City of Greater Sudbury

Becoming a Sustainable Community

The EarthCare
Sudbury
Local Action Plan

2003

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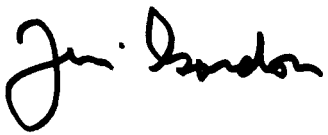
A Message from the Mayor

It is with great pleasure that I introduce the EarthCare Sudbury Local Action Plan to the citizens of Greater Sudbury.

The Local Action Plan is an ambitious and visionary initiative, one which is aimed at making Greater Sudbury cleaner, greener, healthier and more sustainable. It has been developed through an innovative and exciting process that has involved the City, hundreds of individuals and dozens of community agencies, organizations, businesses and institutions.

While the Local Action Plan contains scores of actions that will improve the environment, make our community healthier and strengthen the local economy, it should not be viewed as the last word, or as all-encompassing. The Local Action Plan is rather the beginning of a long journey that will be made by the partners who are committed to environmental action. Making the Local Action Plan work will require all of us to get involved - businesses, institutions, organizations and residents.

I urge you to join us in this important task. Sudbury is already a leader in terms of energy efficiency and landscape recovery. Together we can help the City of Greater Sudbury become the most sustainable city in Canada.



Jim Gordon
Mayor of the City of Greater Sudbury

Foreword by the Environmental Commissioner of Ontario

In my capacity as Environmental Commissioner of Ontario, I have been able to observe many extraordinary things in this province. This past June my advisory committee and I had the good fortune to see some of Sudbury's environmental achievements firsthand. We were already familiar with the city's remarkable landscape recovery work, of course, but it was a pleasure to see just how "green" this city has become. If we are to address the complex environmental issues Canada faces – such as global climate change and the growing waste disposal crisis – it is essential that initiatives such as EarthCare Sudbury find local solutions to the problems at the heart of environmental concerns.

What really impressed me about Sudbury were the many intelligent green innovations that had taken root here – in local government, at the university and within industry. Everywhere we looked, there were committed individuals and teams that had found practical ways to save energy, reduce chemical loadings, change consumption habits or measure environmental progress. What's more, those solutions had already been put into practice. The people of Sudbury were confident that they were the right things to do, and that they would eventually contribute to a larger plan. EarthCare Sudbury is that larger plan, and I applaud it.

My job as Environmental Commissioner for the past four years has been to promote the goals of the Environmental Bill of Rights in Ontario. This has been a very challenging and exciting period, which has seen remarkable developments related to safe drinking water, waste management, climate change, and the protection of sensitive areas such as the Oak Ridges Moraine.

The idea that underlies the Environmental Bill of Rights will be familiar to anyone involved in EarthCare Sudbury. It is the idea that individuals have an important role in protecting our environment. It is not a job that we should leave to government alone.

Your city has become a unique example of what can be achieved through landscape restoration projects. Today, the design of your action plan continues to recognize the tremendous potential of local expertise and local partnerships. It will be exciting to watch what you achieve together over the coming years.

Gord Miller
Environmental Commissioner of Ontario

Acknowledgments

The City of Greater Sudbury and its citizens have already gained a substantial reputation for environmental action, and rightly so. The development of the EarthCare Sudbury Local Action Plan can be seen as a logic extension of this demonstrated commitment. This ambitious and visionary plan could not have been developed without the hard work, creativity and goodwill of hundreds of people who support the goals of a cleaner, greener, healthier and more sustainable Sudbury.

The Local Action Plan has benefitted greatly from strong local leadership. The Council of the City of Greater Sudbury has adopted this work as one of their strategic priorities. To Mayor Gordon and Councillors Bradley, Callaghan, Courtemanche, Craig, Davey, Dupuis, Gainer, Kilgour, Lalonde, McIntaggart, Petryna and Portelance, we thank you for your wisdom and your support.

Our thanks also go to the ever-growing circle of EarthCare Sudbury Partners. These Partners, listed in Appendix B, provided unlimited human resources and intellectual power to the process. We thank you for your commitment, your creativity and your hard work.

Thank you also to the hundreds of individual Sudbury residents who contributed so much to the development of the Local Action Plan. Special thanks to the many working group members who sat on committees and attended meetings and sent us their comments, ideas and thoughts. These are the people who fuel the engine that drives environmental action in Sudbury. We thank you for your active participation: the process has been much the richer for your passionate involvement.

We give particular thanks to the Chairs of our Working Groups including:

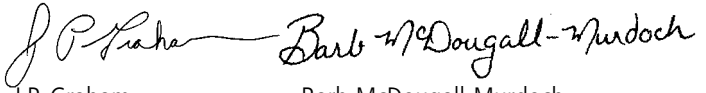
- Public Education and Outreach - David Pearson
- Business Plan - Heather Campbell, Vice Chair - Jim Ilnitski
- Industrial, Commercial and Institutional (ICI) - Pat Thompson, Vice Chair - Tony Cecutti
- Municipal - Shawn Scott, Vice Chair - Guido Mazza
- Residential - Richard Munn

To Louise Comeau of the Federation of Canadian Municipalities and Rob Kerr of the International Council for Local Environmental Initiatives, we value our work together. You have our gratitude and ongoing commitment.

To Dr. David Pearson, Chair of the EarthCare Sudbury Steering Committee, Dr. Peter Beckett, Chair of the Vegetation Enhancement Technical Advisory Committee, Dr. John Gunn, Manager of the Cooperative Freshwater Ecology Unit, Dr. Graeme Spiers, Chair for Environmental Monitoring Technology and Dr. Dougal McCreath from the School of Engineering, we thank you for your expertise and your leadership in local environment action.

Finally, we wish to acknowledge the financial support provided by the Federal Government through the Climate Change Action Fund. We look forward to continued support from our Federal Members of Parliament, The Honourable Diane Marleau and Ray Bonin.

To you all – we give our sincere gratitude and thanks.



J.P. Graham Barb McDougall-Murdoch

Contents

photo: Don Johnston

Spring cascade in the Wanup area.

1 Introducing the Local Action Plan

1.1 Background and Purpose of the Local Action Plan

Welcome to the EarthCare Sudbury Local Action Plan – the Plan that will make the City of Greater Sudbury cleaner, greener, healthier and more sustainable! The Local Action Plan has been developed by EarthCare Sudbury, a coalition of community groups.

The Local Action Plan has three main goals. The first of these is to enhance the environmental health of Greater Sudbury – to improve the quality of our air, land, water and living systems – and in so doing, improve the social and economic well-being of future generations. The second goal is to encourage each of us to take environmental responsibility by carrying out local actions that contribute to community sustainability and reduce emissions of greenhouse gases. The third goal is to share the knowledge and experience gained here with Sudbury's citizens and other communities.

Imbedded in these goals are four very important principles. The first of these, is that **we need to act now**. The way we live today – the resources we use (or don't use), the pollutants we emit (or don't emit), the actions we take (or don't take) – can have a profound effect on the planet and therefore, a profound effect on future generations. If we care about our children, and our children's children, we need to act today to ensure that future generations live in a Sudbury that is clean, healthy and prosperous.

The second principle of the Local Action Plan is that **we need to protect and enhance the natural environment** if we want a healthy community and a prosperous economy over the long term. The natural environment, economy and society are inextricably linked. When we alter the natural environment – improve it or make it worse – we also affect the economic and social environments. Over the long-term, the sustainability of Greater Sudbury – its economic and social health – will be tied to its environmental health.

The third principle is that **we all need to be involved**. Governments alone can't solve today's environmental challenges, nor can industries or institutions. Improving the environmental health of Sudbury requires the involvement of everyone – residents, workers, business owners, organizations, schools, colleges, universities and others.

The fourth principle is that to achieve a cleaner, greener, healthier and more sustainable Sudbury, **we need to work together**. Through partnerships we can harness the creativity, experience, resources, energy and problem-solving capabilities that will foster success.

These principles form the basis of the Local Action Plan.

About this document

This document has two main functions. One, is to tell you all about the EarthCare Sudbury Local Action Plan – how it was developed, why it is unique, what actions are being proposed to reduce greenhouse gases and to contribute to our community sustainability, and

Overall Goals of the EarthCare Sudbury Local Action Plan

- Enhance the environmental health of Sudbury and thereby improve the social and economic well-being of future generations.
- Take environmental responsibility by carrying out local actions that contribute to community sustainability and the reduction of greenhouse gases.
- Share knowledge on progress with Greater Sudbury citizens and share knowledge and experience gained with other communities.

Introducing the Local Action Plan

how the Local Action Plan will be implemented. There is a much larger accompanying document entitled "Towards Sustainability" which documents the efforts of the Working Groups. This will be used as a reference document for those involved in implementing various actions over time.

The second, very important function of the document is to engage you in the important work of implementing the Local Action Plan. Many of the actions described in the Plan are aimed at individuals. Others are more suited to businesses, institutions or organizations. As you read the document, we hope that you keep in mind the role that you can play. We hope that by the time you reach the end, you are ready to join us in the important job of making Sudbury cleaner, greener, healthier and more sustainable.

As we proceed down the path of implementation, it is inevitable that additional complementary programs and initiatives will be developed. This document is really only the beginning of Sudbury's sustained commitment to the environment.

Canada geese on Kelley Lake at dawn.

photo: Don Johnston

1.2 Why a Local Action Plan?

The development of the EarthCare Sudbury Local Action Plan was prompted by the need to take action on **climate change** and **sustainability**, and the understanding of the local benefits that can accrue from taking these actions. To meet these interrelated challenges, the City of Greater Sudbury set out to develop a comprehensive and integrated Local Action Plan, one that will engage the local community in actions to reduce climate change and improve the sustainability of Sudbury.

Taking action on climate change

The idea to develop a Local Action Plan stemmed from two programs that engage municipalities in the climate change issue. In 1997, Sudbury joined the first of these programs, the Cities for Climate Protection Program which is organized by the International Council for Local Environmental Initiatives (ICLEI). In 1998, Sudbury joined the Partners for Climate Protection program, a joint initiative of ICLEI and the Federation of Canadian Municipalities (FCM).

Like other Canadian towns and cities, the City of Greater Sudbury became involved in the climate change issue because municipalities generate large amounts of greenhouse gases. The emission of human-produced greenhouse gases – including carbon dioxide and methane – alters the composition of the global atmosphere and leads to accelerated global climate change (also known as global warming). Municipalities generate greenhouse gases in many ways: through the heating, cooling and lighting of public buildings, through the operation of public transit systems and vehicle fleets, through the collection and disposal of solid waste and through the collection and treatment of wastewater. However, municipalities can also make significant reductions in their greenhouse gas emissions, through strategies such as increasing energy efficiency and using renewable energy sources. Because of this, more than 100 Canadian municipalities are now developing local action plans that address climate change by reducing greenhouse gas emissions.

The EarthCare Sudbury Local Action Plan coordinates the efforts of the municipality and other sectors to reduce the emission of greenhouse gases. In so doing, the Plan will help the City of Greater Sudbury, its residents, industries and institutions meet the challenge of the Kyoto Protocol on climate change.

Becoming a sustainable community

When the City of Greater Sudbury started thinking about developing a local action plan for climate change, City staff soon realized that climate change and sustainability were closely linked.

Sustainable development was defined by the Bruntland Commission in 1987 as "meeting the needs of the present generation without compromising the ability of future generations to meet their needs." How do we apply this to Greater Sudbury?

Many municipalities in Canada and around the world are engaged in the challenge of becoming sustainable communities. The end goal is a community that is healthy over the long term – in other words, a community with a healthy environment, a prosperous economy and a thriving society.

Defining a Sustainable Community

"Sustainable communities are defined as towns and cities that have taken steps to remain healthy over the long term. Sustainable communities have a strong sense of place. They have a vision that is embraced and actively promoted by all of the key sectors of society, including businesses, disadvantaged groups, environ-mentalists, civic associations, government agencies, and religious organizations. They are places that build on their assets and dare to be innovative. These communities value healthy ecosystems, use resources efficiently, and actively seek to retain and enhance a locally-based economy. There is a pervasive volunteer spirit that is rewarded by concrete results. Partnerships between and among government, the business sector, and non-profit organizations are common. Public debate in these communities is engaging, inclusive, and constructive. Unlike traditional community development approaches, sustainability strategies emphasize: the whole community (instead of just disadvantaged neighbourhoods); ecosystem protection; meaningful and broad-based citizen participation; and economic self reliance."

Institute for Sustainable Communities

Introducing the Local Action Plan

Urban wetland.

photo: Don Johnston

The foundation of sustainability is a healthy natural environment. A healthy natural environment provides us with clean air, oxygen, abundant and clean water, plentiful resources, a stable climate, diverse life forms and food. As we have found, the actions that reduce greenhouse gas emissions – such as improving the energy efficiency of municipal buildings – also improve sustainability. When we reduce greenhouse gas emissions, we save energy. And when we save energy, we reduce the environmental impacts that come from generating, transmitting and using that energy. That means cleaner air, water and soil. In addition to reducing environmental impacts, reducing greenhouse gas emissions also saves us money, and improves our local air quality, public health, the local economy and the quality of life.

To achieve sustainability, Sudbury must become more efficient in terms of the resources we use (water, energy and materials). Sudbury must protect its "green capital" – the streams, rivers, lakes, groundwater, forests and wetlands that sustain life on the planet. Sudbury must become more self-sufficient in terms of the local production of energy, food and other goods. Sudbury must integrate environmental considerations into economic and social planning. To do these things, Sudbury must harness the immense creative capital that is found here and the power of its institutions, businesses and citizens.

1.3 Key Elements of the Plan

There are a number of important elements in the EarthCare Sudbury Local Action Plan that make it unique. These set it apart from many other municipal local action plans.

It takes a comprehensive and integrated approach.

The EarthCare Sudbury Local Action Plan addresses all of the environmental issues facing the City. These include energy, transportation, solid waste, re-greening, soils, air, water, food, pesticides, the economy and land use planning. As noted throughout this document, many of these issues are interrelated, and the Local Action Plan recognizes these interrelationships and synergies, where they occur. Many of the actions proposed will address multiple issues. The actions proposed to reduce solid waste, for example, will also reduce the impacts on climate change, on air quality and on our water resources. They can also contribute to local economic development.

It is multi-sectoral.

Many local action plans are focused solely on the municipality.
The EarthCare Sudbury Local Action Plan addresses all sectors – municipal, industrial, commercial, institutional and residential. Significant gains in terms of sustainability and climate protection can only be achieved by engaging the entire Sudbury community.

It has an innovative implementation strategy.

The EarthCare Sudbury Local Action Plan was developed through a unique and powerful partnership process. Because of this, along with the comprehensive nature of the Plan and the engagement of all sectors, an innovative implementation strategy was developed. This is described in section 4.

It will measure progress.

A Monitoring Plan will be developed so that progress can be measured. It will measure progress against the goals and objectives of the Local Action Plan, and targets that will be set within the first year.

About the EarthCare Sudbury Local Action Plan

"It is a very far-reaching plan with high goals and interesting alternatives and covers many areas of the local environment and economy. It seems to me that the future of healthy ecosystems lies in the localization of resources and communities providing for themselves, becoming more self-sufficient. This plan addresses that process.

Participant,
June 4, 2003 Public Forum

1.4 How the Plan was Developed

With the support of ICLEI and FCM, Council approved the development of a Local Action Plan in 1999. The EarthCare Steering Committee was formed to guide development of the Plan, and an environmental planner hired to coordinate the project. Key consultants were also retained to assist in the Plan's development.

City staff began meeting, one on one, with potential community partners to solicit their participation in the development of the Local Action Plan. The response was overwhelmingly positive, and 38 partners had joined EarthCare Sudbury by the time of its launch in May of 2000. (The list of the partners at the time of the launch is found in Appendix A). The EarthCare Sudbury launch was heralded by the signing of a Declaration of Community Partners, which committed the partners to help develop a plan for a greener, more sustainable community.

The Local Action Planning process formally began on February 23, 2001 with a day-long meeting held at the Cambrian Foundation. During a roundtable discussion, participants discussed the anticipated benefits of the local action planning process, as well as the vision, values and goals of EarthCare Sudbury. The proposed process and schedule for developing the Plan were confirmed at the meeting.

Following this session, some 100 participants stepped forward to take part in one of five working groups that were created and additional partners also joined in the process. The Working Groups focused on the following areas: the Residential Sector; the Industrial, Commercial and Institutional Sector; the Municipal Sector; Public Education and Outreach, and Business Plan. The Working Groups met numerous times between March and June 2001, and developed recommended strategies and actions specific to their group.

A public forum was held on May 17, 2001 at Science North to seek community perspectives on the draft goals and objectives of the Local Action Plan. Participants generally gave strong support to the goals and objectives and suggested more than fifty new actions or ideas for inclusion in the Plan.

A one-day meeting was held on December 13, 2002 to discuss the Draft Local Action Plan. Proposed actions were described and participants were asked to comment on the actions. Many suggestions were received on how to improve the Plan, additional actions that could be considered, and innovative ways of implementing it.

In a draft form, this document was used to focus the discussion at an EarthCare Sudbury Public Forum held at Science North on June 4, 2003. The participants at this forum expressed overwhelming support for the Local Action Plan. At the Public Forum and in written comments, many suggestions were made for improvements to the Plan. Where appropriate, these have been incorporated into this final version.

2

2.1 Land Use Planning

The Issues:

Municipal land use planning processes play a huge role in defining cities. They help to determine many things – what a place looks like (the built form), how one gets around (the transportation system), water and wastewater infrastructure, the amenities available (parks, schools and community centres) and the quality of life of the inhabitants. Municipal land use planning policies can also play a major role in determining the sustainability of a community.

The municipal planning process

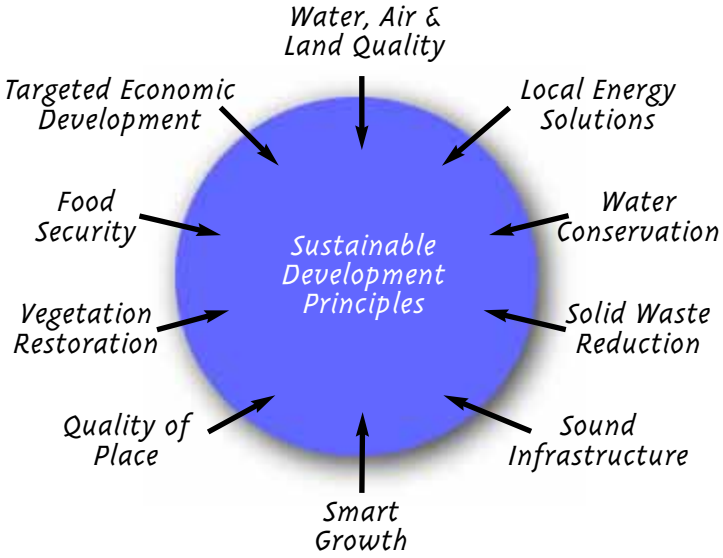
With the incorporation of the City of Greater Sudbury, most (if not all) policy documents from the former municipalities are up for review. Staff have proposed a two-stage process to create a single Official Plan for the new City. Phase 1 would involve the consolidation of all thirteen official plan documents into a single Official Plan that preserves all the existing rights and polices how contained in each document. Phase 2 would involve the development of a new Official Plan, extensive community consultation, and public debate on options and alternatives.

As part of this process, there is an opportunity to incorporate EarthCare Sudbury's Local Action Plan into the Official Plan and implementing documents. This could include incorporation of the Action Plan's principles, goals, objectives and recommendations for best practices. The many elements that contribute to a sustainable Sudbury are illustrated in the accompanying figure.

Infrastructure

Like other Canadian municipalities, Sudbury faces significant challenges in terms of building and maintaining its infrastructure – its roads, bridges, buildings, water and sewer systems, waste management facilities and utility networks. Existing infrastructure is aging, and in some cases in need of replacement or reconstruction. In other cases, new infrastructure is needed to meet the needs of Sudbury's citizens and the development community.

Sustainable Sudbury



It is widely recognized that municipal infrastructure limitations can be major impediments to both new development and job creation. Addressing these problems – such as the lack of capacity for wastewater treatment and fire protection – is expensive, but vitally necessary. With the development of the Local Action Plan, there is an opportunity for the City to take a strategic approach to infrastructure development and maintenance and identify key needs and timetables. The sharing of this information with the public and the development community will help to build support for actions and give certainty to those considering developing new homes and businesses in the area.

As with municipally-owned infrastructure, deteriorating private infrastructure (such as septic systems) can lead to environmental and human health problems. The impacts of new development utilizing septic systems can be scrutinized through the municipal planning process.

Smart Growth

In 2001, the province launched its "Smart Growth" initiative, aimed at managing and promoting sustainable growth. The key goals of the Smart Growth initiative are to promote better use of resources by optimizing the use of existing infrastructure, helping communities reach their economic potential, protecting the quality of air, water and land by steering development away from significant agricultural lands and natural areas, and contributing to the building of strong, safe, attractive and vibrant communities. Long-term Smart Growth plans are being developed on a regional basis, and there is a Smart Growth Panel for the Northeast.

Principles for Smart Growth have been developed by the Ontario Professional Planners Institute. These are wide-ranging and include such principles as "promoting cities as the engines of the economy" and "ensuring that existing and new communities are healthy places to live and have high standards of air and water quality."

There is a tremendous opportunity to incorporate the principles and lessons of Smart Growth into the City's land use planning processes.

The Goal:

To ensure that municipal policies and planning processes support the Local Action Plan.

The Objectives:

- Develop a new Official Plan that incorporates EarthCare objectives and principles.
- Develop Official Plan policies and programs that assist in implementing EarthCare objectives.
- Position the City of Greater Sudbury as a Centre of Environmental Excellence.
- Monitor the Official Plan to chart progress.

The Actions:

Create a single Official Plan

The City will consolidate the thirteen existing Official Plan documents into a single Official Plan (OP) for the City of Greater Sudbury.

Integrate the Local Action Plan into municipal planning

The City will integrate EarthCare Sudbury's Local Action Plan into the new OP. The City will:

- to the extent possible incorporate the goals, objectives and targets of the Local Action Plan into the new OP
- establish a section within the new OP that encourages sound environmental planning (such as best practices in the use of private septic systems, stormwater management and energy efficiency)
- show leadership by implementing the Local Action Plan principles within the City's own buildings, facilities, infrastructure and operations
- monitor the OP on a yearly basis with full reviews every five years to see that the Local Action Plan goals and objectives are being met

Develop a ten-year Infrastructure Plan

The City will develop a ten-year Infrastructure Plan. The Plan will:

- identify critical infrastructure problems and map out an infrastructure improvement program, taking into consideration the EarthCare goals and objectives
- improve infrastructure in strategic locations where economic development initiatives are likely
- provide capital budget or strategic reserves to assist with strategic development opportunities
- develop mechanisms to encourage development and cost-sharing for infrastructure in specified locations
- provide information on the availability of water for fire prevention and the methodology for calculating it to the development community
- create a new revenue stream by investing in new renewable energy infrastructure systems

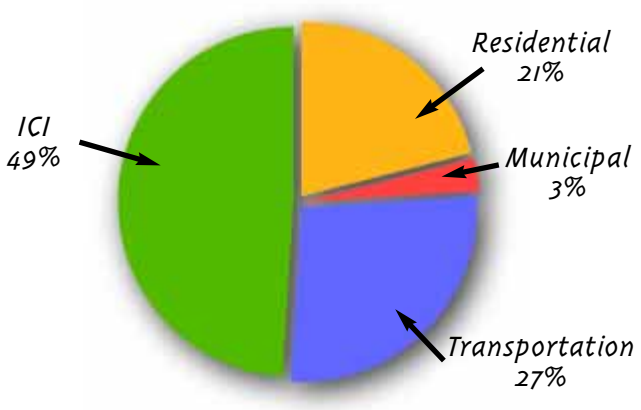
Integrate Smart Growth principles into municipal planning

The City will integrate the principles of Smart Growth into its municipal planning processes as it creates its new OP. As an early action, the City will work with the development community to build a number of demonstration projects that use the integrated approach represented by the EarthCare Sudbury Local Action Plan.

Potential Benefits

- Integration of environmental policies into the Official Plan process
- Increased recognition of the City as a municipal environmental leader

City of Greater Sudbury's 2000 Energy Costs



Total Cost $392,770,000 annually

2.2 Energy

The Issue:

A stable supply of reasonably priced energy is central to our economic well-being, but the production, transmission and use of that energy can produce significant environmental impacts. These impacts include alterations in river processes from damming, the generation of air pollution, the creation of wastes (including spent nuclear fuel), the contamination of surface and groundwater, and the emission of enormous quantities of greenhouse gases.

Global consumption of fossil fuels continues to increase and is the major cause of global climate change. In Canada, energy consumption per capita tripled between 1958 and 1997, outstripping population growth which doubled. In response to local air quality concerns and the challenge of meeting the Kyoto Protocol on climate change, the City of Greater Sudbury has become a municipal leader in terms of increasing energy efficiency and energy self-reliance.

Currently, Greater Sudbury spends about $392,770,000 annually on energy. At this point, most of this investment and its accompanying economic benefit leave the community.

Strategic Energy Plan

In 1995, the former Regional Municipality of Sudbury launched a Strategic Energy Plan which focused on improving the energy efficiency of municipal buildings. The partnership, formed with ICLEI, local utilities and external consultants, began by conducting a detailed energy audit of thirty municipal facilities representing more than 85 percent of the municipality's total energy consumption. The audit identified many retrofit projects and estimated both the cost savings and the reductions in greenhouse gas emissions that could be attained. To date, the initiative has cut carbon dioxide emissions by 26 percent, saved $0.9 million annually or 30 percent of annual energy costs and created 210 person-years of employment. The Strategic Energy Plan is now entering a second phase to tackle buildings owned by the former area municipalities.

A newspaper article on the Strategic Energy Plan reported that "the beautiful secret is that while it has been helping to save the planet, Sudbury has also saved millions of dollars on energy costs, improved

the air quality, helped create ... jobs and brought new industry and investment to the region ..."

Sudbury District Heating Corporation

In 2000, the Sudbury District Heating Corporation, a partnership between the City and Toromont Industries, officially launched Sudbury's first district energy system. This uses a central plant to supply energy for heating, cooling and electricity to buildings in the local core, replacing individual furnaces, boilers and air conditioning units in each building. The 5 megawatt (MW) co-generation system uses two high-efficiency natural gas generators and heat recovery technology. Customers benefit from competitive energy, capital and operating costs; the environment benefits from cleaner energy and reduced greenhouse gas emissions; and the community benefits from energy dollars spent locally. A 6 MW project has also been developed for the Sudbury Regional Hospital. The federal Climate Change Action Fund has contributed $500,000 to Sudbury's district energy projects.

Community Energy Plan

With financial support from the FCM, the City has developed a Community Energy Plan which is available under separate cover. The aim of the Plan is to become the most energy-wise community in Canada, as well as becoming more economically and environmentally sustainable. The Plan is being developed by a number of community partners representing institutions, the university, industries, citizens and consultants. A Community Energy Efficiency Strategy will help the community reduce water and energy use. A Community Renewable Energy Supply Strategy will help Sudbury become more self sufficient in energy production, with a goal of producing half of Greater Sudbury's energy locally.

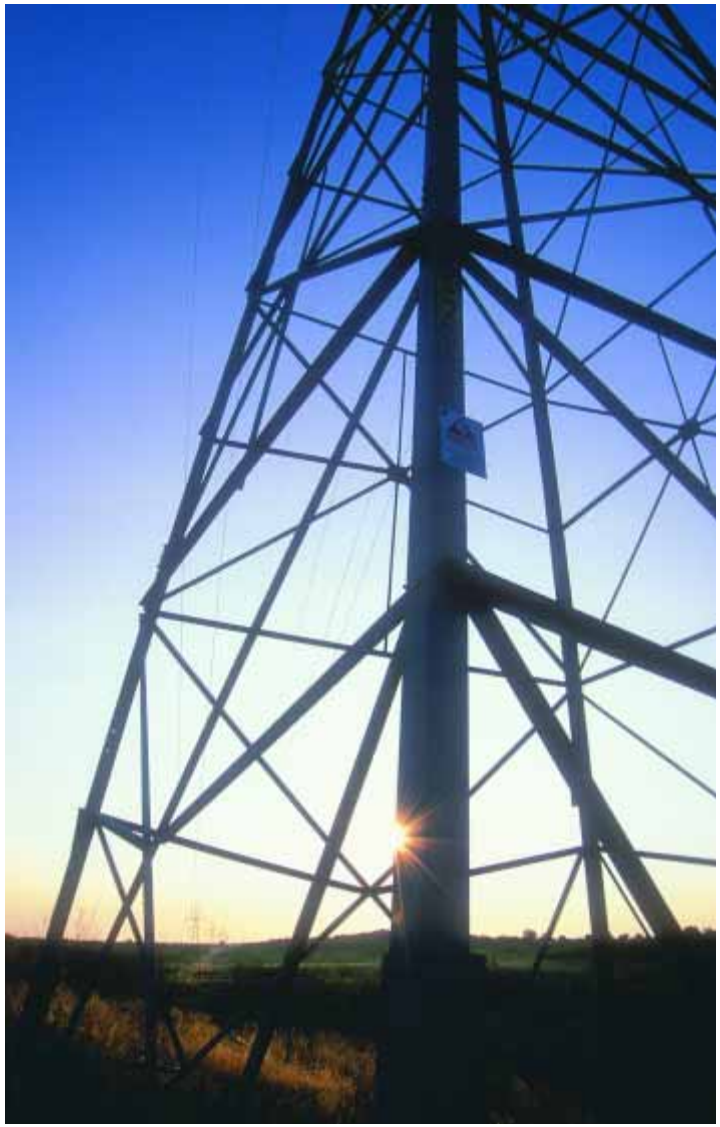
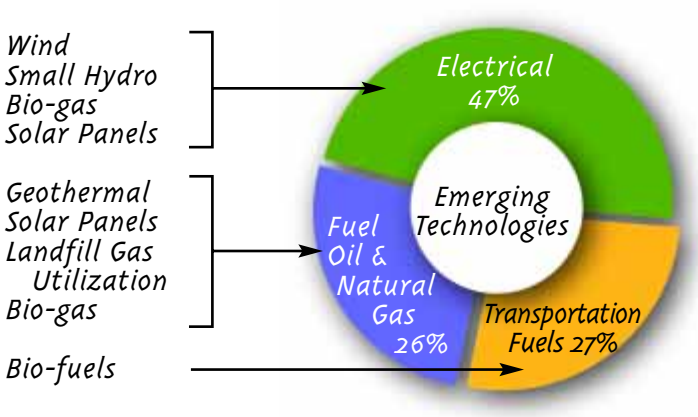


photo: Don Johnston

Community Energy Supply Strategy



The Goal:

To become the most energy-wise community in Canada.

The Objectives:

- As an early action, increase energy efficiency across all sectors and reduce energy costs by $5 million annually.
- As a long term target, produce 50% of the community's energy and fuels locally.
- Manage energy uses in the community's day-to-day operations.
- Reduce and offset community greenhouse gas emissions.

The Actions:

Conserve energy and improve energy efficiency

EarthCare Partners will continue to develop programs to conserve energy and improve energy efficiency across all sectors. This will build on the significant work that has been carried out to date in the municipal, residential and industrial, commercial and institutional sectors. (See Chapter 3 – Involving the Community.

Develop local wind generation

In partnership with Northland Power Incorporated and REpower Wind Corporation, the City of Greater Sudbury will develop wind farms that will ultimately produce up to 150 MW of power. These wind turbines will be manufactured locally. EarthCare Partners will also develop and install up to 500 small-scale wind power systems suitable for residences, farms or businesses.

Develop small-scale hydro projects

EarthCare Partners will develop small-scale hydroelectric projects with a combined capacity of 10 MW.

Capture and use landfill gas

The City will implement a Greater Sudbury Landfill Gas Utilization Project to collect and use the energy from landfill gas (total capacity, about 1MW).

Implement a bio-diesel project

EarthCare Partners will implement a project to locally produce about 10 million litres of bio-diesel annually from canola and soybeans.

Initiate geothermal projects

Using the small district energy system model, EarthCare Partners will initiate large geothermal projects to meet the heating and cooling needs of new clusters of environmental businesses.

Develop a solar hot water system program

EarthCare Partners will support a program to install hot water systems powered by solar panels in residences and businesses.

Introduce hybrid and alternative fuel vehicles

EarthCare Partners will assemble a demonstration fleet of hybrid and alternative fuel vehicles, including buses.

Continue to monitor and evaluate emerging technologies

The EarthCare Sudbury Partners will convene a team of experts (to be known as the Alternative Energy Technical Advisory Committee or AETAC) to monitor and evaluate emerging energy technologies.

Establish a Centre of Excellence

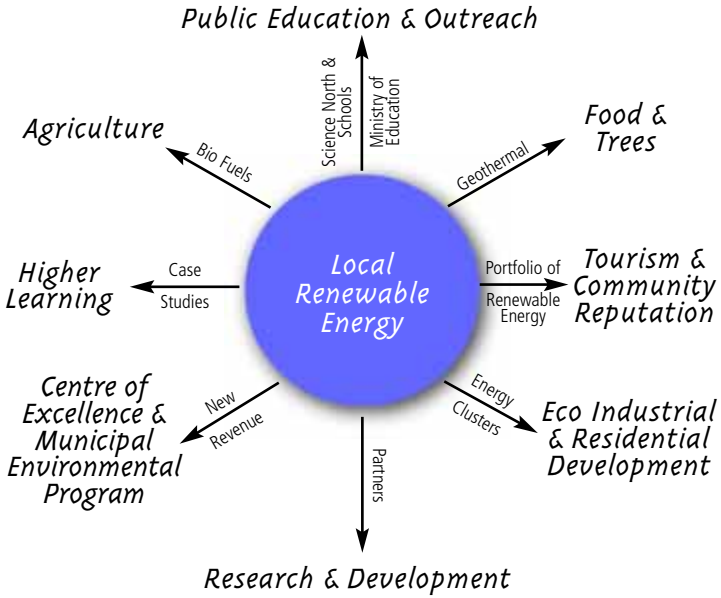
EarthCare Sudbury Partners will promote the creation of a Northern Ontario Centre of Excellence for energy and environmental solutions. The goals of the Centre are to stimulate internationally competitive, leading-edge research in energy, to develop and retain world-class researchers, and to create multi-disciplinary and multi-sectoral research partnerships that integrate research and development.

These goals are consistent with and reinforce the City's economic development strategy.

Energy Cost Monitoring Network

EarthCare Sudbury Partners will support the creation of a program to track and monitor the energy market on a real time basis. The "fee for service" program will provide timely energy information as the cost fluctuates to allow business and organization to make strategic operating changes.

Impacts of Local Renewable Energy



Potential Benefits

The benefits of implementing the recommendations in the Community Energy Plan are varied and will help to ensure the community "keeps its eye on the energy ball." The opportunities include:

- Annual savings of $5 million for community energy expenditures
- Ability to offer consumers access to green energy at stable costs
- Locally-produced energy revenues will be reinvested in local economic development and job creation
- Ability to attract new energy and environmental businesses to locate in Greater Sudbury
- Leadership in meeting Kyoto Protocol targets (and subsequent emission reduction targets) for greenhouse gas reduction at the local level
- Building the community's reputation as a municipal leader in energy efficiency and energy self-reliance

The focus on the development of local renewable energy and fuel sources will have a dramatic long-term effect on the Community and will make a significant contribution to the reduction of greenhouse gases.

photo: Don Johnston

2.3 Transportation

The Issue:

Transportation is vital to society, allowing us to move people, goods and services around. Unfortunately, as currently practiced in North America, it has significant adverse effects on the environment, both locally and regionally.

All internal combustion engines that burn fossil fuels emit nitrogen oxides and volatile organic compounds that contribute to smog and local air pollution. They also emit greenhouse gases (nitrogen dioxide and carbon dioxide), and are a major contributor to global climate change. Statistics show that greenhouse gas emissions in Canada rose by 11.6 percent between 1990 and 1996, and that a quarter of this total increase was due to vehicle use. Many of the gains made in fuel efficiency since the 1970s have been offset by increased numbers of cars, increased usage of cars, and the popularity of larger vehicles such as SUVs. Poorly tuned engines and idling exacerbates the problems.

About 89% of the households in Greater Sudbury own a car. In 2000, the Sudbury community spent $106 million, or 27 percent of its total energy expenditures, on transportation. Many of these dollars flow out of the local economy, into the pockets of national and international producers and distributors of fuel.

The key to reducing the environmental impacts of transportation involves improving fuel efficiency, using alternate (less-polluting) fuel sources such as natural gas and bio-diesel, eliminating unnecessary use of vehicles and encouraging the use of options such as public transit, walking and cycling in place of the automobile. Other factors that influence transportation decisions include policies on urban development (especially built form), transportation infrastructure, parking availability and pricing, and student transportation. There is much that Sudbury can do to reduce the environmental impacts of transportation.

The Goal:

To reduce greenhouse gas emissions from transportation sources in the City of Greater Sudbury by 10 percent by 2015.

The Objectives:

- Promote fuel efficiency initiatives within municipal operations and in the community at large.
- Rationalize Sudbury's publicly funded transportation systems to encourage increased usage, while reducing greenhouse gas emissions.
- Raise public awareness of and commitment to use more environmentally friendly transportation options.
- Support the development of trail networks for walking, hiking and cycling.
- Ensure municipal and business planning and operations take the environmental impacts of the community's transportation system into account.
- Prepare the community to take advantage of the introduction of alternative fuel sources as these become commercially viable.

The Actions:

Implement a Fleet Smart Program

The City will implement a municipal Fleet Smart program to maximize the efficiency of its cars and trucks, and EarthCare Partners will promote Fleet Smart practices within the wider community.

Continue the Anti-Idling Program

The City will continue the Idle-Free campaign until 30,000 drivers have been reached and Greater Sudbury has been established as an idle-free zone.

Implement a Drive Clean Educational Program

EarthCare Partners will develop a program to encourage citizens to adopt the practices recommended in the provincial Drive Clean Program. These include regular vehicle tune ups, avoiding idling, maintaining proper tire pressure, observing the speed limit, efficient trip planning, and ride sharing.

Reduce travel times and use of fuel

The City will maximize the effectiveness of its traffic signal programs and systems to reduce travel time and the use of fossil fuels.

Promote the use of alternative fuels for public transit

The City will consider the use of alternative fuels (including biodiesel) for public transit as they become feasible. The EarthCare Partners will encourage the use of alternative fuels and will also ask the province to provide the regulatory framework to encourage alternative fuels in the marketplace.

Greater Sudbury Transit's biodiesel bus.

photo: Don Johnston

Potential Benefits

- Community-wide savings for transportation energy expenditures
- Improved local air quality, especially in school zones and other public spaces
- Reduced emission of greenhouse gases
- Reduced wear and tear on roadways and reduced maintenance costs for taxpayers
- Savings on transportation of secondary school students
- Lower financial burdens on working families
- Increased revenues for municipal transit
- Added convenience for citizens using transit
- Reduced transportation costs for citizens who car pool
- Health and quality of life benefits for citizens who adopt the bicycle or walking as a means of transportation
- Improved trail system will enhance visitor appeal (e.g., for mountain biking, hiking, etc.)

Promote the use of public transit by students

EarthCare Partners will investigate the use of transit passes and other tools to encourage high school, college and university students to use public transit.

Ensure municipal policies are transit friendly

The City will review its policies including municipal parking rates and zoning policies to ensure that they are transit friendly. This will include promoting the Central Business District as a location for municipal and agency offices.

Carry out a market analysis for the transit system

The City and its Partners will conduct a market analysis for the transit system as a competitor of the private automobile and will allocate more resources for promoting transit use.

Investigate commuter-friendly transit and carpooling

EarthCare Partners will undertake a market analysis of the feasibility of offering "park and ride" trips from outlying areas. It will also examine the feasibility of implementing a carpooling program that matches up vehicles and riders, and which provides subsidized parking for carpooled vehicles.

Encourage bicycle use

EarthCare Partners will develop a City Cycling Plan to promote bicycle use for both recreation and commuting. They will work to develop and maintain bicycle-friendly infrastructure, including bike lanes, trails and racks. A community advisory group will be created to assist in this work, and there will be a significant emphasis on youth to help achieve the goal of long-term behaviour change.

Improve the local trail system

EarthCare Partners will work with municipal planning and tourism staff and the Rainbow Routes Association to assess the need for new trails, add connector trails to the existing system, and develop a strategy and business plan to accelerate trail improvements in the City of Greater Sudbury. EarthCare Partners will also examine the feasibility of developing trail-based ecotourism experiences that focus on the community's environmental story (see the Economy).

Reduce the cost of transporting food

EarthCare Partners will reduce the transportation costs associated with food by developing a vertically integrated food system (see the Food section).

2.4 Solid Waste

The Issue:

As Canadians, we use significantly more than our share of global resources and are without a doubt, one of the world's most wasteful countries. (North Americans represent 8 percent of the world's population but generate 53% of the world's solid waste). The average Canadian produces almost half a tonne (490 kilograms) of waste every year. About 24 million tonnes of solid waste are landfilled every year across the country. Much of this waste is potentially useful: It contains metals, paper, glass, organic waste and other materials that could be recycled into products. Our wasteful habits as a nation mean that we throw away the energy equivalent of millions of barrels of oil every year. Our landfills also create significant amounts of methane as waste decomposes, which contribute to global climate change. Atmospheric pollution from methane gas continues to rise in Canada, and landfills are major contributors.

The City of Greater Sudbury spent about $10.3 million on waste management in 2001. It operates four landfill sites, a recycling centre and a household hazardous waste depot, managing the deposit of approximately 112,000 tonnes annually.

Blue box recycling was introduced to the community in 1991. The original program was aimed at low density residential areas and it was expanded in 2001 to serve more than 200 high density units (apartments, townhouses and mobile home parks). Over the years the list of materials collected in the blue box program has grown, and it now includes: newspapers and magazines, household papers,

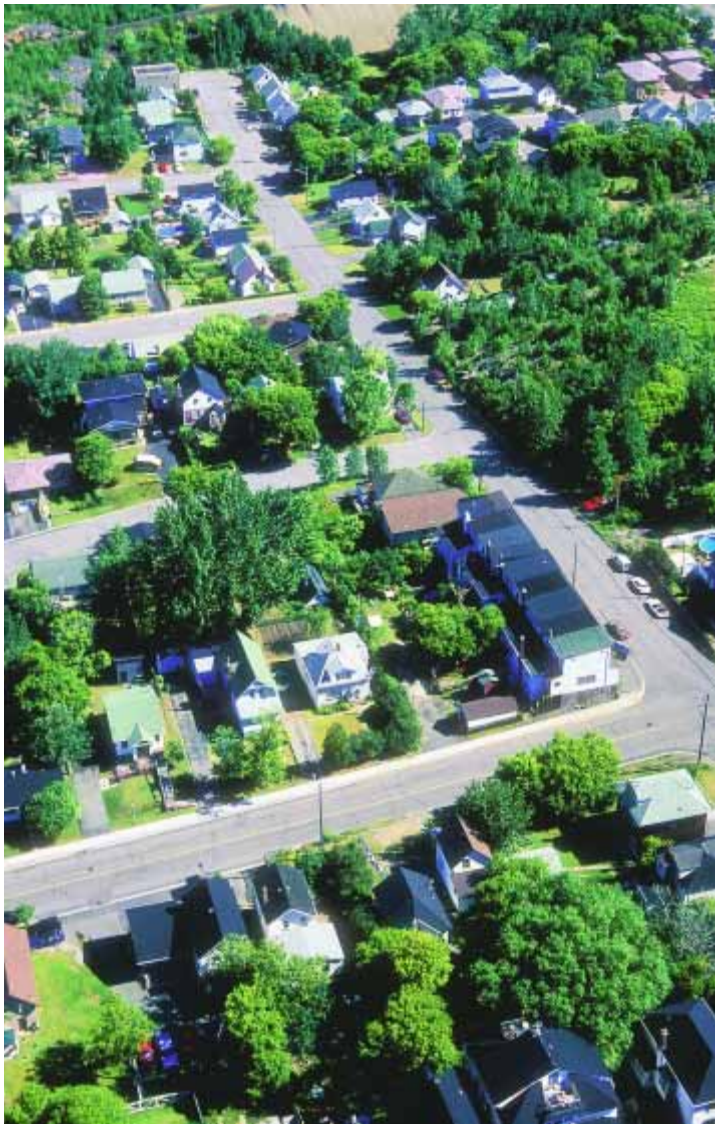


photo: Don Johnston

boxboard, corrugated cardboard, aluminum cans, plates and trays, steel cans, empty and dry metal paint cans, plastics #1, #2 and #5, clear and coloured glass containers, aseptic containers (juice boxes) and polycoat containers (e.g., milk cartons). To date, the materials collected have been sent out of the City for reprocessing, so the economic benefits are realized elsewhere.

Blue box materials are collected weekly. Yard trimmings are also collected in the spring and fall and composted by the City. In 2001, these programs resulted in 15,016 tonnes of residential waste being diverted from landfill, or 28.4 percent of all the residential waste generated. By comparison, only 5.3 percent was diverted by the industrial/commercial/ institutional sector.

To encourage reduction, re-use and recycling in the residential sector, in May 2001, the City introduced a limit on the amount of waste that could be placed at the curb (four bags or containers). This limit has since been lowered to three.

The City offers curbside collection of bulky items such as dryers, stoves and refrigerators from low density residential areas, while residents from high-density residential units can drop off bulky items at their local landfill site. The City captures the Freon from Freon-containing appliances at landfill sites before recycling them.

In order to divert household hazardous materials from area landfills, the City operates a Household Hazardous Waste Depot, which is open 25 Saturdays a year. Residents can bring their household hazardous wastes such as paint, thinners and motor oils here for proper disposal. Residents who are unable to deliver their household hazardous wastes to the depot can use the City's "Toxic Taxi" service that provides home collection service. The City has also recently approved an "e-waste" program. This program will divert old computers and other electronic goods from the waste stream, sending what is useful to re-use stores and what is not to an electronic processing facility in Southern Ontario.

The City has recently launched the "Biz Box Recycling Program". This program allows small businesses to participate in recycling for an annual fee of $46. Businesses are provided with up to three yellow boxes to be used for papers, cardboard and containers. The commercial and institutional sectors can also bring source-separated blue box materials to the City's Recycling Centre and landfill sites free of charge. Other materials that they can bring to local landfill sites free of charge include: leaves, grass clippings, twigs, branches, hedge and brush trimmings, non-treated and clean wood waste, and wooden pallets.

In 2003, the City began its "Waste Optimization Study" which will create a road map of actions for the near future.

The Goal:

To increase the diversion and re-use of solid waste generated in the City of Greater Sudbury, with the ultimate goal of reducing the community's total material needs, ensuring the proper disposal of hazardous wastes, and using diverted materials to generate local economic development.

The Objectives:

- Reduce the quantity of solid waste produced by the community.
- Significantly increase the diversion rate across the community.
- Develop recycling processes and manufacture products using collected recyclable solid waste.

The Actions:

Launch a comprehensive behaviour change program

Achieving significant and lasting reductions in the amount of solid waste produced in Sudbury requires changing how people behave. This includes whether people reduce waste through consumer choice at point of purchase, and whether or not they re-use, recycle and compost. The City and its Partners will develop a comprehensive behaviour change program emphasizing waste reduction, waste diversion and composting. The program will be part of EarthCare's Public Education and Outreach program.

Support blue box recycling in schools

Sudbury's young residents are tomorrow's waste reducers and recyclers. In order to help create a recycling culture among our youth, EarthCare Partners will support the expansion of the blue box program to area schools.

Composting diverts waste from landfills.

photo: Don Johnston

Potential Benefits

- Extended lifespan of municipal landfill sites
- Decreased emissions of methane from landfill sites
- Increased resource efficiency
- Reduced risk of groundwater contamination from hazardous wastes
- Local economic development and jobs
- Forging stronger ties with educational institutions for educational programs and research and development

Support curbside collection of organic wastes

City staff are currently considering how to implement a program to collect "green" organic wastes (kitchen and yard wastes) at the curbside. The emphasis to date has been on development of an "in-vessel" composting facility, capable of producing a high value end product that can be sold in the marketplace. A detailed study will be presented to Council in mid-2004.

Meet municipal targets for waste reduction, diversion and composting

The City will measure progress in waste reduction, diversion and composting against the benchmarks that have been set by the Ontario government and Canada's Climate Change Program.

Advocate for waste reduction

Many aspects of waste reduction, such as regulations on packaging, are under provincial or federal jurisdiction. EarthCare Partners will lobby senior governments to aggressively pursue waste reduction at source.

Promote the re-use of materials

Re-use – the second of the 3R's – is often under-emphasized. EarthCare Partners will explore the potential to develop programs that promote materials re-use, such as the creation of a depot for drop-off and pick-up of reusable items such as construction and renovation materials.

Encourage waste re-use as part of an eco-industrial strategy

As part of an "eco-industrial strategy," EarthCare Partners will seek out new technologies and processes that re-use waste materials. This will include encouraging manufacturers that use diverted solid waste as a feedstock for industrial processes to locate here, and examining possibilities to expand the range of materials collected for recycling. (See the Economic section).

Reduce the amount of household hazardous waste going to landfill

The City and its Partners will work with residents to raise their awareness of alternatives to household toxic products and the need for proper disposal.

photo: Don Johnston

Landfill site challenges.

2.5 Landscape Recovery and Biological Integrity

The Issue:

Terrestrial ecosystems, the complex mix of vegetation, soil and animal life that covers the land, are a vital part of our life support system. Vegetation is vital to our existence: Through photosynthesis, plants produce oxygen that sustains life on earth and removes carbon dioxide from the air. This "sequestering" of carbon helps to reduce global climate change by offsetting the carbon dioxide created by human activities. Vegetation also contributes to air quality by helping to filter out a range of pollutants including nitrogen dioxide, sulphur dioxide, carbon monoxide and particulates. Vegetation also retains stormwater, creates microclimates, provides shade from the sun and ultraviolet rays, reduces noise and provides habitat for a wide range of wildlife. It is no exaggeration to say that without plants, we would not exist. A healthy landscape is essential to our well-being.

Sudbury's efforts to recreate ecosystems on its landscape have been underway for over a quarter of a century. In this time, grasses and 12 million trees have been planted on over 16,000 hectares of land. This has triggered a remarkable improvement in the ecological health of the Sudbury area including improvements in the water quality in our lakes and rivers. The success can be measured by the photographs on the following page.

Regreening the Martindale area.

photos 1-4: Keith Winterhalder

Nevertheless, there is still much to do. Only about half of the land reclamation task is complete.

Reclamation must continue

Although natural recovery is taking place in some areas, there are thousands of hectares of land without adequate plant cover. In these areas, continued land reclamation and restoration is needed to counter the high acidity and metal concentrations and begin the long-term healing and recovery of the ecosystem.

Biodiversity is low

Biological diversity, or "biodiversity" is the term that is used to describe species richness, genetic variation and ecosystem complexity in a system. The re-vegetated areas around Sudbury are young, fragile systems with relatively few species of plants, shrubs and trees. After 25 years of activity, much of the reclaimed areas resemble pine forests, but with only half of the plant species present. This limits the diversity of habitat and therefore limits the diversity of animal life. In addition, low plant diversity means that the entire system may be more susceptible to major disruptions from pests, such as infestations of gypsy moth and spruce budworm, and climate change.

Urban tree cover is falling

In 2001, the Land Reclamation Program noted that Sudbury was losing about 500 street trees a year because of age, damage and disease. The amount of tree canopy coverage in many neighbourhoods is now well below 25%, the target that is used by many municipalities as a target for healthy residential areas.

Surface waters continue to be degraded

The loss of vegetation in the area around Sudbury led to the degradation of streams and rivers, as soils eroded and were carried into watercourses, along with contaminants. This degradation continues today in areas that are still devoid of vegetation.

photo 5: David Pearson

The Goal:

To improve the quality of Sudbury's terrestrial ecosystems and, by so doing, improve the health of our watersheds, our urban and rural environments, and the quality of place.

photo: Don Johnston

The Objectives:

- Increase tree cover in both urban and rural portions of the City of Greater Sudbury.
- Increase vegetation cover in critical watersheds, thereby contributing to improved water quality.
- Increase the biological diversity within developing vegetation communities.
- Improve knowledge of and seek to protect key natural heritage areas.

The Actions:

Continue vegetation enhancement

Under the guidance of the Vegetation Enhancement Technical Committee (VETAC), EarthCare Partners will continue using land reclamation and restoration techniques to enhance vegetation in the Sudbury area. The techniques being used will continue to be refined and improved, including adoption of an approach to reclamation that is based on critical watersheds and subwatersheds. Where feasible, measures will be taken to increase the diversity of species used in reclamation.

Develop an Urban Treescape/Shade Initiative

The City's will develop an Urban Treescape Initiative with two components – planning and planting. The planning will include an assessment and mapping of impervious areas and tree canopy cover in urban areas. A street tree inventory will also be developed to identify areas where trees are needed. These studies will be complete by early 2004. Mapping of tree canopy coverage and impervious areas on both public and private properties will use geographic

information system (GIS) and electronic air photos. The City and its Partners will also continue the tree planting program, focusing on improving the health of critical areas such as the Junction Creek and Silver Lake watersheds.

The provision of shade is an important strategy for people's exposure to the damaging effects of ultraviolet light (UV). Sudbury has an existing "Community Shade Working Group" which is encouraging public policy decisions that increase shade for public and school outdoor recreation areas. Strategic shading should also be considered as an energy efficiency measure when planning the city's built form.

Carry out a natural heritage study

As part of the process to develop a new Official Plan, the City is undertaking a number of Background Studies. One of these is a Natural Heritage Study that is scheduled to be completed by mid-2004. This study will inventory and assess the natural heritage features within the City of Greater Sudbury and develop recommendations for Official Plan policies addressing natural heritage. The study will also identify existing and potential links and connections between natural heritage features that will allow ecosystem function to be more fully integrated into land use planning.

Establish a Sudbury Biodiversity Partnership

EarthCare Partners will establish a Biodiversity Partnership . It will focus not just on the terrestrial environment, but also aquatic and wetland systems. One of the prime tasks of the Partnership will be to develop a Biodiversity Action Plan by late 2005. In addition, it will develop education programs on the importance of biodiversity for the public and schools. A third focus will be to encourage the integration of the biodiversity concept into Greater Sudbury's land use planning process and documents.

Use a watershed approach

In order to better relate actions on land to potential effects on receiving waters, EarthCare Partners will develop detailed subwatershed mapping in 2003. Subwatershed units will be used to plan future tree planting efforts and monitor the success of past efforts with respect to watershed health. The City will ensure that watershed protection and vegetation enhancement is integrated into its land use planning process and documents.

Grow trees locally

EarthCare Partners will explore the potential to grow trees locally for re-greening and urban forestry purposes.

Potential Benefits

- Improved public health
- More diverse and healthy terrestrial systems
- Increased protection of water resources
- Enhanced watershed health
- Increased recreation and tourism opportunities
- Improved aesthetics
- Bioremediation of metals in soils

Liming in the Kelley Lake area.

photo: Don Johnston

2.6 Soils

The Issue:

The quality of soil is important to the health of an ecosystem. Healthy soil helps to provide us with clean air and water, bountiful crops and terrestrial vegetation, diverse wildlife, and beautiful landscapes. Soil does this by performing four essential environmental functions: It regulates how water moves, sustains plant and animal life, filters pollutants, and cycles nutrients.

Sampling over a thirty-year period has found that soils in some areas of Greater Sudbury contain elevated levels of nickel, copper, cobalt, and to a lesser extent, arsenic and lead. These elements are found naturally in soils, especially in the highly mineralized Sudbury Basin, but are elevated near the current and historic smelter sites in Copper Cliff, Falconbridge and Coniston. The presence of these metals in soils is a legacy of historic emissions from smelting operations. While pollutant emissions from the Copper Cliff and Falconbridge smelters have been dramatically reduced over the last thirty years due to process improvements in the plants, and the Coniston smelter is no longer operating, the elevated levels of metals persist. In some places, the concentrations of metals in soils exceed the criteria found in the Ontario Ministry of the Environment's "Guidelines for Use at Contaminated Sites." Although the Guidelines are not regulatory in nature, this suggests further study of the issue is needed.

The Goal:

To determine the extent and severity of soil metal levels in the Greater Sudbury area in order to prepare an Ecological Risk Assessment and a Human Health Risk Assessment and make recommendations for remediation, if needed.

The Objectives:

- Determine the levels of metals and arsenic in soils in residential communities adjacent to smelting centres.
- Determine the levels of metals and arsenic in industrial lands adjacent to residential communities.
- Contribute to the development of ecological and human health risk assessments for the Sudbury area communities.

- Through detailed soil sampling, attempt to determine background levels of metals and arsenic in the Sudbury Basin due to the presence of base metal ore bodies.
- Determine the geographic extent of the atmospheric deposition of metals and arsenic, based on the natural background levels.

Soil sampling.

photo: Ontario Ministry of the Environment

The Actions:

Sudbury Soils Initiative

The Sudbury Soil Initiative is a cooperative initiative involving the Ministry of the Environment, Health Canada, Inco, Falconbridge, the Sudbury & District Health Unit, and the City of Greater Sudbury. The goal of the initiative is to determine the extent and severity of soil metal levels in the Greater Sudbury area in order to prepare an Ecological Risk Assessment and a Human Health Risk Assessment and make recommendations for remediation, if necessary,

The Ministry, Inco and Falconbridge launched an extensive soil sampling program in 2001. Some 9,000 samples were collected in almost 1,200 locations throughout the community, including schoolyards, playgrounds, parks and daycare centres. The results of the sampling program will improve understanding of how contaminants have accumulated in Sudbury soils during more than a century of mining activity. The data collected will also be used to complete an Ecological Risk Assessment and a Human Health Risk Assessment.

A multi-agency Technical Committee has been set up to begin the assessment of data collected, and provide technical guidance for the ecological and human health studies. A Public Advisory Committee has also been formed and a neutral Process Observer named. EarthCare Sudbury sits on the Public Advisory Committee and is supportive of the initiative. A Communications Subcommittee of the Technical Committee will keep the public informed of progress as the study unfolds. A final report is expected in 2005, and a period of public consultation will follow the release of the report.

Potential Benefits

- Improved understanding of the ecological and human health risks associated withistoric soil contamination in the Greater Sudbury area
- Identification of any areas where remediation of soils may be needed

photo: Don Johnston

2.7 Air Quality

The Issue:

Over the past three decades, tremendous efforts have been made to improve Ontario's air quality, and these have resulted in significant gains. As a result of regulatory efforts, technological advances, and the use of cleaner fuels, factories and smokestacks no longer belch black smoke, lead is no longer present in gasoline, and the problem of acid rain has been reduced. Nevertheless, air quality is still a problem for human health, and levels of some pollutants are in fact increasing. Increasing concentrations of ground level ozone – the prime ingredient in smog – and respirable particulates are of great concern to public health officials.

Key pollutants

Studies link high levels of ground level ozone and respirable particulates to increased hospital admissions for respiratory disease and increased death rates. The Ontario Medical Association (OMA) has estimated, for example, that 1,920 deaths and 9,800 hospital admissions a year in Ontario are caused by smog. The OMA has also concluded that levels of ground-level ozone are increasing in Ontario, levels of respirable particulates remain stable and progress to reduce the pollutants that are the building blocks of smog has stalled.

Ground-level ozone and respirable particulates are both formed in the atmosphere from precursor compounds. Ground level ozone is formed when nitrogen oxides and volatile organic compounds react in the presence of sunlight. Respirable particulates are formed when sulphur dioxide and nitrogen oxides react to form sulphates and

nitrates. The main sources for nitrogen oxides, sulphur dioxide and volatile organic compounds are automobiles, coal-fired power plants, and certain industries.

In North America, the major cause of smog is automobile exhaust. Smog is a regional, not a purely local problem: The Ontario Ministry of the Environment has estimated that about 50% of the smog that reaches southern Ontario originates in the United States. One of the challenges in dealing with smog is to identify local actions that can make a difference within a community, given that a significant part of the problem is beyond local control.

Sudbury's air quality

The Air Quality Index was developed by the province to measure local air quality. It is a composite index that measures the levels of six common pollutants. Data from 2002 show that Sudbury's air quality between the months of May and September was generally good. A moderate Air Quality Index was reached on eleven days. **Ground-level ozone is the most significant pollutant** of concern in Sudbury, and is the pollutant that most often triggers high levels of the Air Quality Index.

Over the years, the mining sector has significantly reduced its emissions and their local impacts in the Sudbury area. In September 2001, the Ontario Ministry of the Environment ordered Inco and Falconbridge to reduce their allowable sulphur dioxide concentrations at ground level from 0.5 parts to 0.34 parts per million by April 1, 2002 and this has been implemented. The companies were also ordered to reduce their total annual sulphur dioxide emissions from Sudbury area smelters by 34% by the end of 2006 and by 50% by 2015 and develop a system to inform the public about poor air quality days. In issuing these orders, the Ministry noted that sulphur dioxide contributes to respiratory problems, smog and acid rain.

Greater Sudbury now has better air quality than many of the industrialized cities in Southern Ontario. However, during the summer, the wind occasionally carries significant amounts of smog from the northern United States and from southern Ontario far enough north to affect the Greater Sudbury area.

Hawkweed in the spring.

photo: Don Johnston

Potential Benefits

- Increased citizen awareness of air quality issues leading to behaviour change on smog alert days
- Improved health and quality of life for citizens of Greater Sudbury
- Reduction of economic and social losses resulting from worker sick days, premature illness and death
- Enhanced community competitiveness as a safe, clean place to live, work and study
- Increased technological innovation and investments within the local mining industry

The Goal:

To encourage reduced emissions of air pollutants locally, and to respond appropriately when smog alerts are issued.

The Objectives:

- Educate the community about the health effects of air pollution.
- Document and report on local air quality.
- Reduce air pollution locally.
- Prepare the community to respond appropriately to smog events.

The Actions:

Sudbury Air Quality Initiative

The Sudbury Air Quality Initiative is a committee formed of citizens and representatives from the Ontario Ministry of the Environment, Inco, the City of Greater Sudbury, Falconbridge and the Northern Centre for Advanced Technology. The goal of the Initiative is to encourage local reductions of air pollutant emissions and to respond appropriately at the local level when smog alerts are issued by the province.

The Air Quality Initiative will do this by:

- providing general information on air quality issues;
- providing information on and maintaining a database on local air quality;
- serving as a forum in which citizens can bring concerns about air quality;
- analyzing and evaluating air quality data to establish baselines and priorities;
- ensuring that concerns are addressed in partnership with businesses, industries, government, education and public sector organizations, including EarthCare Sudbury; and
- encourage EarthCare Sudbury Partners to develop and implement a Smog Alert Response Plan within their own operations.

Most of the air pollution reduction actions will be carried out through the Energy, Transportation and Economic sections of the Local Action Plan.

Monitor and report on local successes

EarthCare Partners will work with local industries to monitor pollution reduction initiatives and report successes as a way of promoting the community and quality of place.

2.8 Water Resources

The Issue:

Access to an adequate supply of clean, fresh water is a basic requirement for life. Freshwater is important, first and foremost, for drinking whether it be surface water or ground water. But it is important in many other ways, too. Water provides habitat for a wide range of animal life. It assimilates our wastes, can be harnessed to generate electricity, and is used for transportation and recreation. Water is also a powerful integrator of environmental stresses – the pollutants that we emit to the air or the land ultimately end up in either surface or groundwater.

The City of Greater Sudbury is rich in terms of its water resources. Within the municipal boundaries are 330 lakes that are at least ten hectares in size, along with several hundred smaller lakes and ponds. These lakes provide drinking water and provide outdoor recreation in the form of swimming, canoeing, boating and sport fishing. Many of the area rivers are used to generate hydroelectric power. Sudbury's abundant water resources, including its fisheries, are a major asset to the tourism industry, including the growing eco-tourism sector. They also represent a significant natural heritage that should be passed on to future generations. However, there are many current stresses on our water resources.

Past industrial pollution

Many of the area's lakes have been adversely affected by historical industrial activities, especially mining and smelting. This has led to erosion, acidification, metal contamination, the deposition of wood waste on lake bottoms (in Minnow Lake), and contamination from a former creosote plant (in Junction Creek and Kelley Lake). Smelter emissions have been drastically cut, and other practices that led to these impacts have long since ceased, and recovery is underway.

Nutrients

Many area lakes and groundwater systems are at risk from excess nutrients – particularly nitrogen and phosphorus that come from wastewater treatment plants, septic systems and fertilizers.

Stormwater

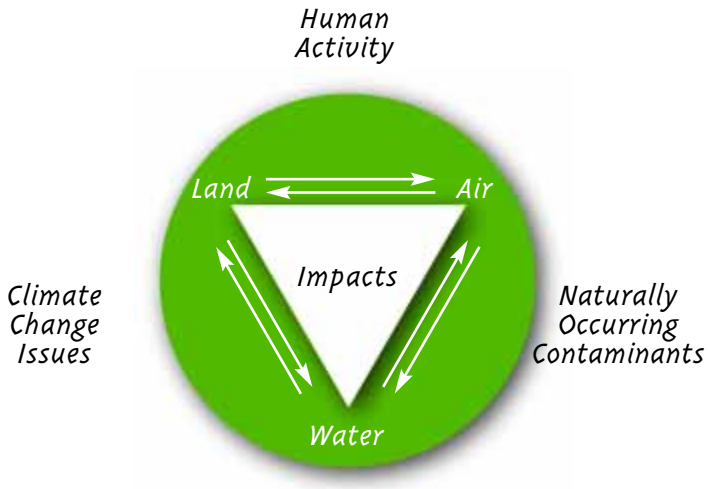
Urban stormwater runoff contains a host of pollutants picked up as it crosses streets, parking lots and yards – pesticides, herbicides, motor oil, road salt, animal feces and other contaminants – all of which end up in our lakes and rivers.

Watershed protection plans

In the Part 2 Report of the Walkerton Inquiry, released in 2002, Justice O'Connor recommended that drinking water sources be protected by developing watershed-based source protection plans. Although final decisions on how Source Protection Planning will proceed in Ontario still have not been made by the Province, some of the current EarthCare Sudbury Partners have begun the process of addressing this issue locally.

Focus On Issues

Integrated Solutions



Alterations in water flows

Various practices, including the elimination of wetlands, deforestation and the construction of dams can alter water flows. This can lead to increased risk of flooding in springtime, reductions in levels of groundwater and falling lake levels in the summer.

Shoreline development

In several lakes, inappropriate shoreline development (such as the construction of breakwater walls and docks with solid foundations and the clearing of native vegetation) has led to aquatic habitat loss, soil erosion, and pesticide and fertilizer runoff.

Introduction of invasive species

Invasive aquatic species are already well established in some lakes in the area. Eurasian milfoil is a problem in Kelley, Long, McFarlane, Minnow, Mud and Simon Lakes, among others. The spiny waterflea is now found in Lake Panache and the rainbow smelt is now found in Lake Nepahwin. These non-native species can severely destabilize native fish communities.

Water resources planning

To be effective, water resources planning must take an integrated approach that considers the interrelationships among water, land and air. Many human activities on land can affect water quality, for example, as can air pollution.

The Goal:

To improve the quality of Sudbury's surface and groundwater resources while using our water resources wisely and efficiently.

The Objectives:

- Protect drinking water supplies.
- Reduce stresses on the aquatic ecosystem.
- Maintain the water quality of lakes with low nutrient levels.
- Improve water quality in lakes with medium and high nutrient levels.
- Maintain healthy fisheries where they exist and reintroduce fisheries to recovering lakes .
- Reduce metal and nutrient concentrations in the Junction Creek watershed (Kelley to McCharles).

The Actions:

Protect drinking water supplies

The City and its Partners will develop and implement a Watershed Protection Program for surface and groundwater drinking water supplies. Early priorities will be Lake Ramsey, the Wanapitei System, the Vermilion System and the major drinking water aquifers.

Reduce nutrient levels in our lakes

The City will improve phosphorus removal at its waste water treatment plants, develop and implement a program for inspection and maintenance of septic systems, and create an awareness campaign to help citizens reduce nutrient runoff from their properties. The City will also study the feasibility of introducing a by-law requiring septic maintenance agreements between installers and property owners.

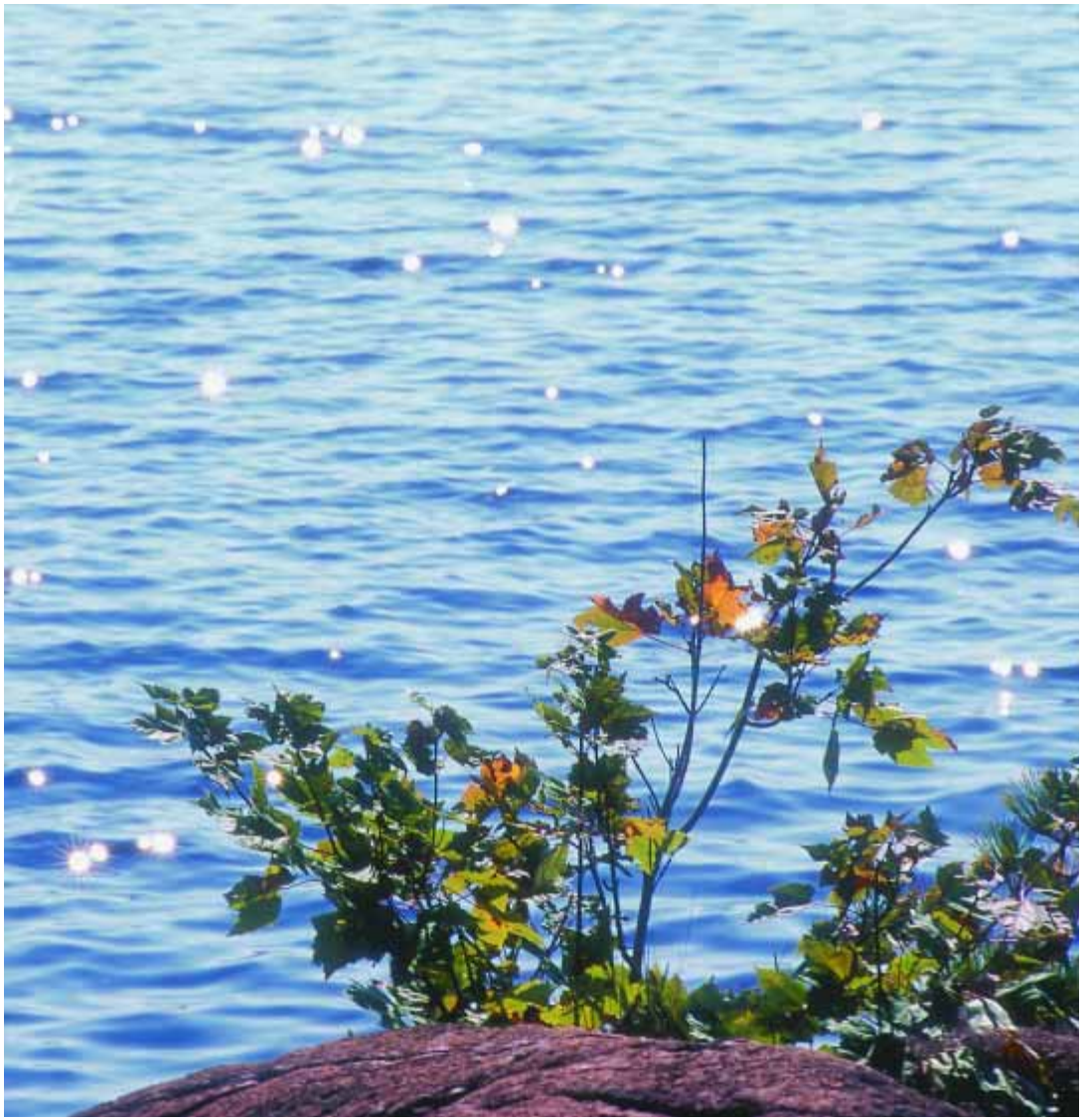


photo: Don Johnston

Focus On Issues

Reduce the impacts of stormwater

The City will reduce the use of road salt and install stormwater management facilities where storm sewers enter lakes that supply potable water. Through the Watershed Protection Program, it will identify other actions to reduce the impacts of pollutants on water quality.

Develop an awareness program for invasive species

EarthCare Partners will develop and implement a program to make anglers aware of the impacts of releasing bait into local lakes.

Enhance fisheries

EarthCare Partners will develop a strategy to re-introduce lake trout into local lakes where the water quality is appropriate.

Establish Lake Stewardship Committees

EarthCare Partners will establish Lake Stewardship Committees on all lakes with more than 50 lakeshore homes to educate residents about water quality and engage them in monitoring and stewardship activities.

Address lake acidification and other industrial impacts

EarthCare Partners will implement a watershed liming program on lakes with a low pH as the next step in land reclamation. They will also continue to press for the cleanup of creosote from Junction Creek.

Continue to support the rehabilitation of Junction Creek

EarthCare Partners will continue to support the rehabilitation of the Creek with the goal of creating a healthy aquatic system. In addition, EarthCare Partners will study the potential to use the Junction Creek model to rehabilitate Nolins Creek.

Create a community-based water efficiency program

The City and its Partners will develop a community-based water efficiency program to ensure that citizens are aware of the need for and practice water conservation.

Protect air quality monitoring lakes

EarthCare Partners will recognize and protect the nine area lakes that have been used to monitor air quality over the last 30 years.

Support the Co-operative Freshwater Ecology Unit

EarthCare Partners will support the growth and development of the Co-operative Freshwater Ecology Unit, a partnership of government, industry, the university and the municipality. The aim of the Unit is to develop an internationally recognized science and education centre for the protection and wise management of water resources.

Increase the understanding of local water resources

EarthCare Partners will improve the basic scientific understanding of the area's lakes and watersheds, including water quality and fisheries.

Monitor and improve the quality of surface water resources

With assistance and input from the Greater Sudbury Lake Improvement Advisory Panel (GSLIAP), EarthCare Partners will continue to improve the health of the community's surface water resources through water quality monitoring and volunteer participation from local lake stewardship groups. GSLIAP will: advocate for improvements to lakes, assist in creating lake stewardship groups, make policy recommendations to City Council, help form partnerships, review and provide input on monitoring results, and report water quality results to the public.

Ensure the City's policies address emerging issues

The City will entrench sound water resources management in its Official Plan and by-laws. It will also map the current uses of area lakes to ensure that appropriate water quality protection measures are used and facilitate research into the effects of global climate change on Sudbury's water resources.

Potential Benefits

- Enhanced protection of public health
- Lower costs for treating drinking water
- Increased consumer confidence in our potable water supplies
- A more diverse and healthier ecosystem
- Increased property values
- Increased recreation and tourism opportunities
- Public acceptance for increasing funding for water protection

photo: Don Johnston

2.9 Wastewater

The Issue:

Municipal treatment of wastewater (human sewage and "grey" water from washing) is a vital component of environmental protection. Effective wastewater treatment protects our lakes, streams and rivers from the effects of excess nutrients and pathogens. Wastewater treatment is also a source of greenhouse gas emissions: Statistics Canada estimates that greenhouse gas emissions from wastewater treatment plants rose 8.3 percent between 1990 and 1996, and represented 1,300 kilotonnes of carbon dioxide equivalents in 1996.

In 2001, the City of Greater Sudbury collected, treated and disposed of 36,441 million litres of wastewater, at a cost of $11.8 million. The City operates nine wastewater treatment plants that provide secondary treatment (the removal of biological impurities), as well as four lagoons. The City also purchases sewage treatment services for 8,000 citizens from a private mining company. Because of the area's rocky terrain, 75 pumping stations are needed to collect and transport wastewater to municipality's treatment plants. Sewage sludge – the solid material remaining after treatment – is hauled to a site in a mine tailings area for disposal.

Inflow and infiltration

Inflow – surface water that flows into the sanitary sewer system as runoff – is a concern in Sudbury. So too, is infiltration from groundwater, which enters the system through deteriorating manholes or cracks in the pipes themselves. Infiltration can also be caused by foundation drains on private property that are still connected to the sanitary sewer system and from downspouts that are connected to foundation drains which in turn are connected to the sewage system.

Inflow and infiltration use up the capacity of municipal wastewater treatment plants which are rated for a given flow. During rain storms, this excess flow taxes the capacity of pumping equipment, and increases the risk of sewer backups onto private property. Pumping all these excess flows consumes energy, increases the cost of wastewater treatment for taxpayers, and increases local greenhouse gas emissions.

Inflow typically takes place in low-lying areas, and can be reduced in off-road locations by raising the elevation of manholes. On roads, manholes can be fitted with inflow protectors, which sit between the manhole frame and cover. Reducing infiltration from groundwater requires repairing cracks and leaks in joints, pipes and manholes. This can be done by crack sealing and grouting, inserting stainless steel liners, or in extreme cases, replacing old pipes with newer, more watertight materials. Although the City has carried out significant work in some parts of Sudbury to reduce inflow and infiltration, it does not yet have a comprehensive program to address the issue.

Septic systems

A significant number of properties in Greater Sudbury are serviced with private septic systems. These can vary dramatically in terms of

age, condition and proximity to sensitive surface and groundwater systems. Improperly maintained septic systems can adversely affect water quality. At the present time, septage from private septic systems is hauled to pits at some of the City's landfill sites.

The Goal:

To optimize the municipal wastewater system, both economically and environmentally.

The Objectives:

- Reduce inflow and infiltration into the collection system.
- Maximize the returns on municipal investment in wastewater infrastructure (both for collection and treatment).
- Reduce the potential for adverse effects on area lakes, rivers and streams.
- Reduce the potential for adverse effects on private property.
- Minimize energy expenditures and greenhouse gas emissions.

The Actions:

Find new sewage sludge/septage disposal solutions

The City will strive to develop a management solution for sewage sludge and septage, likely through a public/private partnership. The goal is to utilize these sewage wastes as feedstocks for treatment processes that produce energy (e.g. bio-gas) and other value added products.

Reduce inflow and infiltration into the system

The City will develop and implement a comprehensive program to reduce inflow and infiltration into the sanitary sewer system. The program will include:

- design and construction practices that can reduce inflow and infiltration into the sewer system
- developing and testing a model program to encourage homeowners to disconnect their foundation drains from the sanitary sewer system
- developing public education tools to raise awareness about the impacts of stormwater from private property on the sewage system and the environment

photo: Mike Dupont

Sudbury Wastewater Treatment Plant.

Potential Benefits

- Lowered energy costs for wastewater collection and treatment
- Reduced emissions of greenhouse gases
- Increased lifespan for wastewater treatment infrastructure
- Reduced potential for sewer system backups
- Improved water quality of receiving streams and lakes
- Development of feedstocks for composting and the production of bio-gas

Strive to produce the best quality effluent economically achievable

The City will strive to achieve the best quality effluents from its wastewater plants that are economically achievable. It will do this by: investing in operator training, developing and maintaining excellent operating manuals, developing a breakdown and preventive maintenance system, and remaining aware of improvements in wastewater technology.

Identify funding opportunities to upgrade treatment

The City will take advantage of all funding opportunities available to voluntarily adopt a higher standard of treatment than is required by law. This could include moving to tertiary treatment of sanitary sewage where practicable.

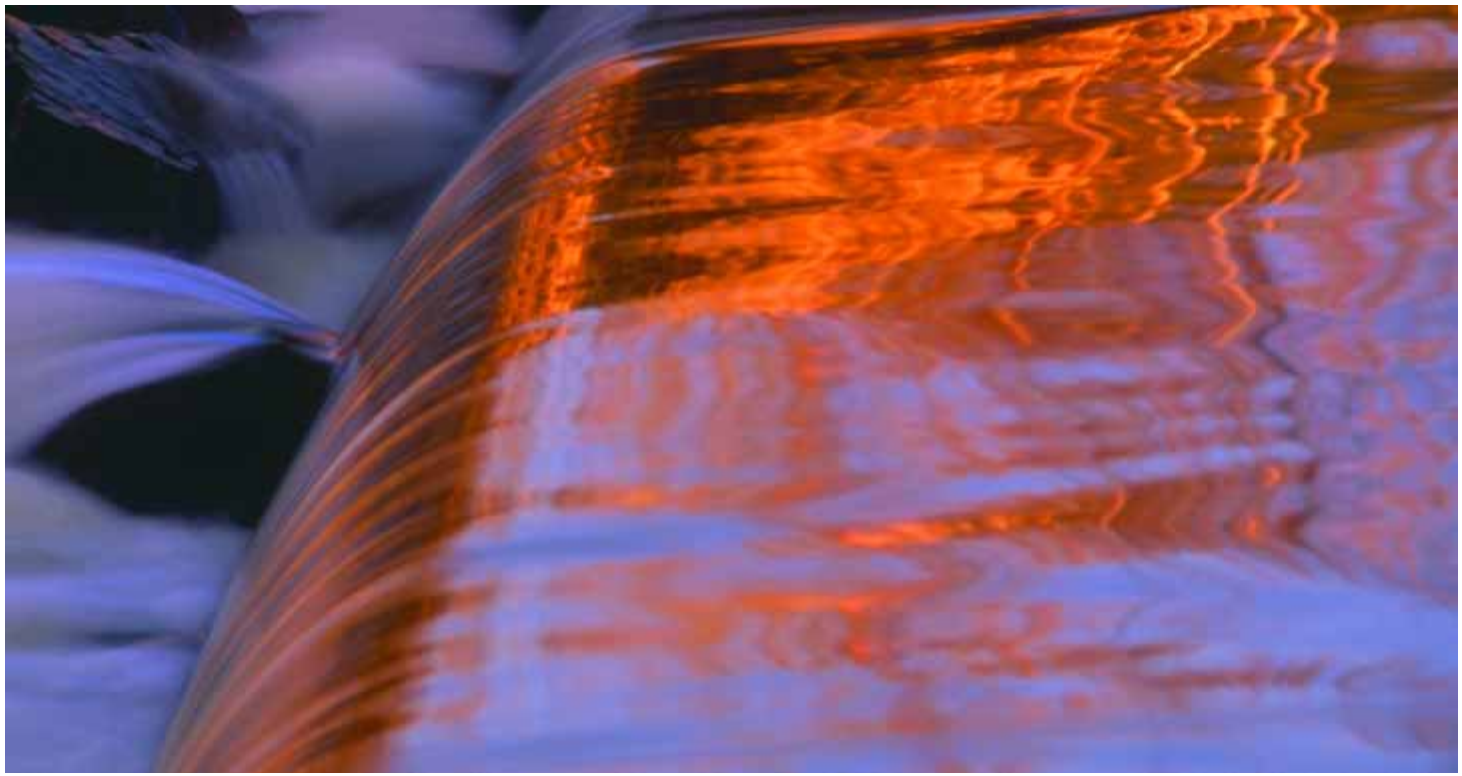


photo: Don Johnston

Kelley Lake weir in the morning.

2.10 Food

The Issue:

Access to an adequate supply of safe, nutritious and affordable food is a basic human need. But while food is necessary to sustain life, the way in which it is produced, processed and distributed can have significant environmental and economic impacts.

photo: Don Johnston

We all spend a significant portion of our pay cheques at the supermarket cash register. In total, residents of Greater Sudbury spend over $300 million annually on food. Most of this is spent on food that is grown and processed outside the region, and transported long distances to our local markets. The costs of this transportation are high, and the contribution it makes to greenhouse gas emissions and smog is significant. The production of this food makes too tittle contribution to the local economy.

An alternative paradigm is to develop a vertically integrated community food system for Greater Sudbury. Such a system would foster the local production, processing and sale of food products. Food grown and raised locally is fresher and nutritionally better than that shipped long distances. The environmental benefits of food grown locally include reduced transportation impacts and increased environmental stewardship. Local food production and processing boosts local economic development, encourages value added-processing and recirculates food dollars in the community. It can also lead to increased opportunities for research and development.

There are social benefits to a vertically integrated community food system as well. It encourages community involvement, builds local responsibility, supports equitable food distribution, entrenches community-based food policies, and connects urban and rural issues.

At this time, the lack of state-of-the-art waste treatment systems is a significant barrier to attracting various food processors to the Greater Sudbury area.

Potential Benefits:

- Reduced greenhouse gas and smog emissions
- Reduced use of pesticides
- Improved public health and quality of place
- Local economic development

The Goal:

To develop a more sustainable food strategy for Greater Sudbury.

The Objectives:

- To increase the amount of food grown and processed locally.
- To reduce the transportation requirements and environmental impacts of food delivery systems.
- To develop integrated waste management solutions that minimize the environmental impacts of food production.
- Use local energy opportunities as an attractor for local food production and processing industries.

The Actions:

Develop a local food security strategy

EarthCare Partners will develop a local food security strategy by the end of 2004. It will include the following elements:

- a baseline inventory of food movement and flows (what is being shipped where)
- predicting the economic impact on Sudbury of a vertically integrated food system
- estimating greenhouse gas and smog emission reductions that can be realized
- an economic development strategy for food
- encouraging the eating of locally produced and processed foods
- working with food retailers to support the local food industry

Support the development of a food charter

EarthCare Partners will support the development of a local food charter. This is a policy document that outlines support for food safety programs and services, events that celebrate multicultural food traditions and other issues.

Recruit eco-industrial partners

EarthCare Partners will identify and recruit clusters of eco-industrial partners that support the local food industry. These may include local growers of crops and livestock, greenhouse operators, in-vessel fish farms, waste to energy processes, and others.

Support community pesticide reduction

EarthCare Partners will help to reduce the environmental impacts of food production through a community-wide pesticide reduction strategy (see Pesticide section).

Establish a permaculture design group

EarthCare Partners will establish a permaculture design group to pursue the application of permaculture principles in Sudbury. Permaculture (short for "permanent agriculture") focuses on the design of ecological food production systems. It includes the use of organic fertilizers, the non-use of synthetic pesticides, and other approaches that reduce the environmental impact of food production.

Support local food production

EarthCare Partners will support the creation of community gardens and the implementation of a Foodshed Project. The project is aimed at increasing the production of food grown locally, increasing environmental sustainability, and ensuring that food is equitably distributed to all socio-economic sectors.

2.11 Pesticides

The Issue:

Pesticides – the umbrella term that includes pesticides, fungicides and herbicides – are widely used in agriculture, forestry and horticulture to kill unwanted insects, fungi and plants. However, concern about the environmental and health effects of pesticides has increased greatly in the last decade. Public scrutiny of the pesticide issue was focused by the passage in 1991 in Hudson, Quebec of a by-law that banned the non-essential use of pesticides. Interest intensified after the Supreme Court ruled in 2001 that the municipality's by-law was legal.

In the wake of the Supreme Court's ruling, many Ontario municipalities – among them Cobalt, Barrie, Guelph, Hamilton and Toronto – began considering strategies to reduce pesticide use within their boundaries. These efforts have been triggered by public health concerns about human exposure to these chemicals, and usually focus on the misuse of "non-essential" pesticides – those products that are used for aesthetic reasons. It is understood that some pesticides will be required in problem areas, to protect crops, human health or the environment. Public health organizations invoke the "precautionary principle," which states that the absence of scientific certainty should not be used as an excuse for inaction where there are potentially serious threats to human and environmental health.

Recognizing the precautionary principle, the City of Greater Sudbury Council directed staff in November 2002 to develop a pesticide reduction strategy. This strategy is to be carried out in two phases.

photo: Don Johnston

Potential Benefits
- Improved ecological health
- Reduced human exposure to pesticides

Phase 1 will focus on reducing pesticide use on city-owned land. Phase 2 will broaden the scope to include reducing pesticide use on private property, and will be accompanied by a public awareness and education program.

The Goal:

To reduce the non-essential use of pesticides in the City of Greater Sudbury.

The Objectives:

- Increase public awareness of alternatives to pesticides.
- Increase public awareness of the risks associated with the misuse of non-essential pesticides.
- Decrease the misuse of non-essential pesticides in all sectors.

The Actions:

Show civic leadership

The City will take on a leadership role in pesticide reduction. It will adopt Integrated Pest Management as a preferred approach to dealing with pests on municipal property, address non-toxic alternatives in its Environmental Purchasing Guide, and develop an Employee Education Plan.

Create a Pesticide Reduction Steering Committee

EarthCare Sudbury will establish a Pesticide Reduction Steering Committee to investigate approaches to reduce pesticide use. The Committee will liaise with municipalities that have passed policies or by-laws restricting pesticide use, promote non-toxic alternatives to pesticide use and seek funds for community-based approaches to reducing pesticide use.

Develop a community-wide pesticide reduction strategy

Through consultation and education, the City and its Partners will develop a community-wide pesticide reduction strategy. This will include:

- addressing pesticides in Watershed Protection Programs (see the Water Resources section)
- promoting less-toxic alternatives to pesticides through the Community Eco-Procurement Strategy (see the Public Education and Outreach section)
- encouraging pesticide application companies and the public to adopt the use of less-toxic alternatives and Integrated Pest Management approaches
- including education on pesticides in education programs (see the Public Education and Outreach section)
- if necessary, passing a by-law to restrict the misuse of pesticides

Incorporate pesticide reduction into the Food Security Strategy

EarthCare Partners will incorporate pesticide reduction approaches into the development of a Sudbury Food Security Strategy (see Food section).

2.12 Eco-Procurement

The City of Greater Sudbury is intimately involved with the Local Action Plan – as a coordinator of municipal involvement, as a partner of EarthCare Sudbury, and as a participant in activities such as the energy retrofitting of its buildings. But the municipality has another potential role to play, and that relates to "green procurement." Green procurement is the conscious decision to give preference to products that are more durable, reusable or energy-efficient, products that generate less pollution, products that contain a high level of recycled materials, or products that have minimal impacts on the environment.

Municipalities are huge consumers of materials. According to the Federation of Canadian Municipalities, Canadian municipalities spend about $42 billion annually on goods and services. This is a tremendous amount of buying power. Changing procurement policies so that municipalities consider, not just the cost, but also the environmental impact of what they are buying, can have a profound effect on the environment (and the marketplace). The International Council for Local Environmental Initiatives (ICLEI) is currently promoting the development and use of green procurement policies in municipalities around the world. Good progress has been made in many communities including Hamburg and Stuttgart in Germany, Malmo in Sweden, Kolding in Denmark, Miskolc in Hungary, and Zurich in Switzerland.

The City of Greater Sudbury can continue its environmental and energy leadership by adopting green procurement policies. The City can leverage additional environmental benefits by working with EarthCare Partners, citizens and businesses on community-wide eco-procurement initiatives.

Potential Benefits

- Cost savings through practicing the 3RS
- Decreased pressure on local landfills
- Lower costs for sold waste disposal, hazardous materials management and pollution control
- Increased ability to comply with environmental regulations and demonstrate due diligence
- Lower risk of exposure to toxic products
- Conservation of natural resources
- Cleaner air and water
- Support for local green industries

The Goal:

To ensure that municipal procurement practices are consistent with EarthCare Sudbury goals and objectives.

The Objectives:

- Design and implement a green procurement system that will result in lower financial costs and decreased environmental impact.
- Encourage environmentally-friendly purchasing decisions by EarthCare Sudbury partner organizations and the citizens of Greater Sudbury

The Actions:

Design a green procurement policy

The City will seek funding for a study on how best to design and implement a green procurement system. The study will examine current practices, the existing legal and policy framework for procurement, progress made by other municipalities, the level of local support and key success factors. The study will examine the issues in a Northern Ontario context, and will include a cost-benefit analysis. Input to the study findings will be gathered from a workshop attended by local buyers groups and key decision makers (councillors, staff and representatives from participating community organizations).

Adopt a green procurement policy

When the green procurement policy is ready, the City will adopt it. Training will be provided to City staff, and information on the policy will be shared with Councillors, staff, citizens, community groups and EarthCare partners to foster support for green procurement throughout the community.

Involve citizens in green procurement

Through the EarthCare Sudbury public education and outreach program, the City will work with partners to design and implement a Community Eco-Procurement Strategy. This will promote environmentally-friendly purchasing decisions by the citizens of Greater Sudbury.

Foster increased availability of green products

The City and its partners will work with local merchants to increase the availability and range of choice of environmentally-friendly products on local store shelves.

2.13 Economy

The Issue:

In the 21st century, cities are increasingly becoming the economic engines that keep Canada's economy humming. As this happens, the competition among these cities to attract economic development is becoming increasingly fierce. However, there are many strategies the City of Greater Sudbury can adopt to increase its economic competitiveness in terms of attracting and holding on to business, industries and skilled workers. These strategies will also serve the dual purpose of improving environmental quality and sustainability.

The City of Greater Sudbury has recently adopted a new plan entitled "Coming of Age in the 21st Century – Economic Development Strategic Plan – 2015." Engine #5 of this plan focuses on pursuing targetted environmental business and renewable energy projects.

Eco-industrial networking

Sudbury has an opportunity to develop local eco-industrial networks. These are loose affiliations of businesses that can benefit from cooperating with each other, for example, in sharing energy, or using another firm's waste products as a feedstock for a manufacturing process. The identification and exploitation of such synergies typically provide participating companies with reduced costs and a greater return on investment. It also benefits the environment by conserving resources, reducing energy use and reducing pollution.

Environmental business

The environmental industry in Canada includes about 6,000 companies with $21 billion of annual sales, representing 2.2% of national Gross Domestic Product. Almost half of the industry is found in Ontario. With recognition of its energy efficiency and renewable energy initiatives and a strong technology sector, Sudbury is in a good position to attract environmental businesses. Indeed, the recent partnership of two local firms with the German firm, REpower AG, to establish a wind turbine manufacturing operation is a glowing example of what can be achieved.

The energy advantage

There are widespread concerns in Ontario about the province's energy supply and the cost of energy in the future. Sudbury's track record in achieving energy efficiency gains and its plans to develop renewable energy supplies can be used to attract investment, new industries and new businesses to the Sudbury area.

Quality of place

In the new economy of the 21st century, the competitive advantage has shifted to those regions that can generate, attract and retain the best talent. Studies show that "quality of place" is often the key to developing high tech regional economies. The people who work in these economies – so-called knowledge workers – are attracted by a clean and healthy environment, diverse and accessible recreational opportunities, and abundant lifestyle amenities. Sudbury can capitalize on its remarkable story of environmental renewal and its exceptional opportunities for outdoor recreation.

Ecotourism

Ecotourism has been defined as "responsible travel to natural areas

that conserves the environment and sustains the well-being of local people." In Canada, outdoor tourism and ecotourism have grown by 15 percent annually over the past five years. A major conference on ecotourism was held by the City in 2002, in partnership with Industry Canada-FedNor. It is expected that strategies to expand the ecotourism industry in Northern Ontario will evolve from the proceedings of this conference.

There is a tremendous opportunity for Sudbury to develop an ecotourism strategy that capitalizes on its successes in rehabilitation of the local environment and greenhouse gas reduction. (For its restoration efforts, the community was recognized with a United Nations Local Government Honours Award at the 1992 Earth Summit in Rio de Janeiro).

The EarthCare Sudbury Partners have broadened the ecotourism concept to include "Eco-Technology Tourism." This is a concept where renewable energy sites, innovative environmental businesses and interpretive centres become the focus of environmental technology tours.

Goal:

To achieve community economic development goals while improving the natural environment and sustainability.

Objectives:

- Foster the expansion of businesses and the development of new enterprises within the environment, energy and food sectors.
- Increase productivity of participating organizations.
- Enhance the competitiveness of the City of Greater Sudbury as a location for doing business.
- Promote waste re-use as a business development strategy.
- Increase ecotourism opportunities.

The Actions:

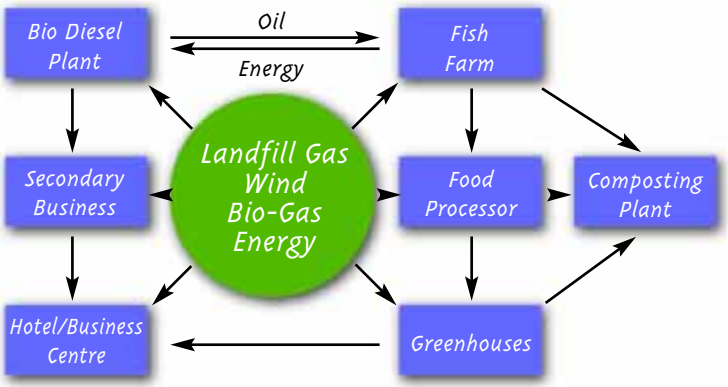
Adopt an eco-industrial networking strategy

EarthCare Partners will seek funding to develop an eco-industrial networking strategy to identify and exploit the synergies among private and public sector businesses and institutions.

Encourage the development of eco-industrial parks

EarthCare Partners will encourage clusters of targeted new businesses to locate near energy sources. They will recruit businesses and technologies to locate in these eco-industrial parks, and will own the energy infrastructure. Typically, a park will have mixed land use and will have several key partners in the cluster as in this "Typical Eco-Industrial Park."

Sudbury Eco-Industrial Park



Use the City's energy advantage as an attractor

To help attract new businesses, EarthCare Partners will promote Sudbury's successes in energy efficiency, district energy, and renewable energy as part of an economic development strategy.

Foster partnerships with environmental businesses

The City will encourage the development of partnerships between local industries and environmental businesses. This will build on the success achieved with the location of a future wind turbine manufacturing operation here.

Make "quality of place" a central feature of economic development strategies

EarthCare Partners will use Sudbury's "quality of place" – its clean environment, abundant recreational opportunities, and diverse lifestyle amenities – as a central feature in attracting economic development.

Develop an ecotourism strategy

In consultation with the ecotourism community, EarthCare Partners will develop a new eco-technology tourism strategy that celebrates the Sudbury story of environmental reclamation and renewal as well as the use of environmental innovative technology's contribution to sustainability and climate protection.

Secure research funding

EarthCare Partners will seek research funding needed to implement the Local Action Plan, in partnership with academic and research institutions in the community.

Develop a directory of eco-businesses

EarthCare Partners will develop a directory of local eco-businesses, including food producers.

Potential Benefits

Interestingly, economic development has become one of the main drivers of the Local Action Plan. Job creation is a priority of Council and is absolutely critical to the community's sustainability. Many of the Plan's actions will help fuel Greater Sudbury's economy.

Attracting new environmental business such as a Bio Diesel Plant and a Wind Turbine Assembly Plant will bring new "knowledge workers" to the area. This, combined with the dollars spent to develop eco-industrial parks and related infrastructure to support these new businesses will give rise to many new jobs. Currently the EarthCare Sudbury partners are actively working on several projects. These currently identified opportunities are projected to create economic growth and 630 permanent jobs. A sustained effort in this area, over the next ten years, will significantly increase the numbers.

The "Community Energy Plan" goal of producing 50% of Greater Sudbury's energy requirement locally presents a very significant opportunity to create an entirely new revenue stream in the community. This can only occur, however, if the City and other Sudbury investors take a significant equity position in these energy production projects. Without this local investment, others will utilize our resources and "the profits will continue to leave town."

If this local investment in energy production is made by the 2015, by conservative estimations, $25 million in energy revenue would be accrued annually. Likely 50 to 60% of that revenue will still be servicing long-term debt, leaving approximately $10 million to be pumped in the local economy annually. If, during this period, the community saved an additional $5 million annually through energy efficiency, the impact would be significant.

According to the International Council for Local Environmental Initiatives, the re-investment of $15 million annually into the community and its economic multiplier effects will result in the creation of at least 1,000 new jobs and/or the stimulation of new investment.

Other potential economic benefits expected from the EarthCare Sudbury Local Action Plan include:

- Improved return on investment for firms participating in eco-industrial networking
- A competitive advantage for business and industry through the development of green energy facilities
- Waste minimization leading to savings in waste disposal costs
- Increased tax revenues for the City
- An increase in the variety and nature of experiences available to visitors

3.1 Community Projects

Over the years, the City of Greater Sudbury has led the development of many community projects. As typified by the Lake Ramsay Boardwalk and Walkway in Bell Park, these projects are usually designed to contribute to the quality of life in Sudbury, and are developed with the involvement of many community partners and volunteers.

Community projects related to the EarthCare Sudbury Local Action Plan will also require the leadership of the City and the involvement of local businesses and organizations and individuals. Through existing programs, City staff will work with EarthCare Sudbury Partners and volunteers to implement these priority projects.

It is expected the community projects will evolve over the years but will focus on actions to improve the environment and the city's quality of place.

The Ramsey Lake Boardwalk in front of Science North.

The Goal:

To develop and implement community projects to promote and demonstrate actions that improve the environment and the city's quality of place.

The Objectives:

- Develop, operate and maintain projects that recognize the progress being towards sustainability.
- Demonstrate environmental and energy technology for public education and eco-technical tourism.
- Create lifestyle amenities to attract tourists and knowledge workers and beautify the city.

The Actions:

Develop Various Community Projects

On an ongoing basis, the City will lead in the development of community projects such as:

- the development of a Demonstration Ecological Building and Environmental Interpretive Centres
- the creation of trails and bicycle corridors that link significant features of the EarthCare Sudbury Local Action Plan
- the development of a Strategic Plan to beautify the gateways to the City
- the creation of visible barometers to report on progress and to maintain enthusiasm in the community for environmental action
- the development of an annual international environmental conference dealing with the complex issues surrounding sustainability and climate change

3.2 The Industrial, Commercial and Institutional Sector

Sudbury's industrial, commercial and institutional (ICI) sector is tremendously diverse. Mining and manufacturing are dominant industries in the goods-producing sector, accounting for 6.4 and 9.3 percent of employment in Great Sudbury respectively. The largest industries in the services sector are retail trade (15%), health and social services (11.4%), education (8%), government services (7.7%) and accommodation, food and beverage (7.5%).

Many industrial environmental initiatives are triggered by regulations and laws developed at the provincial and federal level. The federal government, for example, will be working with large industrial emitters on an overall target for greenhouse gas reductions.

Some Sudbury businesses and institutions, including Inco, Falconbridge and Laurentian University have made impressive gains in energy efficiency in the last few years. There is, nevertheless, much that the ICI sector can do to reduce its environmental impacts, especially with respect to improving the energy efficiency of buildings.

Energy efficiency in buildings

EarthCare Sudbury Partners have developed a Community Energy Plan that, among other things, focuses on improving energy efficiency in the community. The Community Energy Plan targets a saving by the community of $5 million dollars annually through improved energy efficiency. Falconbridge Limited, INCO and Laurentian University, the City and Greater Sudbury Utility Inc., among others,

Migrating waterfowl in Kelley Lake with Inco's Copper Cliff refinery in background.

photo: Don Johnston

have all made strong commitments to promote energy efficiency in their organizations.

As demonstrated in the City's Strategic Energy Plan, there are major gains that can be made in retrofitting buildings to achieve increased energy efficiency. The gains accrued include reduced operating and maintenance costs and reduced greenhouse gas emissions. Studies show that the gains from retrofitting can be dwarfed by the gains possible in new building construction. By some estimates, the energy requirements of new commercial buildings can be reduced to a third of what is currently the norm, and to less than half of what can be achieved using the National Model Building Code. Grasping the opportunities available for retrofitting existing buildings or building super-efficient new buildings is the challenge of the Local Action Plan. Programs like Toronto's Better Building Partnership are one model for how energy efficiency can be achieved in private sector buildings.

photo: Don Johnston

Sharing information and knowledge

As noted above, Sudbury's ICI sector comes in all shapes and sizes. There are great differences in the sector with respect to the capacity to undertake environmental programs. For many small and medium industries, access to relevant information on clean technologies and energy efficiency is important. All members of the sector would likely benefit from receiving information that keeps them abreast of new and emerging environmental and energy technologies, products, services and processes. So too, would they benefit from information on business management techniques such as life cycle costing and sources of funds for environmental improvement and energy efficiency programs. The well-informed business will be aware of global best practices and can consider whether to adopt them within its own operations.

The Goal:

To foster sustainability within the industrial, commercial and institutional sector in the City of Greater Sudbury.

The Objectives:

- Develop programs and services that meet identified sustainability needs within the ICI sector.
- Foster the sharing of information and knowledge on sustainability within the ICI sector.
- Assist the ICI sector meet EarthCare Sudbury targets using strategies that integrate both business and environmental objectives.

The Actions:

Develop a Series of Building Workshops

EarthCare Partners will develop a series of workshops for the owners of major buildings. The focus of the workshops is to help building owners develop environmental and energy management plans that are consistent with their business strategies.

Establish an ICI Energy Network

EarthCare Partners will establish an ICI Energy Network. The focus of the Network will be to promote energy efficiency in ICI buildings through retrofits of existing buildings and state-of-the-art new building design. The Network should include those players who are in a position to influence the decisions of end-use energy consumers in the ICI sector. This includes: air conditioning and electrical contractors, mechanical engineers, architects, energy savings companies, local construction associations, realty associations, gas and electrical utilities, equipment suppliers and industrial energy managers.

Form an Environmental Program Services Unit

Once the ICI Energy Network is formed, it should establish within itself an Environmental Program Services Unit. The Unit should:

- complete a needs assessment of ICI members
- identify and inventory funding sources for the ICI sector
- develop and maintain data bases to link ICI members with information on global best practices and ICI-related sustainability associations
- facilitate the development, management and sharing of knowledge among members from the ICI sector
- promote the adoption of management such as life cycle costing in capital expenditure decision-making and the inclusion of environmental priorities in business plans
- support the initiatives of the ICI Energy Network

Promote the establishment of a Net Impact chapter

EarthCare Partners will promote the establishment of a chapter of Net Impact in the MBA program at Laurentian University. Net Impact is an international organization representing students and alumni from over 100 graduate business schools. It provides future business leaders with access to educational, leadership and professional programs that are designed to address issues of environmental and community sustainability.

Potential Benefits

- Attainment of EarthCare Sudbury environmental and economic targets
- Reduced costs of implementing environmental strategies due to the use of a partnership approach
- Increased awareness of and readiness to conform to future standards and regulations
- Increased competitiveness because of increased efficiencies due to adoption of best practices
- Increased community goodwill for participating businesses

Potential Benefits:
- Reduced environmental impacts on air, water and land
- Reduced greenhouse gas emissions
- Increased public support for environmental and sustainability initiatives
- Increased volunteerism and community involvement in environmental projects and programs
- Increased markets for "green" products

3.3 The Residential Sector

Many of the actions identified in the Local Action Plan will target and require the participation of the residents of Greater Sudbury. This includes voluntary initiatives to address water conservation, anti-idling, the promotion of cycling, walking and transit use, waste reduction, re-use and recycling, the protection of shorelines and water quality in lakes, preventing the introduction of invasive aquatic species, the disconnection of downspouts and foundation drains from the sewer system, and the elimination of non-essential pesticide use. Programs addressing all these issues will need the active participation of Greater Sudbury residents in order to be successful.

The outcomes of these programs can significantly contribute to a cleaner environment. Residential energy use, for example, makes up 17 percent of the energy used in Canada, and half of this is used for home heating. In terms of greenhouse gases, the residential sector contributes 72 megatonnes of carbon dioxide equivalents annually, 15.8 percent of all emissions. Significant benefits can be realized from home retrofits, in terms of energy saved, greenhouse gas emissions avoided, and money saved (an average of 25 percent of energy bills by implementing the recommendations of an Energy Guide for House Evaluation).

The Federal Government will soon be releasing their "One Tonne Challenge," a program to encourage individual behaviour change. The goal of the program will be to have each person reduce their contribution to greenhouse gas production by one tonne per year. Sustaining this behaviour change over time will be one of the real challenges of the program.

Moving beyond the energy sector, there are scores of ways that residents can have a positive effect on the environment and contribute to a sustainable Sudbury. For example, Canadians consume on average 350 litres of water a day. Water conservation measures can save taxpayers money, reduce the impacts on lakes, rivers and streams, and reduce greenhouse gases. Reducing waste and diverting more waste from landfill through composting, re-using and recycling also has multiple benefits. Eliminating the use of non-essential pesticides can improve both ecological and human health. Many actions taken by individuals can help us achieve cleaner water and air, healthier systems and a more sustainable future for Greater Sudbury.

Many Sudbury citizens are already involved in environmentally positive activities through recycling, through programs such as Idle-Free and EcoAction's EnerGuide home audits and through community-based projects to clean up parks and restore degraded watersheds. There is a tremendous opportunity through the Local Action Plan, however, to develop an integrated and comprehensive program to involve all residents in all aspects of improving the environment. There is also an opportunity to increase the exposure of local students to environmental education.

The Goal:

To involve Sudbury residents in actions that to contribute to a cleaner environment and a more sustainable city.

The Objectives:

- To increase people's understanding of environmental issues and the environmental impacts of their actions.
- To increase participation in positive actions that help to improve the environment and contribute to sustainability.
- To develop a stewardship ethic across the community.

The Actions:

Develop a comprehensive program to involve residents in activities and actions that benefit the environment

The City will work with EcoAction Sudbury and other partners to develop a comprehensive and integrated program to involve Sudbury residents in helping to achieve a cleaner environment and a more sustainable city. The program will address and integrate (but not be limited to) waste reduction, recycling, composting, hazardous household products, energy and water conservation, the reduction of pesticide use, shoreline protection, habitat enhancement, and reducing automobile use. The program will include the use of effective communication, community-based social marketing approaches, demonstration projects and other tools.

Develop a "One Tonne Challenge" Strategy

As an early action, the EarthCare Sudbury Partners will develop their version of the "One Tonne Challenge" and take advantage of the National Campaign to encourage local actions to reduce greenhouse gas emissions.

Focus on integrated solutions.

photo: Don Johnston

3.4 Youth and the Environment

It's an old adage that the youth of today hold the promise of tomorrow's future. This is never truer than when addressing long-term challenges such as climate change and sustainability, which require significant societal changes. The youth of Sudbury have a good general understanding of the environmental issues that have been the focus of action in the Greater Sudbury area. However, there is still much that can be done to improve education on environmental issues and to induce positive behaviour change.

A recent survey confirms that Greater Sudbury youth are concerned about water quality, air quality and other local environmental issues.

Copper Cliff Public School.

photo: Don Johnston

In fact, youth have been involved in many local activities, including:

- Hands for Nature, Greener Neighborhoods Through Volunteerism
- Children's Summer Program in Community Gardens
- Native Medicine Garden (planted on June 21, National Aboriginal Day)
- Junction Creek Restoration: bug search, liming and tree planting

In 2003, City Council created the Greater Sudbury Youth Cabinet to help develop a strong, proactive image of young people. The Cabinet will provide direction on issues confronting youth and provide volunteer resources to community activities. Environmental action should be included in these priority activities.

The Goal:

To embed environmental action in the day-to-day lives of youth of all ages in the City of Greater Sudbury.

The Objectives:

- To raise awareness in youth of climate change, sustainability, environmental restoration and local environmental action strategies through multi-tiered education programs.
- To directly involve youth in all phases of local environmental actions including the use of behaviour change tools.

The Actions:

Expand the environmental curriculum

EarthCare Partners will work with and encourage all schools and educational institutions to increase the environmental content in

their curriculums. This will help build awareness of environmental issues and lay the groundwork for environmentally-positive behaviour change.

Continue Science North and youth programming

Science North provides Greater Sudbury with an opportunity for unique educational experiences, introducing young and old alike to the science underlying our environmental challenges and opportunities. Science North already has some wonderful programs, including the Climate Change Object Theatre and the Roots 'N' Shoots Annual Conference in conjunction with the Jane Goodall Institute. The continued development of in-house and outreach school programs at Science North will build on the work done to date and will sustaining this focus.

Develop Eco-Tours for youth

EarthCare Partners will develop Eco-Tours for youth in order to raise awareness of the many activities underway in the Local Action Plan. These tours could include Science North, water and wastewater treatment plants, waste management sites and facilities, greenhouses, renewable energy sites, demonstration ecological buildings, eco-industrial parks, and regreening projects.

Involve youth in Community Projects

Ontario's education curriculum requires secondary school students to have at least 40 volunteer hours in order to graduate. Many of these hours can easily be directed to environmental action. EarthCare Partners will provide opportunities for youth to become involved in Community Projects, which will address a particular environmental theme each year. Youth can be involved in all phases of these Community Projects. At the school level, Eco-Teams can be created. The Greater Sudbury Youth Cabinet can play an important role in helping to deliver this program.

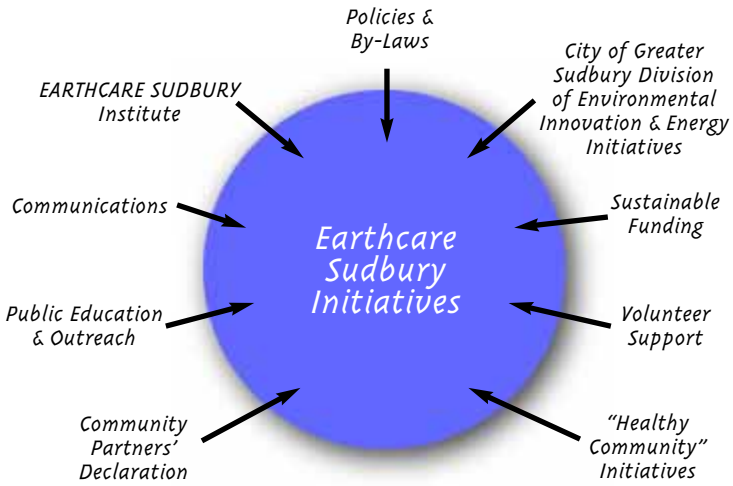
Develop Youth Environmental Awards

In order to encourage achievement and excellence in environmental education and community involvement, the EarthCare Sudbury Partners will develop a "Youth Environmental Award" system for individuals and/or teams. The awards will vary and could include such ideas as: recognition naming on community projects, development of an "Environmental Wall of Excellence", or financial support for further education.

ECO-Schools

4

Implementation Strategy



4.1 The Implementation Strategy

EarthCare Sudbury understands the vital importance of a good implementation strategy for the Local Action Plan. Too many good plans end up consigned to filing cabinets, all for the lack of an effective implementation strategy. Effective implementation of a plan requires:

- clear actions;
- measurable targets or benchmarks;
- timetables for actions;
- clearly defined responsibilities;
- support of partners;
- effective coordination;
- monitoring and reporting of progress; and
- adequate staff and financial resources to carry out the actions.

The Local Action Plan is an ambitious, visionary, complex and comprehensive partnership initiative. The implementation strategy reflects this complexity, requires multi-disciplinary approaches, and uses a variety of mechanisms or tools to get the job done. As described in this section, these include the EarthCare Sudbury Institute, a community-based partnership organization focused on fostering community sustainability in Greater Sudbury. It also includes a new City Division of Environmental Innovation and Energy Initiatives, to coordinate municipal implementation efforts. The implementation strategy also includes an evolution of EarthCare's partners into a formal partnership organization, the EarthCare Sudbury Community Partnership. Other important implementation mechanisms include sustainable funding, public education and outreach, communication, and volunteerism and community involvement. All of these mechanisms will be required for effective implementation of the Local Action Plan.

Ultimately, implementation of the Local Action Plan will be coordinated by the EarthCare Sudbury Institute and the City's Division of Environmental Innovation and Energy Initiatives. Until these are ready to take up this role, implementation will be coordinated by the EarthCare Steering Committee.

4.2 EarthCare Sudbury Community Partnership

One of the reasons for EarthCare Sudbury's success is that it is a partnership organization. The EarthCare Sudbury partners first came together in 2000, when 38 community organizations representing a broad range of interests signed a declaration confirming their participation in the development of the Local Action Plan. Since that time, additional partners have joined in this unque process. Now that the Local Action Plan has been finalized, the EarthCare Partners (now numbering over 90 organizations and growing) will again be asked to formally endorse their support by signing a declaration, as an initial step in the implementation process.

To formalize their relationship and coordinate their efforts, it is proposed that the EarthCare community partners create an EarthCare Sudbury Community Partnership. The partners would work with an organizational development consultant to design and develop a healthy and robust organization that meets the partners' needs. Some of the key organizational issues that will need to be addressed include: governance, accountability, management, funding of the EarthCare Sudbury Institute and its relationship with various community organizations.

The creation of an EarthCare Sudbury Institute has been proposed as one of the primary vehicles for implementing the Local Action Plan. The community partners will be asked to help set the terms of governance for this not-for-profit Institute during consultations that are part of the feasibility study and business planning process.

Community partners will also be asked to support the Institute by becoming members. As members, the community partners will have increased access to the Institute's information resources on energy efficiency and environmental improvements. There may also be increased opportunities for partners to take part in special projects and research programs.

The feasibility study and business planning process for the Institute will assess the potential for sharing partner resources (such as buildings or staff) to meet the capital and operating needs of the Institute. Financial support for the Institute may be sought from partners in the form of membership fees, donations, fees for service, and other suitable mechanisms that may be identified in the feasibility study and business planning process.

4.3 EarthCare Sudbury Institute

The EarthCare Sudbury Institute will be an independent, not-for-profit, partnership-based organization with a singular focus. The goal of the organization will be to foster community sustainability in Greater Sudbury, with an emphasis on energy efficiency, renewable energy and environmental enhancement. The main activities of the Institute will be to coordinate and develop programs that further community sustainability goals. The Institute will help partners get funding for priority projects and will be a central focal point for community sustainability initiatives.

The Institute will be formed as a partnership that includes the City of Greater Sudbury and other public and private sector organizations. It will work directly with the proposed Division of Environmental Innovation and Energy Initiatives at the City of Greater Sudbury and other EarthCare Sudbury partners to implement the EarthCare Local Action Plan.

The Institute will develop and implement a long-range strategy and business plan, aiming to achieve organizational sustainability.

Areas of emphasis and activities

Initially, it is proposed that the Institute will focus on projects related to energy, including greenhouse gas reduction. Over time, it should expand its focus to encompass other areas of environmental excellence that will further community sustainability goals.

Proposed organizational structure

The Institute will have a Director who will report to a board of directors. The Board will provide overall direction, monitor progress and ensure financial accountability. The Board will consist of members with expertise in the fields of environmental restoration, energy and freshwater ecology. It will be supported by a Think Tank, or Advisory Committee(s).

Attracting appropriate personnel

For the Institute to be recognized as "best in class," it will have to attract the best and brightest personnel. Sudbury is well-positioned to do this, with its strong technology sector and track record in environmental enhancement and scientific research (e.g., the Sudbury Neutrino Observatory). The municipality will soon host Canada's newest medical school, and boasts a progressive university, two community colleges, a major regional hospital, a world-renowned science centre, and an outstanding northern lifestyle. The Local Action Plan emphasis on improving Sudbury's "quality of place" will enhance the ability to attract appropriate personnel.

Sources of funding

EarthCare Sudbury will seek initial startup funds to do a feasibility study and develop a business plan. Funds will be sought for this from FedNor, the Province of Ontario, EarthCare Sudbury Partners, foundations, professional organizations and private citizens. In order

for the Institute to become sustainable over the long term, it will require long-term funding commitments.

Getting started

A seven-stage approach is proposed for development:

- Communicate the Institute's vision to elected officials, potential partners and supporters, conduct a feasibility study and identify the best location.
- Determine the organizational structure and develop a business plan.
- Secure funding for startup and operational expenses.
- Establish the Board of Directors and determine priorities.
- Hire a Director and other staff.
- Develop and deliver programming with partners.
- Deliver programming and services on a fee-for-services basis to customers.
- Seek additional funding to broaden the range of activities.

photo: Don Johnston

Laurentian University area.

4.4 Division of Environmental Innovation and Energy Initiatives

One of the City's strategic priorities, set in 2002 and confirmed in 2003, is to "Pursue new environmental and alternative energy opportunities identified in EarthCare Sudbury's forthcoming Local Action Plan and the Community Energy Plan." As part of the City's economic development strategy, a focus on environmental and renewable energy opportunity is one of five "Engines of Development".

EarthCare Sudbury proposed that the City set up an internal division in order to focus on Council's new priority and to support internal objectives and the community's efforts to implement the Local Action Plan. The newly-created Division of Environmental Innovation and Energy Initiatives will work with the community-based EarthCare Sudbury Institute, the Greater Sudbury Development Corporation, and other community partners to instill a culture of environmental actions as part of the City's core business and in the community as a whole.

In September 2003, City council confirmed its support by passing the following resolution:

WHEREAS the Council of the City of Greater Sudbury by their resolution 2003-35 confirmed:

- THAT Council support the initiatives outlined in the EarthCare Local Action Plan;
- AND FURTHER THAT the Organizational Elements of the Proposed Implementation Strategy will be evaluated during "The Organization for Tomorrow" process;
- AND FURTHER THAT the Chief Administrative Officer be directed to bring a report back to the Priorities Committee with recommendations outlining how Council may implement the initiatives in the EarthCare Local Action Plan and integrate these initiatives into the City's organizational initiatives and policies by creating a Division of Environmental Innovation and Energy Initiatives;

THEREFORE BE IT RESOLVED THAT a new Division of Environmental Innovation and Energy Initiatives be created in Public Works;
AND FURTHER THAT the new Division be created with the following requirements:

- THAT the Sections in the new Division continue to deliver their current activities;
- THAT the Sections also collectively work together to champion environmental innovation and energy initiatives in the core activities of Public Works;
- THAT this Public Works unit work closely with the Economic Development and Planning Services Department on community-based EarthCare activities;
- THAT there be no additional permanent staff hired as a result of this reorganization;
- THAT there be no overall budget increase arising from this reorganization;

AND FURTHER THAT environmental and energy objectives be required to be included in the business plan for all City units thereby developing a culture that fosters environmental and energy innovation.

4.5 Sustainable Funding

The City of Greater Sudbury has had tremendous success to date securing the funding needed to initiate its sustainability agenda. Past funding sources have included the municipal budget which provided the funds to develop and implement the Strategic Energy Plan to retrofit municipal buildings. Seed money to start the Local Action Plan came from Environment Canada's Climate Change Action Fund. The Community Energy Plan has been partially funded through the federal government-supported Green Municipal Enabling Fund of the Federation of Canadian Municipalities. A community-based anti-idling campaign pilot program was funded by Natural Resources Canada.

The City now has a significant annual budget for EarthCare Sudbury Initiatives and a growing team focussed on environmental action. Over 100 community organizations, industries and businesses are expected to sign a second declaration called the EarthCare Sudbury Community Partnership committing to work together to implement the Local Action Plan.

EarthCare Sudbury will seek funds from various sources to develop the EarthCare Sudbury Institute. The business plan will identify the capital and operating requirements for the Institute and the expected revenue sources. As part of the business planning process, EarthCare Sudbury will assess the potential for establishing an endowment fund, including potential contributors. Such a fund, in which the principal is held in perpetuity and invested to generate income, will help the Institute achieve financial stability and sustainability.

EarthCare Sudbury will also promote the creation of a Northern Ontario Centre of Excellence for energy solutions and freshwater ecology. The Centre will focus on the research and development opportunities that arise from the Local Action Plan. The Centre's business plan will be developed to ensure its long-term financial sustainability.

The Council of the City of Greater Sudbury has now adopted this work as a strategic priority, committing to "pursue new environmental and alternative energy opportunities identified in EarthCare Sudbury's Local Action Plan and the Community Energy Plan." Implementing this Local Action Plan, however, will require stable, predictable and long-term funding. This will require a source of funding that does not put additional pressure on the tax-base. It is proposed that this new revenue stream arise from the City's investment in renewable energy infrastructure. This strategy has the potential to retain millions of energy dollars in Greater Sudbury and to provide sustainable funding to ongoing environmental and energy initiatives.

4.6 Communication Strategy

Building awareness of the EarthCare Sudbury Local Action Plan through effective communication is a vital component of implementation. Communication is important for accountability, so that people know what is going on and what kind of progress is being made. Communication is an important tool for building bridges to new partnerships and initiatives. Communication is also an important foundation for behaviour change and reinforces it, once that change has been made.

Communicating to the public

A key focus of Local Action Plan communication is to generally raise awareness about environmental issues, especially those that are less well understood by the general public. Climate change is a good case in point. Most people have heard of it, but not everyone understands the causes, and fewer still are aware of the potential impacts on weather, human health, agriculture, infrastructure and water supplies. Understanding why climate change is a problem is a fundamental building block in getting people to reduce their own greenhouse gas emissions. Understanding the links between sustainability and climate change is equally important.

Another important focus of communicating to the public should be performance – that is, the progress being made to implement the Local Action Plan and its related initiatives. Progress will be measured against targets or benchmarks developed in the Monitoring and Evaluation Program (see section 6). Progress reports need to clearly articulate what has been accomplished, how much remains to be done, and whether environmental and economic objectives are being met.

Communicating to partners

EarthCare Sudbury also has to focus on communicating to its partners. This communication will operate at a different level, focusing on exchange of information about initiatives, programs and projects. Here too, reporting on progress will be important, but rather than success in meeting greenhouse gas targets, the measure may be the success of a particular program.

Developing a communication plan

With its partners, EarthCare Sudbury needs to develop a communication plan to guide it. Such a plan needs to include:

- a situational analysis (external considerations, trends)
- objectives (what are we trying to do?)
- resources (what do we need to implement the plan?)
- strategy (what is the general approach?)
- audiences (who are we trying to reach?)
- key messages (what are the "take home" messages?)
- tactics (what about branding? positioning? slogans?)
- tools (will we use advertising? special events? publications? media releases? community relations?)
- timing (when do we do these things?)
- evaluation (how will we know if we're doing a good job?)

4.7 Public Education and Outreach

Reaching out to the public and involving them will be vital to the success of many of the actions identified in the EarthCare Sudbury Local Action Plan. A number of key implementation tools have been identified by the Public Education and Outreach Working Group.

Community-Based Social Marketing

The solutions to many of our environmental problems are rooted in *changing how we behave*. This is true for reducing waste, recycling, making our homes more energy efficiency, using modes of transportation other than the automobile, and eliminating pesticide use in yards and gardens. Studies have shown, however, that the traditional form of marketing – using the media to give people information about the need to conserve water or use public transit – is not by itself sufficient to change behaviour. EarthCare Sudbury proposes using community-based social marketing to achieve permanent behaviour change.

photo: Don Johnston

Community-based social marketing is premised on removing the barriers that prevent an action from taking place, while enhancing the benefits of taking that action. Through the use of tools such as commitments, prompts, norms, incentives, effective communication and face to face contact, community-based social marketing can be used to get people to conserve water, reduce waste, avoid engine idling, save energy, and act in other beneficial ways to improve the environment in Sudbury.

Integrated theme-based outreach

Outreach to the community will be carried out using a theme-based approach that is embedded in broader messages about sustainability and environmental protection. The use of specific themes (such as energy conservation one year, or protection of water quality another) will allow specific actions (and specific audiences) to be targeted. In all cases, the outreach will reflect the interconnectedness of environmental issues, and the specific theme messages will be related to the overall message of enhancing environmental health and improving sustainability in Sudbury.

Environmental declarations

One of the effective tools of community-based social marketing is having people make a commitment to do something. Research

shows that those who make a commitment are more likely to behave in a way that is consistent with that commitment. EarthCare Sudbury proposes to seek commitments from citizens, youth and businesses to support environmental and energy goals by signing environmental declarations.

Develop a Community Eco-Procurement Strategy

Consumers can have a great impact on the environment through the products they buy. EarthCare Partners will design and implement a Community Eco-Procurement Strategy. This will promote environmentally-friendly purchasing decisions by the citizens of Greater Sudbury. This would include, for example, encouragement to use refillable containers, to buy in bulk where possible, and to purchase less-toxic alternatives to household cleaning products and pesticides. EarthCare Partners will also work with local retailers to increase the availability and range of choice of environmentally-friendly products on store shelves.

Expand the Destination Conservation program

The City will support the expansion of the Destination Conservation Program to cover all schools in Greater Sudbury. Currently many schools involve students, teachers, school councils and school board staff in environmental education and the conservation of resources and energy. In addition to its educational benefits, the program reduces energy use, reduces greenhouse gas emissions, and saves the School Board money.

Demonstration projects and interpretive centres

Demonstrations can be powerful tools to educate and inform people. EarthCare Sudbury proposes to develop an EarthCare Ecological Building as a demonstration of state-of-the-art environmentally friendly design and construction, and a living laboratory for education. The building would include such features as energy efficient design, the use of renewable energy technologies for electricity and heat, innovative water and wastewater treatment systems, the use of building materials with low toxic emissions and water conservation systems.

Other potential demonstration projects include a Wind Energy Interpretive Centre, xeriscape (low water) gardens, Energy Clusters, Eco-Industrial Parks, and a Smart Growth Development Centre.

EarthCare Sudbury newsletter

EarthCare Sudbury proposes to develop a periodic newsletter to communicate to the public about successes, new programs, events, resources and progress in the Local Action Plan.

Seminars and case studies

EarthCare Sudbury proposes to offer seminars to educate local businesses about environmental and energy opportunities and initiatives. This may be particularly helpful for small and medium sized businesses that lack the resources to carry out research on best practices in environmental protection and energy efficiency.

Website

EarthCare Sudbury proposes to create a website to share general information about its actions and programs, and to provide specific information to certain sectors of the community. The site would include relevant material relating to EarthCare projects and programs, as well as links to other sites, such as the federal climate change site.

4.8 Volunteerism and Community Involvement

Volunteerism is a core value of the EarthCare Sudbury Local Action Plan. Indeed, volunteerism has been instrumental in its development. Hundreds of citizens came together over a year and a half to help develop the Plan, bringing with them their ideas, experience, concerns and commitment to making a difference. It is expected that volunteerism and community involvement will continue to be an instrumental part of making the Action Plan a reality. Volunteers will play important roles as members of the Board and the Think Tank of the EarthCare Sudbury Institute. They will play a role in public education and outreach, perhaps as local community champions. In addition to these roles, the following roles are envisaged as ways of implementing the Local Action Plan.

Community cleanup groups

Experience has shown that physically cleaning up a park, trail or stream, can be an important first step in learning to care for the environment. For some people, involvement in such "hands on" cleanup is the beginning of understanding that they are part of the environment and not separate from it. Adopting and maintaining neighbourhood parks, streams, and trails is an effective way of both fostering stewardship and improving the environment. Project Careshares, an initiative of the City's Citizen and Leisure Services Department, has several groups that have adopted sites and gardens, and others that help by cleaning trails and paths. The Junction Creek Stewardship Committee organizes annual cleanups of the creek by volunteers, and many schools host annual cleanup events involving their students. EarthCare Sudbury can build on this by:

- making an inventory of existing groups and projects and publicizing them
- developing a "how to" information package for groups interested in starting cleanup projects
- assist in organizing cleanup events by picking up garbage or providing gloves and other materials
- provide matching funds for groups interested in doing cleanups

photo: Don Johnston

- provide recognition of groups and events
- initiate a community-wide cleanup event, perhaps to coincide with Environment Week or Ontario Parks Week

Environmental stewardship

Citizens can play a unique role in terms of keeping an eye on their local environment, including parks, streams and roadways. Initiatives to involve citizens in monitoring public areas are already taking place as part of the Sudbury Trail Plan. Initiatives to involve citizens in monitoring public areas are already taking place as part of the Sudbury Trail Plan. Few citizens, however, know that incidents such as illegal dumping of garbage or the dumping of hazardous materials can be reported to Crime Stoppers. (Crime Stoppers passes on the information to the appropriate agency, such as the Ministry of the Environment or Natural Resources). Accordingly, EarthCare proposes to:

- meet with Crime Stoppers staff to clarify agencies and local groups working in specific areas
- meet with local park and recreation groups such as Rainbow Routes Association to encourage their members to monitor the areas they frequent, similar to initiatives already done by the Sudbury Trail Plan
- piggyback on promotional efforts already established by Crime Stoppers
- develop an information package on environmental regulations and resources for distribution to individuals, organizations and businesses
- establish a matching fund policy similar to that which the City has for Neighbourhood Watch Associations

Neighbourhood Champions will show leadership and help set an example of environmental stewardship. Citizen's Environmental Declarations will be used to identify and publicize these champions. They will become spokespersons in the community.

Restoration and trail building

Citizens can also play an increased role in restoration activities, by planting trees and shrubs along stream banks and shorelines, by planting trees as part of Sudbury's re-greening initiatives, and by naturalizing parks. Helping to create and maintain trail systems helps to improve access to parks and open space.

Schoolyard naturalization

Some Sudbury schools have initiated schoolyard naturalization projects, but many more schools could be involved. Such projects enhance both the natural environment and the educational experience. Programs to naturalize schoolyards typically involve volunteers from the community, students and school staff. Asphalt, concrete or turf grass is removed and replaced with native trees, shrubs, grasses, wildflowers and gardens. Naturalized schoolyards serve as outdoor classrooms for students, providing them with a healthy and safe place to play as well as a place to learn about nature.

Adopt a Road

Citizens can also play an important role in stewarding our roadways. The City's Adopt-A-Road program encourages individuals, non-profit organizations and businesses to contribute to the care of roadsides by picking up litter. The City supports groups and individuals that adopt roads by providing training, cleanup supplies and project coordination. Volunteers are publicly recognized for their efforts in keeping our public spaces beautiful.

5 Greenhouse Gas Reduction Forecast

The need to take local action on climate change is one of the two main reasons behind the EarthCare Sudbury Local Action Plan. As noted throughout this document, there are abundant opportunities for the municipality, industries, institutions and individuals to reduce emissions of the greenhouse gases that contribute to climate change. Most of these reductions can be achieved through investments in energy efficiency and the use of renewable energy sources, but transportation, solid waste, and other sectors can also contribute to the total.

To get a sense of what reductions might be achievable through the actions identified in the EarthCare Sudbury Local Action Plan, the City looked to the expertise of ICLEI Energy Services to help develop Draft Greenhouse Gas Reduction Targets. To do this, ICLEI used the goals and objectives developed in the EarthCare Sudbury Working Groups. Modelling was based on the methodology used in ICLEI's International Cities for Climate Protection Campaign.

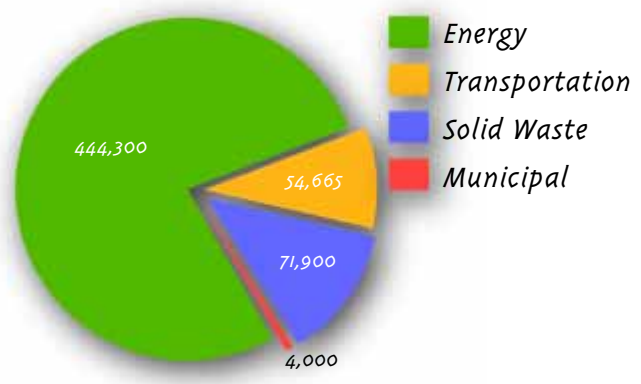
The resulting analysis focused on the sectors that have the most direct impact on greenhouse gas emissions. This includes:

- energy
- transportation
- solid waste
- the municipal sector

The greatest reductions obtained will come from the energy sector, through the implementation of wind generation, small-scale hydro, landfill gas utilization, geothermal energy and solar hot water projects (see accompanying pie chart). Other sectors than the four identified above may also contribute indirectly to reducing greenhouse gas emissions, but their potential impact has not been factored into the equation yet. Nor have municipal actions such as energy efficiencies from additional building retrofits or street-lighting upgrades.

The analysis carried out shows that, if the actions identified in the Local Action Plan are implemented, Greater Sudbury can reduce greenhouse gas emissions by 574,800 tonnes a year. This translates into a

Greenhouse Gas Reduction Targets, by Sector (in tonnes per year)



Total 574,800 tonnes per year

Greenhouse Gas Reduction Forecast

photo: Don Johnston

target of more than 30% reduction below 1990 levels within 15 years, which is far exceeds the voluntary 20% target that has been used in the municipal Partners for Climate Change program.

Greater Sudbury's target of a 30% reduction in greenhouse gas reductions below 1990 levels is an ambitious one. It is based on the assumption that, working together, EarthCare Partners will be able to achieve significant environmental and sustainability gains. This target may be adjusted over time, as implementation unfolds. For the purposes of this Local Action Plan, it will remain the target that EarthCare Sudbury Partners are striving to meet.

6

Monitoring Success

The overall goals for the EarthCare Sudbury Local Action Plan provide overall direction. Goals and objectives have also been set within each part of the Local Action Plan. The next step is to identify measurable targets. This will be done in the first year of implementation, as part of the Monitoring Program.

Monitoring Progress:

Why do we need to monitor?

Monitoring progress through a formal Monitoring Program will accomplish many things. It will:

- give us baseline information on where we are today, before implementation starts
- tell us whether we are making progress or not towards our goals
- tell us whether we are achieving our targets in various areas
- tell us whether we need to adjust our expectations, our resources, or our strategies to reflect changing conditions, emerging technologies or experience gained
- ensure accountability for implementation of the Local Action Plan
- identify successes so that they can be recognized and celebrated
- build understanding and support for continued community action

Monitoring progress on actions

The Monitoring Plan needs to measure progress against targets that will be set for the Local Action Plan actions. The targets will be measurable numeric values related to time, for example, achieving 15% percent reduction in water use by 2008. Targets will be set within a year of the Local Action Plan's adoption by a community-based process. The targets will include both short and long-term targets.

photo: Don Johnston

Monitoring Success

Monitoring progress on goals and objectives

The Monitoring Plan also needs to measure progress in terms of the Local Action Plan's goals and objectives. These are usually not expressed in terms of numerical values, but rather speak to trends. For example, we need to know things such as: Are we reducing our greenhouse gas emissions from transportation? The first step in this is usually to develop indicators.

Indicators are pieces of evidence that tell us something about the conditions around us. (Your temperature, for example, is an indicator of your health). Careful selection of indicators will tell us whether we are making progress towards meeting the Local Action Plan goals and objectives, including the targets set for the Kyoto Protocol. When selecting indicators, it is useful to pick ones that show trends, are scientifically defensible, and are easy to communicate and understand.

Include short and long-term targets

The Monitoring Plan will use both short and long-term targets. Achieving short-term, "do-able" targets allows people to see that progress is being made and provides opportunities to celebrate success, increase awareness of the Local Action Plan, and increase participation in programs and projects.

How will monitoring be done?

Once the targets are identified, the Monitoring Plan should be developed. It should include:

- goals and objectives
- targets
- indicators
- data sources
- who is responsible for collecting the data
- the data reporting system
- the form and accuracy of data to be collected
- the database management system to be used
- data analysis needs and responsibilities
- schedules for reporting
- the nature of reports

Who will monitor and report on monitoring results?

The City and the EarthCare Sudbury Institute will share the responsibility for monitoring progress on the Local Action Plan. The EarthCare Sudbury Institute will have the responsibility to report at periodic intervals on the overall results of monitoring the Local Action Plan. The Institute will draw on information gathered by a broad range of agencies and partners.

Reviewing the Local Action Plan:

The Local Action Plan is meant to be a living document. It will be comprehensively reviewed and evaluated once every five years to see if it continues to meet the needs of EarthCare Sudbury, its partners and the community of Greater Sudbury. The review will examine goals, objectives, targets, actions and the progress being made. If needed, adjustments can then be made to reflect changes in environmental conditions, community priorities, knowledge gained and technological and scientific advances made. In this way, the Local Action Plan becomes a living document.

Getting Involved

The EarthCare Sudbury Local Action Plan can only be successful if it continues to have the support of its partners and engages the broad community of Greater Sudbury. There are many ways that individuals, organizations, businesses and institutions can get involved in the Local Action Plan and contribute to making Sudbury a more healthy, prosperous and sustainable community.

Become a Continuing EarthCare Sudbury Partner

If you represent an EarthCare Sudbury Partner, you can sign the Declaration of Support as a Continuing Partner. This will commit you to, and tell the world that you support and will be part of, the implementation of the Local Action Plan. Those who are committed at the time of publishing this document are indicated in Appendix B.

Sign a formal declaration of support

If you are an individual, or represent a community organization, business or institution that is not yet an EarthCare Partner, you can sign a declaration of support for the Local Action Plan. This will demonstrate your support for the goals, objectives and actions outlined in the Plan.

Get involved in making things happen

If you want to roll up your sleeves right now, and start organizing a community cleanup or learn about what you can do to conserve energy and improve the environment in your own home or workplace, contact us at the address below. Make sure you tell us what you are interested in, and the role you'd like to play in helping to make Sudbury more sustainable. We'll match you up with a program or project that meets your needs.

For more information, please contact:

Barb McDougall-Murdoch
Coordinator of EarthCare Sudbury Initiatives
City of Greater Sudbury
200 Brady Street
P.O. Box 3700, Station A
Sudbury, ON P3A 5W5
(705)671-2489
Fax (705)673-5171
barb.mcdougall@city.greatersudbury.on.ca

"Think of this plan as your plan. Even better, think of this plan as our children's ticket to a better environment and stronger economy here in Greater Sudbury."

Deputy Mayor
Louise Portelance,
Public Forum,
June 4, 2003

photo: Don Johnston

Appendix A: 2000 EarthCare Sudbury Declaration and Community Partnership

Declaration

WHEREAS Sudbury is one of 61 communities in Canada participating in the Partners for Climate Protection (PCP) program; and

WHEREAS Sudbury has been selected by the Federation of Canadian Municipalities (FCM) as one of two Canadian cities to develop a Partners for Climate Protection (PCP) local action plan to be used as a model for communities across Canada; and

WHEREAS Sudbury is one of 386 cities participating in the International Council for Local Environmental Initiatives (ICLEI) cities for climate protection campaign; and

WHEREAS Sudbury has received international recognition from the United Nations and ICLEI for achievements in regreening and municipal energy retrofits;

THEREFORE WE, the undersigned, support the development of Sudbury's local action plan for climate protection known as Earthcare Sudbury, being part of a national response to reduce greenhouse gas emissions as outlined in the Kyoto protocol. The goal of the plan is to increase the community's participation through many local initiatives aimed at improving our quality of life and strengthening our economy.

Dated May 18, 2000

Community Partners

Alexander Centre Industries Limited
Cambrian College
Canada Trust
City of Sudbury
City of Sudbury Bicycle Advisory Committee
Collège Boréal
Le Conseil scolaire catholique du Nouvel-Ontario
Le Conseil scolaire du district du Grand Nord de l'Ontario
e-sudbury.com
Eco ACTION Sudbury
FedNor
Falconbridge Limited
Federation of Canadian Municipalities
GEODE
Greater Sudbury Chamber of Commerce
International Council for Local Environmental Initiatives
Laurentian University
Learning for a Sustainable Future
Ministry of the Environment
Nickel District Conservation Authority
Ontario Healthy Communities Coalition
Professional Engineers of Ontario
Rainbow District School Board
Rainbow Routes
Regional Municipality of Sudbury
Royal Bank
Science North
Sudbury and District Health Unit
Sudbury Catholic District School Board
Sudbury District Energy Corporation
Sudbury Horticultural Society
Sudbury Hydro
Sudbury Regional Development Corporation
Sudbury Regional Hospital
Sudbury Roundtable on Health, Economy and the Environment
Transition Board – City of Greater Sudbury
Union Gas
Vegetation Enhancement Technical Advisory Committee

Appendix B: 2003 EarthCare Sudbury Declaration and Expanded Community Partnership

Our Commitment...

The undersigned organization commits to:

- ✔ Join together to form the EarthCare Sudbury Community Partnership to initiate and sustain implementation of the EarthCare Sudbury Local Action Plan (LAP), Greater Sudbury's community plan for a cleaner, greener, healthier, more climate-friendly and sustainable community.

- ✔ Work with other EarthCare Sudbury Partners, community organizations and individual Sudburians to take local responsibility for actions that contribute to community sustainability and the reduction of greenhouse gases through sustained implementation of the LAP over the long-term; and,

- ✔ Share knowledge and progress on our plan's implementation with the citizens of Greater Sudbury and communities throughout Canada and beyond.

Signed at the City of Greater Sudbury, October 9th, 2003.

Community Partners

Acres International
Alexander Centre Industries Limited
Barnim County
Brake Parts Canada
Byron J. Landry & Associates
Caisse Populaire Lasalle Inc.
Cambrian College of Applied Arts & Technology
CAMIRO
Canada Mortgage and Housing Corp.
CTS Canadian Career College
Canadian Climate Change Impacts and Adaptation Research Network
Canadian Union of Public Employees and its Local 4705
CanSpec Inspection Services
The Cardinal Group Inc.
Castellan Luciw James + Architects Inc.
CEA Technologies International
Centre de Santé Communautaire
City of Greater Sudbury
Collège Boréal
Conseil scolaire catholique du Nouvel-Ontario
Conseil scolaire du district du Grand Nord de l'Ontario
Co-operative Freshwater Ecology Unit
Dalron Construction
Dawn's Images Nature Photography
Dearness Environmental Society
Dennis Consultants
Dinosaur Valley Mini Golf
Earth Tech (Canada) Inc.
ECOaction Sudbury
Falconbridge Ltd.
Federation of Canadian Municipalities
FedNor
Gagnon Renewable Resource
GEODE
Golders Associates Ltd.
Greater Sudbury Chamber of Commerce
Greater Sudbury Development Corporation
Greater Sudbury Lake Improvement Advisory Panel
Greater Sudbury Utilities Inc.
Green Communities Association
The Green Teapot
Home Depot
ICLEI
INCO Limited
J.L. Richards & Associates Limited
Josephine's Vegetables
Junction Creek Stewardship Committee
K.R. Thompson Limited
Kukagami Lodge
Laurentian Media Group
Laurentian University
Lura Consulting
Manitoulin Transport Inc.
McKenzie-Mohr Associates
MIRARCO
N.J. Robbins Consultants Inc.
Neureka Research Corporation
Newbro Developments Inc.
Nickel District Conservation Authority
NORCAT
Northland Power Inc.
Novenco Consultants Limited
Nutri-Lawn
Ontario Healthy Communities Coalition
Partners in Eco-Adventure Tourism
Penguin ASI
Rainbow District School Board
Rainbow Routes
REpower Wind Corp.
Rogers Sudbury Group
Science North
Social Planning Council
Sudbury Catholic District School Board
Sudbury Community Foundation
Sudbury & District Health Unit
Sudbury Horticultural Society
Sudbury & Manitoulin Training and Adjustment Board
Sudbury Naturalists
Sudbury Regional Hospital
Sudbury Round Table on Health, Economy & Environment
SUNDOG Outfitters
Topia Energy Inc.
Toromont Energy Ltd.
Turf King
Union Gas Limited
United Steelworkers of America
Universal Provisions
Valley Growers
Valley Nursery Sod Inc.
VETAC
Wahnapitae First Nation
Waters Environmental Geosciences Ltd.
William Day Construction Limited

Appendix C: Glossary of Terms

Biodiesel – A domestic, renewable fuel for diesel engines derived from natural oils such as canola or soybean oil. The natural oils are processed to remove glycerin, and can be used in any concentration with petroleum-based diesel fuel in existing engines with little or no modification.

Biodiversity – Short for biological diversity, used to describe species richness, genetic variation and ecosystem complexity in a biological system.

Bio-gas – Methane recovered from organic waste sources such as sewage sludge or manure.

Community-based social marketing – A form of marketing used to achieve behaviour change that is premised on removing the barriers that prevent a desired action from taking place. It is an alternative to typical mass-media approaches that have been developed to encourage consumption.

Composting – The biological breakdown of organic material (such as food and garden wastes) into dark, soil-like material called humus. This occurs mainly by the digestion by soil micro-organisms.

Eco-industrial networks – A group of businesses that cooperate with each other and with the local community to efficiently share resources. The desired outcomes are decreased pollution and waste, and increased profits and competitiveness.

Ecology – The scientific study of the inter-relationships among organisms and between them and their environment, both living and non-living.

Ecosystem – The living and non-living parts of a biological system. An ecosystem is composed of air, water, land, and living organisms, including humans, and the interactions among them.

Ecotourism – Responsible travel to natural areas that conserves the environment and sustains the well-being of local people.

Energy efficiency – The usable output per unit of energy.

Fossil fuels – Deposits of organic materials such as coal, oil and gas that are extracted from the earth and capable of being used for fuel. These materials are formed under pressure over millions of year by alteration or decomposition of plant or animal remains. By definition, fossil fuels are non-renewable forms of energy.

Geothermal energy – Energy (heat) originating from within the earth.

Greenhouse gas – A gas that absorbs heat from the earth radiation and contributes to the global climate change when present in the atmosphere. The principal greenhouse gases are water vapour, carbon dioxide, methane, nitrous oxide, halocarbons and ozone.

Green procurement – Purchasing policies that consider environmental impacts of the product or service being purchased, in addition to price, reliability and other conventional criteria.

Global climate change – Changes in climate normally caused by natural influences but now heavily influenced by human activities, especially the emission of greenhouse gases that retain heat radiated from the Earth.

Groundwater – Water that is found below the earth's surface in aquifers (deposits of permeable rock such as gravel or sand that are capable of storing significant deposits of water).

Invasive species – A plant or animal species that does not naturally occur in a specific area, and whose introduction does or is likely to cause harm to the environment, human health, or the economy. Common invasive species of concern include purple loosestrife, Eurasian milfoil, rainbow smelt and spiny waterflea.

Kyoto Protocol – An international treaty signed by more than 170 nations in Kyoto, Japan in 1997. The treaty, part of the United Nations Framework Convention on Climate Change, requires the world's developed nations to reduce the emission of greenhouse gases by 5% from 1990 levels by 2008-2010.

Lake acidification – An increased acidity in a lake due to acid rain or acid deposition of sulphur and nitrogen oxides created by the burning of fuel.

Megawatt – A unit of power equal to one million watts, or the amount of energy needed to light 10,000 100-watt lightbulbs.

Permaculture – Short for "permanent agriculture", a system for the production of food that focuses on ecological production, including the use of organic fertilizers and the non-use of synthetic fertilizers and pesticides.

pH – Short for the "power of hydrogen" – a value on a scale of 0 to 14 that gives a measure of the acidity or alkalinity of a liquid or other medium. Neutral media have a pH value of 7, acidic media have a pH of less than 7, and alkaline media have a pH of greater than 7.

Renewable energy – Energy from a source that is naturally replenished over a short time scale. This includes energy from solar, wind, water (hydro), biomass (e.g., trees), geothermal and tidal sources.

Stewardship – Caring for the earth, by taking personal responsibility for the protection of enhancement of a resource, such as a woodlot or stream.

Sustainability – The state in which economic development takes full account of the environmental consequences of economic activity and is based on the wise use of resources, including the use of renewable resources.

Vertically integrated community food system – A system in which there is local production, processing and sales of food products.

Wastewater – Water mixed with waste matter. Municipal wastewater is the aqueous wastes produced by homes, businesses and institutions and released into the municipal sewer system. This includes sewage and "grey" water (water used in washing or other household activities.)

photo: Don Johnston

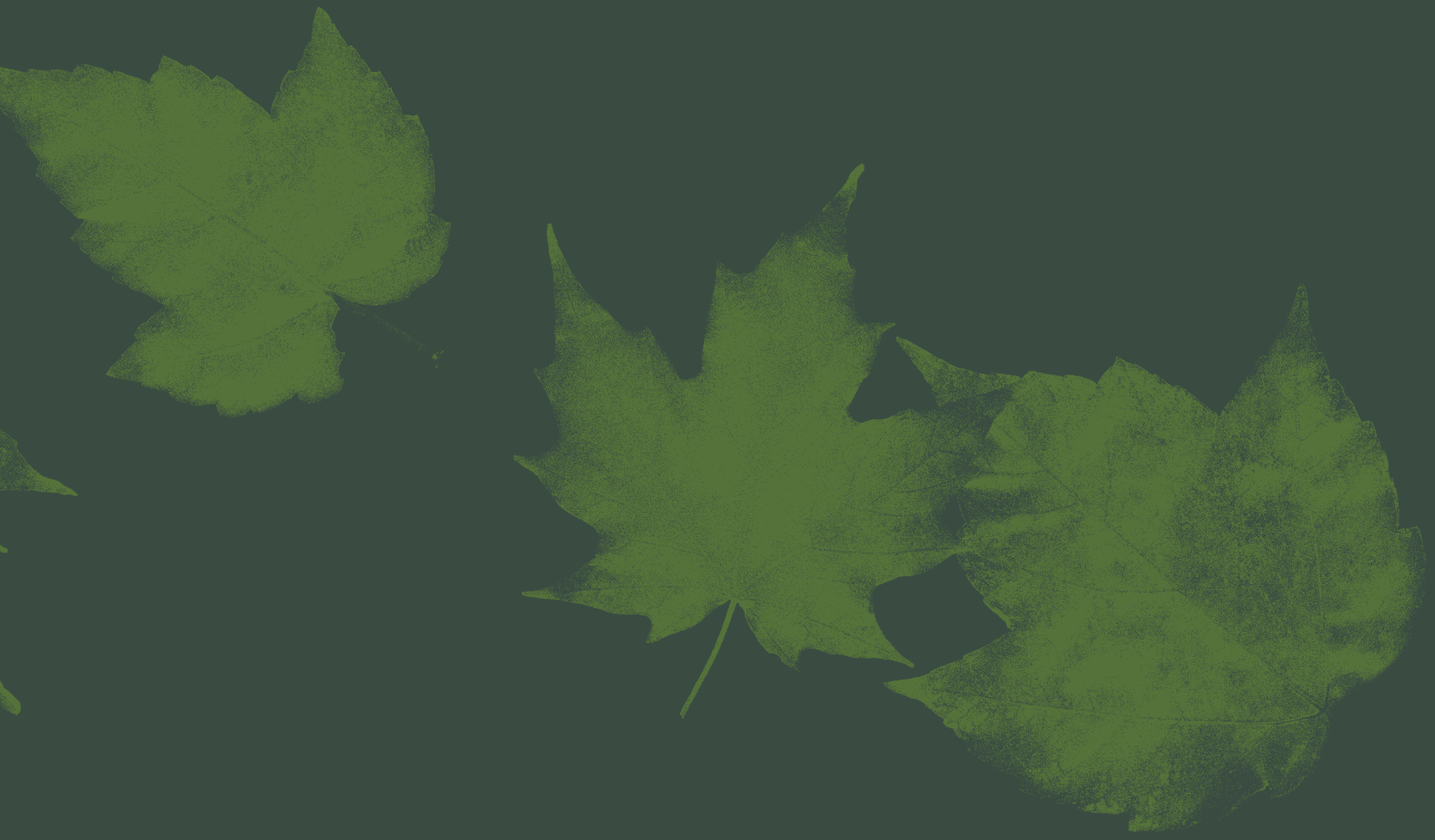
Winter scenery in Walden.

photo: Don Johnston

Copper Cliff barrens.

photo: Don Johnston

Trumpeter swans.



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