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## Sustainable Development



## Green Building

### Did You Know ?

Facility Design Standards were adopted by Thunder Bay City Council in 2014 ensuring that city-owned facilities are sustainably constructed and operated.

# 2.0



## Sustainable Development Green Building

### GOAL:

Thunder Bay buildings minimize energy consumption and conserve resources.

### WHY IT MATTERS:

Green building is the practice of increasing the efficiency with which buildings use energy, water, and materials, while reducing building impacts on human health and the environment, through better siting, design, construction, operation, maintenance, and removal — the complete building life cycle.

Thunder Bay's geographic location means cold winter months with significant heating requirements in all sectors. Buildings are a major contributor to local GHG emissions, and also generate waste in both their construction and demolition. The residential sector alone produces 27%<sup>1</sup> of the community's GHG emissions, so there are significant savings opportunities to be achieved.

Energy efficient building design helps to prevent heat loss, reduce electricity and natural gas consumption, and consequently lower GHG emissions. Building better not only saves energy, it can address other environmental issues such as stormwater management, water efficiency, waste reduction, and air quality. Better buildings are also more resilient in the face of extreme weather, and their design and siting should take climatic factors into account.

The City of Thunder Bay has demonstrated leadership by adopting Facility Design Standards that require gold and silver LEED standard for all new municipal buildings over >2000 m<sup>2</sup> and >500 m<sup>2</sup> in size respectively. This policy will yield long-term cost-savings to the City's taxpayers. The community will also benefit economically from the promotion of new technology, green building materials, and increased building renovation.

### WORKING GROUP MEMBERS:

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<sup>1</sup> 2011 Greenhouse Gas Emissions Inventory



#### OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2020, buildings are being constructed and renovated to improve resilience, increase energy efficiency, and reduce greenhouse gas emissions by 20% from the 2009 baseline.**

##### ACTIONS FOR CORPORATION

- Implement Local Improvement Charges (LICs) or other programs to encourage retrofits on private properties
- Champion and implement the City's Facility Design Standards policy
- Inform residents (i.e. consumers) of green building and energy efficiency options and opportunities
- Create supportive strategies, incentives and regulations to develop green buildings in the residential, commercial and institutional sectors

##### ACTIONS FOR COMMUNITY

- Encourage LEED Canada and Architecture 2030 standards in the entire MUSH sector (Municipal, University, Schools, Hospitals) for new construction or major renovations
- Promote energy performance that is 20% better than the Ontario Building Code in new developments
- Encourage water conservation and waste reduction and the use of more energy efficient appliances

**B. By 2020, Thunder Bay has a robust green building sector (developers, contractors, builders, and suppliers).**

##### ACTIONS FOR CORPORATION

- Support the green building industry by attracting new expertise to Thunder Bay region, and educate the existing industry
- Use recycled and repurposed materials in building construction and divert timber from the landfill

##### ACTIONS FOR COMMUNITY

- Create a green building "community of practice"
- Educate the public about green building design principles, including incentives for retrofitting homes
- Champion and showcase the EcoSuperior model green home as an education tool
- Encourage the saving of materials in building demolition

**C. By 2020, sustainable building design is integrated into land use planning.**

##### ACTIONS FOR CORPORATION

- Promote conversion and development of more multi-unit residential buildings within the urban area
- Implement universal site plan control as a tool to promote environmentally and socially responsible development and reduce climate hazards
- Officially create a cross-departmental group to review road redesign, land use plans, plans of subdivision and Official Plan and Zoning Amendment applications

**D. New and retrofitted structures create a sense of place that enhances local values by integrating buildings as part of a vibrant city-scape.**

##### ACTIONS FOR CORPORATION

- Preserve buildings that are historically significant from an architectural or cultural point of view

##### ACTIONS FOR COMMUNITY

- Encourage developers to use locally sourced products that reflect the northern Ontario and Lake Superior landscapes



#### WHAT YOU CAN DO:

- Install a residential renewable energy system, such as solar panels, for which you can recover your initial investment in a matter of years
- Request building materials with recycled content, and practice the 3 Rs when renovating
- Voice support for new developments within the City that are deemed to be high performance
- Use natural cleaning products
- Proper weather stripping and caulking of doors and windows can reduce heating bills by 25%
- Painting? Be sure to use volatile organic compound-free (VOC-free) paint
- Take leftovers from your renovation project to the Habitat for Humanity Re-Store where they will be recycled and reused
- Research your building materials, their origins and contents – what is their social and environmental footprint?
- Buy lumber that has been approved by the Forest Stewardship Council (FSC)

#### DEFINITIONS:

##### What is LEED?

Leadership in Energy and Environmental Design (LEED) was created to define “green building” by establishing a common market-based standard of measurement. LEED promotes integrated, whole-building design practices, recognizes environmental leadership in the building industry, and raises consumer awareness of green building benefits.

Six main areas are addressed by the rating system:

1. Sustainable sites;
2. Water efficiency;
3. Energy and atmosphere;
4. Materials and resources;
5. Indoor environmental air quality;
6. Innovation and design process.

##### Local Improvement Charges (LICs)

Municipalities can finance capital improvements on private properties that have public benefits and recover costs via Local Improvement Charges. In Ontario, the concept has been extended to energy efficiency or renewable energy improvements on individual properties, where the resulting reductions in GHG emissions benefit the entire community. Water conservation, flood prevention or indoor air quality could also be improved in this way. Designed well, LICs enable municipal action on climate action at no additional net costs to the City while providing a boost to the local economy.