



## EarthCare Sustainability Plan 2014-2020





EarthCare Thunder Bay will lead the community in securing the environmental health of our region, and thereby improve the social, cultural, and economic wellbeing of future generations.

EarthCare Thunder Bay Mission Statement



earthcare  
Thunder Bay  
sustainable by nature

## Message from the Mayor

On behalf of City Council, I am pleased to present to you the EarthCare Thunder Bay Sustainability Plan, the updated blueprint for a more livable Thunder Bay. Formerly called the Community Environmental Action Plan, the new EarthCare Sustainability Plan provides an updated framework of vision and priorities of Thunder Bay, and offers a clear path to deliver positive and tangible change in our community.

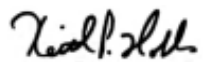
EarthCare's first plan was approved in 2008 and since then, many actions and initiatives have been implemented.

As you read through these pages you will notice the involvement of many committed citizens and partners who have helped shape this Plan. These dedicated citizens, in addition to the hundreds of residents who provided valuable feedback, have helped create a clear course of action for a brighter future.

Although the goals of the EarthCare Sustainability Plan are ambitious, they are both achievable and necessary if we are to become more resilient in light of new challenges municipalities across the country face. Thunder Bay deserves the very best!

The EarthCare Sustainability Plan was produced from the community, and so will its success come from the community. A prosperous, more livable city doesn't come from a plan, but through acting on it. You and I are partners who will be instrumental in bringing the Plan to fruition. As you read through this living document, ask yourself how you can share your ideas and get involved on this important journey toward a more healthy and sustainable Thunder Bay.

Sincerely,



Mayor Keith Hobbs  
City of Thunder Bay



Mayor Keith Hobbs,  
City of Thunder Bay



City Hall, City of Thunder Bay



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## About This Document

The first section of this document provides background and an overview of the theoretical basis from which the plan was developed. The second section reflects the extensive contribution of the Working Groups to examine local and global issues, and create goals, objectives, and proposed actions leading to greater community sustainability, resilience, and reduced greenhouse gas emissions.

Each of the eleven EarthCare Working Groups will create a detailed implementation framework to allow the plan to become a reality, provide a means to measure progress, and continually reflect best practices.



## EarthCare Community Partners

EarthCare Community Partners are businesses, organizations, or individuals from the community of Thunder Bay that have declared their commitment to support the development of the EarthCare Sustainability Plan. Partners have signed a Declaration of Commitment and support the vision and implementation of the EarthCare Sustainability Plan. They provide expertise and support for EarthCare related initiatives when possible.

BFI Canada  
Blue Heron Environmental  
Bombardier Transportation  
Boreal Solutions  
Bruno's Contracting  
Confederation College  
Cook Engineering  
EcoSuperior  
Environment North  
Form Architecture  
Frank's Alternate Energy  
Friends of Chippewa  
Home Depot  
Lakehead District School Board  
Lakehead Region Conservation Authority  
Lake Superior Binational Forum  
Lake Superior Place  
Lakehead University  
Litter-Free Thunder Bay  
Mascarin Collision Centre  
MGM Electric  
Ontario First Nation Technical Services  
Ontario Healthy Communities Coalition  
Ontario Power Generation, T.B.G.S.  
Pack Pros Plus  
PARO

Perrons EcoSolutions  
ReCool Canada  
Resolute Forest Products  
Shelter House  
St. Joseph's Care Group  
Superior Renewable Energy Cooperative  
Tetra Tech Engineering  
The BodyMind Centre  
The EcoBus  
Thunder Bay District Catholic School Board  
Thunder Bay Chamber of Commerce  
Thunder Bay Country Market  
Thunder Bay District Health Unit  
Thunder Bay Field Naturalists  
Thunder Bay Hydro  
Thunder Bay Observatory  
Thunder Bay Public Library  
Thunder Bay Recreational Trails  
Thunder Bay Regional Health Sciences Centre  
Thunder Bay Royal Astronomical Society  
Thunder Bay Seniors Newsletter  
Trees Thunder Bay  
Union Gas  
Valhalla Inn  
Wildwaters

# Introduction

For the last ten years EarthCare<sup>1</sup> has been a changemaker in Thunder Bay. It has provided an interface for the public to work with the municipality to achieve environmental goals, to educate each other on best practices and new ideas, and to mutually benefit from the outcomes. The EarthWise Thunder Bay Community Environmental Action Plan (CEAP) was adopted by Council in 2008, the result of a deputation to Council from four years earlier by two local non-governmental organizations, EcoSuperior Environmental Programs and the Zero Waste Action Team (ZWAT).

This plan builds on five years of successful implementation, lessons learned, and challenges won and lost both locally and on a global scale. Awareness of environmental issues has grown significantly over these past years, but so has public apathy, perhaps due to the seemingly insurmountable odds associated with climate change and modern humanity's impact on the Earth. Local action is one of the most effective and meaningful ways to address this, and creates the co-benefit of a more livable community. The following pages showcase some of EarthCare's influence over the years.

The EarthCare Sustainability Plan is the result of actively sought and valued public engagement and participation. In particular, over 450 students and citizens helped shape this document during the consultation process. It takes a comprehensive and integrated approach, recognizing that environment, economy, society, and culture are linked to each other. The overall goal is to create a more sustainable Thunder Bay now, and in the long term. While the CEAP focused mainly on climate change mitigation, this version has a strong bent towards both mitigation and adaptation. Mitigation can be thought of as actions that protect the climate from humans, while adaptation can be thought of as actions that protect humans from the climate. It has become clear that while mitigation is important to reduce the impacts of climate change far into the future, communities are already experiencing climate change impacts and therefore must take action to prepare for them and adapt infrastructure and cultural systems to become more resilient to the changes.

The main section of this plan reflects the extensive contribution of the Working Groups in examining local and global issues, and in creating goals, objectives, and proposed actions leading to greater community sustainability, resilience, and reduced greenhouse gas emissions.

While the City of Thunder Bay is the keeper of the plan, the plan is multi-sectoral in that many of its actions are aimed at individuals, businesses, institutions, organizations, and the local government. There is a role for everyone in its implementation and in creating a cleaner, greener, more beautiful and proud Thunder Bay.

<sup>1</sup> EarthCare Thunder Bay was formerly known as "EarthWise" and was officially renamed in 2013.

## EarthCare Advisory Committee of Council

The EarthCare Advisory Committee (EAC) of Council was formed to help guide EarthCare and the implementation of the original CEAP and now the Sustainability Plan. These champions are integral in maintaining the momentum of EarthCare. The EAC is comprised of two City Councillors, two members of City Administration, and six citizen appointees.

### EarthCare Advisory Committee Members:

|                                  |  |
|----------------------------------|--|
| Shannon Costigan                 | Citizen                                  |
| Lynn Duffield                    | Citizen                                  |
| Brad Doff                        | Sustainability Coordinator (Acting), CTB |
| Councillor Andrew Foulds (Chair) | City of Thunder Bay 2010-2014            |
| Councillor Rebecca Johnson       | City of Thunder Bay 2010-2014            |
| Sarah Kerton                     | Sustainability Coordinator, CTB          |
| Ashleigh Marchl                  | Citizen                                  |
| Kerri Marshall                   | Manager of Environment, CTB              |
| Curniss McGoldrick               | CEAP Intern, CTB                         |
| Sandra Stiles                    | Citizen                                  |
| Jane Todd                        | Citizen                                  |

## The Partners for Climate Protection Program (PCP)

The Partners for Climate Protection (PCP) program is a joint program of the Federation of Canadian Municipalities (FCM) and ICLEI Governments for Local Sustainability. PCP is designed to assist municipalities in reducing local greenhouse gas (GHG) emissions. Fulfillment of the PCP program requires the completion of five milestones. The first milestone, to create a GHG emissions inventory and forecast, was completed at the end of 2007. Setting an emissions reduction target is the second milestone, and developing a local action plan is the third milestone. These were completed in 2008 with the adoption of the CEAP. Since then, Thunder Bay has been engaged in milestones four and five: implementing the plan, reporting on the plan and monitoring results. A second emissions inventory was completed in 2013, measuring progress up to 2011.



# Working Groups

Part of what makes EarthCare so effective in its mission is its partnership with citizens of Thunder Bay. This unique relationship gives EarthCare its ingenuity, strength, and platform for making real change in the community.

The backbone of EarthCare is its 11 different “Working Groups” (WG), comprised of citizens from across the municipality who developed sections of the Plan based on their interests and expertise. These WGs focused on air quality, climate adaptation, community greening, energy, food, green buildings, land use planning, mobility, waste, and water. At present, they are working hard to implement the recommended actions found in their sections, in addition to supporting initiatives that further their objectives. The Education WG does not have a specific section in the plan, rather, educational components have been integrated throughout the plan in the various WG sections. Most of the WGs came together under the EarthCare banner and have been collaborating since the development of the original CEAP. However, some groups have been working on their issue together for even longer – as with the Food Action Network, who created the food section. People have come and gone throughout the process, and some only made it to a few meetings, but everyone who has participated has made new personal and professional connections.

Since June of 2013, the Working Groups have sought public input into their work and have used the feedback received to strengthen this document and ensure it reflects citizen interests. Because of the interconnectedness of the environment, one positive action towards meeting a goal has a chain of effects that work towards other goals. Sometimes this results in overlapping recommendations between some sections. For example, taking public transit to work every day would decrease GHG emissions, reduce air pollutants, result in health benefits, create less wear and tear on roads, and extend fossil fuel resources.

Each WG section began with the development of an overarching goal. The goal then guided the further development of objectives; which each group has suggested potential ways of operationalizing through the recommended actions. Each action is categorized into one of two categories: the Corporation of the City of Thunder Bay or the Community, depending on who is responsible for carrying out the action. The adoption of this plan does not require committing to every action. Instead, the recommended actions represent the ideas and concerns that were brought forward through this process, and are intended to provide guidance for making the objectives reality.

As the goals and objectives, envisioned in this new Plan by the collective wisdom of Thunder Bay's citizens, are implemented, more participation, feedback, and ideas will be sought. If there is something citizens don't see here that they would like added, they are encouraged to make note of it and contact the Coordinator. EarthCare WG meetings are open to the public, and new participants are always welcome.

Please visit [www.earthcarethunderbay.ca](http://www.earthcarethunderbay.ca) for more information on how to get involved.





## EARTHCARE WORKING GROUPS



AIR QUALITY



CLIMATE  
ADAPTATION



COMMUNITY  
GREENING



EDUCATION



ENERGY



FOOD



GREEN  
BUILDING



LAND USE  
PLANNING



MOBILITY



WASTE



WATER

EarthCare's Working Groups are comprised of citizens from across the municipality.

“Global Warming is really a social and economic problem. It is also the greatest opportunity for creativity and innovation we have ever had. We are all part of the problem. We can all be part of the solution. Rather than fearing change, we must embrace it.”

Dr. Andrew Weaver, Canadian Climate Scientist and member of B.C. Provincial Parliament



EMS Rooftop, November 21 2012

**Sustainable Development**



**Energy**

# 1.0



## Sustainable Development Energy

### GOAL:

To promote the wise use of energy and the transition to a carbon-neutral future. By 2020, the community of Thunder Bay will reduce greenhouse gas emissions by 20% below 2009 levels.

### WHY IT MATTERS:

Energy is required by everyone to live and work. Using energy wisely results in many benefits such as reduced home and business operating costs and a cleaner environment. All forms of energy have environmental impacts, especially those produced from fossil fuels. The production and combustion of fossil fuels produces toxic substances that impact air and water quality. They also produce carbon dioxide, which is a greenhouse gas (GHG).

Greenhouse gases trap the sun's heat in the atmosphere, making the earth warm enough to sustain life. The combustion of fossil fuels from human activities has increased the amount of GHG in the atmosphere, especially in the past 100 years. As a consequence the atmosphere has become warmer, impacting the earth's climate and resulting in increased global average temperatures, melting of the Arctic ice cap and glaciers, and more severe weather events. It is necessary to reduce our dependence on fossil fuels.

Local governments are important partners in building Canada's green energy future and reducing Canada's GHG emissions. Policies and initiatives undertaken by communities can have a significant impact on energy use. Focusing on conservation, efficiency and increased use of renewables are strategies that municipalities are embracing across Canada.

Thunder Bay first conducted a GHG Emissions Inventory in 2007, using a baseline of 2005<sup>1</sup>. Emissions per capita were an average of 13.1 tonnes. In 2011 a second Inventory found a reduction to 8.3 tonnes per capita. This can be explained by some conservation, but is mainly due to a downturn in the economy and a significant reduction of energy use in the industrial sector, as well as a decline in the GHG intensity of electricity by almost 50% due to the phasing out of the use of coal as a fuel to generate electricity in Ontario.

#### WORKING GROUP MEMBERS:

Adrienne Allam  
Hugh Briggs  
Gerald Debenetti  
Vanessa DeGiacomo-Zwares  
Brad Doff  
Andrea Goold  
Scott Hoffman  
Larry Hogard  
Marv Lassi  
Kristin Maenpaa  
Curniss McGoldrick  
Kerstin Muth (Chair)  
Tim Pagee  
Karen Pasko  
Raphael Shay  
Bill Willis  
Tim Wilson

<sup>1</sup> The Energy Working Group will use 2009 as the baseline year on a go-forward basis, as it offers the most complete data set.



# 1.0 Sustainable Development

## Energy

### OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2020, total municipal operations energy consumption (GJ) is 20% below 2009 levels and total community energy consumption (GJ) is 20% below 2009 levels.**

#### ACTIONS FOR CORPORATION

- Adopt higher energy efficiency standards for new buildings and renovations that minimize the environmental impact of the capital projects and energy demands of city facilities
- Continue to implement the Strategic Approach to Corporate Energy Management Plan
- Develop a Local Improvement Charge (LIC) incentive program to facilitate energy efficiency upgrades to private property
- Update and revise the Green Fleet Plan to meet new goals and best practices
- Create processes to track staff travel claims and work to reduce mileage and flights

#### ACTIONS FOR COMMUNITY

- Promote Net-Zero Guide for homes and business
- Support development of the demonstration Net-Zero home
- Thunder Bay Hydro, Union Gas and the City of Thunder Bay continue to develop strategies for residential and commercial consumers to reduce energy use
- Thunder Bay Hydro will develop a web-based software to allow residents to track their time of use details online
- Develop a long range energy plan for the community
- Promote use of fuel efficient vehicles and alternative fuels when technically feasible
- Promote electric vehicles and install at least one electric charging station at a municipal site
- Promote other measures that reduce kilometres travelled by vehicles such as land-use planning, public transport, and active transport

**B. Renewable energy is increasingly used to meet local demand.**

#### ACTIONS FOR CORPORATION

- Continue to implement renewable energy projects such as rooftop/land-mount solar projects
- Pursue opportunities to increase generation capacity for renewable energy sources

#### ACTIONS FOR COMMUNITY

- Encourage Confederation College to develop a clean energy centre with programs for energy efficiency, renewable energy and sustainable buildings ranging from industrial to residential applications
- Increase renewable energy capacity with community partnerships
- Develop and maintain a registry of renewable energy projects

### WHAT YOU CAN DO:

- Have a home energy audit and implement recommended retrofits
- Buy ENERGY STAR® labelled products
- Most buildings constructed in the 1960s and 1970s or earlier are not well insulated. A retrofit of an older building can save up to 75% on space heating costs. It will also save on cooling costs.
- Cooling: A 26°C summer setting will save you about 10% electricity use over a 22° C.
- Reducing the phantom load can reduce electricity use by 8% in a typical Thunder Bay household
- When it comes time to buy a new car, choose a more efficient vehicle. Average fuel efficiency of many new mid-sized vehicles is about 8 litres/100km. The efficiency of many new compact vehicles is less than 6 litres/100 km.
- Maintain proper tire pressure and conduct regular maintenance on your vehicle
- Avoid idling your vehicle

# 1.0 Sustainable Development

## Energy

### HIGHLIGHTS:

#### Thunder Bay Airport Solar Park

The solar park generates enough renewable energy to power 15,000 homes over the next twenty years. The renewable energy generated offsets approximately 7,500 metric tonnes of carbon dioxide equivalent a year. That has an impact that is equivalent to taking about 1300 cars off the road or recycling 2300 tons of waste each year!

#### Corporate Energy Management Plan

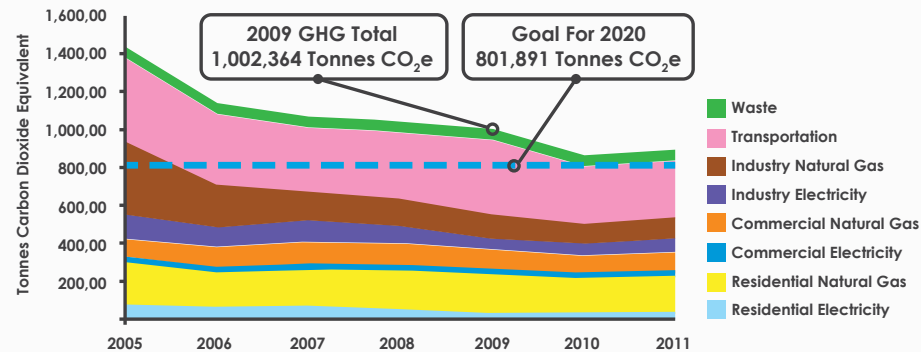
In December 2011, Thunder Bay City Council approved a Corporate Energy Management plan entitled "The Strategic Approach to Corporate Energy Management". This plan outlines strategic initiatives that will manage the Corporation's energy use and create a Corporate "energy-wise" culture.

Table 1. Ontario Greenhouse Gas Electricity Coefficient

| Year | Greenhouse Gas Electricity Coefficient |
|------|--|
| 2005 | 0.23 kg CO <sub>2</sub> e/kWh          |
| 2010 | 0.13 kg CO <sub>2</sub> e/kWh          |

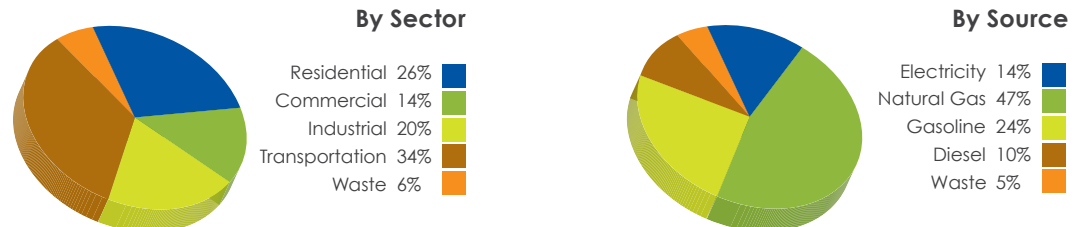
**Source:**  
National Inventory Report  
1990-2010 - Environment Canada

Figure 1. GHG Emissions for Thunder Bay 2005 – 2011



**Overall Canada's GHG emissions have declined from 2005 to 2010 by 6%.**

Figure 2. Thunder Bay 2011 GHG Emissions





## Sustainable Development

### 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.



## Green Building



# 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:

Gerry Broere  
Tom Cook (Chair)  
Scott Hoffman  
Larry Hogard  
Sarah Kerton  
Patrick Larocque  
Ellen Mortfield  
Don Rutledge  
Raphael Shay  
Des Stolz

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

## 2.0 Sustainable Development

### Green Building

#### 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

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

##### ACTIONS FOR COMMUNITY

- a. Encourage LEED Canada and Architecture 2030 standards in the entire MUSH sector (Municipal, University, Schools, Hospitals) for new construction or major renovations
- b. Promote energy performance that is 20% better than the Ontario Building Code in new developments
- c. 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

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

##### ACTIONS FOR COMMUNITY

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

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

##### ACTIONS FOR CORPORATION

- a. Promote conversion and development of more multi-unit residential buildings within the urban area
- b. Implement universal site plan control as a tool to promote environmentally and socially responsible development and reduce climate hazards
- c. 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

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

##### ACTIONS FOR COMMUNITY

- a. 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.





Sustainable Development



Land Use Planning

# 3.0



## Sustainable Development Land Use Planning

### WORKING GROUP MEMBERS:

Brad Doff  
Robyn Gillespie  
Michelle Hovi  
Decio Lopes  
Don Manahan  
Curniss McGoldrick  
Todd Randall (Chair)  
Jay Stapleton

### DEFINITIONS:

**Urban sprawl** is defined as low density, vehicle-oriented portions of urban areas on the fringe of and within currently developed areas that are characteristically homogenous with respect to land use. Sprawl includes residential suburban and exurban development extending into the adjacent countryside.

**Smart Growth** aims to counter many aspects of urban sprawl and reflects a return to urban villages and neighbourhood retail districts, such as the Bay & Algoma Area and Westfort Village. Smart growth areas have an appropriate balance of land use types and housing choices and have almost everything you need on a daily basis within walking distance.

### GOAL:

To include and implement concepts surrounding smart growth and sustainability into the planning and patterns of land use within the community and the Corporation. In particular, these concepts are to be incorporated into decision-making processes concerning the management of land use for new development and for the evolution and change of existing uses of land.

### WHY IT MATTERS:

Land use planning plays a significant role in both defining built landscapes, and shaping the natural landscape. It can be used as a tool to limit the impact of human activities on the environment, as well as to enhance significant cultural aspects of human history.

From Thunder Bay's earliest beginnings on the shoreline of Lake Superior as a natural resource and transportation-based economy, to today's focus on learning, health care, service and retail, and providing for an aging and changing demographic, the City has continued to expand its geographic extent. Notwithstanding that the City's population base has remained virtually unchanged in the past two decades, this increase in the City's extent is continuing with significant impacts upon the City – positively for the growth seen in the Intercity area, but negatively on the two former downtown core areas and costs to deliver services.

Increasingly, smart growth and sustainable community values and considerations are being accepted by society as desirable and achievable elements of community decision making and visions. Careful land use planning can facilitate the livability and sustainability of our built environment. Beyond the original public health benefits, land use planning can protect forests, green spaces and waterways, and can encourage walkability, reduce GHG emissions, reduce the impact of the urban heat-island effect, and contribute to the overall aesthetics and well-being of the community.

Aspects within the community that can be addressed through a sustainable community approach to land use management include:

- Intensification and redevelopment,
- Concentration and increase in population density,
- Response to neighbourhood transition and downtown decline,
- Awareness and protection of sensitive community and ecological assets, and
- General betterment of the City's aesthetics and quality of life

Components of these approaches can be found in the City of Thunder Bay Official Plan (OP) and are integral components of Ontario's Provincial Policy Statement.





#### OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2020, development activities that counter urban sprawl are promoted, providing net energy and land savings and conserving or enhancing ecological functions.**

##### ACTIONS FOR CORPORATION

- a. Encourage land use patterns that optimize the use of existing and planned levels of infrastructure and public services
- b. Promote pedestrian-scaled and transit-oriented development in both residential neighbourhoods and commercial areas
- c. Strive to create residential neighbourhoods which are mixed use, contain a variety of housing forms and provide access to daily amenities within walking distance
- d. Strengthen Official Plan policies that encourage infill redevelopment including setting residential density targets, examining increasing residential dwelling densities along transit routes, and assessing reviewing existing Community Improvement Plans for effectiveness
- e. Establish and maintain linkages between neighbourhoods, with emphasis on walking and bicycling pathways, as part of the City's Active Transportation Plan and relating to the concept of "Complete Streets®"
- f. Strengthen the enforcement of site plan control and examine the feasibility of the application of City-wide universal site plan control
- g. Revise plan of subdivision requirements to require new streets to optimize solar potential for new buildings and dwellings

##### ACTIONS FOR COMMUNITY

- a. Continue to inventory and protect natural heritage assets and resources, such as floodplains and other hazard lands, parks, significant wetlands and lands managed by the Conservation Authority
- b. Encourage community awareness of such natural heritage features and their value to the community, via production of online maps and related documentation
- c. Explore issues and restraints that obstruct redevelopment and residential intensification in the historic downtown cores
- d. Measure the application of the City's urban design guidelines and image route guidelines that increase community aesthetics and liveability
- e. Investigate and develop neighbourhood and building design standards that optimize energy efficiency, reduce GHG emissions and prioritize the capture of renewable energy, for inclusion in the next OP review

**B. Development activities that result in greater socio-economic and demographic diversity in new and existing neighbourhoods are promoted.**

##### ACTIONS FOR CORPORATION

- a. Direct growth to optimize the use of existing infrastructure and public services which will reduce the need to construct new infrastructure or to extend public services, such as parks, schools and community centres
- b. Develop programs, incentives and bonuses targeted at supporting and achieving density increases, affordability, and land use diversity

##### ACTIONS FOR COMMUNITY

- a. Build upon the successes achieved in recent years with respect to the establishment of community gardens
- b. Research issues and other barriers to sustaining and expanding the number of community gardens and other communal green spaces
- c. Conduct research relating to the best types of and locations of housing to meet existing and growing demand from the City's aging population (in conjunction with Corporation)
- d. Research the distribution of existing and planned multi-unit housing across the City, to determine the overall equity in its distribution and its coordination with improvements to transit service



## 3.0



## Sustainable Development

### Land Use Planning

**C. Development activities are supported that optimize the use of existing infrastructure and are within developed areas, and any new expansions and developments do not compromise Thunder Bay's fiscal health.**

#### ACTIONS FOR CORPORATION

- Promote development that maximizes the use of existing or planned utilities, infrastructure and/or public services
- Encourage infill, intensification and redevelopment of existing built areas (over greenfield development) and conduct research to monitor these initiatives in practice
- Identify areas of the City that are in transition or decline and research land use approaches that can help to reverse such trends
- Continue to identify and promote programs and incentives supporting downtown development or redevelopment
- Compile an inventory of City-owned brownfield properties and develop some incentives and best practices for their re-development

#### ACTIONS FOR COMMUNITY

- Research obstructions to the redevelopment of existing buildings
- Explore land use opportunities for the historic downtown areas and the satellite Westfort business area that can expand the level of activity in such areas

**D. The public, City Administration and Council are engaged on the merits of land use policies that champion smart growth practices.**

#### ACTIONS FOR CORPORATION

- Present planning and land use information sessions to new Council and at municipal ward meetings (at least twice annually)
- Employ various public workshops (such as design charrettes) to create development using the City's Urban Design Guidelines and to assist the development of energy-efficient building and neighbourhood design standards
- Explore opportunities to exchange ideas on best land use development and management practices with First Nations communities (in conjunction with Community)
- Expand the definition of "natural environment" within City planning to recognize the role of natural systems in climate adaptation
- Identify natural areas within City limits to manage, conserve and/or remediate in order to maintain or increase ecosystem health and ecological resilience

#### ACTIONS FOR COMMUNITY

- Synthesize updates to planning and land-use management in the City and submit for publication in the EcoSuperior newsletter and other local publications on a bi-annual basis
- Expand the exchange of potential research topics between City Departments, the community, and researchers at the College and University (in conjunction with Corporation)

#### WHAT YOU CAN DO:

- Participate in the yearly "Jane's Walk", or host a walk around your neighbourhood (see [www.janeswalk.org](http://www.janeswalk.org))
- Advocate for walkable neighbourhoods and streets that focus on the person (not just cars)
- Foster distinctive, attractive communities with a strong sense of place
- Advocate to preserve open space, farmland, natural beauty, and critical environmental areas

“ This is not just about coping with climate change, but prospering through it. ”

Canada's National Round Table on the Environment and the Economy, 2012

## Community Lifestyle



## Climate Adaptation

A large thunderstorm hits Thunder Bay on June 26, 2013.  
Photo entitled "Angry Sky" captured by Chris Walton

# 4.0



## Community Lifestyle Climate Adaptation

### GOAL:

Build community resilience to reduce the risks inherent in climate change, and take advantage of opportunities for sustainable initiatives associated with current and future impacts of climate change.

### WHY IT MATTERS:

The Earth's climate is changing. Extreme weather is becoming more frequent. Prolonged heat waves, torrential rainstorms, windstorms, and drought have increased throughout Ontario<sup>1</sup>. Thunder Bay has already experienced the impacts of a changing climate. The May 2012 weather event that resulted in flooding throughout a large part of the City demonstrated that these impacts can incur high costs for the community as a whole and threaten our health, safety, environment and economy.

Climate change is expected to impact Thunder Bay in many ways. Climate projections for the Thunder Bay region include an increase in extreme weather, temperature fluctuations, frequent high-intensity rainfall events, and drought conditions in the summer. Between 1948 and 2008, the average annual temperature in Northwestern Ontario increased by 1.4°C<sup>2</sup>. Scientists project that by 2050 the annual average temperature could increase by 2.7°C, and 4.6°C by 2080<sup>3</sup>. Climate model projections also predict an increase in precipitation of up to 22% in the springtime, summer precipitation decreases of about 1%, and a general increase in extreme weather events<sup>4</sup>.

Although these may just look like numbers on paper, they translate into serious impacts that affect everyday lives. Floods, wildfires, invasive species, dry wells, freezing rain, heat waves, swimmer's itch, algae blooms, ticks, thin ice, wind bursts, increases in violence and substance abuse are all examples of the type of impacts that will increase in Thunder Bay as a result of changes to the climate<sup>5</sup>. Understanding these impacts and local vulnerability to climate change will determine how to address expected changes and reduce the risks they pose to infrastructure, food supply, industry, outdoor recreation opportunities, and quality of life.

In the face of climate change, it is evident that the community must be proactive and take action to build adaptive capacity and resilience. While mitigation is necessary to reduce the rate and magnitude of climate change, adaptation is essential to reduce the damages that cannot be avoided<sup>6</sup>.

### WORKING GROUP MEMBERS:

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Thora Cartlidge  
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Kayla Dixon  
Brad Doff  
Wayne Fletcher  
Norm Gale  
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Roopa Rakshit  
Don Stokes  
Chris Walton

<sup>1</sup> 2011 Climate Ready Ontario Adaptation Strategy Action Plan.

<sup>2</sup> 2011 Climate Ready Ontario Adaptation Strategy Action Plan.

<sup>3</sup> Canadian Climate Change Scenarios Network Localizer Reports for Thunder Bay, Ontario. Report generated by ICLEI Canada. January 24th 2013.

<sup>4</sup> Canadian Climate Change Scenarios Network Localizer Reports for Thunder Bay, Ontario. Report generated by ICLEI Canada. January 24th 2013.

<sup>5</sup> Adapting to Changing Weather Patterns, City of Thunder Bay Corporate Workshop Report, 2013.

<sup>6</sup> Finding the Nexus, ICLEI. <https://www.nrcan.gc.ca/environment/impacts-adaptation/adaptation-101/10025>





## DEFINITIONS:

**Adaptive capacity:** The ability of built, natural, and social systems to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.<sup>1</sup>

**Resilience:** The capacity of a system, community, or society exposed to hazards, to adapt by resisting or changing in order to reach and maintain an acceptable level of functioning and structure.<sup>2</sup>

**Reactive adaptation:** Occurs in response to the consequence of a particular event such as flooding and can put enormous strain on a community's resources and capacity.

**Anticipatory adaptation:** Takes place before impacts are observed, incurs lower long-term costs, and is more effective than reactive adaptation.

<sup>1</sup> ICLEI Canada

<sup>2</sup> ICLEI Canada

## FACTS:

- The extreme cold weather experienced in 2013 and 2014 in Thunder Bay has been attributed to the collapse of the Polar Vortex due to warmer temperatures in the arctic causing wide-scale shifts in the global air circulation.
- 70% of Thunder Bay citizens feel they have experienced climate change.<sup>1</sup>
- By 2050, Thunder Bay's summers could feel more like those of Benton Harbor, Michigan, and Thunder Bay's winters could feel more like those of Green Bay, Wisconsin.<sup>2</sup>

Major climatic changes for Thunder Bay could include:

- Shorter winter, longer summer
- Warmer annual average temperatures
- More frequent extreme heat events (heat waves)
- More extreme cold days
- Less ice cover and shorter duration of lake ice cover
- Increase in rain precipitation in the spring, fall, and winter
- Decrease in summer precipitation
- Lower water levels
- Increase in wind

<sup>1</sup> Mark Groulx, University of Waterloo

<sup>2</sup> GLAA-C



## OBJECTIVES and RECOMMENDED ACTIONS

**A. Collect, analyze, monitor and update climate information and projections for the region and identify areas where adaptation is needed on an ongoing basis.**

### ACTIONS FOR CORPORATION

- Conduct a scoping study to identify and catalogue available climate information and gaps
- Administer a climate monitoring program
- Foster existing partnerships with local, regional, national and international groups and look for additional opportunities to join professional networks
- Share the progress of climate adaptation initiatives in Thunder Bay with stakeholders, the public, and other communities

### ACTIONS FOR COMMUNITY

- Develop a community-wide monitoring program to collect climate information
- Conduct research on climate change impacts and projections for the region to gain knowledge and fill gaps in information
- Develop and promote Thunder Bay as a hub for innovative climate adaptation activities

**B. Identify and implement adaptive actions for the Corporation and the Community through the development of a Climate Adaptation Strategy by 2015.**

### ACTIONS FOR CORPORATION

- Conduct a scoping study to identify existing adaptive capacity and vulnerabilities to the impacts of climate changes within the Corporation and community
- Develop a Climate Adaptation Strategy to support existing adaptive actions that build resilience and address vulnerabilities
- Develop a funding model to provide the resources necessary to address the adaptive needs of the Corporation and the Community
- Dedicate time and resources to apply for funding and develop partnerships to carry out climate adaptation activities
- Support innovative projects that build resilience to meet the adaptation needs of the community such as Low Impact Development to mitigate flooding

### ACTIONS FOR COMMUNITY

- Partner with the City in the development of a Climate Adaptation Strategy through participation and implementation buy-in
- Collaborate with the City to secure funding and carry out activities that build adaptive capacity

“Our world is different. The climate has been permanently altered and is on an escalating vector of change, not because of what we are going to put into the atmosphere in the future but as a consequence of what we have already done.”

—Environmental Commissioner of Ontario, 2009/2010 Annual Report.



**C. Increase awareness, engagement and confidence of Municipal Leadership, City staff, stakeholders, and community members in climate adaptation measures by 2020.**

**ACTIONS FOR CORPORATION**

- a. City leadership and staff understand and actively participate in the development and implementation of a Climate Adaptation Strategy
- b. Develop training courses on climate adaptation through human resources for all City staff
- c. Offer workshops and opportunities for professional development to City leadership and staff on climate-change adaptation

**ACTIONS FOR COMMUNITY**

- a. Community stakeholders, partners, and citizens actively participate in the development and implementation of a Climate Adaptation Strategy
- b. Offer regular events to the community with a focus on climate change and adaptation
- c. Offer educational courses or programs for all ages on climate change and adaptation
- d. Engage stakeholders and citizens in ground work when implementing climate adaptation projects
- e. Establish a resource centre to make climate adaptation information and tools available to the public

**WHAT YOU CAN DO:**

- Attend Council meetings or talk to your Councillor about climate change and the need for adaptation.
- Plant trees around your home! These provide shade in the summer, help insulate your home during the winter, and take up water during heavy rainfalls.
- Prepare an emergency kit with enough supplies to support yourself and your family for 72 hours (Get tips from the City's Emergency Planning webpage: [www.thunderbay.ca/Living/Public\\_Safety/Emergency\\_Planning.htm](http://www.thunderbay.ca/Living/Public_Safety/Emergency_Planning.htm))
- Install a sump pump and/or dry well to keep water out of your basement.
- Install a backflow preventer on your sanitary sewer pipe to reduce the risk of sewage backup.





**HIGHLIGHTS:**

The City of Thunder Bay is proactively developing a Climate Adaptation Strategy to be completed in 2015.

The City of Thunder Bay is a member municipality to ICLEI (Local Governments for Sustainability) BARC program (Building Adaptive & Resilient Communities) that follows a five-milestone methodology to adaptation planning for municipal governments through a series of progressive steps.

The City is hosting the 2014 Great Lakes & St. Lawrence Cities Initiative in June 2014 that features climate change adaptation as a main theme.

The City is a member City of the Great Lakes & St. Lawrence Cities Initiative Municipal Adaptation and Resiliency Service (MARS).

The City is a participant in the University of Michigan's Graham Sustainability Institute Great Lakes Adaptation Assessment for Cities program.

The EarthCare Climate Adaptation Team facilitated workshops delivered to City Managers, City Staff and community stakeholders to identify to main climate impact priorities to address through adaptation in 2013/14 as part of the development of the Climate Adaptation Strategy.

EarthCare Thunder Bay has partnered with Environment North and other community organizations to host a series of Environmental Knowledge Learning and Sharing Seminars with a focus on Climate Adaptation.

*Photo: EarthCare Thunder Bay delivers a full-day workshop to City Managers and City Staff to identify main climate impact priorities.*



## Community Lifestyle

“ We need more farmers. Thunder Bay needs to look at its youth and educate its youth about farming. We have a lot of unused farmland in Thunder Bay that could be put into production again. There is a lot of need we have not met currently. ”

Renate Thiboutot, Mile Hill Farms  
(Chronicle Journal, Apr. 24 2013)



Wild blueberries (*Vaccinium angustifolium*)  
found in rural areas of the city and beyond.

## Food

# 5.0



## Community Lifestyle

### Food

#### GOAL:

To build a more just and sustainable local food system in Thunder Bay that promotes social justice and supports local production, storage, processing, sale and distribution of food.

#### WHY IT MATTERS:

Through the simple act of eating, we interact with the earth's natural systems on a daily basis. The way food is grown, processed, transported, consumed, and disposed of is central to the sustainability of communities and the well-being of local economies, families, and individuals.

Farming and food production in the local area has declined over the past 30 years, with the majority of food now imported from great distances. On average, food travels 3,500 km to reach Thunder Bay, and the storage, refrigeration, packaging and transportation involved generates waste and burns a large amount of fuel. The food system's high energy inputs, such as fossil fuels and fertilizers, account for as much as a third of GHG emissions on a global scale. Worldwide, agro-industrial practices are having negative environmental effects, impacting soil health, water quality, and biodiversity. The Ontario Farmland Trust estimates that Ontario loses approximately 100 acres of farmland every day, with the best, most productive soils going the fastest. Developing a stronger food system closer to home will help reduce the size of our ecological footprint by cutting down on energy use, as well as protecting food-producing space and related biodiversity for generations to come.

Access to safe, nutritious and affordable food affects the health and well-being of individuals and communities. Individuals living in poverty commonly have a difficult time accessing healthy food and the cost of food is only one reason. Often, a lack of grocery store options and more fast food restaurants exist in areas where low-income individuals and families live. Access to public transit, school and workplace eating environments, and food skills also affect people's ability to choose a nutritious diet. By making conscious decisions to build healthy and accessible food environments, food can be a powerful tool to improve quality of life.

The food and agriculture sector represents one of the largest employers in Ontario, making it a linchpin in moving towards greener and more resilient local economies. Many studies across Canada and the US have demonstrated the power of food in creating jobs and sustainable communities. For instance,

#### WORKING GROUP MEMBERS:

##### Thunder Bay Food Action Network:

A coalition of individuals and organizations from health, social services, agriculture/food production, city planning, businesses, emergency food aid, education and environmental protection working to improve community food security.





Photo by Connie Nelson



Photo by Lisa Haessler



Photo by Lisa Haessler



Photo by Brad Doff

5.0



## Community Lifestyle

### Food

It is estimated that if every household in Ontario spent \$10 a week on local food, we would have an additional \$2.4 billion in our local economy at the end of the year and create 10,000 new jobs. Urban farms, rooftop greenhouses, and small-scale processors are up and coming examples of how food is transforming cities and positioning itself as able to respond to many of the social, economic and environmental challenges of our day.

In recent years, public awareness of local food issues has boomed and the number of non-profit and for-profit businesses working towards food systems change has also sharply increased. The Food Action Network (FAN), established in 1995, was an early pioneer in improving the local food system and has been involved in establishing the Regional Food Distribution Association and Good Food Box program, and promoting local food through farmers markets, community gardens and kitchens, and gleaning programs.

In 2008, the City of Thunder Bay and the District Social Services Board endorsed the Thunder Bay Food Charter, which is a set of principles that help guide decisions, policies and collaboration for building a robust local food system. In early 2012, FAN, in collaboration with the City and surrounding municipalities, held a Regional Food Summit that identified the development of a Food Strategy as a necessary next step.

There are many players involved in Thunder Bay's local food movement including educators, farmers, health care professionals, anti-poverty advocates, First Nations, civil servants, and many others. Developing and implementing the Thunder Bay and Area Food Strategy (set to be finalized in 2014) will create linkages across departments and with community partners so that efforts can strengthen one another and help us move more effectively toward the 2020 targets.

The Food Strategy will be built on seven pillars of a sustainable food system, defined by community leadership at the 2012 Regional Food Summit. EarthCare Thunder Bay strongly supports the development, initiation, implementation and sustained funding of the Thunder Bay and Area Food Strategy.



In 2012, City-owned institutions such as long-term care facilities and day cares, and City-run events increased local food purchases by 2%. Building on this success, the City is undertaking a project to increase purchases of local food by 10% by 2015.



Photo by Brad Doff

## THE CITY OF THUNDER BAY & COMMUNITY PARTNERS WILL WORK TOGETHER TO PROMOTE FOOD SYSTEMS CHANGE IN THE FOLLOWING AREAS:

- A. Forest and Fresh Water Foods:** Increase our region's knowledge of available forest and fresh water foods and their sustainable harvest, protect and conserve forest and fresh water food ecosystems, and support a diverse and sustainable forest and fresh water foods economy within the region. This economy includes both harvesting for personal consumption and the development of commercial opportunities.
- B. Urban Agriculture:** Increase food production in the urban landscape and support the participation of citizens in urban agriculture activities.
- C. School Food Environments:** Improve the eating habits, food skills and food literacy of children and youth in Thunder Bay and Area through supportive healthy school food environments.
- D. Food Access:** Create a food system in Thunder Bay and Area based on the principle that food is a human right, not a commodity, and in which all community members have regular access to adequate, affordable, nutritious, safe and culturally appropriate food in a way that maintains dignity.
- E. Food Production:** Protect and encourage growth in farm-scale production so that a greater proportion of food is grown, raised, prepared, processed, and purchased closer to home.
- F. Food Procurement:** Leverage procurement food spending to develop a public sector food supply chain that contributes to the economic, ecological and social wellbeing of Thunder Bay and Area through food purchases that foster local production, processing, and distribution.
- G. Food Infrastructure:** Support the creation of a local food supply chain that links production, processing, distribution, consumption, and waste management to make local food more accessible and the supply chain more economically and environmentally efficient.



Photo by Brad Doff



**Roots to Harvest**

Roots to Harvest provides transformative educational opportunities for youth by engaging them in learning about local agriculture through their urban agriculture site, greenhouse, aquaponics system, and time spent harvesting, selling, and processing food.



Photo by Erin Beagle

**Farm to Cafeteria**

In fall of 2013, four high schools integrated local foods into their cafeteria menus. Meals were \$5 and included a combination of burgers, pulled pork, coleslaw, corn on the cob, squash soup, and roasted and mashed potatoes. 1,300 farm-to-cafeteria meals were sold (a total of 16 farm to caf days), with the cafeterias selling out each time and under 20 minutes. Survey results showed that 96% of students would purchase the meal again.



## 5.0



## Community Lifestyle

### Food

#### DEFINITIONS:

#### What is a Sustainable Food System?

Food systems encompass the economic, environmental and social factors involved in food production, distribution, processing, consumption, and waste. Decisions about food tend to be disjointed and do not take into account the role of food in shaping healthy environments and strong communities.

A sustainable food system:

- Protects and nourishes the environment
- Improves health and access to food
- Fosters local and diverse economic development
- Encourages community involvement

#### Environmental benefits of a healthy sustainable food system.

- Reduced greenhouse gas and smog emissions from long distance transportation of food
- Reduced use of pesticides and fertilizers
- Healthier soils and greater biodiversity
- Improved public health and quality of life
- Local economic development
- More vibrant, green and unique urban spaces to live, work and play

#### Thunder Bay Country Market

An average of 6,000 visitors shop at the Thunder Bay Country Market each week for local meats, cheese, eggs, produce, baking and handcrafted items. The market has grown from 11 vendors in 1997 to 100 seasonal and year-round vendors today. The Country Market adds close to \$5 million to the local economy.

#### WHAT YOU CAN DO:

- Be a wise consumer by choosing healthy, locally produced, fairly-traded food
- Visit local farms and farmers' markets to learn more about where food comes from
- Choose foods without a package and a label more often
- Read the label and choose foods that have no more than five ingredients
- Grow your own produce in your backyard or at a community garden
- Compost kitchen and garden waste to have great fertilizer for your garden and reduce landfill
- Bring your own bags or bins to carry groceries
- Avoid disposable containers, dishes and cutlery
- Make healthy food accessible to all by supporting community food programs



The Thunder Bay Country Market



**Active Transportation Facts:**

70% reduction in cycling collisions with bike lanes present

22% reduction in automobile collisions with bike lanes present

**Community Lifestyle**

The Arundel Active Living Corridor has made cycling, walking, and rolling easy, safer, and more enjoyable for all road users.



**Mobility**

# 6.0



## Community Lifestyle

### Mobility (Active Transportation, Transit, Walkability)

#### GOAL:

Inspire and influence the evolution of integrated urban mobility that is efficient, affordable, and accessible.

#### WHY IT MATTERS:

A convergence of pressures is changing transportation needs across Canada: the cost of owning and driving a car or truck continues to increase; health researchers continue to make the connection between disease, inactivity, and driving; natural systems are buckling under the pressure of GHGs and pollution; and there is an aging population who rely on automobiles, but who soon will be unable to drive. People are looking for cheaper, healthier, and smarter ways of getting around.

The choices people make are changing; for the first time in a century, fewer young people are choosing to drive. People are making new and different transportation choices. There has also been an evolution in thought about what transportation means. It no longer makes sense to plan just for automobiles or just for cyclists. Everybody, at some point in their lives, is a pedestrian, a transit rider, a passenger in a car. Transportation must be thought of holistically, as an integrated system: as mobility.

Mobility is an overarching term that describes the process of getting from point 'A' to point 'B'. It includes transit, walking, driving, cycling, and assistive devices, e.g., wheelchairs.

Mobility planning takes into consideration the possibility of using all of these modes of travel and giving them equal weight when planning roads and developments, with the aim of creating seamless integration and transitions between so that all people, regardless of age, gender, ability, or wealth, can efficiently, safely, and enjoyably travel as needed.

The goals in this section of the EarthCare Plan are intended to help develop infrastructure that helps people walk, use their assistive devices, cycle, and take Transit more easily, safely, and efficiently. Education of citizens, political leaders, and developers is key in making these priority shifts. Getting buy-in and support from the private sector is also critical, because people won't ride bikes to work without appropriate facilities. Seamless planning is also key: What's the point of having a beautiful bus shelter if there isn't an accompanying sidewalk to get to the destination? It's also important that people have easy access to information about their travel options.

This new plan builds on previous success and lessons learned since the first Community Environmental Action Plan was developed, the launch of the Accessibility for Ontarians with a Disability Act, and response to community feedback. It also acknowledges new trends in transportation planning. The overall goal is to help citizens make critical and conscious choices about their travel behaviour so that they can live healthy, happy, productive lives while saving money and the environment.

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 Maria Steinberg  
 Kaela Stradiotto  
 Mike Vogrig  
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## OBJECTIVES and RECOMMENDED ACTIONS

**A. Public and private infrastructure are both strategically used to create seamless, barrier-free options for bicycling, walking, and transit use in order to create a cleaner, greener, more beautiful Thunder Bay.**

### ACTIONS FOR CORPORATION

- As per the Transit Master Plan, implement the proposed Transit route network to improve travel time, transfers, and meet passenger demand.
- Undertake a consultation process to determine which of the city's north-south corridors should be prioritized as the main safe and practical cycling corridor
- Inventory the sidewalk network, including the quality of the sidewalks, and set goals to improve sidewalk connectivity to key destinations and high-use areas
- Establish mobility hubs to facilitate transfers between multiple modes of travel
- All new street reconstruction and capital road projects incorporate design elements for walking, biking, and transit use for all ages and abilities, including place-making
- Develop and implement a Bicycle Parking Master Plan for all municipal facilities and offices, including special event parking
- Develop tools to support businesses and organizations to improve bike parking and end-of-trip facilities

### ACTIONS FOR COMMUNITY

- Identify gaps and expand the current network of cycling facilities to include "quiet street" alternative routes and facilitate access to key destinations/high-use areas
- Investigate and pilot test routes for protected cycling facilities as well as policies that enable safe, all-season active transportation options
- Assess needs, areas of concern, and gaps in street crossings in order to increase the safety of pedestrians and cyclists of all ages and ability (in conjunction with Corporation)
- Identify and address safety concerns among users of multi-use trails and sidewalks (in conjunction with Corporation)



Thunder Bay's new community bicycle racks.

### DEFINITIONS:

**Mobility Hubs** are places of connectivity where different modes of transportation, e.g., walking, biking, transit, come together seamlessly. They are usually located where there is an intensive concentration of working, living, shopping, and/or playing.

### HIGHLIGHT:

#### Transit Master Plan

The Transit Master Plan was approved in principle in 2012 by Council to dramatically improve the delivery of transit services in Thunder Bay.

Between 2010-2013, the City of Thunder Bay created nearly 40 km of active transportation routes, making it easier and safer for people to get around the city.



- B. Citizens of all ages and abilities are inspired to adopt more active modes of transportation, leading to a higher quality of life.**

### ACTIONS FOR CORPORATION

- a. Resource the Transportation Demand Management Plan in order to develop and implement a recognizable brand, develop trip planning tools, website, maps, and campaigns aimed at improving public awareness of, and building support for, sustainable travel options, and encouraging their use
- b. As per the Transit Master Plan, implement the proposed transit route network to facilitate more direct travel and improved service levels to all citizens
- c. Develop, implement, and evaluate an Open Streets program
- d. Sustain the Safe Cycling Thunder Bay education initiative and pool of instructors, offering courses for older adults, women, families, Grade 4 students, and others
- e. Establish a network of bike repair, tire-pumping, and e-bike charging stations in high-use areas (in conjunction with private business)

### ACTIONS FOR COMMUNITY

- a. Partner with safety organizations to promote the "Share the Road" message through education, incentive programs, and enforcement
- b. Identify and implement strategies to promote and support Active and Safe Routes to School (in conjunction with Corporation)
- c. Investigate the feasibility of bike sharing, event bike parking, cargo bikes, and bike trailer programs (in conjunction with Corporation)

- C. Thunder Bay is a leader in developing policies to support sustainable modes of transportation in order to be recognized as a best-run City.**

### ACTIONS FOR CORPORATION

- a. Review and reform site-plan control and development Policies/By-laws so that all new developments are conducive to walking, cycling, and transit-use and there is greater adherence to the Urban Design and Streetscape Guidelines and Image Route Guidelines
- b. Establish a multidisciplinary committee to review projects and decisions, starting at the conceptual stage, that impact sustainable transportation, for example: street design, land-use planning, parking, site plans/facilities, municipal land sales, sidewalk design, and maintenance
- c. Establish 2-way communication with residents in order to engage citizens at all stages in the design of streets at both the neighbourhood and community levels
- d. Research and implement a method to measure mode-share in order to inform policy development
- e. Undertake research and community consultation in order to develop a Transportation Master Plan that prioritizes sustainable transportation options
- f. Update municipal Policies and By-laws to reflect changes in the Official Plan around mixed land-use, transportation corridors, increased density, curbing urban sprawl, and parking
- g. Review and reform Engineering standards in order to improve multi-modal transportation and enhance the implementation of the Urban Design and Streetscape Guidelines and Image Route Design Guidelines

### ACTIONS FOR COMMUNITY

- a. Undertake research and community consultation in order to update the Active Transportation Plan (in conjunction with Corporation)
- b. Apply for the Ontario Walk Friendly Designation and use the results to frame research and community consultation to develop a Walkability Master Plan
- c. Identify and address active transportation policy gaps, such as: access management, bicycle parking, and traffic calming policies



- D. Partners from all sectors support multi-modal transportation in order to create a prosperous and more diversified economy.**

#### ACTIONS FOR CORPORATION

- Support and facilitate the development of a City-wide wayfinding system, including maps and signage for active transportation routes to key destinations
- Implement electronic 'smart-card' transit fare system to curb fare fraud, provide easy access for riders, and improve data collection
- Organize a Bike Summit in Thunder Bay by 2015 to celebrate progress made in Thunder Bay with regards to cycling and to foster political and community leadership for Active Transportation

#### ACTIONS FOR COMMUNITY

- As per the Transportation Demand Management Plan, outreach to employers, business organizations, and event coordinators to promote and support sustainable travel options for residents and employees
- Partner with the business community to implement sustainable land-use and urban design priorities that emerge from the Official Plan Review
- Leverage the support of local, provincial, and federal agencies to improve legislation and financial support for sustainable transportation (in conjunction with Corporation)
- Review and consider implementation of key learnings from the Canadian Urban Institute Study on revitalizing downtown areas







### WALKABILITY FACTS:

- Citizens spend 42% more money when walking to a store rather than driving<sup>1</sup>
- A one-point increase in Walk Score (walkscore.com) is associated with between a \$700 and \$3,000 increase in home values<sup>2</sup>
- A 10-point increase in Walk Score increases commercial property values by 5% – 8%<sup>3</sup>

1 Victoria Transportation Policy Institute

2 CEOs for Cities, 2009

3 University of Arizona & Indiana University, 2010

### TRANSIT FACTS:

- The average citizen can save up to \$10,000 annually by using transit instead of driving<sup>4</sup>
- For every \$1 invested in transit, \$4 in economic return is generated<sup>5</sup>
- 1 bus can take 50 cars off the road, thus reducing infrastructure investment<sup>6</sup>

4 CAA

5 American Public Transportation Association

6 American Public Transportation Association







Community Lifestyle



Waste

7.0



## Community Lifestyle Waste

### GOAL:

Thunder Bay progresses towards zero waste through an integrated waste management approach.

### WHY IT MATTERS:

Canadians throw away the energy equivalent of millions of barrels of oil per year, with significant economic, social, environmental and cultural impacts. In Thunder Bay, each person produces 462 kg of solid waste annually compared to the provincial average of 366 kg<sup>1</sup>. Much of this waste is potentially useful as it contains materials that could be reused or recycled. In addition to the substantial costs of waste collection and disposal, the production of waste creates GHG emissions and toxic substances.

In order to provide direction for optimizing current and future residential and Industrial, Commercial, and Institutional (IC&I) sector solid waste programs to best meet Thunder Bay's needs over the next 20 years, the City is developing a Solid Waste Management Strategy (SWMS). This strategy will give municipal waste managers and the community guidance and direction to manage waste and resources based on consultation, and cooperation between all sectors. It will also optimize resource recovery and economic development opportunities and ensure compliance with current and pending legislative requirements.

Some materials such as fluorescent lights and electronic waste contain toxic chemicals, which pose health and environmental risks. Residents may bring these materials to the Household Hazardous Waste (HHW) Depot at the Solid Waste and Recycling Facility on Mapleward Road or to depots set up by EcoSuperior in conjunction with local businesses. As a result of concerns about potentially hazardous electronic waste going to landfill, the Zero Waste Action Team (ZWAT) worked with the City and IC&I sectors to facilitate the establishment of the Pack Pros Plus E-Waste Collection Depot in 2004. This has resulted in the diversion of 45,454 kg of e-waste from the landfill in Thunder Bay and the region annually, and created new direct jobs.

Litter has a negative effect on the quality of life and economy of our community. Each year, thousands of people participate in the City's annual "Spring Up To Clean Up," helping to clean up stray garbage

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Kristin Maenpaa  
Lisa Martellini  
Randy Mehagan  
Dan Munshaw  
Brett Sharman  
Jason Sherband

<sup>1</sup> Waste Diversion Ontario, 2012





littering our streets. Rather than the current concentration on cleaning up, primary emphasis should be put on prevention and public education, before litter hits the ground.

Green purchasing decisions reduce the impact on the landfill, and can be made by everyone. Individual purchasing choices such as choosing items with less packaging and avoiding items in single use plastic containers (i.e. bottled water, plastic bags) can reduce the impact of our lifestyle on the landfill. Habitat for Humanity works to reduce construction waste by promoting the reuse of building materials through its Restore. Several local organizations also collect used clothing and household goods for reuse, reducing the impact on the landfill. On a larger scale, green procurement policies have been adopted by many organizations and businesses that purchase vast quantities of goods and services.

#### HIGHLIGHT:

##### Energy from Community Waste

Thunder Bay's Solid Waste and Recycling Facility partnered with Thunder Bay Hydro to build a power generating station and heat recovery system that uses the methane gas produced from decaying organic materials as fuel. This process not only destroys potent greenhouse gases that would otherwise escape from the landfill as fugitive emissions, but it also generates energy that can be used to offset fossil fuels.

#### DID YOU KNOW?

Compact fluorescent lights are considered hazardous waste and should be returned directly to the Household Hazardous Waste Depot at the Thunder Bay Solid Waste & Recycling Facility. Check with the City's Green Guide for an updated and comprehensive list of collection sites.





## OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2020, the amount of residential solid waste generated annually per capita has decreased by 15% from the 2005 baseline.**

### ACTIONS FOR CORPORATION

- Develop and implement a Solid Waste Management Strategy (SWMS) for the next 20 years
- Recover the costs of waste management from those creating the waste. (Follow the Extended Producer Responsibility model for managing waste as per provincial legislation)
- Maintain and promote provincial waste minimization programs
- Promote the use of home-composters and seasonal composting of garden/yard refuse
- Investigate the implementation of a curbside organic collection program

### ACTIONS FOR COMMUNITY

- Promote the use of home-composters and seasonal composting of garden/yard refuse
- Community and community partners to launch awareness program that reduces the use of plastic shopping bags
- Community and community partners to champion the promotion of the 6 Rs
- Encourage the responsible disposal of electronic waste
- Support the SWMS efforts to address the challenges of, and misconceptions surrounding participating in recycling and waste diversion within the residential and multi-residential sectors

**B. By 2020, the amount of commercial solid waste generated annually has decreased by 15% from the 2005 baseline.**

### ACTIONS FOR CORPORATION

- Increase the number of waste diversion programs (i.e. pen collection, battery collection) and participation rates within those programs
- Increase accessibility and affordability of diversion programs for the IC&I sector, with an emphasis on small business
- Promote green procurement within Corporation through members of the Corporate Green Team

### ACTIONS FOR COMMUNITY

- Increase the number of waste diversion programs in community (i.e. pen collection, battery collection) and participation rates within those programs
- Promote extended producer responsibility to enhance the recovery and recycling of packaging waste
- Promote private sector take-back programs

**C. By 2020, single use bottled water is phased out of public facilities, schools, and public events in Thunder Bay and a strategy to phase out the use of other plastic containers has been developed.**

### ACTIONS FOR CORPORATION

- Update water bottle By-Law to include the phasing out of bottled water being supplied at public events
- Promote the installation of water filters to increase the site specific safety of tap water (e.g. some older buildings that contain lead intake pipes)
- Provide regular site-specific water quality results of City facilities to ensure safety of tap water

### ACTIONS FOR COMMUNITY

- Provide and promote access to portable water bar or bottle refilling station at community events
- Educate citizens on the benefits of using tap water at public events and schools



**D. By 2020, a reduction in litter has been realized through a preventative approach and a culture of litter prevention prevails.**

### ACTIONS FOR CORPORATION

- a. Increase the accessibility of recycling and waste receptacles throughout the City and in City facilities
- b. Develop and implement an extensive civic pride campaign aimed at the community

### ACTIONS FOR COMMUNITY

- a. Develop a litter awareness program about the social, environmental and economic costs of litter
- b. Design and implement a cigarette litter prevention program including an education campaign, an outdoor ashtray program and a neighbourhood scale recycling collection program for cigarette waste
- c. Support education campaigns on waste reduction, available resources, and the impacts of overconsumption

**E. By 2020, an increase in the diversion of hazardous waste and the use of less toxic alternatives has been achieved.**

### ACTIONS FOR CORPORATION

- a. Increase the amount of household hazardous waste diverted by maintaining and developing new programs to increase accessibility of diversion programs

### ACTIONS FOR COMMUNITY

- a. Educate citizens on the importance of proper disposal of hazardous waste
- b. Reduce the amount of household hazardous waste being generated by recommending alternatives to hazardous products

### DID YOU KNOW?

Of the 58% of Canadian households that had batteries to dispose of in 2009, 42% discarded them in the garbage.

Thunder Bay residents can recycle spent batteries free of charge at six locations across town, and several retail outlets also accept rechargeable batteries, cell phone and laptop batteries and car batteries (see the Green Guide: [www.thunderbay.ca/greenguide](http://www.thunderbay.ca/greenguide)).







### WHAT YOU CAN DO:

- Bring reusable shopping bags to the store
- Purchase items with limited disposable packaging
- Purchase a composter from EcoSuperior, subsidized by the City, for your organic waste
- Bring a reusable bottle rather than buying bottled water
- Properly dispose of hazardous waste
- Reduce, reuse and recycle as often as possible.



**Natural Environment**



**Air quality**

# 8.0



## Natural Environment

### Air quality

#### GOAL:

To lead communities in Northwestern Ontario and the Lake Superior basin in improving outdoor and indoor air quality by reducing air pollutant and noise emissions.

#### WHY IT MATTERS:

Local citizens enjoy the natural environment and expect the outdoors to be free of air contaminants and unwanted sounds (noise). Provincially, key air contaminants such as ozone (O<sub>3</sub>), fine particulate matter (PM<sub>2.5</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>), and total reduced sulphur compounds (TRS) are generated by many sources.

Outdoor air contaminant and noise sources include:

- industrial stationary sources such as factories, power generating facilities and smelters
- mobile sources such as cars, buses, trucks, trains, marine vessels and aircraft
- residential sources such as household heating systems, chemical use, burning wood and garbage
- natural sources such as forest fires, wind/windblown dust and biogenic emissions from vegetation

Air pollution is not restricted by lines on a map and can travel from province to province and country to country, potentially impacting areas far from the source. From the time of emission to the time of removal, the atmospheric behaviour of air contaminants is complex and their movement is continuous. At a given location, pollutant concentrations are affected by source locations and strengths, sunlight, moisture, clouds, precipitation, geography and weather conditions. Similarly, the acoustic environment is determined by noise source locations and strengths, the terrain between sources and receptors, and weather conditions.

#### WORKING GROUP MEMBERS:

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With much of the year spent indoors, indoor air quality has a significant potential impact on comfort and health. In workplaces, schools and homes, indoor sources of air contaminants include:

- equipment such as furnaces, air conditioners, vacuum cleaners, appliances
- combustion sources such as fuel-fired furnaces, water heaters, space heaters, generators, woodstoves
- building materials such as paints, adhesives, caulking, insulation
- household items such as personal care products, cleaning products, “air fresheners”, candles
- pets, insects, other pests (e.g. birds, bats, rodents), water damage, mould
- occupant activities including cooking, cleaning, hobbies (e.g. woodworking, stained glass, pottery) and smoking
- outdoor air (e.g. vehicle exhaust, forest fires)
- radon

### Fresh outdoor air is key to optimizing indoor air quality!

New technology and regulatory requirements have made measureable air quality improvements in Ontario. Ongoing diligence is required to ensure that environmental impacts are considered during personal, business and municipal decision making.

Compared to other Canadian cities of similar size, Thunder Bay's overall air quality is among the cleanest. This is primarily because of a smaller number of industrial sources and the absence of major transportation routes, as compared to cities in more urbanized areas. The Ministry of Environment Report on Air Quality for 2011 identified Thunder Bay's air quality index (AQI) results as among the best of the 40 provincial stations. The poorest 2011 Thunder Bay AQI occurred when forest fire smoke impacted the city in July.

As the largest community in Northwestern Ontario, the City of Thunder Bay must be a leader in protecting air quality. Thunder Bay is the most significant contributor to air emissions in the region and has the largest population subject to potential air quality impacts. Thunder Bay citizens face constantly changing issues: the evolving nature of local industry has impacted air and noise emissions; there are fewer resource-based industries; there is a move to biomass fuel or alternate power generation; and, climate change could be impacting the nature of air contaminant sources.

Currently there are robust provincial and federal regulatory frameworks that address air quality, noise and consumer products. Thunder Bay must support its citizens, visitors, and current or potential business leaders in promoting air quality by providing education, information, tools, and options, so environmentally responsible consumer choices and business decisions can be made.

8.0



## Natural Environment

### Air Quality

#### OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2016 the City of Thunder Bay has developed and implemented anti-idling programs, reducing emissions from idling vehicles.**

**B. By 2020, emissions from household wood combustion and garbage burning are reduced.**

#### ACTIONS FOR CORPORATION

- a. By 2016, City of Thunder Bay fleet vehicles participate in an anti-idling program
- b. By 2016 City staff claiming mileage for personal vehicle use participate in an anti-idling program

#### ACTIONS FOR COMMUNITY

- a. Create a model anti-idling charter that would be signed and adopted by businesses and individuals

#### ACTIONS FOR CORPORATION

- a. By 2020, use By-law, building permit, and/or other municipal regulatory tools to require that woodstoves and other wood heating appliances installed in residential buildings in Thunder Bay are US Environmental Protection Association (EPA) certified
- b. Starting immediately, work with retailers to educate consumers about air emissions from woodstoves and other wood burning appliances
- c. By 2020, use By-law, fire permit, and/or other municipal regulatory tools to prohibit burning of household garbage

#### ACTIONS FOR COMMUNITY

- a. By 2020, install in Thunder Bay residences, new wood burning appliances that are US Environmental Protection Association certified
- b. Continue and/or initiate public education and outreach programs on household combustion including Bernie the Burn Barrel
- c. Starting immediately, work with retailers to educate consumers about air emissions from woodstoves and other wood burning appliances



*The City of Thunder Bay has developed and implemented anti-idling programs, reducing emissions from idling vehicles.*

Photo by Ashley Priem



**C. By 2016, fragrance free policies in public buildings and commercial establishments are adopted.**

### ACTIONS FOR CORPORATION

- a. By 2016 adopt fragrance-free policies for City of Thunder Bay facilities

### ACTIONS FOR COMMUNITY

- a. Create a model fragrance free charter that could be used by businesses and organizations, including participant stickers (actual/virtual)
- b. Continue and/or initiate public education and outreach programs

**D. By 2020, traffic noise control measures are in place.**

### ACTIONS FOR CORPORATION

- a. Review and assess the noise pollution By-law as it relates to community noise concerns
- b. By 2020, use By-law and/or other municipal regulatory tools to limit vehicle noise

### ACTIONS FOR COMMUNITY

- a. Initiate public consultation, education, and outreach programs
- b. Solicit community input about noise concerns

**E. By 2020, Thunder Bay citizens have the air quality and noise resources they need to make environmentally responsible decisions.**

### ACTIONS FOR CORPORATION

- a. Champion the educational initiative by providing and maintaining website
- b. Support air quality research and baseline data collection

### ACTIONS FOR COMMUNITY

- a. Educate and inform citizens about air quality and noise by means of educational initiatives and community resources including a website highlighting ideal resources and links. Topics should include indoor air quality issues such as radon, fragrance products, personal care products, mould, dust, building materials, combustion sources and toxics reduction, and outdoor air quality issues such as wood burning and garbage burning.
- b. Collect and provide baseline air and noise quality information for air and noise quality database
- c. Carry out radon monitoring study within the city
- d. Promote, within the existing building permit process, the requirement for radon mitigation "rough-ins" to be included in new housing construction
- e. Engage the community with a consultation on current air and noise quality issues that would inform the By-law review and potential amendment
- f. Become an active research partner

### HIGHLIGHT:

The City of Thunder Bay currently operates over 600 licensed and off road motorized units that potentially contribute to poor air quality and adverse effect on human health and climate. The Green Fleet Implementation Plan was adopted in 2009 to reduce greenhouse gas emissions (and save money). Some of its initiatives focus on phasing in biodiesel, anti-idling, and choosing right size of vehicles per fleet unit.



## WHAT YOU CAN DO:

- Avoid the use of chemical cleaning products, bug sprays, or other volatile chemicals. Use environmentally friendly cleaning products such as soap and water, vinegar, baking soda, and good old-fashioned elbow grease instead
- Limit use of gas-powered yard maintenance equipment
- Use VOC-free solvents and paints
- Trade in your inefficient woodstove for a low-emission model
- Keep off-road vehicles well maintained
- Develop fuel-efficient boating habits
- Dust with damp cloth, especially around electronics.







## Natural Environment

“ We cannot separate sustainable urban forests from the people who live in and around them...Urban forests require active, consistent, continuing management. ”

Journal of Arboriculture, January 1997



Community tree plant events help to improve our urban forest and engage citizens.

## Community Greening

9.0



## Natural Environment Community Greening

### WORKING GROUP MEMBERS:

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### GOAL:

To protect, maintain and improve the biodiversity, ecosystems and the well-being of the green infrastructure of Thunder Bay.

### WHY IT MATTERS:

The urban forest and other ecological components of the City, termed here as "Green Infrastructure," are a major asset for Thunder Bay and a key component of the City's commitment to sustainability.

The management of Thunder Bay's green infrastructure involves the sustained planning, planting, protection, maintenance and care of trees, forests, green space, and related resources in and around our communities. Green infrastructure on public and private lands beautifies our community, increases civic pride, and enhances our sense of well-being.

Urban trees exist in a difficult environment; lack of growing space above and below ground, contaminated and compacted soils, de-icing salt, and the physical damage caused by construction, lawn mowers, people and cars all challenge our green infrastructure. Suburban development and large scale, unregulated tree cutting on private land threaten the biodiversity and ecology of our rural forests. Climate change has resulted in drought conditions within the Lake Superior watershed, and our forests are increasingly threatened by forest fires and pest infestations.

### HIGHLIGHTS:

The City's first Urban Forest Management Plan was adopted by Council in January of 2013.

The City's first Sustainable Stormwater Demonstration site was developed at Beverly and High Street in 2013.

### Good for your wallet

Healthy trees reduce energy costs (summer shade and winter windbreak) and add significant value to your property

### Good for the planet

Trees reduce air pollution, absorb carbon dioxide, reduce soil erosion and stormwater runoff and provide habitat.





Increasingly, green infrastructure is seen as an integral part of a city because of the wide range of benefits it provides to both humans and wildlife. Not only are trees being noticed for their ecological and environmental services to society, but a large body of research has exposed the social, cultural, and economic benefits they provide. Green infrastructure is an essential tool in the fight against climate change, air and water pollution, crime, and a plethora of other urban challenges. A city's urban forest can be strategically used to provide a cleaner environment while increasing the health, wellbeing, and economic prosperity of a city.

Green infrastructure positively affects a city's walkability, downtown economic vitality, property values, energy savings, stormwater mitigation, and traffic calming. The annual value of benefits from Thunder Bay's street trees is over \$1.5 million, and for every dollar the City spends managing its 20,000 street trees, it recoups \$2 in services. The protection of municipal rural natural areas through preservation and management provides carbon sequestration, resilience in a changing climate, and protects ecosystem services.

*"One generation plants the trees, another gets the shade"*

*-Old Chinese Proverb*



*One hundred year old eastern cottonwood (Populus deltoides) trees stand as much as 40 m above Waverly Park.*

Photo by Jay Dampier



## OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2020 city tree and shrub canopy cover has increased to 30% (from 25% in 2012) within urban limits.**

### ACTIONS FOR CORPORATION

- a. Update the Engineering Standards to reflect the Parks Division Standards and Specifications, and the goals of the Urban Design Guidelines and the Urban Forest Management Plan (UFMP)
- b. Implement UFMP beginning with the following three priority areas:
  - i. Tree Risk Assessment Program
  - ii. Priority pruning and planting programs
  - iii. Young tree training program
- c. Implement the Image Route Private Tree Planting Program
- d. Create shade tree guidelines to encourage a minimum canopy cover percentage for commercial and multi-unit residential properties
- e. Support staff training and certification in both arboriculture and horticulture

### ACTIONS FOR COMMUNITY

- a. Develop/identify means to increase private tree planting (e.g. LEAF Toronto)
- b. Participate in City strategic planning and project development

**B. By 2020, the City of Thunder Bay has a more integrated approach to community planning (i.e. policies/procedures consistent with Official Plan (OP), UFMP, Urban Design Guidelines (UDG)).**

### ACTIONS FOR CORPORATION

- a. Enhance the City's Official Plan (OP) to include more specific green infrastructure policies; to plan land-use with green infrastructure at its core to maximize benefits; and to reference the UFMP
- b. Consider trees as assets and as infrastructure
- c. Coordinate cross-departmental decision-making so that green infrastructure is included at the start of the decision making process
- d. Create, and acquire sustained funding for development of the implementation plan to pro-actively manage the urban forest, as stated in the UFMP
- e. Create stronger Site Plan Control regulations and enforcement to reflect green infrastructure policies

### ACTIONS FOR COMMUNITY

- a. Track innovative policies and initiatives
- b. Work with City Administration to incorporate new ideas into work plans, budgets, and future OP revisions





- C. By 2020, Thunder Bay's citizens are actively engaged in Community Greening through new private-public partnerships, educational events, tree programs and social media.**

#### ACTIONS FOR CORPORATION

- Increase the community's understanding of community greening through various media and marketing initiatives (e.g., social media, ad campaigns, mobile app development)
- Develop incentive programs for the public to plant and maintain trees on private property (e.g. Image Routes, high priority areas)
- Install multiple demonstration sites to showcase green infrastructure services (LID/urban orchard)
- Continue promotion of Notable Tree Program, Citizen Pruner Program, Commemorative Tree and Bench Program, Tree Stewardship Program and other City urban forest programs

#### ACTIONS FOR COMMUNITY

- Provide expertise workshops for citizens and businesses (e.g. speakers' series, guided/educational hikes in the urban forest, media involvement)
- Provide and expand public training on how trees can be pruned appropriately (e.g. Citizen Pruner Program)
- Establish annual Greening Awards (through Clean, Green and Beautiful) to recognize landowners, citizens and businesses that have incorporated new green infrastructure components of their property
- Cultivate new partnerships and/or businesses (e.g. large-scale composting)
- Work with the EarthCare Education working group to enhance outreach opportunities
- Educate local landscapers and "living green infrastructure" suppliers about proper tree form, species, and soil requirements
- Involve media in sharing success stories and best practices

- D. By 2020, Thunder Bay's natural areas and urban forests are comprised of a healthy and diverse mixture of flora and fauna that are resilient to the effects of climate change.**


#### ACTIONS FOR CORPORATION

- Keep abreast of and plant a variety of locally appropriate plant species
- Develop an invasive species strategy
- Encourage new local tree suppliers/ propagators of locally appropriate tree species
- Secure funding for the creation of a community mapping exercise (Official Plan-Environmental Policy Study) to document important local areas of biodiversity/ significant natural heritage features etc.
- Establish and implement a system to rate biodiversity of private and public lands within the City of Thunder Bay that recognizes the role of healthy ecosystems in climate adaptation. (i.e. a Biodiversity Index)

#### ACTIONS FOR COMMUNITY

- Work with local providers to increase appropriate 'living green infrastructure' species availability
- Plan workshops and events that aim to educate the public on the value of biodiversity and ecosystems at the neighbourhood scale
- Identify projects that aim to increase biodiversity by protecting, maintaining, or rehabilitating public and private lands
- Perform site visits to determine if neighbourhood habitat/biodiversity is healthy





“You can gauge a country's wealth,  
real wealth, by its tree cover”

–Dr Richard St Barbe Baker

- E. By 2020, trees planted by the City have adequate soil volume and quality to ensure the living green infrastructure's full lifecycle, and associated ecosystem services, are achieved.**

### ACTIONS FOR CORPORATION

- a. Adopt Parks Standards and Specifications into the Engineering Standards
- b. Increase soil volumes and standards associated with green infrastructure to keep pace with other municipalities
- c. Educate public, private sector and the Corporation about soil and its importance
- d. Use new and emerging technologies (e.g. Silva Cells)
- e. Encourage amendments to the Roads Divisions' Salt Management Plan that would reduce the use of salt on City streets

### ACTIONS FOR COMMUNITY

- a. Educate the community about the value of soil
- b. Raise awareness of economic opportunities to create quality urban soil to meet City specifications
- c. Develop partnership with Lakehead University's soil students in creating economic opportunities for private soil sector (e.g. municipal composting)

- F. By 2020, the City's urban forest section has developed official research partnerships with academic institutions such as Lakehead University and Confederation College, to create greater synergy between academia and industry and provide new research opportunities for students.**

### ACTIONS FOR CORPORATION

- a. Create a committee of like-minded faculty (not limited to Thunder Bay) and City professionals that meet intermittently to collaborate and create new research opportunities
- b. Develop an extension page to the City's website that lists potential City research projects and archives past research projects

### ACTIONS FOR COMMUNITY

- a. Encourage faculty representation from Lakehead University and Confederation College on the Community Greening Working Group and on research committee

### WHAT YOU CAN DO:

- Plant more trees and shrubs (using non-invasive plants)
- Maintain your living green infrastructure (water, prune, mulch, fertilize when necessary, inspect for damage or disease)
- Participate in Arbor Day held annually in the spring
- Request a boulevard tree through the City
- Participate in the City's Citizen Pruner Program



Boulevard Lake Park

## Natural Environment



## Water

# 10.0



## Natural Environment Water

### GOAL:

To ensure that water resources in the local watershed are protected and enhanced through the engagement of various stakeholders.

### WHY IT MATTERS:

Canada is home to roughly 7% of the globe's renewable freshwater, making it the third-largest water supply in the world. The City of Thunder Bay is blessed with water resources being situated on the headland of Lake Superior, the largest freshwater lake in the world by surface area. In Ojibwe, the lake is called Gitchigami, meaning "big water." A number of tributaries make their way through the City, including the Kaministiquia, Neebing and McIntyre Rivers, McVicar Creek, and the Current River.

Many Canadians believe that our freshwater resources are boundless. The truth is that only a small proportion of our water is renewable and located close to where most Canadians live. While we take water for granted in Canada, high population growth, rising consumption, pollution, and poor water management pose significant threats to the global water supply. Coupled with climate change, the results will be disastrous in some areas. The Secretary General of the UN recently condemned the lack of heed paid by governments to these warning signs: "Throughout the world, water resources continue to be spoiled, wasted and degraded...The consequences for humanity are grave. Water scarcity threatens economic and social gains and is a potent fuel for wars and conflict." Ban Ki Moon's remarks come as environmental experts in Great Britain have identified 46 countries — home to 2.7 billion people — where climate change and water-related crises will create a high risk of violent conflict. Humanitarian organizations including the United Nations have declared that water should be protected as a human right. Advocates of water governance stress the need for policies that protect the health of the planet, thereby protecting our water rights.

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Bonnie Low  
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## 10.0 Natural Environment

### Water

Another emerging issue of concern is contamination of water from pharmaceuticals and personal care products such as soaps, lotions and hair dyes. Current municipal wastewater technologies across Canada have limited and unknown abilities to remove the dissolved contaminants that may be contained in the waste stream. Also, rainwater that falls on impervious surfaces like roads, parking lots, houses, and buildings is directed into storm sewers and carried to the lake. This rainwater, called "stormwater runoff" is removed from the natural ecosystem, potentially impacting biodiversity and the health of the ecosystem.

Much of our focus is on the municipal lake-to-lake water system as it serves the majority of local people. However, only 40% of Thunder Bay's land mass is urban or suburban, with the rest largely rural and relying on groundwater sources for drinking water. Swimming and other non-consumptive recreational uses of water such as canoeing and kayaking are very popular in Thunder Bay and also deserve special attention. The local community has an important role in protecting, conserving, and enhancing our local waterways and water supply.

#### HIGHLIGHT:

##### **Cogeneration at the Atlantic Avenue Water Pollution Control Plant**

A cogeneration facility was installed at Thunder Bay's Atlantic Avenue facility in January 2011 to capture digester gas, which contains the potent greenhouse gas methane. This "biogas" is combusted in a cogeneration engine to produce electricity and heat for the plant. The biogas is used to generate approximately 10,000 kW/day - roughly equivalent to the plant's daily energy consumption. In 2011 the plant produced 1.7 million cubic meters of biogas, 96% of which was used onsite.

#### DEFINITIONS:

**Low-impact development (LID)** is a term used in Canada and the United States to describe a land planning and engineering design approach to managing stormwater runoff. LID emphasizes conservation and use of on-site natural features to protect water quality. This approach implements engineered small-scale hydrologic controls to replicate the pre-development hydrology through infiltrating, filtering, storing, evaporating, and detaining runoff close to its source. Some examples of LID techniques are bioretention, permeable pavement, rain barrels, grassed swales, green roofs, reducing impermeable surfaces and tree box filters.



## OBJECTIVES and RECOMMENDED ACTIONS

**A. By 2020, integrated approaches to improve the management of water, wastewater, and stormwater based on best practices are supported.**

### ACTIONS FOR CORPORATION

- Develop a comprehensive master plan for water, wastewater and stormwater
- Raise adequate financial resources for treatment and maintenance of stormwater
- Update the Official Plan with a water lens
- Develop watershed restoration plans to document and prioritize areas for adaptation, restoration and protection of water bodies
- Update storm, sanitary and property By-laws to support maintenance of SWM on private property
- Continue to separate wastewater from extraneous inflow to reduce peak flow to the wastewater treatment plant

### ACTIONS FOR COMMUNITY

- Complete "clean-up" of contaminated North Harbour sediment inside breakwall off former Cascades/Superior Fine Papers Mill site
- Complete actions necessary to address Beneficial Use Impairments, as listed in the Remedial Action Plan for the Thunder Bay Area of Concern. Impairments to be addressed include issues associated with water quality, sediment quality, aquatic and terrestrial habitat, fish and wildlife

**B. By 2020, water conservation, stewardship and water management practices for healthy watersheds are promoted to the community.**

### ACTIONS FOR CORPORATION

- Continue to educate property owners on applicable By-laws related to stormwater management and drainage
- Lead stormwater management, green infrastructure and water conservation projects and promote them to the community
- Reduce corporate water-use
- Educate the public, private sector and the Corporation on water issues and green infrastructure

### ACTIONS FOR COMMUNITY

- Promote the use of Low Impact Development (LID) techniques for redevelopments and new developments
- Identify water-related research gaps or areas for further study
- Promote watershed stewardship through education & awareness campaigns focused on water conservation, enhancement, protection, and adaptation to climate change

**C. Adaptation and readiness plans are promoted to mitigate potential environmental impact due to climate.**

### ACTIONS FOR CORPORATION

- Update the Emergency Preparedness Plan with a focus on hydroclimatic instability
- Expand the definition of "natural environment" in City plans, policies and bylaws to recognize the role of healthy aquatic and riparian ecosystems in climate adaptation
- Work with key stakeholders to define roles within jurisdictional boundaries to protect and enhance the City's water resources and aquatic habitat through management, conservation and remediation in anticipation of projected changes in climate

### ACTIONS FOR THE COMMUNITY

- Implement remediation projects on non-City owned land (including in water bodies) to restore ecosystem health and thereby increase the resilience of the natural environment
- Promote the use of low impact development throughout the community as innovative approaches to climate adaptation and resiliency



## 10.0 Natural Environment

### Water

**D. Partnerships with various stakeholders have been developed to address existing and emerging water issues.**

#### ACTIONS FOR CORPORATION

- a. Develop a communication strategy between agencies and the corporation

#### ACTIONS FOR COMMUNITY

- a. Educate landowners on septic systems, safe fuels and solvent handling/storage, impacts of fertilizers and pesticides and safe marine activities
- b. Partner with Lake Superior advocacy groups

#### WHAT YOU CAN DO:

- Don't let the water run while shaving or brushing teeth
- Buy high-efficiency plumbing fixtures & appliances
- Repair all plumbing leaks (a leaky toilet can waste 700 litres a day)
- Use soaker hoses or trickle irrigation systems for trees and shrubs
- **Landscape using "rain garden" and "rain harvesting" techniques to save water and reduce stormwater runoff**



*The City's Parks, Engineering and Environment Division teamed up with EarthCare to create the City's first demonstration site to showcase Low Impact Development and sustainable stormwater management practices. The project is located at Beverly Street and High Street.*



# Looking Forward

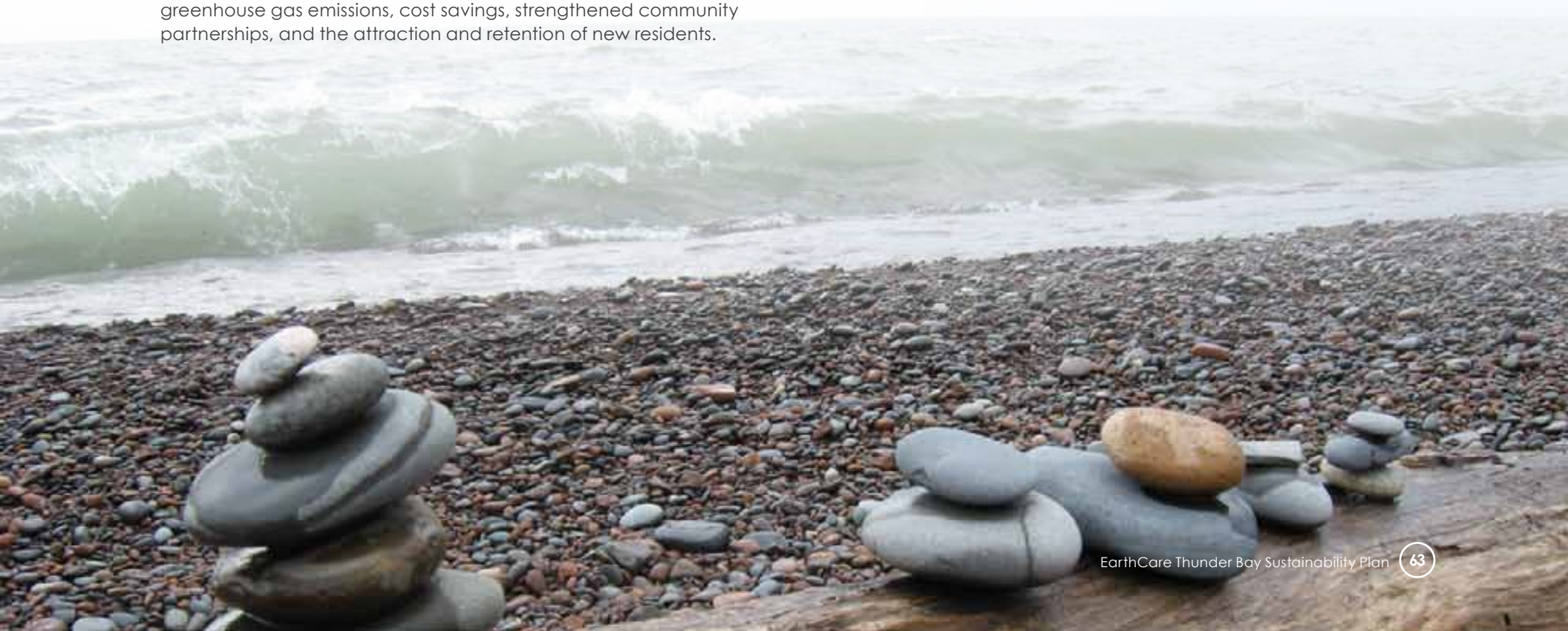
This EarthCare Plan lays out the general direction that the community of Thunder Bay must take in order to reduce greenhouse gases and continue transitioning to a more resilient, sustainable community. Throughout the Plan, needs are identified for continued local action, the importance of education, and the challenge of integrating environment, economy, and community.

The Plan also demonstrates how citizens can make a difference at home, in the workplace and in the community. It challenges the public to work with EarthCare to make Thunder Bay a sustainable city.

The Corporation of the City of Thunder Bay also has an important role to play in seeing the aims of this Plan come to fruition. The City's adoption of this Plan will lead to many benefits, including a more resilient city in the face of a changing climate, enhanced community pride and health of local citizens, improved local environment, lower greenhouse gas emissions, cost savings, strengthened community partnerships, and the attraction and retention of new residents.

Any effective implementation of strategy requires measurable objectives and targets, along with the commitment of responsible individuals in order to ensure results. Effective coordination, monitoring, progress reports, financial resources, and adequate staff are all critical components. The next step is for the Coordinator, in conjunction with the Working Group Chairs, to develop a detailed implementation plan and engage the community to achieve its goals and objectives.

This EarthCare Sustainability Plan presents an ambitious vision and specific set of actions for the Corporation of The City of Thunder Bay and its citizens. Together, over the next six years, it will take this community on an exciting journey that will create new opportunities and ultimately develop a stronger, more livable City of Thunder Bay.









# EarthCare Sustainability Plan 2014-2020

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