California Department of Public Health (CDPH) and Cal OSHA, which can be found on each agencies web sites for COVID-19. On the CDC website under "Work & School", the CDC provides information on Ventilation in Schools and Childcare Programs. The CDPH website provides a section on Ventilation in its publication called, COVID-19 and Reopening In-Person Instruction Framework & Public Health Guidance for K-12 Schools in California, 2020-2021 School Year. There is also a publication on the CDPH website which refers to the Cal/OSHA emergency temporary standard (ETS) regarding guidance for Ventilation, Filtration and Air Quality in Indoor Environments.
4. In what particulars are BUSD schools up to HVAC standards proposed by the CDC and the CA Department of Health, and in what particulars are we still deficient?



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- CDC: The district ensures Heating, Ventilation, and Air Conditioning (HVAC) settings are maximizing ventilation, and makes sure ventilation systems are serviced and meet code requirements. HVAC systems bring in as much outdoor air as the system will safely allow. The HVAC system's total airflow supply is increased to occupied spaces when possible. Demand-controlled ventilation (DCV) controls are disabled that reduce air supply based on occupancy or temperature.
- CDC: HVAC filters are sized, installed, and replaced according to manufacturer's instructions. Portable air cleaners that use high-efficiency particulate air (HEPA) filters to enhance air cleaning are considered in higher-risk areas. Ultraviolet germicidal irradiation (UVGI) is used in the rooms designated for sick students and staff at schools.
- CDC: Exhaust fans are used in restrooms and kitchens, which are inspected to ensure exhaust fans are on and operating at full capacity.
- CDC: The district brings in as much outdoor air as possible by opening windows and doors and considering having activities, classes, or lunches outdoors when circumstances allow.
- CDC: Vehicle windows are kept open when it does not create a safety or health hazard.
- CDPH: Central air filtration is maximized for HVAC systems by using filters with a minimum efficiency reporting value (MERV) of at least 13.
- Cal/OSHA: The district has a section on Ventilation Systems on page 8 of its Benicia USD COVID-19 Safety Plan, posted on the BUSD website opening page under COVID-19 Important Documents.
- Cal/OSHA: For indoor locations, the quantity of outdoor air is maximized when possible to increase filtration efficiency to the highest level compatible with the existing ventilation system.
- Cal/OSHA: For buildings with mechanical or natural ventilation, or both, the quantity of outside air is maximized to the extent feasible, except when letting in outdoor air by other means would cause a hazard to occupants.
- Cal/OSHA: Additional ventilation and filtration measures are considered for moving indoor tasks outdoors or having them performed remotely, increasing outdoor air supply when work is done indoors, improving air filtration, increasing physical distancing as much as possible, respiratory protection, and other applicable controls.
- Cal/OSHA: HVAC units filter air with Minimum Efficiency Reporting Value (MERV) 13 or higher efficiency filters.
- Cal/OSHA: COVID-19 Prevention in Employer-Provided Transportation include vehicle windows are kept open, and the ventilation system is set to maximize outdoor air and not set to recirculate air.

Again thank you for your interest in the safety of our schools during the COVID-19 pandemic.

Sincerely,

Roxanne Egan  
Director of Bond Programs  
Benicia Unified School District

Alfredo Romero  
Director of Maintenance and Operations  
Benicia Unified School District