Minutes – Sustainability Subcommittee Meeting – August 12, 2021
Prepared by Charlie Parker

Natural Ventilation

David Bearg presented his perspective on natural ventilation. Challenge is to provide generous supply of fresh air at low cost through a hybrid model. Need to move air without restrictions where possible. Simpler and more direct approach. And, easier to maintain. Need only Merv 8. Don't restrict with Merv 13.

Matt Root indicated a concern with non-standard design and the risk associated with it. Does the risk outweigh the benefit? Ventilation is small portion of energy and we should really focus on operational cost because it will be relatively low.

Russ indicated that we have Energy Recovery Wheels (ERU's) in each of the schools and they perform well.

Ian Parks from Hill expressed concerns on both cost and performance. System like this has not been used here in New England and how it would perform here.

Andy Oldeman presented an example of natural ventilation showing cross flow and vertical pathway with vent at the roof, which is a wonderful option. Question is with the temperature and humidity extremes. Need mechanical conditioning and that creates a parallel system.

Andy moved to a discussion of displacement ventilation showing difference to standard ventilation techniques, showing the layering of air in a room. Air enters low and rises. One drawback is that the displacement system cannot heat the air and this means there must be a separate system to provide heating at the perimeter. The auditorium is good candidate for this type of ventilation.

Charlie Parker requested analysis of more efficient energy recovery as part of the design process.

Air Conditioning vs Dehumidification

Dehumidification-based system create dryer air but no control over temperature. Advantage of dehumidification is that it saves on first cost over a full cooling system. Heating requires VRF capacity, but the requirement is lower in heating than cooling, leaving a middle ground option with dehumidification at the cooling peak. With VRF system there will be some cooling, it is a question of if full cooling is provided.

Laurie indicated that she had some experience with dehumidification-only and reported mixed results and stressed the importance of AC to existing staff in the middle schools.

Final Comments Displacement Ventilation

Matt asked a follow-up question about the need for heating at the perimeter given the high performance enclosure. Andy responded with a conservative view as to the perimeter heating requirement. Matt and David both indicated the importance of displacement ventilation to healthier environments.