

Q&A from June 1, 2021 Builder Forum Series on Passive Cooling and Step Code
Presented by the Township of Langley (TOL) and Monte Paulsen (RDH Building Science)

Q: The [GHG DPA] guidelines do mention passive cooling, but there are no hard-and-fast requirements - have there been any rejections of development applications for lacking passive cooling in Willoughby Area etc?

A: The Guidelines per our GHG DP's anticipate that proposals incorporate strategies that meet the intent of each guideline, including guidelines that focus on passive cooling.

Review comments have been redirected back to applicants where there is a lack of clarity of how the proposal demonstrates alignment with the Guidelines.

Q: How do you temper the ventilation air in multifamily?

A: For a central HRV design strategy, a heat pump cooling coil can be incorporated and that will cool the ventilation air and supply to each suite. This is not considered air conditioning because the volume of air being conditioned is low compared to a full air conditioning system. A tempered HRV in addition to exterior shading can help reduce indoor temperature by approximately 1-2 °C. Some larger ERVs already have packaged solutions with cooling coils.

Q: Solar panels create shade - can that be part of the modeling?

A: Solar panels can be considered as a shading option. Modellers can include solar panels as shading device and simulate the impact. This may also depend on the decorative strategy of the building.

Q: Bigger windows and better views attract buyers but after they've lived there a while they close the blinds as was mentioned. The point is making windows smaller is a barrier to selling homes.

A: Statistically this is not true. Buildings with lower WWR, like traditional styled and heritage buildings are sold for pretty much the same cost.

Designs can choose to have higher WWRs and maintain high performance envelopes by choosing higher performing windows or/and being selective about where you have fenestration and where you do not. See our BFS webinar on High Performance Fenestration here:

<https://www.youtube.com/watch?v=hS7jXLt3i7I>

Q: What glazing percentage do you recommend? tnx

A: For multi unit residential buildings, a 30-40% WWR would be ideal. This reduces cost and improves performance. For affordable housing projects, this can be further reduced. For buildings that demand higher WWR, a better window performance can be used to compensate the increased WWR. The final decision should be more strategic to the location, use etc.

Q: Interested in Monte's thoughts on the optimum % of glazing (relative to external vertical wall area) in multifamily housing in the lower mainland. What has he seen on successful projects that have a good balance of energy, design and thermal comfort?

A: Refer to above response.

Q: Question for Monte if he can get to it: If you remove the gas in a building after installing heat pumps, what do you suggest as back up for the heating portion of the system if the heat pump can not operate during cold outdoor conditions?

A: When considering electrification, consider increasing the thermal resistance of the building to Step 4/5. This reduces peak demand and hence more resiliency could be built into the building. Once the peak demand is reduced, electric resistant heating could be considered as a backup. That being said, every project varies hence it would be recommended to simulate different scenarios for each project and conclude based on the outcomes.

Q: What is the typical ACH that natural ventilation can achieve in a MURB?

A: For Part 3 MURBs, because you have windows on only one side and limiters for window openings to limit the openings to 6-9 inches, the natural ventilation ACH is quite low, as low as 0.1-0.5 ACH. Hence night flush through a mechanical system would be a recommended solution.

For Part 9 Townhouses, this could be much higher because of cross flow ventilation.

Q: Will Code eventually mandate passive cooling/future climate analyses?

A: Passive cooling and future climate modelling/analysis are being discussed by many municipalities. It should not be surprising if passive cooling or/and future climate analysis are mandated at some point. Other than that, we cannot confirm.