

## Appendix E – Natural Resources Canada Trade-off Calculators

The National Energy Code of Canada for Buildings 2017 (NECB 2017) allows you to trade enhanced energy efficiency of one component against decreased energy efficiency of another component within the same part of the Code. For example, in Building Envelope (NECB Part 3), higher roof insulation efficiency levels can be traded off against lower wall insulation levels, but not against lighting levels, which are included under Lighting (NECB Part 4). NRCAN has developed trade-off calculators based on the NECB 2011 for Parts 4, 5 and, 6 of the Code. Depending upon the components under consideration and the type of system being designed the calculators may be useful in assisting with any trade-off compliance calculations for a building under design. Trade-off calculations may also be completed without the use of these software calculators. The calculator is a workbook that includes an introduction, worksheets help information, and summary compliance reports.

For more information or to obtain a copy of the tool, e-mail [info.services@nrca-nrcan.gc.ca](mailto:info.services@nrca-nrcan.gc.ca).

### **Lighting (NECB Part 4) trade-off calculator**

The Microsoft Excel-based trade-off calculator allows you to demonstrate compliance with the NECB 2011 using the trade-off path for Lighting (NECB Part 4). The calculator considers lighting energy allowances using the space-by-space method. The trade-off worksheet provides all the required data entry fields to define each space and calculates the compliance of the building. The calculations account for annual day and night operating times, daylight harvesting, occupancy sensors and personal controls.

### **Heating, Ventilating and Air-conditioning systems (NECB Part 5) and Service Water Heating (NECB Part 6) trade-off calculator**

The Microsoft Excel-based trade-off calculator considers the entire heating, ventilating and air conditioning (HVAC) and system water heating (SWH) structure as a whole, providing trade-off values for 27 systems and 32 components, including fans, motors, controls and piping insulation. The calculator provides more flexibility than the prescriptive compliance requirements. It allows a mechanical designer to examine a system design and evaluate its overall performance for code compliance. Given the complexity of modelling energy use, the trade-off path calculator should be considered as intended: as a compliance mechanism, and not as an energy assessment method.