

Mount Baker School District

Indoor Air Quality

As I became aware of the need to increase fresh air into our buildings because of Covid 19, I reached out to several heating and air movement experts. This list includes Jordan Beaudin, an engineer from United Energy Engineers, Conde Hernandez the commercial foreman from Barron heating. Plus, other heating experts from around western Washington. There were also discussions with the Northwest Clean Air.

With the guidance from Jordan, who has children in the school district, we increased the fresh air return from the state regulated min 10% outside air to 20%. The 10% gives each room the recommended number of air exchanges per hour that is needed. We now have doubled that by increasing to 20%. I have attached Jordan's email to Me with his recommendations per our discussion.

My discussion with Conde was about the amount of fresh air exchanged as students enter the room is normally enough air exchange for the time that they have class. Also, the age of most of our buildings there is enough air leakage around windows and through the walls to suffice the minimum outside air requirements.

The School District is currently having ductless heating and air conditioners with filtered exhaust systems installed in the 5 portable classrooms throughout the district. These should be completed by the end of next week. We are in the process of having a filtered fresh air system installed in the 800 building. We are hoping to have this completed by mid-March. When these projects are completed we will have eliminated all of our red marked classrooms.

I hope this helps answer your questions and concerns. It is my belief that with consulting with experts in the heating industry, with my background in indoor air quality, we have addressed all the concerns of making sure our buildings are safe for students and staff.

Sincerely,

Tom Larsen

Director of Maintenance

And Water Distribution

Hi Tom,

Yes, you are correct that this is a tough question with all of the different systems that are in place in the district. But after working on these systems for the past several years I do feel like I can give you some guidance based on my experience.

In general, there is a lot of heat capacity in the gas fired furnaces and rooftop units in the district. For these spaces you could probably go up to about 50% OSA and still be able to appropriately heat the spaces under normal winter weather. We occasionally see OSA percentages of about this high in other projects with similar equipment installed. This would apply to Kendall and the Middle School and High School classrooms served by furnaces. You could probably also go to these higher OSA percentages in the district office and middle/high school administration area if desired.

I think that the areas of the district served by hot water boilers would not be able to go to very high OSA percentages without issues. I am thinking of the 300 wing AHU classrooms and the Acme annex. When we look at these spaces in the winter we see that they take a long time to heat up and may not keep up with the heating load even with OSA percentages around 5-10%. I would say that you would not be able to increase these OSA percentages much beyond 10-15% without heating issues on the colder days.

I think that the Acme univents served by the steam boiler should have the heating capacity to go to about 50% OSA. In general there is a lot of heating capacity in units served by steam.

I would say that I am least familiar with the equipment at Harmony. I would think that the new units that were installed about 5 or 6 years ago could handle OSA percentages of about 50%. The older univents may not be able to go that high, but I would guess that they could go to at least 30-40% without issues. I would say that for these you could start at 30% and go higher if they seem ok.

For all spaces where the OSA was increased the equipment would cycle more frequently and the occupants would likely notice some cooler air being blow into the space when the units were not heating, but overall I think they would operate acceptably without the occupants noticing much of a difference.

Overall, I think that determining these OSA values will take a bit of trial and error. Let me know if you have any further questions or would like us to start making some changes to these values.

Jordan

Jordan Beaudin

United Energy Engineers

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