Q&A from July11, 2023 Builder Forum Series | Step Code 4 in the Township & Upper Steps: Design Best Practices
Presented by the Township of Langley and Pat Cuthbert (Aqua-Coast Engineering Ltd)

Township of Langley: TOL Aqua-Coast: ACE

Q:	How are you approaching renovations with the new prescriptive requirements in 9.36? Are you using 9.36.2.8.C or using 9.36.2.8. A +B?
TOL	Please see this Bulletin issued by Buildings Safety Standards Branch. This includes the Province's comments about application to existing buildings: 20_better_ee__zcsc.pdf (gov.bc.ca) As noted in the Bulletin, each case is different. Note, the question does not give enough information on the building/occupancy to provide further comment.
Q:	On part 9 buildings, if a builder is intending to achieve Step Code 4 and they do their final testing on their buildings and it is determined they did not achieve Step Code 4 air tightness, what happens then?
TOL	Please, see this link for access to the **Langley Building Bylaw**: Building Bylaws - Township of Langley (tol.ca) Further, the answer to your question depends on what the requirement of the municipality is at the time of BP application. Currently (at the time of this response), the Township requires Step 3. Therefore, as long as the applicant can demonstrate meeting all requirements of the Step Code (and other BCBC reqs), and at minimum the air tightness requirement of Step 3, the building will be compliant with Step Code and the Langley Building Bylaw. If the applicant is targeting Step 4 voluntarily and does not meet the Step 4 requirements but still can meet Step 3 requirements, it is still compliant. When the Township raises its P9 residential requirements to Step 4, and if the final blower door test does not meet the necessary requirements, then compliance may not be met or/and further steps must be taken. As pasted above, please read the Langley Building Bylaw, Section 7.5, as there is further information there.
Q:	Does floor area include basements and garages as well as all levels of the building?
ACE	Floor area includes only heated areas within the building envelope above and below-grade.

Q:	Is poly an air barrier or vapour barrier? If used as air barrier, then does it come before or after insulation?
ACE	Properly sealed poly is both and air and vapour barrier. Poly can also function as just the vapour barrier when not fully sealed if there is another air barrier. The vapour barrier is on the warm side of the insulation while an air barrier can be located anywhere in the assembly. You can also have multiple air barriers if you like, such as an exterior membrane and sealed poly.
Q:	Why do you seal the bath fan, when the end product has a grill open to the fan above?
ACE	CAN/CGSB allows for intentional mechanical openings to be taped during an air tightness test when it is not "as-operated". EnerGuide requires that the test is completed "as-operated" so this would only apply when the modelling is 9.36.5 or NECB. https://publications.gc.ca/collections/collection_2019/ongc-cgsb/P29-149-010-2019-eng.pdf
Q:	How do you prepare masonry fireplaces and/or free-standing fireplaces, for airtightness testing?
ACE	Fireplaces should have closable dampers or flues that can be closed during the air tightness test if they are not fully sealed units.
Q:	How will kitchen exhaust fan work with high cfm if there is no air circulation due to tight envelopes?
ACE	The BCBC has provisions for make-up air design for kitchen exhaust fans. For high-flow kitchen exhaust fans, appropriate makeup air design needs to be considered.
Q:	For colder climates, Zone 6 and higher how well are heat pump only scenarios working out? During thaw cycle is freezing up an issue?
CEA	https://www.communityenergy.ca/bal-north/ CEA has relevant case studies for HPs in northern climates Building A Legacy North - Community Energy Association
Q:	What was the under-slab insulation added for the example models shown in the presentations?
ACE	Not all the example models were the same (as we started from existing models). On average the under-slab insulation to go from Step 2/3 to Step 4/5 would likely be R15 (3”) for 3ft around perimeter to R20 (4”) continuous.

Q:	How do you reconcile PTAC exhaust ports with air tightness requirements? It's a big hole to put through the envelope.
ACE	That is definitely something that needs to be looked at when designing the mechanical systems. PTAC penetrations can be difficult to seal properly and can have a negative impact on air tightness. The design team should look at this type of detailing early on when looking at the air tightness requirements and mechanical equipment selected. Stay tuned – an airtight, thermal efficient product is in the works for this.
Q:	When is the TOL going to Step Code 4 on Part 3 buildings?
TOL	There are no immediate plans to require Step 4 for Part 3 buildings. We will communicate out to industry and public when we are contemplating that change.
Q:	Can Mechanical equipment efficiencies offset additional insulation?
ACE	Mechanical efficiencies can help MEUI or % Better than an ERS reference, but does not benefit TEDI
Q:	What consideration is given to the MEUI for the inclusion of the now mandated EV chargers?
ACE	Car chargers and other internal loads are not included in the MEUI. For Part 3 car chargers are also excluded from the TEUI based on the CoV modelling guidelines
Q:	BCBC requires active make up air with a solid fuel appliance in some circumstances, how would you reconcile this? TECA checklist shows when this requirement is necessary. How would the CEA take this into account?
ACE	BCBC has recently implemented Carbon Pollution metrics to prioritize the adoption of low-carbon energy systems over solid fuel and other fossil fuels, owing to pressing environmental concerns. This also brings other benefits to occupants such as reduced safety risks. However, if it becomes necessary to retain a solid fuel appliance that requires a make-up air system, EnerGuide has developed a methodology for incorporating make-up air and non-dampered combustion air appliances into the energy model assessment that must be performed by energy modellers. This ensures uniformity across all EnerGuide projects and enhances overall consistency.
Q:	How important was the slab thermal break in the Step 4 and Step 5 models?
ACE	Slab thermal break (or exterior insulation on footings) is almost certainly required for Step 4/5. This is even more important in climate zones 5 and up. With more energy efficient homes if this thermal break is not include a “cold floor” at the perimeter may be more noticeable.