

**Part 1 Energy Modelling and Utility Metering****1.1 Summary**

- .1 Unless otherwise indicated, follow the standards when specifying architectural woodwork. These standards are not intended to restrict or replace professional judgement.
- .2 In order to facilitate efficient building operations, to assist with the tracking of savings from energy and water conservation initiatives, and to allow engagement of building occupants, McGill has identified various levels of metering and sub-metering as well as energy modelling for projects depending on their scope of work. The requirements are as follows:

1.2 Energy Modelling

- .1 For all new constructions and major renovations:
 - .1 Complete an energy model of the building with recognized software (SIMEB, eQuest, EE4-CBIP, etc.) comparing the proposed design either with the ASHRAE 90.1-2010 reference or with the National Energy Code of Canada for Buildings (NECB) 2011 reference.
 - .2 For all projects with an impact on energy consumption or energy demand, whether it be an increase or decrease in load or a change in the seasonality of the load, McGill's "Fiche énergétique" must be completed both in the pre-design phase and at project completion. This is not required for projects that already require an energy model.

1.3 Utility Metering

- .1 For new constructions and major renovations:
 - .1 Separate metering of all utilities entering the building. Sub-metering of energy for main cafeterias, parking garages, major server rooms, food outlets and other retail points, HVAC systems, and chillers.
 - .2 The designer must plan for the installation of meters to measure the building's energy and water consumption from distribution networks – whether operated by McGill, a municipality, or a utility company. The following measuring equipment must be included in compliance with McGill's standards:
 - .1 Electric meter
 - .2 Steam meter
 - .3 Condensate meter
 - .4 Hot water meter
 - .5 Chilled water meter
 - .6 Potable water meter
- .2 For all fit-outs and partial building interior fit-outs of more than 500 m² and of at least one building storey and multiple building systems, and system upgrades with a change of more than 50% of a system:
 - .1 Sub-metering of energy for main cafeterias, parking garages, food outlets, chillers, and HVAC system in the case of a major upgrade of the system.

1.4 Performance Target

- .1 For all new constructions and major renovations, the proposed design must meet the following energy intensity target:
- .1 20% more efficient than ASHRAE 90.1-2010 (Appendix G) **or**
 - .2 20% more efficient than the National Energy Code of Canada for Buildings 2011 (NECB) in compliance with LEED v4 Canadian Alternative Compliance Paths (ACPs) requirements **or**
 - .3 40% more efficient than the Model National Energy Code for Buildings (MNECB) 1997.

Part 2 Carbon Neutrality**2.1 Summary**

- .1 McGill has committed to becoming carbon neutral by 2040. All efforts must be deployed to reduce both direct and indirect emissions from all activities. McGill's approach is to reduce emissions at the source, maximize carbon sequestration where feasible, and purchase offsets for residual emissions as a last-resort solution. McGill's energy systems are the greatest source of McGill's greenhouse gas emissions. Decarbonizing energy systems is key to reaching the carbon neutrality goal.

2.2 Carbon Reduction Target

For all new constructions, major renovations, and for any project that includes the installation or the replacement of an HVAC system and/or heating system:

- .1 For standalone buildings, any modification to the HVAC and/or heating system must be made so that no less than 80% of total energy use come from renewable energy sources. Acceptable renewable energy sources include electricity from Hydro-Québec's grid, ground- and air-source heat pumps, solar energy (thermal and electric), wind energy, and renewable natural gas (aka bio-methane). Additionally, load-shedding strategies must be put in place to mitigate the impact of peak power demand on the building's electricity rate.
- .2 This requirement does not apply to buildings whose HVAC and/or heating systems use energy from McGill's district heating. McGill will address the de-carbonization of its central energy distribution networks through different initiatives.

END OF SECTION