

## ***Sustainability Action Plan Part 1 - Background Report***



**Town of Essex**

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## Table of Contents

Executive Summary.....	iii
1.0 Introduction.....	1
2.0 Case for Sustainability.....	2
2.1 Business Case.....	2
2.2 Financial Case.....	2
2.3 Economic Case.....	2
2.4 Quality-of-life considerations.....	3
3.0 Steps Toward Sustainability.....	3
3.1 Introduction.....	3
3.1.1 Resource Depletion.....	4
3.1.2 Climate Change.....	5
3.1.3 Peak Oil.....	7
3.1.4 Loss of natural ecosystems.....	8
3.2 Four System Conditions.....	9
3.3 Planning Framework (based on Natural Step principles).....	11
4.0 Municipal Sustainability Planning – Overview and Case Studies.....	11
4.1 Integrated Community Sustainability Plan – an overview.....	11
4.2 Sustainable Community Planning.....	17
5.0 Municipal Sustainability Examples.....	18
5.1 Whistler, British Columbia.....	18
5.2 Canmore, Alberta.....	24
5.3 Atlantic Canada Sustainability Initiative.....	31
5.3.1 Town of Stratford.....	32
5.3.2 Halifax Regional Municipality.....	33
5.3.3 Town of Wolfville.....	34
5.4 Town of Olds, Alberta.....	34
6.0 Relevant Legislation and Funding Opportunities.....	36
6.1 Green Energy Act.....	36
6.2 Funding Opportunities.....	36
6.2.1 Federal Government.....	37
6.2.2 Provincial Government.....	39
6.2.3 Possible Prizes.....	39
6.2.4 Other Opportunities.....	40
List of Tables.....	47
List of Figures.....	47
References.....	48

## Executive Summary

The actions of society depend upon and impact the environment. Ecosystem services and finite resources are stressed due to increased societal pressure from rising populations and consumption rates. Society needs to shift to the concept of sustainable development, which is *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*.

To maintain essential ecological processes and natural resources, one must:

1. reduce and eventually eliminate our dependence on finite substances taken from the earth’s crust (i.e. fossil fuels and other natural resources);
2. reduce and eventually eliminate our contribution to the ongoing build-up of substances produced by society (i.e. DDT and dioxins);
3. reduce and eventually eliminate our contribution to the ongoing degradation of natural systems by physical degradation (i.e. clearing forests or building on farmland).

Municipalities are ideally placed to proactively address such challenges and pursue opportunities related to sustainable development. The general business case for sustainability focuses on complying with environmental and planning regulations, obtaining benefits from implemented sustainability projects and avoiding costly environmental problems.

There are strategic benefits to be gained by reducing resource consumption and waste management costs, by shifting consumer preferences to “green” products and/or services, by mitigating higher energy costs and gaining access to capital from new sources, such as government eco-management funding programmes.

Communities getting involved in sustainability often look beyond pure financial calculations and touch on an understanding of the social, cultural, environmental and economic benefits that can accrue to a community. This puts an emphasis on quality-of-life.

The path towards sustainability is a continual long-term change process, which requires leadership, dedication and hard work. First, awareness of sustainability issues and opportunities and the development of a future vision for the community are necessary. Planning this desired future state requires extensive community consultation, which also helps educate citizens about their ecological footprint. Second, the baseline of current practices and policies must be established. Third, creative solutions of how to connect the baseline to the vision and desired future state are developed. Finally, a community must decide on which priorities to take toward its desired goals, keeping in mind that the action must be a flexible and must provide an adequate social and financial return on investment.

Municipal staff is affected by sustainability initiatives at three levels:

1. As individuals, people have control over their personal choices. Behaviours can be modified to reduce their impact on the environment, such as reducing water consumption by fixing leaky faucets and running full loads of laundry. Individuals are also agents of change. Without them believing in the importance of environmental sustainability, little progress towards sustainability can be made.
2. As employees in municipal operations, staff should embed sustainability into the corporate culture. As an organization, the Town of Essex has made good progress towards implementing sustainability initiatives. There now needs to be an overarching framework where all of the existing departmental initiatives are incorporated and united. By uniting the various initiatives, the first steps have been taken towards creating a Sustainability Action Plan. The plan will involve consultation with staff in order to develop a common and accepted vision. After cataloguing the current baseline, initiatives which improve the current state and move the Town of Essex towards their vision should be implemented.
3. After the sustainability planning process occurs for municipal operations, with increased employee awareness of sustainability issues, staff can then create a community-wide awareness program and begin gathering support for a community-based sustainability action plan. Community involvement is necessary in sustainability planning, to develop a shared vision for the future, improve decision-making, establish cohesive policy decisions, increase citizen involvement, align stakeholders, increase employee loyalty, save money and improve the municipality's reputation.

This document serves as an example of the proof of possibilities by studying other Canadian municipalities that have been working towards sustainability.

Studying other municipalities, as set out in Section 5, provides a “proof of possibilities”, that can enhance the learning processes, provide initiatives and permit avoidance of those steps and actions that were unsuccessful.

Section 6 highlights relevant legislation and funding opportunities, briefly introduces the Province's Green Energy Act, which will impact community structure by increasing investment in green energy infrastructure and job creation, and lists potential funding sources, which may help to implement environment and sustainability initiatives.

## 1.0 Introduction

Society is becoming more aware of the impact of their activities on the state of the environment, upon which they depend. An increasing population and consumption rate have placed more pressure on earth's systems, which has resulted in decreasing resource availability and the erosion of ecosystem services. Ecosystem services, while financially undervalued, are crucial to support human society.

Ecosystem services can be divided into five categories:

provisioning (production of food and water),

regulating (control climate and disease),

supporting (crop pollination and nutrient cycles), cultural (spiritual and recreational benefits of nature) and

preserving (maintaining diversity to guard against uncertainty).

Continuing with society's current business system could be catastrophic.

It necessitates a change to sustainable development, which is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Business practices need to shift to using more environmentally friendly methods, to resources that are more abundant and renewable in nature, and to decreased negative impact of natural processes and ecologies.

Municipalities are ideally positioned to proactively address these challenges and move towards a more sustainable future. Not only are municipal operations very visible to the public, but extensive community consultation can help make citizens more aware of their activities' impacts on nature. This can facilitate long-lasting change throughout the community.

## 2.0 A Case for Sustainability

There are many reasons for implementing sustainability practices into business and community decision-making (Blackstone and Burnside, 2008). There is the business case, the financial case, the economic case, and the enhanced quality-of-life considerations.

### 2.1 Business Case

The general business case begins with a focus on compliance with environmental and planning regulations, obtaining benefits for previously implemented sustainability projects and avoiding costly environmental problems, such as inefficient and costly energy use.

More and more organizations, though, are realizing that there are strategic benefits to be gained from adopting more sustainable strategies. Some strategic issues will push an organization towards sustainability to address rising resource and waste management costs, shifting consumer preferences for “green” products and/or services, higher expectations of top talent for healthier and greener community services and quality of life, stricter and/or new government environmental legislation and tougher access to capital due to more demanding investors/funders for green services and values.

Possible sustainability benefits that could pull an organization towards sustainability include reduced recruiting costs, reduced attrition costs, increased employee productivity, eco-efficiencies (savings in energy, water, materials and waste handling), increased revenue from new green activities and lower insurance and borrowing costs (Willard, 2008).

### 2.2 Financial Case

The financial case for municipal governments also includes the opportunity to obtain more federal and provincial infrastructure funding, such as the Federation of Canadian Municipalities’ Green Municipal Fund and the Federal Gas Tax funding (which will be covered in more detail in section 6.2 of this document). Also, environmental measures can increase efficiencies resulting in further monetary savings.

### 2.3 Economic Case

The economic case highlights strategic planning for future supply and demand choices. All goods rely on some form of raw materials. If these raw materials are unsustainably harvested, are extracted at a rate faster than the rate of replenishment or are non-renewable resources, supply will continue to decrease, while demand rises. Prices will increase accordingly, which can compromise municipal operations in the long run. The more we use non-renewable resources, the more expensive it will become, until it is no longer feasible to use them. Also, shifting consumer preferences towards more environmentally responsible products and services affects the demand curve for consumer goods.

## 2.4 Quality-of-life considerations

The case for communities getting involved in sustainability also often looks beyond pure financial calculations and touches on an integrated understanding of the social, cultural, environmental and economic benefits that can accrue to a community (figure 1). This puts an emphasis on quality-of-life. The environmental dimension of the business case emphasizes the need for a healthy environment in order to have a healthy economy and society. The cultural dimension demonstrates the positive impacts of culture on environmental, economic and social goals.

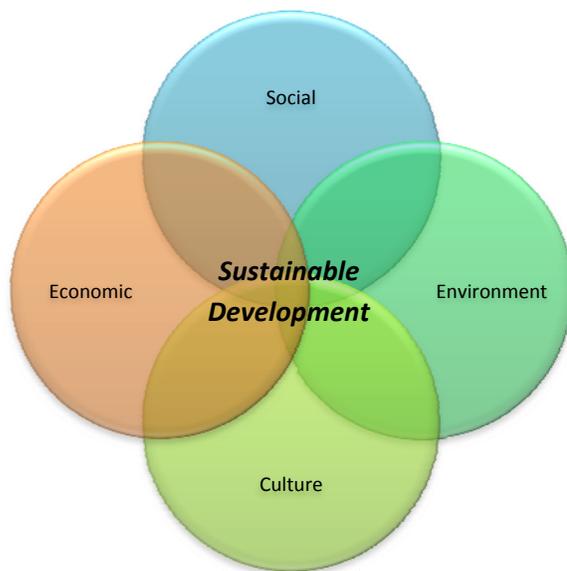


Figure 1. Four pillar model of Sustainable Development

## 3.0 Steps Toward Sustainability

### 3.1 Introduction

The Brundtland Commission (1987) defined sustainable development as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations Department of Economic and Social Affairs, 1987).

Sustainability is a long-term goal. Movement towards sustainability must be socially, environmentally and economically accountable. There are some global issues that demonstrate the importance of developing and living in a sustainable manner. Four important global issues are resource depletion, climate change, peak oil and loss of natural ecosystems.

### 3.1.1 Resource Depletion

Resource depletion is being driven by two global trends. Society is being constrained by decreasing resources and life-support systems and an increasing demand of these resources, which results in degraded life-support systems. Humanity has been increasing societal pressures on earth's systems, through both per capita resource consumption and population growth.

For instance, there is a greater demand for basic necessities such as food, water and energy, as well as for convenience services and luxury items. Simultaneously, ecosystem services are being overwhelmed by this demand, as seen through increased carbon dioxide, nitrous gas, and methane emissions, ozone depletion, degraded water supplies, increased frequency and intensity of weather events and much more.

Ecosystem services are crucial to support human society and can be classified in five categories: provisioning, regulating, supporting, cultural and preserving. Provisioning services include the production of food and water, regulating services help control climate and disease, supporting services are crop pollination and nutrient cycling, cultural services are the spiritual and recreational benefits of nature, and preserving services are the need to maintain diversity to guard against uncertainty.

A financial analogy of an investment can be drawn. Instead of living on the interest of an investment (the yearly renewable resources), as was done through most of history, people are now drawing down the capital of the investment (degrading ecosystem services), which is reducing their ability to grow more interest or even maintain their capital.

Ecological footprint research, which calculates humanity's demand on nature by measuring how fast we consume resources and generate waste, indicates that we are no longer living within the Earth's capacity to support us. Currently, humanity uses the equivalent of 1.3 planets to provide the resources we use and absorb our waste – this is depleting the very resources on which human life and biodiversity depend. It is estimated that if everyone worldwide lived the lifestyle of Canadians, it would take four planets to support us. It is crucial to live within the capacity of one planet.

The Natural Step, one format for measuring current levels of sustainability and setting future goals, utilizes a funnel metaphor to demonstrate the long-term 'squeeze' pressure of the current system, which has placed a constraint on the manoeuvrability of organizations (figure 2).

As resources dwindle, it will become increasingly more difficult to meet the needs of the current generation, let alone future generations. The goal is to open the constraints of the funnel walls by moving towards sustainable living practices and natural system restoration.

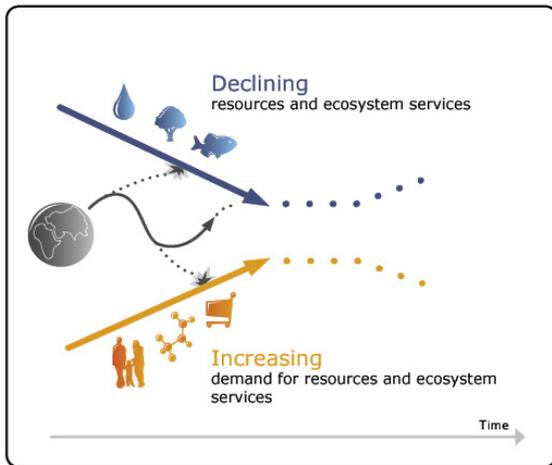


Figure 2. The Funnel Metaphor (The Natural Step Canada, 2009)

### 3.1.2 Climate Change

Many scientists consider climate change to be a very serious threat facing the world today. The United Nations Framework Convention on Climate Change defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods”. The United Nations Intergovernmental Panel on Climate Change believes that the warming of the climate system is undeniable and the observed increase in global average temperatures since the mid-20<sup>th</sup> century is very likely due to the increase in anthropogenic greenhouse gas concentrations.

Human activities have impacted the Earth’s climate. Some examples of human activities include cutting down forests for farmland, expanding settlement areas and burning biomass and fossil fuels for energy. Rising concentrations of carbon dioxide, methane and nitrous oxide (greenhouse gases) have increased the insulating properties of the atmosphere, intensifying the natural greenhouse effect. The burning of fossil fuels releases air pollutants which contribute to acid deposition.

Climatic events and regional weather patterns form in the region of the atmosphere called the troposphere, where greenhouse gases including water vapour, carbon dioxide, methane, nitrous oxide, chlorofluorocarbons and ozone concentrate. While present in small amounts, these gases can absorb the infrared radiation and either reflect it back into space or towards the earth’s surface. The latter action results in a warming of the atmosphere, which is necessary to make the earth a habitable environment.

However, burning fossil fuels increases the atmospheric concentration of carbon dioxide. Combustion of fossil fuels has also contributed 48-100 metric tons of methane emitted annually, which is 50 times more effective at absorbing infrared radiation than carbon dioxide. Nitrous oxides are created during the high-temperature reactions in vehicle engines. Sulphur

dioxide is also produced from burning fossil fuels and leads to acid deposition, which can affect human health, harm buildings, damage ecosystems and leach toxic metals out of the soil through a change in pH. Global warming affects weather patterns worldwide and causes a change in a region's climate. This includes temperature changes (warming in some places and cooling in others) and altered rainfall patterns, as well as more frequent occurrences of hazardous weather events such as heavy spring rains and heat waves.

The Union of Concerned Scientists (a science-based non-profit comprised of more than 250,000 citizens and scientists) has created a projected model of climate change in Ontario, if human actions remain unchanged. They project an increase in average temperature, increase in both precipitation and evaporation and an increase in the number of extreme weather events. The warmer temperatures will lengthen the growing season by 4-7 weeks. However, the increase in annual precipitation will not compensate for increases in evaporation due to higher temperatures. Ontario soils may become drier and experience more droughts (table 1).

Table 1. Projected Climate Change in Ontario



Temperature Change			°F	°C
2030	Summer	↑	3-4	2
	Winter	↑	3-4	2
2095	Summer	↑	7-14	4-8
	Winter	↑	5-13	3-7

Precipitation Change			% Increase
2030	Summer	↑	0 to 20
	Winter	↑	5 to 20
2095	Summer	↑	No change
	Winter	↑	10 to 30



Yet by modifying behaviours and changing attitudes, it is hoped that we can still minimize the effects of climate change. International governments have recognized the threat of climate change in The Kyoto Protocol, an international agreement to reduce the greenhouse gas emissions that cause climate change. In 1997, the Canadian government pledged to reduce greenhouse gas emissions by six percent below 1990 baseline levels by 2008-2012.

The current Ontario government has taken an aggressive stance on climate change. Ontario's Climate Change Action Plan, launched in June 2007 by Premier Dalton McGuinty, has ambitious targets for reducing greenhouse gases. The goals are to have a 6% reduction in greenhouse gas emissions by 2014 (based on 1990 levels), 15% by 2020, and 80% by 2050. The province has seven strategies to combat climate change and is working hard to pursue a Green Energy Future.

The strategy to transition towards a Green Energy Future includes replacing the coal-fired electricity generating stations by 2014, encouraging and providing incentives for renewable energy sources and encouraging energy efficiency through home energy improvements incentives. The Ontario government also encourages alternate methods of transportation by exempting bicycles from the Retail Sales Tax, providing a rebate of up to \$2000 when purchasing a hybrid vehicle and working to develop a Low Carbon Fuel Standard.

In addition, the province has implemented the Grow Green action plan, to protect 1.8 million acres of environmentally sensitive and agricultural lands from development, updated the Ontario Building Code to promote greater energy efficiency, implemented the Pick Ontario Freshness Strategy to promote buying locally produced foods, established a goal of planting 50 million trees by 2020 and protecting 225,000 square kilometres of the Boreal region.

The recently legislated Green Energy Act (Bill 150) expands renewable energy production, encourages energy conservation and creates green jobs. This bill is intended to significantly expand the economic market for green energy and provide an estimated 50,000 direct and indirect jobs within three years of its implementation. The Ontario government is also making industry greener by implementing a cap and trade system to create a carbon trading market to provide incentives for industries to reduce GHG emissions. They have created a committee of leading scientists and environmental experts to focus on methods to help people and communities adapt to climate change.

All of these provincial and federal initiatives help drive policies and create opportunities for a more environmentally friendly future: however, the Town of Essex, as a local municipality, can also directly implement actions to help minimize the effects of climate change.

### 3.1.3 Peak Oil

Fossil fuels are a non-renewable resource, as the rate at which plant and animal biomass is converted into the viscous multi-hydrocarbon chained substance occurs over millions of years and is not easily replenished. Humanity is depleting oil at an astounding rate as the current global rate of consumption is much greater than the rate of production. The concept of Peak Oil defines the time when the maximum rate of global petroleum extraction is reached, after which production will steadily decline. Peak Oil for the United States occurred between 1965 and 1970 and in 1973 in Canada.

While the timing of global peak oil is under debate, many estimates place it between 2010 and 2015. In addition to being used as a transportation fuel and heating, oil is currently used in the production of over 500,000 products including items such as pharmaceuticals, plastics and medicines. Oil stability is also subject to the demands of the exporting countries, specifically the Middle East, and will likely become increasingly unstable as supplies diminish.

Four factors determine long-term oil prices: production costs, world growth in oil demand, the Organization of the Petroleum Exporting Countries (OPEC) investment and production behaviour and the cost and availability of unconventional oil, like the oil sands.

However, as demand for oil is constantly increasing, as the world experiences continual growth, the price of oil will continue to rise as demand supersedes supply. In addition to the global recognition that fossil fuel consumption must be reduced, alternative renewable energy supplies must be expanded. While these alternatives are yet to be aggressively cost-competitive, further research, development and technologies will drive the cost of alternative fuel sources down and biofuels and renewable technologies will become economically feasible and demand available. Furthermore, renewable technology development is being actively supported by the province of Ontario and will continue to be so in the future. However, the transition from fossil fuel dependence to the dominance of renewable energy supply will be over a 20 year period and it is virtually impossible to keep fossil fuel production at sustainable levels relative to demand for such a period.

### 3.1.4 Loss of natural ecosystems

#### TERRESTRIAL ECOSYSTEMS

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 improved air quality by helping to filter out a range of pollutants including nitrogen dioxide, sulphur dioxide, carbon monoxide and other 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. A healthy natural landscape is essential to our well-being.

#### SOIL

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 water movement, sustains plant and animal life, filters pollutants and cycles nutrients.

#### AIR QUALITY

Tremendous efforts have been made to improve Ontario’s air quality over the past three decades. As a result of regulatory efforts, technological advances and the use of cleaner fuels, factories and smokestacks no longer emit black smoke, lead is no longer present in gasoline and the problem of acid deposition 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.

Health rates are typically the downstream effects of a poorer quality environment. When compared with the provincial or federal averages, Essex County suffers from higher rates of

illnesses. For instance, the poor air quality in Essex County has also contributed to higher rates of respiratory illnesses with 7.6% of residents within Essex County suffering from asthma, compared to the federal average of 6.3%. In addition, cancer rates are above normal and cardiac disease is 29% above the provincial average. While there are some local impacts that we can reduce, such as minimizing the effects of crop spraying and car pollution, there are many issues in the air shed which go beyond our boundaries. The Town of Essex is impacted by Detroit and Ohio's air shed and their power plants and factories over which Essex has no control. These inter-jurisdictional and boundary issues demonstrate why moving towards sustainability is an important County, Provincial, Federal and international issue.

## **WATER**

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 is surface water or ground water. However, water 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.

### **3.2 Four System Conditions**

The earth is a sustainable system. Scientists agree that human society is capable of damaging nature and altering life-supporting ecological structures and functions in three major ways. Based on this scientific understanding, The Natural Step has defined three basic system conditions for maintaining essential ecological processes (table 2). In addition, it recognizes that social and economic dynamics fundamentally drive the actions that lead to ecosystem changes, both positive and negative. Therefore, the fourth system condition focuses on socio-economic dynamics and affirms that meeting human needs worldwide is an integral and essential part of sustainability.

Table 2. The Natural Step's Four System Principles (The Natural Step Canada, 2009)

<b>System Condition</b>
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System Condition	
1. To reduce and eventually eliminate contribution to ongoing build-up of substances taken from the earth's crust	
2. To reduce and eventually eliminate contribution to ongoing build-up of substances produced by society	
3. To reduce and eventually eliminate contribution to ongoing degradation of natural systems by physical degradation	
4. To reduce and eventually eliminate contribution to undermining the ability of people to meet their human needs	

To address System Condition 1, it is necessary to mine materials efficiently, reduce fossil fuel dependence and to replace scarce minerals with ones that are more abundant in nature. Examples of initiatives to minimize impact are reduced fresh water use in industrial production, pursuing energy efficiency, utilizing renewable energy sources, using biodegradable, natural materials, such as wood or glass vs. plastics, and reusing and recycling materials.

To address System Condition 2, there is a need to substitute persistent, manmade compounds with more abundant, naturally-degrading ones and to use all substances more efficiently. Examples of initiatives to minimize the use of synthetic substances include using natural, biodegradable material like cotton vs. polyester, reusing and recycling material and pursuing organically grown, untreated crops.

To address System Condition 3, society needs to use resources and land more efficiently and productively. Therefore, caution should be exercised in all kinds of nature modification. Ecosystems need to be well-managed and resources should be extracted more from fast-growing, renewable crops. Previously developed Brownfield lands could also be utilized to minimize future development demands on Greenfield lands.

To address System Condition 4, one must eliminate practices permitting unsafe working conditions and unfair pay regimes that create barriers to people in meeting their needs. Manfred Max-Neef, a human rights economist, defined nine fundamental human needs: subsistence, protection, identity, understanding, affection, leisure, participation, freedom and creation (Max-Neef, 1987). The lack of any one of these human needs represents a poverty of some kind.

Society needs to promote solutions which meet basic human needs and to manage natural resources responsibly so as to meet the needs of all people (including future generations). Examples of meeting human needs include safe working and living conditions, sufficient resources required to live, access to education, political freedom, and affordable products and services.

### 3.3 Planning Framework (based on Natural Step principles)

#### Step 1: Awareness and Visioning

Firstly, municipalities need to be aware and possess a common understanding of sustainability. Participants can then develop a vision of the idealized future state of living in balance with nature and the global community. John Kottor, who works on organizational change at the Harvard Business School, describes six key components of a successful vision: that it be imaginable, desirable, focused, flexible, communicable and describe a sustainable outcome.

#### Step 2: Baseline analysis

Secondly, municipalities need to conduct a 'gap analysis'. In this step, the baseline of where the municipality is currently at with regard to the four sustainability principles is established (table 2). This step permits municipalities to establish their current state and highlight opportunities for change.

#### Step 3: Creative Solutions

Thirdly, potential solutions to move the municipality closer towards sustainability are brainstormed. This step forms the basis of the backcasting principle, whereby the idealized state is held in mind, and each possible solution offers a platform for further improvement.

#### Step 4: Decide on Priorities

Finally, municipalities must decide on priorities identified in the creative solutions step. This permits the development of an action plan that includes step-by-step implementation and methods to achieve their goals. Strategic sustainability also requires prioritization to ensure that the initiatives move towards sustainability, are flexible, which avoids dead-end investment, and are good business decisions.

## 4.0 Municipal Sustainability Planning – Overview and Case Studies

All municipalities face a variety of future challenges. Municipal strategic planning is necessary for communities to proactively address these challenges and move towards a desired future, in a proactive manner.

### 4.1 Integrated Community Sustainability Plan – an overview

An Integrated Community Sustainability Plan (ICSP) is an overarching community plan outlining how the community is going to achieve sustainability with respect to three pillars: social, economic and environmental. In Ontario, an ICSP and progress towards enhanced

sustainability planning is expected by early 2010, however, an Official Plan having sufficient sustainability principles and action mandates is acceptable (AMO, 2008).

An extension of the Federal Gas Tax (FGT) funding from 2010-2014 will bring approximately \$2.9 billion to Ontario communities, but candidate municipalities must demonstrate progress towards sustainability to receive additional funding (Blackstone and Burnside, 2008). For the 2009 fiscal year, the Town of Essex has received \$1,044,200 from the FGT fund, in the form of both direct transfers and through the County of Essex (see section 6.2.1). To receive the next phase of the FGT funding, Ontario municipalities, including the Town of Essex, must show progress they have taken towards sustainability since 2005 and an action plan for the future.

The Alberta Urban Municipalities Association (AUMA) has developed a guidebook on ICSP, called Municipal Sustainability Planning (MSP). This guidebook was piloted in five communities, including the Town of Olds (discussed in section 5.4). AUMA has outlined a five phase planning process (figure 3).



Figure 3. Phases of implementing Municipal Sustainability Planning (AUMA, 2006)

In phase I, municipal Council support is necessary to structure the planning process, decide on the scope and supply necessary resources. Council may choose to form a Citizen Advisory Group of councillors, municipal staff and community leaders, which could help create a plan and dedicate additional resources.

Phase II requires community engagement to develop the community's vision, values and goals for the community's environmental, economic, social, cultural and governance aspects through a dialogue process.

Phase III requires the community to identify strategic areas that need to be addressed to achieve the vision.

Phase IV requires brainstorming initiatives which can connect the current reality of each strategy area to the future vision. Once the plan has been created, the municipality needs to implement the plan and continually monitor its success (AUMA, 2006). Common elements of successful MSPs can be seen in table 3.

**Table 3. Common Elements of successful Municipal Sustainability Plans (AUMA, 2006)**

Common Elements of Successful MSPs		
Political will to commit resources	Broad involvement	Vision-Led Process
Backcasting	Taking a systems approach	Picking the low-hanging fruit
Democratic process	Keeping it going	Leading from the side

For the community as a whole, engagement with various stakeholders is crucial to implement a community-wide sustainability plan that has community support. By involving citizens and a variety of organizations in the development of a Community Sustainability Action Plan, these individuals now have an embedded interest in the outcome and will work harder to realize success, as they “own the process”. Working towards sustainability requires continual dedication and progress. In addition, the wealth of expertise and knowledge in a community is accessed through inclusive decision-making processes (AUMA, 2006).

There are three levels of citizen participation, which each require different strategies to harness.

Firstly, the optimists will commit a lot of time and energy to creating a vision statement. The optimal level of engagement would involve them in a capacity which would permit a deeper dialogue, such as a Citizens Advisory Group (AUMA, 2006).

Secondly, the proactives will be accepting and willing to commit some time. The ideal way of harnessing their participation may be through one or two hour evening workshops (which facilitate dialogues on the future of their community).

Finally, many will not be proactive, but may answer surveys or at least do their own research into the issues and answers.

There are numerous motivations for sustainability, and corresponding initiatives and strategies to work towards those goals (table 4 and 5).

Table 4. A checklist of sustainability goals and potential initiatives (Blackstone and Burnside, 2008)

Sustainability Category	Types of Goals	Sustainability Initiatives
<b>A. Environmental Sustainability</b>		
Water Quality/Management	<ul style="list-style-type: none"> <li>Efficiently obtained, dependable supply of high quality water</li> <li>Watershed protection</li> <li>Elimination of pollution sources</li> </ul>	<ul style="list-style-type: none"> <li>Water protection plans</li> <li>Water treatment facility upgrading</li> <li>Distribution system upgrading</li> <li>Measure to capture rainwater</li> <li>Training/awareness building</li> </ul>
Storm water management; Storm surge/flood risk	<ul style="list-style-type: none"> <li>Efficient storm water management</li> </ul>	<ul style="list-style-type: none"> <li>Creation of integrated soil and groundwater management strategies</li> <li>Collection of storm water runoff for treatment prior to discharge and/or usage on-site</li> <li>Improve quality of storm water runoff through various measures</li> </ul>
Municipal energy management	<ul style="list-style-type: none"> <li>Reduction of greenhouse gas emissions</li> <li>Reduction in long-term municipal asset operating costs</li> <li>Reduced reliance on the grid/increased independence</li> <li>High level of energy efficiency in buildings</li> </ul>	<ul style="list-style-type: none"> <li>Retrofitting of municipal lighting</li> <li>Incentives/policies to ensure new construction achieves green building certification</li> <li>Installation of energy efficient water pumps</li> <li>Purchase of energy at spot prices</li> <li>Use of solar/renewable sources</li> <li>Undertaking of energy audits</li> <li>Development of district heating</li> <li>Implementation of co-generation/purchase of green electricity</li> <li>Creation of energy conservation plan</li> <li>Creation of energy conservation office</li> </ul>
Solid waste management	<ul style="list-style-type: none"> <li>Accommodation of material use and disposal through promotion of the most efficient and environmentally safe use and reuse of materials, and reduction of waste going into the natural environment</li> </ul>	<ul style="list-style-type: none"> <li>Introduction/extension of blue box, composting, etc., thereby reducing waste disposal and extending the lifecycle of the sanitary landfill</li> <li>Education of staff and community on the 3 R's (Reduce, Reuse, Recycle)</li> </ul>
Transportation management	<ul style="list-style-type: none"> <li>Efficient movement of residents, labour force, visitors and materials to/from/within community</li> <li>Increase in user-ship and viability of transit</li> <li>Improved walking/cycling options</li> </ul>	<ul style="list-style-type: none"> <li>Increase investment in transit based on well thought out transit plans</li> <li>Create bike paths and pedestrian linkages</li> <li>Provide extensive on-site bicycling/parking facilities</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>Improvement of air quality as measured by the air quality index</li> </ul>	<ul style="list-style-type: none"> <li>Upgrading of the transit system and other measures to reduce use of the car</li> <li>Planning to situate shopping and personal services within walking distance of residential units</li> <li>Adoption of smog alert protocols</li> <li>Adoption of demolition and construction dust control protocols</li> <li>Continued protection/upgrading of municipal green space and trees</li> <li>Retrofitting of existing municipal assets to reduce emissions</li> <li>Establishment of new policies regarding building codes</li> </ul>
Greenhouse Gas	<ul style="list-style-type: none"> <li>Reduction of Greenhouse Gas Emissions</li> </ul>	<ul style="list-style-type: none"> <li>Setting of targets for reduced per capita energy use</li> </ul>

Sustainability Category	Types of Goals	Sustainability Initiatives
		<ul style="list-style-type: none"> <li>• Incentives/policies to ensure new construction achieves green building certification</li> <li>• Installation of software to track carbon savings from energy efficient housing</li> </ul>
Biodiversity Protection/Green Space/parks	<ul style="list-style-type: none"> <li>• Maintenance of ecosystem integrity and protection of biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>• Native species policies for landscaping</li> <li>• Minimum soil depths for new development</li> </ul>
Asset management	<ul style="list-style-type: none"> <li>• Optimization of municipal assets/buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Development of Capital Investment Plans utilizing new PSAB requirements, thereby providing a stronger basis for assessment of potentially more economically and environmentally sound long-term investment decisions</li> </ul>
<b>B. Economic Sustainability</b>		
Economic Development	<ul style="list-style-type: none"> <li>• Attraction of new investment based on attractiveness of sustainability policies</li> </ul>	<ul style="list-style-type: none"> <li>• Applications of such tools as the Business Vitality Index</li> <li>• Attraction/establishment of 'eco-businesses'</li> <li>• Increase in % of population employed locally</li> <li>• Provision of affordable housing and transit and other amenities that attract and sustain a healthy labour force</li> <li>• Undertaking of sound sustainability policies, planning and implementation that have the effect of attracting new investment</li> </ul>
Tourism	<ul style="list-style-type: none"> <li>• Support tourism growth by providing a clean, safe, vibrant, healthy community</li> </ul>	<ul style="list-style-type: none"> <li>• Heritage preservation</li> <li>• Walkable/bikeable city</li> <li>• Promotion of "green tourism"</li> <li>• Increase in/protection of green space</li> </ul>
Town centre vitality	<ul style="list-style-type: none"> <li>• Heritage buildings preserved</li> <li>• Business operating profitably to enable long-term sustainability</li> <li>• Good access to city centre</li> <li>• Continual upgrading and investment</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage of mixed use residential/ commercial to encourage vitality past work hours</li> <li>• Planning of buildings and streets to ensure good sunlight for walking zones</li> <li>• Installation of attracting walkways suitable for four seasons' usage</li> <li>• Designation of car-free zones</li> <li>• Maintenance/increase of green space</li> <li>• Enhancement of BIA funds to enable upgrading</li> <li>• Improved transit to/from the centre</li> </ul>
Tax base	<ul style="list-style-type: none"> <li>• Improvement of tax base</li> </ul>	<ul style="list-style-type: none"> <li>• Development of sustainability policies, related to densification, downtown revitalization, affordable housing, and transit; energy retrofitting, LEED certification, in order to attract and keep labour forces and attract new investment</li> </ul>
Food production		<ul style="list-style-type: none"> <li>• Promotion of community gardens/public plots</li> <li>• Encouragement of organic farming</li> <li>• Incorporation of roof gardens into design</li> </ul>
<b>C. Social Sustainability</b>		
Housing affordability and sustainability	<ul style="list-style-type: none"> <li>• Increase long-term affordability in view of rising energy costs</li> <li>• Be a 'showcase' for high-performance building design</li> </ul>	<ul style="list-style-type: none"> <li>• Design of development/building placement to improve opportunities for distinct energy options</li> <li>• Planning to ensure housing for all age groups and families of all types, sizes and economic status</li> <li>• Provision of incentives to developers and/or mandating certifications such as LEED, EnergyStar</li> <li>• Convening of workshops for municipal staff, developers/contractors to communicate goals</li> </ul>
Population growth	<ul style="list-style-type: none"> <li>• Maintain and/or increase population</li> </ul>	<ul style="list-style-type: none"> <li>• Development of incentives to developers, and/or mandating certification</li> </ul>
Labour force	<ul style="list-style-type: none"> <li>• Maintenance/growth of the</li> </ul>	<ul style="list-style-type: none"> <li>• Development of affordable housing options,</li> </ul>

Sustainability Category	Types of Goals	Sustainability Initiatives
	labour force	energy efficiency and overall sustainability plans that demonstrate long-term thinking about environmental issues to reassure and attract high-quality labour
Social Services	<ul style="list-style-type: none"> <li>Attention to the needs of community members</li> </ul>	<ul style="list-style-type: none"> <li>Provision of community services such as outdoor play areas, community recreation centres, schools, hospitals, etc.</li> </ul>
Health	<ul style="list-style-type: none"> <li>Enhancement of community health through smart planning</li> </ul>	<ul style="list-style-type: none"> <li>Development of ambient noise levels in residential areas</li> <li>Mandating/encouragement of LEED/other certification that create more health business environments</li> <li>Provision of bicycle and walking paths to enable exercise and improve health</li> </ul>
Safety	<ul style="list-style-type: none"> <li>Reduction in crime and increase in perceptions of, and actual, safety</li> </ul>	<ul style="list-style-type: none"> <li>Provision of good lighting</li> <li>Provision of safe walkways, separated from traffic</li> <li>Creation of vital city centres</li> </ul>
<b>D. Cultural Heritage Sustainability</b>		
Cultural/Heritage Preservation	<ul style="list-style-type: none"> <li>Integration of cultural heritage considerations into land use planning, parks design, tourism planning, etc.</li> <li>Recognition of cultural heritage's part in being competitive as a town/city in attracting high quality labour force and new investment</li> </ul>	<ul style="list-style-type: none"> <li>Preservation and retrofitting of heritage buildings</li> <li>Heritage inventorying, planning and protection, integrating heritage resources into planning a design, including adaptive re-use, restoration, etc.</li> <li>Creation of cultural and heritage destinations</li> <li>Support of cultural expression in new buildings and infrastructure and in green spaces</li> </ul>
<b>E. Overall Sustainability</b>		
		<ul style="list-style-type: none"> <li>Development of community-wide awareness building programmes that encourage pride and participation in day-to-day sustainability/green practices</li> <li>Creation of a Sustainability Office and embedding of sustainability into daily decision-making</li> <li>Interaction with other adjacent communities to achieve efficiencies in development of transit, energy, water, green space/natural heritage protection, etc.</li> </ul>

Table 5. Potential Strategy Areas (AUMA, 2006)

Issue Area	Description
Affordability & Housing	How to make living and playing in your community affordable for residents, and how to meet housing needs of diverse permanent residents.
Arts/Culture/Heritage	How arts, culture and heritage will be supported, enhanced and delivered, and how they will stimulate and support the transition to sustainability in your community.
Built Environment	How to develop and renew buildings, neighbourhoods and facilities that will continue to making your community unique, live-able and sustainable.
Economic Development	How your community will create a strong local economy and develop and maintain successful, resilient businesses that help move the community towards sustainability.
Energy	How to meet your community's energy needs in an efficient, affordable, sustainable and reliable way, while managing greenhouse gas emissions and air quality.
Food	How to ensure a health, nutritious and sustainable food supply that maximizes opportunities to build the social, ecological, cultural and economic capital of the community.
Governance & Partnerships	How local government and other stakeholders will organize and collaborate in decision-making and implementation of the MSP.
Health and Social	How to meet the health and social needs (including physical, mental, spiritual and

Issue Area	Description
	emotional) of the community.
Learning	How to meet resident and visitor needs for formal and informal lifelong learning
Materials and Solid Waste	How to meet your community's need for material supply and disposal through the most efficient use and reuse of the most sustainable materials and keeping waste out of the natural environment.
Natural Areas	How ecosystem integrity and biodiversity will be protected and where possible restored in your community/region
Recreation & Leisure	How recreation and leisure activities for both residents and visitors will be delivered to exceed expectations while protecting the environment.
Transportation	How to move residents, employees, visitors, and materials to, from and within the community in a more sustainable manner.
Water	How to provide a dependable supply of high quality water in a way that maintains healthy aquatic environments and uses water efficiently.

## 4.2 Sustainable Community Planning

Sustainable community planning offers a shared vision, improved decision-making, more cohesive policy decisions, increased citizen involvement, aligns stakeholders, furthers employee loyalty, saves money and enhances the municipality's reputation (The Natural Step Canada, 2009).

Numerous Canadian municipalities have progressed towards sustainability and developed sustainability action plans, including Whistler, British Columbia; Canmore, Alberta; Wolfville, Nova Scotia; Halifax, Nova Scotia; District of North Vancouver, British Columbia; Town of Olds, Alberta; and Strathcona County, Alberta (Sustain Dane, 2009) (figure 4). The Ontario Association of Municipalities (AMO), the Federation of Canadian Municipalities (FCM) and Alberta Urban Municipalities Association (AUMA) have developed guidelines on Municipal Sustainability Planning.

Key lessons learned from other municipalities' sustainability experience can be helpful in setting local goals and strategies (table 6). Achieving sustainability is a complex, difficult process, which requires leadership, creative solutions, collaboration, dedication and hard work. Opening dialogue with other municipalities might create shared learning opportunities and possible synergies.



Figure 4. Sample summary of Canadian Municipalities' progress on sustainability

Table 6. Key lessons from other municipalities' sustainability experiences:

- clear motivation is necessary for sustainability processes to succeed
- citizens are becoming more receptive to the sustainability message
- support of Council and the CAO is necessary to implement meaningful and lasting change towards sustainability
- best results come when a plan is owned by the larger community
- meaningful stakeholder engagement is one of the biggest challenges
- credible information is necessary before broad community consultation occurs
- not all municipalities require a formal ICSP, and have been successful through learn-by-doing models
- visible results are necessary early in the process, and regularly afterwards
- staff capacity building contributes to a common base and language regarding sustainability
- realizing sustainability requires integrated, multi-disciplinary decision-making

## 5.0 Municipal Sustainability Examples

The next sections of this document describe a variety of municipal case studies.

### 5.1 Whistler, British Columbia

Whistler is a world renowned resort community in the interior of British Columbia with a permanent population of approximately 10,000. Whistler produced an award-winning, comprehensive sustainability plan entitled Whistler2020, which integrates social, environmental and economic issues in an upstream planning fashion, to avoid problems

before they occur. There are approximately 30 formal partner organizations and businesses, 160 task force members and 40 organizations implementing task force actions involved in the Whistler2020 sustainability plan (Spzala, 2008).

By identifying global and local trends affecting Whistler (table 7), the community developed a compelling vision and identified five priorities and seventeen strategies that would help bring them closer towards their vision (table 8 and 9). Each strategy area was developed by task forces of local experts, organizations to be responsible for implementation of recommendations, and other affected stakeholders, with municipal staff playing a facilitating role. They also outlined potential success indicators which could be used to quantify progress towards strategies and priorities, and their current progress towards sustainability on each strategy can be viewed on Whistler’s website.

The Whistler2020 vision is “Whistler will be the premier mountain resort community – as we move towards sustainability” (Whistler, 2009).

Table 7. Identified trends affecting Whistler (Whistler, 2009)

Global trends	Local trends
Changing demographics and population	Changing climate which could affect winter sport activities
Changing tourism	Changing demand for resident and visitor products
Economic globalization	Changing travel patterns and fluctuating visitor numbers
Ecosystem services	Health issues
Environmental and health impacts of materials and toxins	Increasing dependence on limited natural resources
Materials that affect health and pollute nature	Increasing growth pressures
Natural habitats and biodiversity values	Increasing housing, living and business expenses
Socio-political insecurities	

Table 8. Strategic priorities and related strategies of Whistler (Whistler, 2009)

Priority	Related strategies	Potential success indicators
<b>1. Enriching Community Life</b>	<ul style="list-style-type: none"> <li>• Arts, culture &amp; heritage</li> <li>• Built environment</li> <li>• Energy</li> <li>• Health &amp; social</li> <li>• Learning</li> <li>• Materials &amp; solid waste</li> <li>• Recreation &amp; leisure</li> <li>• Resident affordability</li> <li>• Resident housing</li> <li>• Transportation</li> <li>• Water</li> </ul>	<ul style="list-style-type: none"> <li>• Health status</li> <li>• Learning opportunities</li> <li>• Local workforce</li> <li>• Recreation opportunities</li> <li>• Satisfaction with Whistler</li> <li>• Unaffordability rate</li> </ul>
<b>2. Enhancing the Resort Experience</b>	<ul style="list-style-type: none"> <li>• Arts, culture &amp; heritage</li> <li>• Built environment</li> <li>• Health &amp; social</li> <li>• Learning</li> <li>• Natural areas</li> <li>• Recreation &amp; leisure</li> <li>• Transportation</li> <li>• Visitor experience</li> </ul>	<ul style="list-style-type: none"> <li>• Intention to recommend</li> <li>• Number of visitors</li> <li>• Unlawful activity</li> <li>• Visitor satisfaction</li> </ul>
<b>3. Protecting the Environment</b>	<ul style="list-style-type: none"> <li>• Built environment</li> <li>• Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Development footprint</li> </ul>

Priority	Related strategies	Potential success indicators
	<ul style="list-style-type: none"> <li>Materials &amp; solid waste</li> <li>Natural areas</li> <li>Transportation</li> <li>Water</li> </ul>	<ul style="list-style-type: none"> <li>Energy use</li> <li>Greenhouse gas emissions</li> <li>Material use</li> <li>Water use</li> </ul>
<b>4. Ensuring Economic Viability</b>	<ul style="list-style-type: none"> <li>Arts, culture &amp; heritage</li> <li>Economic</li> <li>Finance</li> <li>Learning</li> <li>Natural areas</li> <li>Recreation &amp; leisure</li> <li>Resident affordability</li> <li>Resident housing</li> <li>Transportation</li> <li>Visitor experience</li> </ul>	<ul style="list-style-type: none"> <li>Full time employees</li> <li>Median income</li> <li>Occupancy rate</li> <li>Rooms sold</li> <li>Total income</li> <li>Unemployment rate</li> </ul>
<b>5. Partnering for Success</b>	<ul style="list-style-type: none"> <li>Partnerships (with community services, housing authority, environmental groups, First Nations, neighbouring communities, regional district, provincial and federal governments)</li> </ul>	<ul style="list-style-type: none"> <li>Community decision making</li> <li>Voter turnout</li> </ul>

Table 9. Whistler's strategies for implementing their vision (Whistler, 2009)

Strategies	Some Description of Success	Related Indicators
<b>1. Arts, culture &amp; heritage</b>	<ul style="list-style-type: none"> <li>Passionate community</li> <li>Diverse opportunities</li> <li>Retain history</li> <li>Heritage shared</li> <li>Attracts international artists</li> </ul>	<ul style="list-style-type: none"> <li>Income below costs</li> <li>Cultural opportunities</li> <li>Cultural participation</li> <li>Cultural participation (visitors)</li> <li>Number of partners</li> </ul>
<b>2. Built Environment</b>	<ul style="list-style-type: none"> <li>Limits to growth understood and respected</li> <li>Built environment is attractive and vibrant</li> <li>People can readily be immersed in nature</li> <li>Safe and accessible</li> <li>Avoid continuous encroachment on nature</li> <li>New and renovated built environment implements sustainable management of energy and materials</li> <li>Recognized for excellence in sustainable community development</li> </ul>	<ul style="list-style-type: none"> <li>Adaptive heating/cooling</li> <li>Development footprint</li> <li>Dwelling density</li> <li>Energy Use</li> <li>Green building</li> <li>Housing liveability</li> <li>Land filled waste</li> <li>Park satisfaction</li> <li>Services proximity</li> <li>Transit proximity</li> <li>Water use</li> <li>Whistler Atmosphere</li> </ul>
<b>3. Economic</b>	<ul style="list-style-type: none"> <li>Diverse, year-round tourism economy</li> <li>Investments provide competitive return on investment</li> <li>Adapts effectively to changing external conditions</li> <li>Skilled workforce</li> <li>Physical and social infrastructure attract and support work and investment</li> <li>Integral part of region's economy and works collaboratively with stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Business licenses</li> <li>Energy use</li> <li>Full time employees</li> <li>Length of stay</li> <li>Local workforce</li> <li>Median income</li> <li>Number of partners</li> <li>Occupancy rate</li> <li>Rooms sold</li> <li>Single living income</li> <li>Total income</li> </ul>

Strategies	Some Description of Success	Related Indicators
		<ul style="list-style-type: none"> <li>• Unemployment rate</li> <li>• Visitor number</li> <li>• Visitor satisfaction</li> </ul>
<b>4. Energy</b>	<ul style="list-style-type: none"> <li>• Energy system is a mix of sources that are regional if possible</li> <li>• Energy sector increases energy efficiency and generates new supply</li> <li>• Energy system is moving to eliminate emissions and waste into air, land and water</li> <li>• Eliminate physical impact to land and water ecosystems</li> <li>• Reliably and equitably meet community energy needs</li> </ul>	<ul style="list-style-type: none"> <li>• Adaptive heating/cooling</li> <li>• Commuting mode</li> <li>• Energy use</li> <li>• Green building</li> <li>• Greenhouse gas emissions</li> <li>• Local air quality</li> <li>• Regional air quality</li> <li>• Registered vehicles</li> <li>• Renewable fuel</li> <li>• Vehicle occupancy</li> <li>• Visitor bus travel</li> </ul>
<b>5. Finance</b>	<ul style="list-style-type: none"> <li>• Lives within financial means</li> <li>• Resort community effectively and efficiently balance costs and expenditures</li> <li>• Resort community partners collaborate to identify shared spending priorities, share resources, and align financial planning</li> <li>• Financial principles, practices and tools encourage behaviour that moves Whistler towards success and sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Economic dependency ratio</li> <li>• Financial reserves</li> <li>• Municipal revenue mix</li> <li>• Number of partners</li> <li>• Total income</li> </ul>
<b>6. Food</b>	<ul style="list-style-type: none"> <li>• Equal access to sufficient, nutritious, safe and affordable food</li> <li>• Preserve regional agricultural land</li> </ul>	<ul style="list-style-type: none"> <li>• Bear incidents</li> <li>• Effluent quality</li> <li>• Farm area</li> <li>• Food service quality</li> <li>• Restaurant experience</li> <li>• Waste diversion</li> </ul>
<b>7. Health &amp; Social</b>	<ul style="list-style-type: none"> <li>• Maintain and improve physical, mental, spiritual and social health through prevention and treatment services</li> <li>• Exposed to and respect other cultures and diverse views</li> <li>• Law abiding community members</li> <li>• Resort community is safe for all</li> <li>• Whistler is accessible and inclusive for those with disabilities</li> <li>• Community members eat healthy food, exercise and engage in stress relieving activities to prevent illness and avoid substance abuse</li> </ul>	<ul style="list-style-type: none"> <li>• Child development</li> <li>• Community trust</li> <li>• Drinking water quality</li> <li>• Green building</li> <li>• Health status</li> <li>• Local air quality</li> <li>• Low birth weight</li> <li>• MSP usage</li> <li>• MSP use rate</li> <li>• Recreation injuries</li> <li>• Resident satisfaction</li> <li>• Sense of belonging</li> <li>• Unlawful incidents</li> <li>• Volunteer rate</li> </ul>
<b>8. Learning</b>	<ul style="list-style-type: none"> <li>• Diverse, affordable, accessible lifelong learning opportunities</li> <li>• High quality kindergarten to post-secondary education offers a diversity of programs to meet community expectations and needs</li> <li>• Learning opportunities foster collaboration, trust and community engagement and build community's capacity for achieving sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Child development</li> <li>• Decision input</li> <li>• Education attainment</li> <li>• Information quality</li> <li>• Learning opportunities</li> <li>• Length of tenure</li> <li>• Number of partners</li> </ul>
<b>9. Materials &amp; Solid Waste</b>	<ul style="list-style-type: none"> <li>• Resort community is clean and well maintained</li> <li>• Use less materials than in the past while maintaining service</li> <li>• Use less environmentally harmful, durable materials that are recycled</li> </ul>	<ul style="list-style-type: none"> <li>• Bear incidents</li> <li>• Effluent quality</li> <li>• Green building</li> <li>• Greenhouse gas emissions</li> <li>• Hazardous materials</li> </ul>

Strategies	Some Description of Success	Related Indicators
		<ul style="list-style-type: none"> <li>• Land filled waste</li> <li>• Material use</li> <li>• Waste diversion</li> </ul>
<b>10. Natural areas</b>	<ul style="list-style-type: none"> <li>• Protect and restore ecologically functioning and viable network of critical natural areas</li> <li>• Maintain full spectrum of locally representative ecosystems</li> <li>• Protect backcountry areas from overuse and degradation</li> <li>• Community members and visitors act as stewards of natural environment</li> </ul>	<ul style="list-style-type: none"> <li>• Development footprint</li> <li>• Effluent quality</li> <li>• Green building</li> <li>• Greenhouse gas emissions</li> <li>• Hazardous materials</li> <li>• Length of roads</li> <li>• Species at risk</li> </ul>
<b>11. Partnership</b>	<ul style="list-style-type: none"> <li>• Residents, taxpayers, business and local government hold shared vision for resort community and work together to achieve it</li> <li>• Decisions consider community's values, social, economic and environmental consequences</li> <li>• Trust maintained</li> <li>• Collaborate with neighbouring municipalities and First Nations</li> <li>• Partners meaningfully engage stakeholders and practice 'good governance' guided by Whistler's Partnership Principles</li> </ul>	<ul style="list-style-type: none"> <li>• Community trust</li> <li>• Decision input</li> <li>• Decision trust</li> <li>• Information quality</li> <li>• Number of partners</li> <li>• Voter turnout</li> </ul>
<b>12. Recreation &amp; leisure</b>	<ul style="list-style-type: none"> <li>• Enjoy activities year-round that encourage healthy living, learning and a sense of community</li> <li>• Variety of price points</li> <li>• Resort community globally recognized as a leader in innovative recreation products and services</li> <li>• Recreation experiences reflect balance between adventure, challenge and safety, and exist within carrying capacity of the amenity</li> <li>• Recreation practices minimize degradation of natural areas and are moving towards sustainable energy and material use</li> </ul>	<ul style="list-style-type: none"> <li>• Energy use</li> <li>• Income below costs</li> <li>• Park satisfaction</li> <li>• Recreation injuries</li> <li>• Recreation opportunities</li> <li>• Recreation participation</li> <li>• Recreation participation (visitors)</li> <li>• Recreation satisfaction (visitors)</li> </ul>
<b>13. Resident affordability</b>	<ul style="list-style-type: none"> <li>• Income and innovative benefits make it affordable to live and play in Whistler</li> <li>• Access to affordable goods and services to meet needs</li> <li>• Buy-local culture exists</li> </ul>	<ul style="list-style-type: none"> <li>• Family living incoming</li> <li>• Housing affordability</li> <li>• Income below costs</li> <li>• Income to cost</li> <li>• Median income</li> <li>• Restricted wait time</li> <li>• Single living income</li> </ul>
<b>14. Resident housing</b>	<ul style="list-style-type: none"> <li>• Resident restricted housing is affordable</li> <li>• Planned flexibility within neighbourhood design, housing form and tenure enables adaptability to meet changing housing needs and future affordability considerations</li> <li>• Housing developed close to transit, pedestrian and bicycle routes, and amenities and services to reduce auto dependency</li> <li>• Housing is healthy and liveable, and housing design, construction and operations are moving towards sustainable and energy and material efficient management</li> <li>• Developed areas designed to be sensitive to surrounding environment</li> </ul>	<ul style="list-style-type: none"> <li>• Dwelling density</li> <li>• Green building</li> <li>• Housing affordability</li> <li>• Housing liveability</li> <li>• Local workforce</li> <li>• Market home ownership</li> <li>• Rental availability</li> <li>• Resident restricted housing</li> <li>• Restricted wait time</li> <li>• Services proximity</li> <li>• Transit proximity</li> </ul>
<b>15. Transportation</b>	<ul style="list-style-type: none"> <li>• Policy, planning and development prioritizes preferred methods of transportation: (1)</li> </ul>	<ul style="list-style-type: none"> <li>• Commuting mode</li> <li>• Greenhouse gas emissions</li> </ul>

Strategies	Some Description of Success	Related Indicators
	<p>pedestrian, bike, other-non-motorized means (2) transit (3) private automobile – HOV, low-impact technologies (4) private automobile (SOV, traditional technology)</p> <ul style="list-style-type: none"> <li>• Transportation alternatives to minimize negative impacts of traditional travel, reduce effect on nature, transition towards renewable energy sources, improving air quality and maintaining ecosystem integrity</li> <li>• People are aware of importance and benefits of preferred transportation choices</li> <li>• Transportation is safe and enjoyable, and accessible</li> </ul>	<ul style="list-style-type: none"> <li>• Highway traffic</li> <li>• Length of roads</li> <li>• Local transport satisfaction</li> <li>• Regional air quality</li> <li>• Registered vehicles</li> <li>• Renewable fuel</li> <li>• Transit proximity</li> <li>• Vehicle incidents</li> <li>• Vehicle occupancy</li> <li>• Visitor bus travel</li> <li>• Visitor transport</li> </ul>
<b>16. Visitor experience</b>	<ul style="list-style-type: none"> <li>• Visitors welcome (communication, travel and services are seamless and convenient throughout travel and stay)</li> <li>• Resort community’s authentic sense of place and engaging, innovative and renewed offerings attract visitors again</li> <li>• Resort is comfortable, functional, safe, clean and well-maintained (with natural environment respected)</li> <li>• Visitor experience based on practices and systems that efficiently use sustainable materials and energy</li> </ul>	<ul style="list-style-type: none"> <li>• Length of stay</li> <li>• Occupancy rate</li> <li>• Recreation pricing (visitor)</li> <li>• Recreation satisfaction (visitor)</li> <li>• Resident interaction</li> <li>• Unlawful incidents</li> <li>• Visitor number</li> <li>• Visitor satisfaction</li> <li>• Whistler atmosphere (visitor)</li> </ul>
<b>17. Water</b>	<ul style="list-style-type: none"> <li>• Potable water supply delivers excellent quality (meets or exceeds health standards)</li> <li>• Water supply is reliable, equitable and affordable</li> <li>• Water and wastewater treatment to minimize energy requirements and favour sustainably managed materials and resources</li> <li>• Residents educated and encouraged to conserve water</li> <li>• Watershed-based management approaches (development, infrastructure, forests, habitat, recreation, fisheries and aquifers)</li> </ul>	<ul style="list-style-type: none"> <li>• Development footprint</li> <li>• Drinking water quality</li> <li>• Effluent quality</li> <li>• Green building</li> <li>• Length of roads</li> <li>• Stream health</li> <li>• Water use</li> </ul>

In order to ensure the development of a successful community vision and a common approach for sustainability, Whistler initially created an Early Adopters program of six local organizations: the Resort Municipality of Whistler, Whistler Blackcomb, the Fairmont Chateau Whistler, Tourism Whistler, the Association of Whistler Area Residents for the Environment (AWARE), and Whistler Foto Source (Szpala, 2008).

The Early Adopters had to be organizations that were already community leaders, were interested in sustainability and, together, represented a broad spectrum of society. They received awareness training programs, held a community sustainability symposium that featured TNS case studies, hosted a speaker series, with guests such as David Suzuki and Ray Anderson, and initiated a community engagement program which designed sustainability toolkits for houses, businesses and schools.

Each early adopter organization then pursued their own sustainability programs and implemented a community outreach program to educate and inspire other organizations

about sustainability. Finally, after each organization had embarked on their own path towards sustainability, a community-based, comprehensive, long-term vision and plan were developed.

### **Early Adopter: Whistler Blackcomb**

One of the six Early Adopters was the ski resort of Whistler Blackcomb. Their inclusive environmental plan included waste reduction audits and initiatives (emphasizing recycling), energy quest (energy reduction goal of 15-20%), reduction of timber used for lift expansion, and a habitat improvement team (protect and restore local habitats and resources) (Szpala, 2007).

After pursuing internal company education, Whistler Blackcomb began client and local community outreach initiatives, which included establishing a sustainability network to share information with other resorts, displaying informative educational signs on the mountain, and sponsoring the Telluride Mountain Film Festival to raise awareness of environmental issues. Some of the initiatives Whistler Blackcomb has pursued to reduce impact on climate change include implementing company car pools, installing a 10 kW run-of-river turbine, retrofitting buildings to reduce greenhouse gas emissions, reducing electricity consumption by using automatic lights and heat controls, and implementing an aggressive waste management program. These changes will be very visible during the 2010 winter Olympics, and should increase awareness and support of environmental initiatives globally.

Whistler's success with progressing towards environmental sustainability can shed insight into the process and types of initiatives other municipalities could pursue. However, both patience and a long-term commitment are necessary to pursue sustainability planning. There needs to be a strong commitment to community engagement, with multiple formats that include open houses, workshops, kids' forums, surveys and the internet.

## **5.2 Canmore, Alberta**

Canmore, Alberta, which is located in the Bow Valley, has a population of approximately 12,000. Being in the Canadian Rockies, Canmore is a world-renowned outdoor recreational tourist destination for rock climbers, cyclists and other outdoorsmen. Early Adopters program, who received training in TNS, comprised the municipal government, the public library, the Radisson Hotel and Conference Centre, the Rocky Mountain Flatbread Company, the Bow Valley Waste Management Commission, the Three Sisters Mountain Village Polar Pin (local business), and the local Seniors' Association. Not only can their success stories can facilitate change throughout the community, this organization created a sustainability network, the Bow Valley Sustainability Hub, to publicize local sustainability initiatives. Part of the Canmore community engagement strategy included a day-long sustainability forum, which featured Canadian environmentalist David Suzuki as a guest speaker. There were classroom education programs, a sustainability display at the library, and training of municipal staff.

After the community identified trends driving change in Canmore (table 10) and discussed potential future scenarios for the town (figure 5), three main values, five guiding principles and sixteen policy categories were developed (table 11) (Mackrael, 2008, *Canmore*). This community engagement process involved the participation of more than 600 people (including more than 40 neighbourhood and community groups).

The three main values of the Town of Canmore are sustainability, diversity and connectedness. Sustainability is “integrating our social, economic and environmental activities in ways that will enable us to meet the needs of the current generations without compromising the ability of future generations to meet their own needs”; diversity is “managing our community in ways that attract, include, keep, and celebrate a wide range of people, perspectives, and lifestyles” and connectedness is “managing our community in ways that foster a shared sense of belonging among all citizens” (Town of Canmore, n.d. *Executive Summary*).

Table 10. Identified trends affecting Canmore (Town of Canmore, n.d. *Final Report*)

Trends driving change in Canmore		
Aspirations and Values	External Reputation	Lifestyle Trends
Culture and the Arts	Global Economic Trends	Physical “built” Structures
Demographic Shifts	Governance	Recreation Trends
Economic Prosperity	Government Policy	Social Fabric
Environmental Factors	Land Use	Technology



Figure 5. Canmore’s future scenario possibilities (Town of Canmore, n.d. *Executive Summary*)

Table 11. Town of Canmore's values, principles and policy categories (Mackrael, 2008, *Canmore*)

Values	Guiding Principles	Policy categories
<ol style="list-style-type: none"> <li>1. Sustainability</li> <li>2. Diversity</li> <li>3. Connectedness</li> </ol>	<ol style="list-style-type: none"> <li>1. Identity</li> <li>2. Economic sustainability</li> <li>3. Social fabric</li> <li>4. Environmental stewardship</li> <li>5. Civic engagement and leadership</li> </ol>	<ul style="list-style-type: none"> <li>• Commercial</li> <li>• Growth management</li> <li>• Growth phasing</li> <li>• Healthy community services</li> <li>• Implementation responsibility</li> <li>• Industrial</li> <li>• Local area plans</li> <li>• Municipal finance</li> <li>• Natural environment</li> <li>• Plan amendment</li> <li>• Plan monitoring</li> <li>• Public parks, schools &amp; trails</li> <li>• Regional cooperation</li> <li>• Residential</li> <li>• Resort &amp; tourism</li> <li>• Transportation &amp; utility infrastructure</li> </ul>

## Principles:

The Town of Canmore has five principles to guide them in their progress towards their vision (table 12 and 13).

### Identity

A group identity is necessary to unite a municipality. Canmore's identity is expressed in their vision statement, which states "The Canmore of the future is a prosperous, vital and vibrant community. Its great strength is its varied, resourceful, and engaged citizens, who thrive together on the strength of the community's long-term commitment to the diversity of its people and the health of the mountain landscape that shapes and sustains it." (Town of Canmore, n.d. *Executive Summary*)

### Civic Leadership

The municipality needs to be a leader in community sustainability and actively pursue community engagement and governance. To visibly demonstrate sustainable design principles, the Town of Canmore built their new Civic Centre according to Leadership in Energy and Environmental Design (LEED) Silver Certification. Some green design initiatives include maximizing natural ventilation, having a water efficient landscape design, using passive solar initiatives, implementing energy efficient lighting and heating, using recycled and regional construction materials, and reducing artificial lighting through high-performance glazed windows (Town of Canmore, 2009).

The Civic Centre uses 40% less energy, 55% less water, has natural daylight and ventilation, and utilizes dual flush toilets and waterless urinals when compared with traditional design practices (Mackrael, 2008, *Canmore*).

Another example of civic leadership by the Town of Canmore is the development of a Sustainability Screening Report (SSR), which evaluates all projects through the lens of The Natural Step. The SSR process requires developers to explain the social, environmental and economic benefits of their project, which in turn are presented to Council at a public meeting. The Green Building Policy also obliges builders to obtain third party certification for their environmental impact (Mackrael, 2008, *Canmore*).

Sustainability is also embedded into all municipal operations with the development of Environmental Action Plans. These action plans include specific goals on reducing the environmental impact of using water and energy, producing waste, applying cosmetic pesticides and performing snow removal operations. There are numerous environmental initiatives pursued by the municipality.

Some include purchasing green power for 40% of town needs, the water conservation rebate program, free bus and taxi for special needs residents, recycling depots, 20% biodiesel use, green cleaning products in municipal buildings, a hybrid vehicle in the municipal fleet, computer recycling and paperless municipal offices (if possible) (Mackrael, 2008, *Canmore*).

### Economic Sustainability

The three significant economic initiatives pursued by the Town of Canmore are the purchasing guidelines, the water conservation rebate program (discussed under environmental stewardship) and the second home owner study. The sustainability purchasing guidelines provides purchasers with information to make better choices on products such as antifreeze, batteries, cleaning products, de-icers, electronic computer equipment, fertilizer, food and beverage, fuels, garbage bags, light bulbs, oils and lubricants, paints, paper products, piping water and wastewater, printing inks, road surface material, sealants and caulking compound, tires, vehicles, wood products and writing instruments (Town of Canmore, 2009).

The second home owner study surveyed homes of non-resident citizens to determine why they chose to purchase Canmore property and the value this has in the community. This survey was also undertaken to better understand these migrant residents and the challenge they pose to the Town of Canmore, as they lack interest in participating and engaging in community planning endeavours.

### Environmental Stewardship

In addition to the Civic Centre, one of the key success stories of environmental improvement towards sustainability was the installation of a solar PV cell on a municipally-owned building, as this visible sign educates civilians on solar energy. Canmore established programs and initiatives to shift their baseline towards sustainability, by implementing an education and awareness program, purchasing green power (for 40% of municipal power needs), undertaking energy retrofits, establishing the green building policy, supporting green buildings, implementing the smart growth land use (Sustainability Screening Report for

developers), and providing efficient vehicle fleets and alternative fuels for vehicles (biodiesel and hybrids).

Other environmental initiatives include specific targets for reduction in usage of water, energy, waste, cosmetic pesticide and snow management. For instance, in water management, Canmore catalogued their water inventory and discovered distribution system losses of 22.4% of water produced, which lead to a goal of a 10% reduction by 2012 (Town of Canmore, 2009). They also implemented water conservation goals of 20% reduction in per capita water consumption and implemented metering capacities to measure success.

For energy management, the Town established the corporate energy and emissions baseline of municipal operations and of the community in general. For waste management, the Town instigated a solid waste inventory and declared a goal of reducing per capita municipal waste sent to landfills by 50% by 2010 (with a 2001 baseline).

It developed an action plan to educate citizens on source separation, composting, recycling and household hazardous waste program. They established a pesticide goal to eliminate cosmetic pesticides by 2014 and a snow management goal to achieve a sand/salt mixture with a maximum of 10% salt volume.

Finally, the environmental program implemented rebates to encourage individual citizenship participation, such as the installation of water meters, and to replace older toilets and shower head fixtures with new water efficient fixtures.

### Social Fabric

The Comprehensive Housing Action Plan is a good example of the Town of Canmore working to address the need for affordable housing. They identified a variety of housing policies and actions to meet the needs of the community for a wide range of housing.

**Table 12. Goals and Criteria for Canmore's principles (Town of Canmore, n.d.)**

Principle	Goal	Criteria
<b>Identity</b>	<ol style="list-style-type: none"> <li>1. Understand, cherish and maintain the diverse nature of Canmore's landscape, heritage and people</li> <li>2. Recognize that our sense of community, including both ourselves and those who visit us, is the core of our identity</li> <li>3. Acknowledge that our identity includes regional and international tourism, recreation and mountain lifestyles, and a focus on wellness and excellence in sport</li> <li>4. Create a balanced relationship between the Canmore that serves tourists and the Canmore that serves a large local, non-tourist population</li> <li>5. Recognize and redefine our connection and working relationships with the nearby communities of Banff, Exshaw, Lake Louise, Morley, Calgary</li> <li>6. Retain Canmore's small town character – open, friendly, easily accessible – while developing its</li> </ol>	<ol style="list-style-type: none"> <li>1. Be consistent with, and strengthen the value of Canmore's identity</li> <li>2. Strengthen our connectedness by creating means to create a strong sense of belonging</li> <li>3. Demonstrate the relationship between the natural landscape and our identity</li> <li>4. Market and promote our identity in a way that supports and enhances our vision</li> <li>5. Communicate Canmore's identity to residents, newcomers and visitors</li> </ol>

Principle	Goal	Criteria
	<ul style="list-style-type: none"> <li>7. Preserve and celebrate our mountain heritage</li> <li>8. Develop excellence in arts and culture, environmental stewardship and wellness</li> </ul>	<ul style="list-style-type: none"> <li>1. Support local businesses</li> <li>2. Encourage economic diversity</li> <li>3. Increase our capacity to attract new business that will enhance and complement the tourism industry through policies of the Town</li> <li>4. Promote entrepreneurial networking among business professionals, including self-employed residents</li> <li>5. Integrate all of our values and guiding principles into our economic decision making</li> </ul>
<b>Economic Sustainability</b>	<ul style="list-style-type: none"> <li>1. Build a strong, vibrant and diversified local economy and business base that is resilient to changes in any one sector</li> <li>2. Develop and implement a clear marketing plan based on Canmore's strengths and that has positive consequences for the social fabric</li> <li>3. Blend and integrate the needs of Canmore's local population with the needs of its visitors and those who serve them</li> <li>4. Develop a large base of staff who are committed to local businesses, and provide diverse, permanent employment opportunities for locals</li> <li>5. Research and distribute information regarding current and emerging economic drivers, including tourism, knowledge-based work, second-home ownership, retirement and investment income, entrepreneurship, wellness, and lifestyle</li> </ul>	<ul style="list-style-type: none"> <li>1. Support local businesses</li> <li>2. Encourage economic diversity</li> <li>3. Increase our capacity to attract new business that will enhance and complement the tourism industry through policies of the Town</li> <li>4. Promote entrepreneurial networking among business professionals, including self-employed residents</li> <li>5. Integrate all of our values and guiding principles into our economic decision making</li> </ul>
<b>Social Fabric</b>	<ul style="list-style-type: none"> <li>1. Acknowledge and strengthen our social connections and manage the pressure that will be placed on them over time</li> <li>2. Recognize and strengthen Canmore as a diverse, inclusive community, integrating residents of all ages, income levels and skills</li> <li>3. Meet the needs and aspirations of permanent residents while integrating new full and part time residents</li> <li>4. Ensure all citizens have access to basic levels of safe, secure, affordable and appropriate shelter</li> <li>5. Encourage and support a broad range of community activities and programs</li> <li>6. Support the growing community interest in wellness, which encourages personal responsibility and community engagement</li> </ul>	<ul style="list-style-type: none"> <li>1. Contribute to a dynamic, well-stratified demographic profile</li> <li>2. Provide basic social services for all citizens</li> <li>3. Ensure cooperation by community services, education and health authorities, and faith communities</li> <li>4. Ensure access to support and services within the community for people with special needs</li> <li>5. Provide a mix of affordable housing options for all who require it</li> <li>6. Ensure the design of physical facilities and activities that encourage people to come together (pedestrian areas, trails, meeting places in new developments)</li> </ul>
<b>Environmental Stewardship</b>	<ul style="list-style-type: none"> <li>1. Maintain the biodiversity and ecological integrity of the Bow Valley ecosystem</li> <li>2. Encourage and support programs and activities intended to create an educated and engaged public that embraces environmental stewardship</li> <li>3. Define and promote the entire spectrum of cultural and ecological values associated with our mountain landscape</li> <li>4. Acknowledge and respect the needs of both humans and wildlife regarding the use of the natural landscape</li> <li>5. Acknowledge there are geographic and ecological limits in the Bow Valley, and that the reality of limits must be considered in discussions regarding continued use of the landscape by people and other species</li> </ul>	<ul style="list-style-type: none"> <li>1. Enhance community understanding of the responsibilities and trade-offs involved with living with wildlife in the Bow Valley</li> <li>2. Provide opportunities for individuals to participate responsibly in wilderness recreational activities</li> <li>3. Use the precautionary principle as defined below</li> <li>4. Be made with community collaboration on environmental issues</li> <li>5. Define the environmental and social impacts of an</li> </ul>

Principle	Goal	Criteria
	<ol style="list-style-type: none"> <li>6. Connect Canmore's role as a gateway community to Provincial and National Parks to the regional ecosystem; maintain regional connectivity of the surrounding landscape</li> <li>7. Exercise leadership in environmental excellence through innovation and creativity</li> </ol>	<ol style="list-style-type: none"> <li>6. economic endeavour Maintain regional wildlife connectivity, ecological integrity and biodiversity (do not harm)</li> </ol>
<b>Civic Engagement and Leadership</b>	<ol style="list-style-type: none"> <li>1. Develop and refine ways for the citizens of Canmore to engage in public policy processes that move well beyond open houses and public hearings</li> <li>2. Nurture a well informed and broad-based electorate that is empowered to vote, to be involved in community decisions, and to make a positive contribution to the community</li> <li>3. Recognize and utilize the diverse range of talents and perspectives of citizens</li> <li>4. Encourage and support policies, programs, and activities that will increase Canmore's leadership capacity and the capacity of all citizens to exercise civic responsibility</li> <li>5. Revise the Town's of Canmore decision making structures to reflect significantly increased and long-term citizen engagement</li> <li>6. Increase the capacity for clarity of, formal community communications</li> <li>7. Monitor and evaluate the Town of Canmore's decisions to ensure the community's long-term vision is upheld over time</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop pro-active planning that involves citizens and integrates community input into decision making</li> <li>2. Use a variety of ways to ensure citizen engagement</li> <li>3. Clearly communicate to the community at large and by 1 and 2 above foster a sense of trust and ownership in civic engagement processes</li> <li>4. Continue to build capacity for continuing dialogue for formal and informal community leaders</li> </ol>

Table 13. Town of Canmore's Sustainability Principles key issues (Town of Canmore, 2009)

Principle	Key Issues	Best examples
<b>Identity</b>	<ul style="list-style-type: none"> <li>• Pace of Growth</li> <li>• Community Spaces</li> <li>• Compact Built Form</li> <li>• Downtown Neighbourhood Redevelopment</li> </ul>	
<b>Civic Leadership</b>	<ul style="list-style-type: none"> <li>• Meaningful Citizen Engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Canmore Civic Centre</li> <li>• The Natural Step</li> <li>• Mining the Future 2</li> <li>• Sustainability Screening Reports</li> <li>• Mining the Future: A Vision for Canmore</li> </ul>
<b>Economic Sustainability</b>	<ul style="list-style-type: none"> <li>• Essential Community and Commercial Services</li> <li>• Sustainable Economic Development</li> </ul>	<ul style="list-style-type: none"> <li>• Purchasing Guidelines</li> <li>• Water Conservation Rebate</li> <li>• Second Home Owner Study</li> </ul>
<b>Environmental Stewardship</b>	<ul style="list-style-type: none"> <li>• Limits to Development</li> <li>• Comprehensive Trail Network</li> <li>• Wildlife Corridors and Habitat</li> <li>• Sustainability Initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Alberta Solar Showcase</li> <li>• Environmental Care Program</li> <li>• Rebates and Conservation</li> </ul>
<b>Social Fabric</b>	<ul style="list-style-type: none"> <li>• Retaining and Attracting Full Time Residents</li> <li>• Affordable Accommodation</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive Housing Action Plan</li> </ul>

The initiatives Canmore has implemented can potentially be used to implement sustainability initiatives in other communities like the Town of Essex.

### 5.3 Atlantic Canada Sustainability Initiative

The Atlantic Canada Sustainability Initiative (ACSI) is a regional initiative to build momentum around environmental, economic and social sustainability. ACSI is comprised of fourteen organizations, including private business, not-for-profits and government. This is the first regional level sustainability project in Canada. Previously, many Atlantic communities and organizations had begun implementing their own sustainability initiatives, but there was a need to develop a coherent response, which integrated social, economic and environmental interventions to be mutually supportive and enhancing.

The actions of ACSI are coordinated by the Centre for Rural Sustainability, which assists education, planning and strategic decision making regarding sustainability (Mackrael, 2008 *ACSI*). With 40% of Atlantic Canadians living in rural areas, resource-based activities are extremely important to the economy and need to be sustainably managed. An example of gross overharvesting and mismanagement lead to the collapse of the cod-fisheries in Eastern Canada.

From 1979 to 2000, the state of natural ecosystems declined 33%, while the ecological pressure increased by 50% (Mackrael, 2008 *ACSI*). Therefore, the need to implement sustainability initiatives is imperative. The primary goal of the ACSI was to support local businesses, communities and NGOs implementing TNS framework.

The vision of ACSI is “for Atlantic Canada to become a global leader in sustainable development” (Atlantic Canada Sustainability Initiative, 2007). The objectives, guiding principles and priorities of the Atlantic Canada Sustainability Initiative can be seen in table 14.

**Table 14. Objectives, principles and priorities of the Atlantic Canada Sustainability Initiative (Atlantic Canada Sustainability Initiative, 2007)**

Objectives	Guiding Principles	Priorities
<ul style="list-style-type: none"> <li>• Build capacity and competence</li> <li>• Implement a plan of action</li> <li>• Serve as role models</li> <li>• Build an effective network</li> <li>• Build regional momentum</li> <li>• Identify and act on opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Leadership on Sustainability</li> <li>• Excellence and Innovation</li> <li>• Inclusiveness and Participation</li> <li>• Transparency</li> </ul>	<ul style="list-style-type: none"> <li>• Expand the ACSI network</li> <li>• Build Partner Capacity and Competence on Sustainability</li> <li>• Build Momentum Towards Sustainability through Collective Action</li> <li>• Evaluate and Share the ACSI Framework with Others</li> </ul>

Many organizations began by pursuing projects that were low-risk and would provide quick returns on investment, such as energy efficiency audits and utilizing recycled products. Others conducted baseline analyses and created long-term sustainability plans. Other participants educated their clients, suppliers and the community (Mackrael, 2008 *ACSI*). A closer analysis of the local government ACSI partners, which are the Town of Stratford, the Municipality of Halifax and the Town of Wolfville, is set out below. The Atlantic Canada Sustainability Initiative demonstrates the advantages of pursuing sustainability initiatives simultaneously at multiple levels (municipal and regional).

### 5.3.1 Town of Stratford

The Town of Stratford, Prince Edward Island, is a community comprised mainly of farming and summer cottages. Being close to Charlottetown, Stratford is PEI's most rapidly growing community (Atlantic Canada Sustainability Initiative, 2007). They created a steering committee of residents, staff and elected officials to create the sustainability action plan, Imagine Stratford, which is currently in its draft stage (table 15).

Their current vision is focused on the dimensions of social, cultural, environmental and economic sustainability. The eventual sustainability action plan will be embedded into the Official Town Plan. They are currently beginning community engagement and planning exercises to design strategies and plans for a sustainable future (table 16).

**Table 15. Town of Stratford's Sustainability Goals, Principles and Responsibility Areas (Town of Stratford, 2009)**

Broad Sustainability Goals	Principles	Responsibility Areas
<ol style="list-style-type: none"> <li>1. Reduce greenhouse gas emissions</li> <li>2. Reduce Stratford's Ecological Footprint</li> <li>3. Improve Quality of Life</li> </ol>	<ol style="list-style-type: none"> <li>1. Economic</li> <li>2. Social</li> <li>3. Environmental</li> <li>4. Cultural</li> <li>5. Governance</li> </ol>	<ul style="list-style-type: none"> <li>• Arts, Culture and Heritage</li> <li>• Built Environment</li> <li>• Economy</li> <li>• Energy</li> <li>• Health and Social Vibrancy</li> <li>• Parks and Open Spaces</li> <li>• Transportation</li> <li>• Water</li> <li>• Municipal responsibility</li> </ul>

**Table 16. Proposed Stratford strategies and actions for a sustainable future (Town of Stratford, 2009)**

Strategies	Actions
Stratford Town Centre	<ul style="list-style-type: none"> <li>• Improve performance in energy efficiency, water conservation and user satisfaction in municipal buildings</li> <li>• Utilize Fair Trade Coffee for staff and meetings</li> </ul>
Community Engagement Strategy	<ul style="list-style-type: none"> <li>• The Natural Step training and resources</li> <li>• Public engagement techniques and events (i.e. local food days, Earth hour)</li> </ul>
Sustainable Economic Development Strategy	<ul style="list-style-type: none"> <li>• To be developed</li> </ul>
Sustainable Housing Pilot	<ul style="list-style-type: none"> <li>• To be developed, based on ecological design, energy efficiency and water conservation</li> </ul>
Water Conservation	<ul style="list-style-type: none"> <li>• Educational initiative</li> </ul>
Wind Energy Policy	<ul style="list-style-type: none"> <li>• To be developed with a regulatory framework for wind installations within town boundaries</li> </ul>
Sustainability Procurement	<ul style="list-style-type: none"> <li>• Include sustainability principles in procurement and purchasing by May 2009</li> <li>• Certifications such as Eco-Logo, TransFair and Forest Stewardship Council</li> </ul>
Public Transit	<ul style="list-style-type: none"> <li>• To be implemented</li> </ul>
Active Transportation Plan	<ul style="list-style-type: none"> <li>• To be developed</li> <li>• Scope: multi-use trail network linking neighbourhoods and business establishments, links to public transit, safety and aesthetic factors and signage</li> </ul>
Dark sky compliant street lighting pilot	
Paperless Office	<ul style="list-style-type: none"> <li>• Paperless council meetings</li> <li>• Reduce paper use in administration</li> </ul>
Earth Hour 2008	<ul style="list-style-type: none"> <li>• Observe in municipal buildings, educate and encourage civilian participation</li> </ul>

Strategies	Actions
Creating Stratford's Future Open House	<ul style="list-style-type: none"> <li>• Stratford's Winter Carnival included an Open House featuring displays and short films related to energy efficiency, pollution reduction and fair trade</li> </ul>
Health and Safety in Stratford Parks	<ul style="list-style-type: none"> <li>• Tree planting, portable shelters, information flyer and signage</li> </ul>
Diversity and Inclusion	

### 5.3.2 Halifax Regional Municipality

*As is proposed for the Town of Essex, with the vision of leading by example*, the Regional Municipality of Halifax focused on internal culture and conducted a sustainability analysis of internal operations. A multi-departmental sustainability transition team trained in The Natural Step was formed (called the Sustainable Environment Management Office). They designed a decision-making protocol to include sustainability principles into all major decisions (Atlantic Canada Sustainability Initiative, 2007).

Some sustainability activities include climate change and community energy planning, environment (clean air/land/water) and land use planning, active transportation implementation and urban design policies (Halifax Regional Municipality, 2009). From the Corporate Sustainability Analysis, three immediate priorities were established: green buildings, green procurement and green corporate culture (Halifax Regional Municipality, 2009).

The green buildings strategy is the desire to develop new facilities and retrofit old ones, to LEED standards, and to pursue energy efficiency projects (i.e. geothermal technology). The green procurement is to embed sustainability into purchasing decisions throughout municipal operations. Greening corporate culture refers to training staff and promoting sustainable practices and policies – nearly 200 staff and community members have taken TNS courses and 150 staff have participated in TNS workshops. In addition to the three immediate priorities, there are four strategies identified and their potential action items (table 17).

Table 17. Halifax Regional Municipality's awareness program strategies and action items (Halifax Regional Municipality, 2009)

Strategy	Action items
Clean Land	<ul style="list-style-type: none"> <li>• Regional Plan</li> <li>• Solid Waste Management</li> <li>• Pesticide Use Reduction</li> </ul>
Clean Air	<ul style="list-style-type: none"> <li>• Climate SMART</li> <li>• Corporate &amp; Community Greenhouse Gas Emission Reduction Plans</li> <li>• Bus Rapid Transit</li> <li>• Bio-Fuels (in buses and certain buildings)</li> <li>• Reduced Idling</li> <li>• Methane Capture (former landfill)</li> <li>• Clean Air Strategy</li> </ul>
Clean Water	<ul style="list-style-type: none"> <li>• Harbour Solutions Project</li> <li>• Wastewater/Storm water strategy</li> <li>• Water quality monitoring program</li> <li>• Water and sewer extensions</li> <li>• Road salt management</li> </ul>

Strategy	Action items
	<ul style="list-style-type: none"> <li>• Groundwater/septic stewardships</li> <li>• Biosolids program</li> <li>• Upgrade WWT facilities</li> </ul>
Clean Energy/Climate Change	<ul style="list-style-type: none"> <li>• Wind energy master plan</li> <li>• Community energy plan</li> <li>• Community energy planning</li> <li>• Transit / transportation long range plans</li> <li>• Natural gas synergy</li> <li>• Wind power – green power purchase</li> <li>• Energy performance contracts – metro transit facility</li> <li>• LED lights/savings</li> <li>• Landfill gas recovery (aka Clean Land: methane gas)</li> <li>• Alderney Five Project</li> </ul>

### 5.3.3 Town of Wolfville

The Town of Wolfville is part of the Wolfville Sustainability Initiative, a collaborative partnership. Wolfville established the Sustainable Community Planning (SCP) Task Force, which reviews and revises planning documents. Therefore, currently Wolfville is concerned with educational awareness and establishing the current baseline of their activities. There is extensive public participation involved, with approximately 30 community circles held in early stages of the plan review process (Atlantic Canada Sustainability Initiative, 2007). They pursue public education, by training staff, council, committee members and the public in sustainable design tools and The Natural Step. Also, they are developing innovative infrastructure projects and community health indicators.

### 5.4 Town of Olds, Alberta

Olds, Alberta is a rural community with a population of 7,300. After considerable community engagement (over 200 citizens), a future vision and 15 key strategic initiatives were identified (table 18 and 19). Old’s vision is to be “a progressive, sustainable community with substantial cultural, economic, environmental, social and governance opportunities” (Town of Olds, n.d.). The Town of Old’s values are integrity, collaboration, innovation and accountability (Town of Olds, n.d.). Old believes that the dimension of a sustainable community is a healthy environment, a strong economy, a vibrant culture scene, good governance and a strong social network.

Table 18. Identified trends affecting the Town of Olds (Town of Olds, n.d.)

Current and emerging trends
Globalization
Rapid Information transfer
Technology advancement

Table 19. Town of Old's Strategies (Town of Olds, n.d.)

Strategy cluster	Strategies
Partner in Strategic Opportunities	<ul style="list-style-type: none"> <li>• Governance and Partnerships</li> <li>• Communications</li> <li>• Learning</li> <li>• Economic Development</li> </ul>
Responsible Growth	<ul style="list-style-type: none"> <li>• Transportation</li> <li>• Built Environment</li> <li>• Natural Areas</li> </ul>
Healthy, Thriving, Flourishing Community	<ul style="list-style-type: none"> <li>• Recreation and Leisure</li> <li>• Arts, Culture and Heritage</li> <li>• Affordability and Housing</li> <li>• Food</li> <li>• Health and Social</li> </ul>
Innovative Service Delivery	<ul style="list-style-type: none"> <li>• Water</li> <li>• Materials and Solid Waste</li> <li>• Energy</li> </ul>

The process of municipal sustainability planning is long, with multiple phases. The strategic sustainability planning process can be seen in figure 6. The phases of the Town of Olds are (Town of Olds, 2008):

- Phase 1 Structuring the planning process
- Phase 2 Creating a shared understanding of sustainable community success
- Phase 3 Community based issue analysis
- Phase 4 Action planning
- Phase 5 Ongoing implementation and monitoring



Figure 6. Strategic Sustainability Planning Process (Town of Olds, 2008)

## 6.0 Relevant Legislation and Funding Opportunities

### 6.1 Green Energy Act



On February 23, 2009, Bill 150, the Green Energy Act was introduced into the Ontario legislature. This bill passed legislature on May 14, 2009. This 20-year plan is an attempt to redefine Ontario's electricity system and shape its evolution. The main purposes of this act are to expand renewable energy production, encourage energy conservation and create green jobs. Its goal is to establish Ontario as a leader in North America for green energy. This bill, it is predicted, will significantly expand the economic market for green energy, by providing an estimated 50,000 direct and indirect jobs within three years of its implementation.

The Green Energy Act will also expand Ontario's use of renewable, clean energy sources, like solar, wind and biomass, and reduce/eliminate the use of coal (a dirty electricity source) by the end of 2014. There are four key policy initiatives in Bill 150. First, there is an enhanced policy commitment to conservation, smart grid and renewable energy. The second enables feed-in tariffs to acquire renewable technologies. Third, is to guarantee and prioritize connection of renewable technologies. Fourth, is to streamline approvals while protecting neighbouring uses (Green Energy Act Alliance, 2009).

Concerns have been expressed by some municipalities (such as Kingston) over the loss of local authority over planning applications for renewable energy projects under this legislation (Young, 2009). However, the Minister of Energy and Infrastructure, George Smitherman, states that the Province is attempting to achieve a universal Provincial standard, with guidelines and specific regulations for renewable projects.

According to the Province, there is a lot of public support for this initiative. 87% of Ontarians support the Green Energy Act, with 62% of them strongly supporting it (Pollara, 2009). In Essex County, a poll showed public support levels for the Green Energy Act to be at 86% (with support stronger outside of Windsor [91%] than in the city [82%]), and support for the wind farms to be 84% with opposition at 11% (Green Energy Act Alliance, 2009). Part of the support for the Green Energy Act may be a result of strong opposition to importing electricity from the United States (53%) and the use of coal power (40%) (Pollara, 2009).

### 6.2 Funding Opportunities

Implementing a variety of initiatives can be expensive and funding is frequently a limiting factor. There are various sources of funding for sustainability initiatives with respect to municipal capacity building, at the federal, provincial and private sector sponsored level.

## 6.2.1 Federal Government

### 1. Infrastructure Canada: Federal Gas Tax Fund (*already received*)

The Federal Gas Tax (FGT) Fund provides \$13 billion to Canadian municipalities from 2005 to 2014 to support environmentally sustainable municipal infrastructure projects. Budget 2008 announced indefinite funding, by extending the Gas Tax Fund at \$2 billion per year permanently beyond 2014. Currently Ontario gets 37% of the annual funding. This money is to fund projects that contribute to cleaner air, cleaner water and reduced greenhouse gas emissions. The eligible project categories for FGT funds are public transit infrastructure, water infrastructure, community energy systems, local roads and bridges, wastewater systems, solid waste management and capacity building (figure 7) (AMO, 2008). The FGT also provides funding for capacity building to support communities in planning for long-term sustainability. A requirement of receiving FGT monies is the completion of an integrated community sustainability plan by 2010. To be eligible to receive the next phase of funding, Ontario municipalities must demonstrate progress taken towards sustainability since 2005, or show an action plan for the future. The purpose of the integrated community sustainability plan is to enhance or build upon existing planning instruments and processes. As Essex has received Federal Gas Tax funding, they are thus required to implement sustainability initiatives (table 20).

Table 20. Breakdown of the Gas Tax Fund received by and promised to the Town of Essex

	2008	2009	2010	2011	2012	2013
Town of Essex	\$ 326,312	\$ 652,625	\$ 616,185	\$ 616,185	\$ 616,185	\$ 616,185
Portion received from Essex County	\$ 195,787	\$ 391,575	unknown	unknown	unknown	unknown
<b>Total</b>	<b>\$ 522,099</b>	<b>\$ 1,044,200</b>	<b>\$ 616,185</b>	<b>\$ 616,185</b>	<b>\$ 616,185</b>	<b>\$ 616,185</b>

Furthermore, on April 3, 2009, in an effort to stimulate regional economies and to create jobs for Canadians, John Baird, Canada's Transport and Infrastructure Minister announced doubling the FGT transfers to \$2 billion/year, and to accelerate payments by three months.

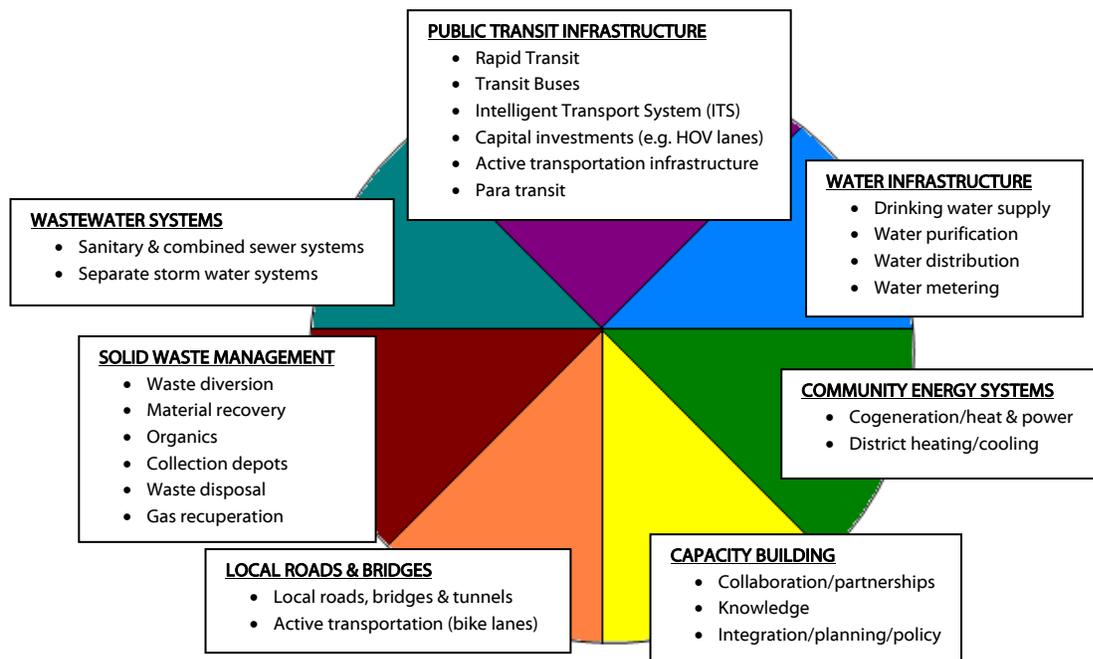


Figure 7. Projects eligible for Federal Gas Tax funding (Blackstone and Burnside, 2008)

## 2. Infrastructure Canada: Green Infrastructure Fund (GIF)

The Green Infrastructure Fund was launched on May 29, 2009, and commits to \$1 billion of funding over 5 years. The purpose of the fund is to support sustainable energy generation and transmission infrastructure, building and improving municipal wastewater treatment systems, and improving solid waste management infrastructure. The goal is to improve water and air quality and lower carbon emissions.

## 3. Government of Canada: EQUilibrium Communities Initiative

On June 1, 2009, the Ministry of Natural Resources and the Canada Mortgage and Housing Corporation (CMHC) announced a \$4.2 million initiative to improve community planning and develop healthy sustainable communities that are energy-efficient, economically viable, and vibrant places to live. This initiative will provide financial, technical and promotional assistance to sustainable community projects chosen through a national competition. The projects will be evaluated with the following criteria: energy, land use and housing, water, wastewater and storm water, transportation, natural environment and financial viability. While the current competition is now closed, there is the possibility of future competitions.

#### **4. Environment Canada: EcoAction Community Funding Program**

Environment Canada is supporting projects that have measurable, positive impacts on the environment. Eligible projects protect, rehabilitate or enhance the natural environment, and build the capacity of communities to sustain these activities in the future. Projects must support themes of climate change, clean water, nature and/or clean air. They provide a maximum of \$100,000 per project, but require matching funds (50% of funds must come from other sponsors than the Federal government). Applications are due November 1<sup>st</sup>, 2009.

#### **5. Industry Canada: Municipal Rural Infrastructure Fund (*already received*)**

The goal of the Municipal Rural Infrastructure Fund was to implement green infrastructure that provides a better quality of life for smaller communities. This fund was launched in 2004 and provides funds until March 31, 2011. These infrastructure projects include drinking water, wastewater, solid waste management and recycling, energy efficiency in local municipal buildings, transit, roads and bridges, tourist, cultural and regional facilities and broadband connectivity. Projects are evaluated based on health and safety, public policy priorities and value for money. The Town of Essex has already received \$899,000 for improvements to Third Concession Road, improvements to Roseborough Road, and upgrading of Hanlan Street.

### **6.2.2 Provincial Government**

#### **6. Association of Municipalities of Ontario: Federal Gas Tax Project Awards**

The Association of Municipalities of Ontario honours municipalities that have demonstrated excellence in the use of Federal Gas Tax Funds, and showcase projects that exemplify environmental objectives and demonstrate long term planning for environmental and community sustainability. Three Awards will be awarded annually.

### **6.2.3 Possible Prizes**

#### **7. King Hassan II Great World Water Prize**

This International award encourages the cooperation and sound management in the development and use of water resources. This award is given every three years, and is worth \$100,000 USD. The objectives of the prize are to identify critical water issues, raise awareness, provide a common strategic vision on integrated water resources management on a sustainable basis, provide advice and relevant information to develop policies, and resolve trans-boundary water issues.

#### **8. The Sophie Prize**

The Sophie Prize is awarded to individuals or organizations that are working towards a sustainable future through raising awareness of alternative methods to modern-day

development or by pioneering manners of alternative development. This annual award was implemented in 1998, and is worth \$100,000 USD.

#### 6.2.4 Other Opportunities

##### 9. Federation of Canadian Municipalities Green Municipal Fund (GMF)

The Federation of Canadian Municipalities has set up a Green Municipal Fund to help transition municipalities towards sustainable communities by providing funding in three areas: plans, studies and projects. First, to access funding for plans, municipal governments must have passed a council resolution committing to establish a vision and targets in a plan that includes economic, social and environmental objectives and targets for environmental performance. Possible initiatives are sustainable community plans, neighbourhood plans, municipal greenhouse gas reduction plans and brownfield action plans (community improvement plans). The Federation of Canadian Municipalities provides grants up to 50% of costs, to a maximum of \$350,000. However, in order to apply for this grant, the Town must include a municipal council resolution that commits the municipality to establishing a sustainable vision and targets. Second, municipalities can access funding for up to 50% of costs, to a maximum of \$350,000 to implement feasibility studies and field tests which improve environmental effectiveness of municipal operations in brownfields, energy, transportation, waste or water sectors. The assessment criteria is environmental, social and economic benefit, knowledge value and project management. However, to access these funds, the municipal council must have adopted the sustainable community plan. Lastly, projects can receive up to 80% of funding, to a maximum of \$4 million in loans (interest rate 1.5% lower than the Government of Canada bond rate for equivalent term) and \$400,000 in grants. Eligible projects include brownfield remediation, green building (retrofits and new construction), sustainable transportation, waste diversion and wastewater.

##### 10. Canadian Mortgage and Housing Corporation, Canadian Home Builders' Association and Canadian Housing and Renewal Association: Affordability and Choice Today (ACT)

The Affordability and Choice Today grant encourages greater housing affordability, choice and quality through regulatory reform. Provided by a partnership of Canadian Mortgage and Housing Corporation, Canadian Home Builders' Association and Canadian Housing and Renewal Association, grants of up to \$5000 can be used to facilitate transformation of information, to implement regulatory reform solutions, or to hold workshops. Possible initiatives include solutions for innovative housing forms, multi-family housing, streamlined permitting, live/work, NIMBY (not-in-my-backyard)/community support, sustainable development, ecovillages, parking, renovation/rehabilitation, conversion, secondary suites, and alternative development standards.

## 11. ecoENERGY Retrofit Grants and Incentives and Hydro One Conservation and Rebate Programs

The Ontario Ministry of Energy and Infrastructure recently developed an energy efficiency funding guide, which lists potential sources of funding for each sector (table 21).

Table 21. Potential sources of funding for energy efficiency (Ontario Ministry of Energy and Infrastructure, 2009)

Program Name	Sponsor	Target	Type of Financial Incentive
<b>All Sectors</b>			
ecoENERGY Technology Initiative	Natural Resources Canada, Office of Energy Research and Development	Research, development and demonstration of next-generation clean-energy technologies	Grant
Enbridge AWAIRE Fund	Enbridge	Support clean air initiatives and improve public health	Grant
Innovation Demonstration Fund (IDF)	Ontario Ministry of Research and Innovation, Commercialization Branch	Commercialization and demonstration of globally competitive, innovative technologies, processes and/or products	Grant
Renewable Energy Standard Offer Program (RESOP)	Ontario Power Authority (OPA), Conservation Bureau	Standardized price for electricity that energy generators sell to the grid (to help Ontario meet its renewable energy targets)	Subsidy
Rural Economic Development Program (RED)	Ontario Ministry of Agriculture, Food and Rural Affairs	To help rural communities remove community development and economic growth barriers	Grant
Sustainable Technologies Development Canada (SDTC)	Development Canada, Sustainable Technologies	To develop and demonstrate clean technologies to solve climate change problems, air and water and soil quality problems, and deliver economic, environmental and health benefit to Canadians	Grant, Loan
<b>Residential Sector</b>			
Community Go Green Fund	Ontario Ministry of the Environment	Reduce GHG emissions	Grant
Cool Savings Rebate Program	Ontario Power Authority (OPA), Every Kilowatt Counts	Replace outdated central heating and cooling equipment	Rebate
ecoENERGY Retrofit – Homes	Natural Resources Canada, OEE, Housing and Equipment Division	Energy efficiency improvements	Rebate
Home Energy Savings Program (HESP)	Ontario Ministry of Energy and Infrastructure	Energy audit cost and energy efficiency retrofits	Rebate
Net Metering	Ontario Ministry of Energy and Infrastructure	Electricity generators can sell excess electricity to electrical grid	Rebate
Peaksaver	Local hydro and power distributors	Programmable thermostat, lower summer peak energy use	Rebate
Programmable Thermostat Rebate Program	Enbridge, Energy Efficiency Programs	Programmable thermostat	Rebate
Retail Sales Tax (RST) Exemption on Renewable Energy Systems	Ontario Ministry of Revenue	Installation of renewable energy equipment (solar, wind, micro-hydro electric, geothermal)	Rebate
Retail Sales Tax (RST) Exemption on ENERGY STAR® Household Products	Ontario Ministry of Revenue	RST exemption to purchase, rent or lease of ENERGY STAR® household products	Tax Incentive
<b>Multi-Residential and Multi-Use Residential Programs</b>			
Commercial Audit Incentives	Enbridge, Energy Services	Energy efficiency improvements	Rebate

Program Name	Sponsor	Target	Type of Financial Incentive
<b>Program</b>			
ecoENERGY Retrofit – Homes	Natural Resources Canada, OEE, Housing and Equipment Division	Energy efficiency improvements	Rebate
ecoENERGY Retrofit – Small and Medium Organizations	Natural Resources Canada, OEE, Housing and Equipment Division	Energy efficiency improvements	Rebate
Gas Equipment Conversion	Enbridge, Energy Services	Installation of energy efficient equipment	Rebate
Higher Efficiency Boiler Program	Enbridge	Upgrades to higher efficiency heating and domestic hot water boilers	Rebate
Infrastructure Ontario Loan Program	Infrastructure Ontario, Loan Operations Group	Loans for capital expenditures	Loan, No/Low Interest Loan
MultiChoice Conversion Program	Enbridge	Natural gas savings due to replacing equipment, operational changes or building automation systems	Rebate
Net Metering	Ontario Ministry of Energy and Infrastructure	Electricity generators can sell excess electricity to electrical grid	Rebate
New Building Construction Program (NBC)	Enbridge	Design energy efficient buildings and save on natural gas	Rebate
Peaksaver	Local hydro and power distributors	Programmable thermostat, lower summer peak energy use	Rebate
Programmable Thermostat Rebate Program	Enbridge, Energy Efficiency Programs	Installation of a programmable thermostat	Rebate
Retail Sales Tax (RST) Exemption on Renewable Energy Systems	Ontario Ministry of Revenue, Refund Unit, Retail Sales Tax	Installation of renewable energy equipment (solar, wind, micro-hydro electric or geothermal)	Rebate
Retails Sales Tax (RST) Exemption on ENERGY STAR® Household Products	Ontario Ministry of Revenue, Refund Unit, Retail Sales Tax	RST exemption to purchase, rent or lease of ENERGY STAR® household products	Tax Incentive
<b>Low-Income Programs</b>			
Budget Billing Plan	Enbridge Gas	Spread out natural gas charges over the year to control for fluctuating seasonal energy costs	Payment Plan
Community Start-Up and Maintenance Benefit (CSUMB)	Service Ontario	Financial assistance for utilities for Ontario Works or Ontario Disability Support Program recipients	Grant
Cool Savings Rebate Program	Ontario Power Authority, Every Kilowatt Counts	Replace outdated central heating and cooling equipment	Rate Reduction
Emergency Energy Fund (EEF)	Ministry of Community and Social Services	Help Ontario residents pay for utility arrears, security deposits and reconnection costs for electricity, natural gas and energy	Grant, Rebate
Golden Age Service	Enbridge Gas	Benefits to seniors for paying gas bills	Credit/ Discount, Payment Plan
Keep the Heat	Windsor & Essex County	Emergency assistance to prevent families experiencing financial difficulties to have their heating utilities terminated	Credit/ Discount
Peaksaver	Local hydro and power distributors	Programmable thermostat, lower summer peak energy use	Rate Reduction
Programmable Thermostat	Enbridge, Energy Efficiency	Installation of a programmable	Rate

Program Name	Sponsor	Target	Type of Financial Incentive
Rebate Program	Programs	thermostat	Reduction Grant
Resident Efficient Space Heating (R-4)			
Retails Sales Tax (RST) Exemption on ENERGY STAR® Household Products	Ontario Ministry of Revenue, Refund Unit, Retail Sales Tax	Installation of energy efficient appliances	Subsidy
Share the Warmth (STW)	Share the Warmth	Energy assistance and conservation services to those living at or near the poverty level	Credit/ Discount
Winter Warmth	Enbridge (United Way)	Financial assistance to those living at or below the poverty line to pay their electricity or gas bills	Credit/ Discount
<b>Business and Commercial Sector</b>			
Canadian Textiles Program (CANtex)	Industry Canada, Service Industries and Consumer Products Branch	To improve company efficiency, enhance productivity and diversify products	Rebate, Tax Incentive
Commercial Audit Incentives Program	Enbridge, Energy Services	To implement energy efficiency improvements	Rebate
Design Assistance Program	Enbridge, Energy Services	For design activities that improve a buildings energy and environmental performance	Rebate
Double Return Program	Hydro One Networks Inc.	Reduce average peak consumption between 7am and 7pm by a minimum of 5%	Rate Reduction
ecoAgriculture Biofuels capital Initiative – ecoABC	Agriculture Canada	Use of feedstock to produce biofuel	Loan
ecoENERGY Biofuels	Natural Resources Canada, OEE, Buildings Division	To biofuel producers	Subsidy
ecoENERGY for Renewable Heat	Natural Resources Canada, Renewable and Electrical Energy Division	Installation of solar heating systems	Rebate
ecoENERGY for Renewable Power	Natural Resources Canada, Renewable and Electrical Energy Division	Installation of renewable energy generation (wind, biomass, low-impact hydro, geothermal, solar PV and ocean energy)	Rebate
Electricity Retrofit Incentive Program (ERIP)	Local hydro and power distributors	Retrofits for existing facilities to improve efficiency	Rebate
Higher Efficiency Boiler Program	Enbridge	Upgrades to higher efficiency heating and domestic hot water boilers	Rebate
HVAC Program	Enbridge, Energy Solutions	Report on estimated annual energy and heat loss, costs to insulate and potential savings on operating costs	Rebate
Monitoring and Targeting Energy Analysis	Enbridge, Energy Services	Energy analysis to improve operations	Rebate
Net Metering	Ontario Ministry of Energy and Infrastructure	Electricity generators can sell excess electricity to electrical grid	Rebate
New Building Construction Program (NBC)	Enbridge	Encourage design of energy efficient buildings	Rebate
Ontario Biogas Systems Financial Assistance Program	Ontario Ministry of Agriculture, Food and Rural Affairs	To develop and build biogas systems that produce clean energy, reduce electricity costs and contribute to local economies	Grant
OPA Technology Development Fund	Ontario Power Authority, Conservation Bureau	To develop technology	Grant
Peaksaver	Local hydro and power distributors	Programmable thermostat, lower summer peak energy use	Rebate

Program Name	Sponsor	Target	Type of Financial Incentive
RST Exemption on Renewable Energy Systems	Ontario Ministry of Revenue, Refund Unit, Retail Sales Tax	Installation of renewable energy equipment (solar, wind, micro-hydro electric, geothermal)	Tax Incentive
RST Exemption on ENERGY STAR® Household Products	Ontario Ministry of Revenue, Refund Unit, Retail Sales Tax	RST exemption to purchase, rent or lease of ENERGY STAR® household products	Tax Incentive
Steam Saver Program	Enbridge, Energy Solutions	To save steam energy	Rebate
Tank-less Water Heater Program	Enbridge, Energy Services	Installation of energy efficient natural gas tank-less water heater	Rebate
<b>Institutional, Commercial, and Industrial (ICI) Sector</b>			
Canadian Textiles Program (CANtex)	Industry Canada, Service Industries and Consumer Products Branch	To improve company efficiency, enhance productivity and diversify products	Rebate, Tax Incentive
Commercial Audit Incentives Program	Enbridge, Energy Services	To implement energy efficiency improvements	Rebate
Conservation Fund	Ontario Power Authority (OPA), Conservation Bureau	Build marketplace capacity for conservation programs, test new program elements, and scale up to deliver significant energy savings	Grant
Demand Response Program	Ontario Power Authority (OPA), Conservation Bureau	Reduce electricity demand	Rebate
Design Assistance Program	Enbridge, Energy Services	For design activities that improve a buildings energy and environmental performance	Rebate
Double Return Program	Hydro One Networks Inc.	Reduce average peak consumption between 7am and 7pm by a minimum of 5%	Rate Reduction
ecoAgriculture Biofuels Capital Initiative – ecoABC	Agriculture Canada	Use of feedstock to produce biofuel	Loan
ecoENERGY for Biofuels	Natural Resources Canada, OEE, Buildings Division	To biofuel producers	Subsidy
ecoENERGY for Renewable Heat	Natural Resources Canada, Renewable and Electrical Energy Division	Installation of solar heating systems	Rebate
ecoENERGY for Renewable Power	Natural Resources Canada, Renewable and Electrical Energy Division	Installation of renewable energy generation (wind, biomass, low-impact hydro, geothermal, solar PV and ocean energy)	Grant
ecoENERGY Retrofit – Small and Medium Organisations	Natural Resources Canada, Office of Energy Efficiency (OEE)	Implement energy saving projects	Rebate
Energy Retrofit Incentive Program (ERIP)	Local hydro and power distributors	Retrofits for existing facilities to improve efficiency	No/Low Interest Loan
Environmental Damages Fund (EDF)	Environment Canada, ecoAction	Projects to repair harm caused by pollution	Grant
Excise Tax Exemption for Ethanol and Methanol	Canada Revenue Agency, Excise Taxes and Special Levies	Develop and market ethanol and methanol made from biomass	Tax Incentive
FCM Green Municipal Fund (GMF)	Federation of Canadian Municipalities	for plans including feasibility studies, field tests and sustainable community plans and capital projects	Grant, Loan
Green Streets Canada	Tree Canada Foundation	For municipalities and communities to implement projects that adopt innovative best management practices and policies in a municipal forest management	Grant
Higher Efficiency Boiler	Enbridge	Upgrades to higher efficiency	Rebate

Program Name	Sponsor	Target	Type of Financial Incentive
Program		heating and domestic hot water boilers	
HVAC Program	Enbridge, Energy Solutions	Report on estimated annual energy and heat loss, costs to insulate and potential savings on operating costs	Rebate
Industrial HVAC Audit Program	Enbridge, Business Markets	For an HVAC audit to implement retrofits to save natural gas	Rebate
Industrial Research Assistance Program (IRAP) – Technology Partnerships Canada (TPC)	National Research Council, Industrial Research Assistance Program	Improve technological competitiveness; development of sustainable alternatives including energy, water and non-renewable resource conservation	Grant
Industrial Steam Saver Program	Enbridge, Business Markets	To implement energy-efficiency measures	Rebate
Infrastructure Ontario Loan Program	Infrastructure Ontario, Loan Operations Group	To public sector organizations for capital expenditures	Loan, No/low interest loan
Monitoring and Targeting Energy Analysis	Enbridge, Energy Services	Energy analysis to improve operations	Rebate
Net Metering	Ontario Ministry of Energy and Infrastructure	Electricity generators can sell excess electricity to electrical grid	Rebate
New Building Construction Program (NBC)	Enbridge	Encourage design of energy efficient buildings	Rebate
Ontario Biogas Systems Financial Assistance Program	Ontario Ministry of Agriculture, Food and Rural Affairs	To develop and build biogas systems that produce clean energy, reduce electricity costs and contribute to local economies	Grant
Ontario Solar Thermal Heating Incentive (OSTHI)	Ontario Ministry of Energy and Infrastructure	To install a qualifying solar water or solar air heating system	Rebate
OPA Technology Development Fund	Ontario Power Authority, Conservation Bureau	To develop technology	Grant
Peaksaver	Local hydro and power distributors	Programmable thermostat, lower summer peak energy use	Rebate
Retail Sales Tax (RST) Exemption on Renewable Energy Systems	Ontario Ministry of Revenue, Refund Unit, Retail Sales Tax	Installation of renewable energy equipment (solar, wind, micro-hydro electric, geothermal)	Rebate
Steam Saver Program	Enbridge, Energy Solutions	To save steam energy	Rebate
Tank-less Water Heater Program	Enbridge, Energy Services	Installation of energy efficient natural gas tank-less water heater	Rebate
<b>Not-For-Profit Sector</b>			
Community Go Green Fund	Ontario Ministry of the Environment	Local projects that reduce greenhouse gas (GHG) emissions	Grant
Community Power Fund	Community Power Fund	Help community organizations in developing and installing renewable energy projects	Grant
Conservation Fund	Ontario Power Authority (OPA), Conservation Bureau	Electricity conservation and demand management projects	Grant
EcoAction Community Funding Program	Environment Canada, ecoAction	Projects that have measurable, positive impacts on the environment	Grant
ecoENERGY for Renewable Heat	Natural Resources Canada, Renewable and Electrical Energy Division	Installation of solar heating systems	Rebate
ecoENERGY for Renewable Power	Natural Resources Canada, Renewable and Electrical Energy Division	Installation of renewable energy generation (wind, biomass, low-impact hydro, geothermal, solar PV and ocean energy)	Grant

Program Name	Sponsor	Target	Type of Financial Incentive
Environmental Damages Fund (EDF)	Environment Canada, ecoAction	For projects that help repair harm done by pollution	Grant
Infrastructure Ontario Loan Program	Infrastructure Ontario, Loan Operations Group	To public sector organizations for capital expenditures	Loan, No/ Low Interest Loan
Ontario Solar Thermal Heating Incentive (OSTHI)	Ontario Ministry of Energy and Infrastructure	To install a qualifying solar water or solar air heating system	Loan
Ontario Trillium Foundation Community Grants	Ontario Trillium Foundation	For different projects relating to environment, arts and culture, sports and recreation, and human and social services	Rebate

## List of Tables

Table 1. Projected Climate Change in Ontario .....	6
Table 2. The Natural Step's Four System Principles (The Natural Step Canada, 2009).....	9
Table 3. Common Elements of successful Municipal Sustainability Plans (AUMA, 2006).....	13
Table 4. A checklist of sustainability goals and potential initiatives (Blackstone and Burnside, 2008) .....	14
Table 5. Potential Strategy Areas (AUMA, 2006).....	16
Table 6. Key lessons from other municipalities' sustainability experiences:.....	18
Table 7. Identified trends affecting Whistler (Whistler, 2009) .....	19
Table 8. Strategic priorities and related strategies of Whistler (Whistler, 2009) .....	19
Table 9. Whistler's strategies for implementing their vision (Whistler, 2009).....	20
Table 10. Identified trends affecting Canmore (Town of Canmore, n.d. <i>Final Report</i> ) .....	25
Table 11. Town of Canmore's values, principles and policy categories (Mackrael, 2008, <i>Canmore</i> ) .	26
Table 12. Goals and Criteria for Canmore's principles (Town of Canmore, n.d.).....	28
Table 13. Town of Canmore's Sustainability Principles key issues (Town of Canmore, 2009).....	30
Table 14. Objectives, principles and priorities of the Atlantic Canada Sustainability Initiative (Atlantic Canada Sustainability Initiative, 2007) .....	31
Table 15. Town of Stratford's Sustainability Goals, Principles and Responsibility Areas (Town of Stratford, 2009).....	32
Table 16. Proposed Stratford strategies and actions for a sustainable future (Town of Stratford, 2009).....	32
Table 17. Halifax Regional Municipality's awareness program strategies and action items (Halifax Regional Municipality, 2009).....	33
Table 18. Identified trends affecting the Town of Olds (Town of Olds, n.d.).....	34
Table 19. Town of Olds' Strategies (Town of Olds, n.d.) .....	35
Table 20. Breakdown of the Gas Tax Fund received by and promised to the Town of Essex .....	37
Table 21. Potential sources of funding for energy efficiency (Ontario Ministry of Energy and Infrastructure, 2009).....	41

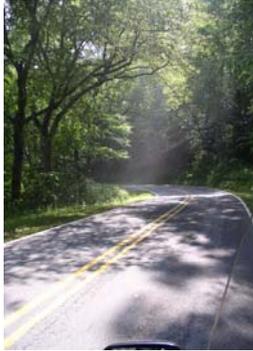
## List of Figures

Figure 1. Four pillar model of Sustainable Development.....	3
Figure 2. The Funnel Metaphor (The Natural Step Canada, 2009).....	5
Figure 3. Phases of implementing Municipal Sustainability Planning (AUMA, 2006).....	12
Figure 4. Sample summary of Canadian Municipalities' progress on sustainability .....	18
Figure 5. Canmore's future scenario possibilities (Town of Canmore, n.d. <i>Executive Summary</i> ) ....	25
Figure 6. Strategic Sustainability Planning Process (Town of Olds, 2008) .....	35
Figure 7. Projects eligible for Federal Gas Tax funding (Blackstone and Burnside, 2008) .....	38

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## Sustainability Action Plan Part 2 - *Baseline Analysis of Municipal Operations and Further Opportunities*

Town of Essex

Anika Steblin and Jeff Watson

November, 2009



## Table of Contents

Executive Summary.....	3
1. Introduction.....	3
2. Where We Stand .....	5
3. Legislative Considerations .....	6
3.1 Asset Management and Sustainability.....	6
3.2 The Planning Act of Ontario.....	9
3.3 Town of Essex Official Plan .....	10
4.0 Sustainability Goals.....	11
5.0 Summary of Analysis .....	12
5.1 Results of Staff Survey and Interviews.....	13
5.1.1 Staff Survey.....	14
5.1.2 Sustainability Challenges Identified by Staff .....	16
5.1.3 Sustainability Opportunities identified by Staff .....	19
5.2 Departmental Initiatives – Current Practices.....	20
5.2.1 Finance and Administration department.....	20
5.2.2 Infrastructure and Development Department.....	22
5.2.3 Parks and Recreation Department.....	30
5.2.4 Fire and Emergencies Department.....	31
6.0 Conclusions .....	32
Appendix A: Town of Essex Development History .....	34
Appendix B: Sustainability References in the Town of Essex Official Plan .....	51
Appendix C: Municipal Energy Use .....	62

# Baseline Analysis of Municipal Operations and Further Opportunities

## Executive Summary

The Association of Municipalities of Ontario (AMO) has published a guideline document entitled, *A Sustainability Planning Toolkit for Municipalities in Ontario*, June 2008, intended to assist municipalities in the preparation of a sustainability action plan. It uses three basic steps:

1. Review lessons learned by other municipalities adopting their own master plans (see Sustainability Action Plan, Part 1 – Background Report);
2. Undertake a self assessment of current municipal practices;
3. Prepare a Sustainability toolkit of policies and procedures.

Part 1, of this report set out the argument for integrating sustainability in municipal day to day activities and long term decision-making and identified actions of other municipalities in the creation of a sustainability action plan.

Part 2, reveals the results of a staff questionnaire and one-on-one interviews with key persons within the administration regarding current practices, efforts to reduce resource consumption and waste and other initiatives to effect more sustainable operations.

It was concluded that the Town has been proactive at departmental levels. But it also revealed that there is no overall plan about how to embed sustainability corporate wide nor is there a means of monitoring positive change to demonstrate to the community and to higher levels of government.

## 1. Introduction

The Brundtland Commission defined sustainable development in 1987 as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainability is becoming an increasingly higher priority for municipalities around Canada. As all municipalities face a variety of challenges, proactive planning is necessary for communities to address these challenges and move towards desired future.

Despite our success in so many endeavours, there is a growing concern about the long term impacts of our actions and western “lifestyle” in terms of its ever-increasing demands for non-renewable resources, its stresses on the natural environment and ecological systems, the increased pollution generated and our dependence on unsustainable land use practices.

We must prepare for the inevitable reduction in the availability of and increasing cost of non-renewable finite resources. We must protect natural landscapes and preserve ecological functions and processes. We must establish economic systems, built environments and cultures that are inherently sustainable for the benefit of our generation and that of our children and grandchildren.

We must adopt sustainable practices and long term policies that provide for our well-being and that of future generations. The United Nations World Commission on Environment and Development defines sustainability as “Sustainability meets the needs of the present generation without compromising the ability of future generations to meet their own needs.”

Sustainability means, for example, much less reliance on non-renewable resources, the use of non-toxic and biodegradable materials and goods and cradle to cradle manufacturing processes, in other words, sustainability must be embedded in our day to day decisions and in our practices and policies for long term development and spending

As well, the Provincial and Federal governments have implemented several funding vehicles which a municipality can utilize for various capital works and programme development. A municipality with a sustainability master plan can have a competitive advantage in securing such funding and, in fact, some programmes, such as the Federal Gas Tax (FGT) initiative, require that such a plan be in place before such monies can be accessed.

The Association of Municipalities of Ontario (AMO) has published a guideline document entitled, A Sustainability Planning Toolkit for Municipalities in Ontario, June 2008, intended to assist municipalities in the preparation of a sustainability action plan. It uses three basic steps:

1. Review lessons learned by other municipalities adopting their own master plans (see Sustainability Action Plan, Part 1 – Background Report);
2. Undertake a self assessment of current municipal practices;
3. Prepare a Sustainability toolkit of policies and procedures.

The ultimate goal is to “embed sustainability’ as a routine part of day to day decision making and long term policy formulation.

Becoming sustainable means developing new policies and priorities, adopting new procedures, encouraging public acceptance and making a firm commitment to a sustainable future.

## 2.0 Where We Stand

The Town of Essex has been proactive in adopting sustainable practices in several ways:

1. The adoption (2009) of a new comprehensive Official Plan for the Town, which incorporates sustainability principals and policies;
2. Completion of an energy audit for municipal buildings (2008);
3. Undertook a public opinion survey concerning energy conservation and use (2008);
4. Secured Federal Gas Tax monies for infrastructure improvements (2008-);
5. Initiated an asset management plan which uses life cycle costing;
6. Member of Partners for Climate Protection, an initiative of the Federation of Canadian Municipalities (2007);
7. Adoption of administrative practises devoted to energy conservation and cost-savings.

These decisions and activities will help to bring about a more sustainable business model and set the groundwork for the incorporation of sustainable practises in the workplace and in long term decision-making.

Council began the process with its adoption of the following resolution on September 8, 2009:

“Whereas sustainability means satisfying our present needs without compromising the ability of future generations top meet their needs and

whereas sustainable or “green” practices conserve energy, water and other natural resources, preserve local and global environmental quality, strengthen the local economy, promote human health and safety, create higher quality enduring structures and other cost reductions in maintenance, solid waste disposal and energy

and

whereas the Town of Essex has continually demonstrated commitment to the preservation of our natural resources and quality of life,

therefore Council of the Town of Essex resolves to commit to the on-going pursuit of greater environmental, economic and socio-cultural sustainability and we direct our municipal departments to develop a sustainability plan of action for approval by Council in 2010.”

This review focuses on internal operational and administrative means for the Town of Essex to achieve sustainability. The goals are to move toward practices that preserve and enhance natural heritage and ecological systems, gradually free us from our dependence on finite resources, help to achieve cradle to cradle solutions in our consumption of goods and resources and to ensure that the basic needs of individuals are met in a way which does not compromise the ability of future generations to live healthy and rewarding lives.

However, sustainability practices must ultimately be incorporated into day to day lives of all residents of the Town of Essex. This involves public education, participation and commitment

to create a common vision of environmental, social and economic sustainability. The options for subsequent phases leading to the integration of sustainable practices throughout the community will be recommended in this review, but it is not proposed that such actions be taken at this time. Rather, the Town will demonstrate to the community by example the potential for sustainability and act in a leadership role to promote sustainable practices.

## 3.0 Legislative Considerations

### 3.1 ASSET MANAGEMENT & SUSTAINABILITY

Appendix 'A', discusses the development history of the Town of Essex between 1971 and the present, using census data and building statistics. Land use development and expansion requires a broad range of municipal support services and infrastructure. Roads, sewers, bridges, pollution control systems all require maintenance, replacement and expansion as a municipality grows and infrastructure ages. New development means expanded infrastructure and services. A review of population and construction projections shows that Essex will likely experience slow or little growth over the next twenty years. This also impacts budgeting and future capital expenditures. Funding sources from higher levels of government are not guaranteed and the "strings" attached to such funding cannot always be satisfied, without asset management and a verifiable commitment to sustainability and cost-effective spending.

Municipalities in Ontario are facing an infrastructure deficit scenario, where it will become increasingly difficult to replace old aging infrastructure with current finances. As there was a significant population growth in the two decades following World War II, there was a surge in building municipal infrastructure, much of which is now reaching the end of its serviceable life. Furthermore, the public demand for higher levels of service is increasing. At the same time, drinking water, wastewater and stormwater systems are responding to higher standards of safety, health and environmental protection, and have stringent regulations which require upgrades and additional investments in municipal infrastructure.

Ontario municipalities are responsible for a lot of critical infrastructure and have an obligation to ensure that these assets are managed effectively. Collectively, Canadian municipalities spend \$12-15 billion annually on infrastructure. Proper stewardship of these assets, through long-term strategic planning and budgeting, contributes directly to our quality of life and our economic health.

While assets play an important role in the community's ability to diversify, expand and improve environmental conditions, the maintenance, renewal and replacement of aging infrastructure can cause financial stress on local government and jeopardize the sustainability and affordability of services. If maintenance and renewal expenditures are postponed, the life

expectancy of the asset and service levels of infrastructure could be decreased and the costs of repair or replacement increased.

Asset management plans involve cataloguing the inventory, determining the cost/replacement rates and the condition and capability of the infrastructure. This information can be correlated with capital and operating planning and budgeting. Finally, this information can help short-term and long-term financial planning, setting priorities, allocating monetary resources, determining the acceptable level of risk and estimating long-term affordability. The financial plan is necessary to sustain the assets, by ensuring that there are available resources to operate, rehabilitate, and ultimately replace the assets at the optimum time to achieve the lowest life cycle cost.

Municipalities in Ontario are affected by section 294.1 of the *Municipal Act, 2001*, which requires municipalities to "...for each fiscal year, prepare annual financial statements for the municipality in accordance with generally accepted accounting principles for local governments as recommended, from time to time, by the Public Sector Accounting Board (PSAB) of the Canadian Institute of Chartered Accountants."

In 2009, Bill 175 / PSAB 3150 was passed, which requires local municipalities to report on the state of their tangible capital assets. The types of capital assets which must be reported on include land, buildings, equipment, roadways, bridges, mass transit, motor vehicles, electricity transmission networks, communication networks, furniture and fixtures, and water, sewer and other utility systems.

As the Town of Essex is now cataloguing and reporting on the state of its capital assets, it can leverage this information and use it in long-term financial planning. While this is not a requirement of PSAB 3150, the information gathered can be used to practice asset management and long-term financial planning. This information can guide the review of user fee policies and rates, reserve fund adequacy analyses, and debt management strategies.

The Town is currently facing a stagnant population growth or possibly, a minor population decline. Therefore, efforts must be made to maintain essential services in an efficient manner and review those considered to be no longer needed or optional. Traditionally, development (such as plans of subdivision) was seen as an economic boom and desirable trait for the municipality.

While the developer pays development charges to cover the additional costs accrued to the municipality, as a result of the new development (additional roads, sewers and water infrastructure, etc.), the municipality assumes the long-term financial obligations of maintenance and replacement. In the long-term, the Town will have to replace this infrastructure, which will likely prove to be very expensive. To provide sustainable municipal infrastructure services, the demands of the community must match the service capabilities of the municipality.

### 3.1.1 Sustainable Asset Management:

The sustainable asset management approach is intended to:

- Preserve the major functions and ecological/environmental features (preserve the net environmental benefits) of the surrounding lands
- Maintain social benefits and;
- Meet economic requirements from the perspective of the ratio of the total costs to the projected life expectancy of these systems, the efficiency of the capital and operational costs

#### 1. Environmental

- Conveyance systems (drainage/storm sewers)
  - Ensure that discharges will not create erosion and adversely impact on the fluvial geo-morphological
  - Ensure that discharges will not adversely impact on water quality of the open watercourses
  - Ensure no impact on the fishery/aquatic system (ecological health of the receiving water)
- Water quantity
  - Mimic the natural functions and features of the hydrological cycle through effective management of the water balance including implementation of green infrastructure, best management practices, natural channel design, and monitoring of natural processes
  - Identify, mitigate, and monitor the areas in the existing water resources system where there are deficiencies in the water balance
- Water quality
  - Preserve and enhance water quality in all sources of fresh water including creeks, rivers, and lakes as well as groundwater aquifers
  - Identify, mitigate and monitor existing sources of water contamination and work towards reducing water pollution
- Erosion
  - Imitate the processes of natural creeks and rivers to transport water and sediment
  - Identify, mitigate and monitor existing locations of erosion and bank instability, and aim to establish equilibrium
- Raw Material Resource Extraction
  - Use materials for infrastructure that use closed loop approaches
  - Use renewable, sustainably harvested materials and plentiful metals (e.g. iron, aluminum, silica)
  - Re-use and recycle materials and end-of-life assets
- Energy usage
  - Identify and implement potential energy saving initiatives (i.e. convert streetlights to LED from HPS when at the end of operational life)
  - Uses renewable energy sources, such as solar, geothermal, wind or bio-fuels

2. Social
  - Design infrastructure as amenities for the local community and protect resources (i.e. stormwater) as a natural resource
  - Ensure access for all people to clean drinking water through municipal infrastructure or preservation of wells in rural areas
  - Establish municipal/provincial/federal policies to protect our water resources and improve water resources that have been damaged by human development
  - Educate the public and promote sustainable lifestyle practices (and respectful asset management).
  -
3. Economic
  - Plan for adequate asset management to address life-cycle improvements to existing infrastructure and address future needs
  - Optimize practices/processes to maximize funding resources
  - Ensure there are adequate funding sources to meet environmental, social and economic objectives

## 3.2 The Planning Act of Ontario

In January 2007, the Province brought in the Planning and Conservation Land Statute Law Amendment Act (Bill 51). This statute amends the Planning Act of Ontario, which governs all land use matters within Provincial, regional and local jurisdiction. Regional and local municipalities are given a mandate to regulate development in a sustainable fashion, in a manner that satisfies provincial interests expressed in the Provincial Policy Statements set out in the Act.

Municipalities shall have regard to (comply with) several PPS statements regarding sustainability. They include:

### 1.1.3.2 Land use patterns and settlements areas shall be based on:

Densities and a mix of land uses that efficiently use land and resources, are appropriate for the efficient use of infrastructure and public service facilities, minimize negative impacts to air quality and climate change and promote energy efficiency and intensification of uses.

### 1.5.1 Healthy, active communities should be promoted by:

Planning streets, public spaces and facilities to be safe, meet the needs of pedestrians and non-motorized movement, including walking and cycling, providing a full range of publicly accessible build and natural settings including parks, trails, and open spaces, including water based resources.

1. A land use pattern, density and mix of uses should minimize the length and number of vehicle trips and support the development of viable choices for public transit.

1.7.1 Long term economic prosperity should be supported by:

Optimizing the long term availability and use of land, resources, infrastructure and public service facilities, promoting the sustainability of the agri-food sector and minimizing land use conflicts, providing increased energy generation including alternative energy systems and renewable energy systems.

It provides, for example, that a municipality shall have regard to “the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians” Section 2 (q).

1.8.1 Planning authorities shall support energy efficiency and improved air quality through land use and development patterns which:

Promote compact urban form and structure of nodes and corridors;

Promote public transportation and other alternative transportation modes between residential and employment areas;

Focus major employment, commercial and other travel-intensive land uses on sites well served by public transit now or in the future;

Improve the mix of employment and housing uses to shorten commute journeys and reduce congestion;

Maximize the use of alternative energy and the mitigating effects of vegetation.

### 3.3 The new Town of Essex Official Plan

[See Appendix 'B' for a more detailed listing of sustainability policies in the Official Plan](#)

During the preparation of the new Official Plan (OP), the need to incorporate into it PPS mandates regarding sustainability was recognized. As such, many specific references to sustainable principles were incorporated into it.

The OP:

adopts the provincial goals of building strong communities through efficient land use and cost effective development patterns with reduced land consumption;

promotes the wise use of resources and resource management and directs development away from agricultural lands, which must be protected, and from natural and man-made hazards, which pose the risks of greater public cost, safety and damage;

encourages energy efficient design and the use of alternative and renewable energy sources;

adds new zoning, plan of subdivision, community improvement and site plan control tools to achieve more compact urban form, the preservation of natural and cultural resources, greater energy efficiency, barrier free features and the provision of public amenities, such as walkways, bicycle lanes and recreation areas, through the development approval process;

provides for the creation of a Municipal Heritage Committee and encourages the preparation of an Archaeological Master Plan to protect heritage resources and promote heritage conservation;

provides that the replacement and extension of municipal services will be based on financial viability, the protection of human health, the promotion of resource conservation and proper integration of both the land use and public services into the existing development pattern and land uses.

In light of the fact that the OP incorporates sustainability principles and mandates, as well as the other above-referenced initiatives taken by the Town, we are well advanced in the preparation of an action plan. We now require an over-riding philosophy and a plan of action to integrate sustainability practices into everyday decision-making.

#### 4.0 Sustainability Goals:

We need to:

1. “Think sustainably” for the long-term;
2. Evaluate sustainability within the context of the environment, the community and the economy;
3. Achieve greater efficiency in energy use, resource consumption and reuse;
4. Begin with short term actions and achievable targets;
5. Monitor and report on our progress towards greater sustainability;
6. Raise the level of community awareness and participation and promote a sustainable life-style.

This report, comprising Part 2, of the Sustainability Action Plan, examines current departmental practices and identifies short and long term actions to establish sustainable decision-making in the work place.

A Sustainability Action Plan (CSAP) is an overarching community plan stating how the community is going to achieve sustainability with respect to four pillars: social, economic, environmental and cultural.

Integrating sustainability into the core of operations occurs when there is a true commitment to sustainable development. Sustainability must:

1. be ingrained in the corporate philosophy as part of the vision, goals, operations and organizational culture;
2. engage stakeholders to test its assumptions and performance, and
3. be transparent in its operations, monitoring and reporting.

Sustainability when truly integrated into the corporate culture will have everyone from frontline staff to the CAO looking for new opportunities in their daily work to achieve greater sustainability and efficiencies. Employees who are committed to sustainability will bring this philosophy into their homes as well.

It may be a concern of Council that excess money would be required for Essex to pursue sustainability initiatives. It will take years to work towards sustainability and the Town will be justifiably cautious and accountable with public finances. However, integrating sustainability principles into an organization can bring about cost savings from reduced energy consumption and staff efficiencies.

This document is an analysis of the sustainability-related initiatives taken by the Town of Essex today and it provides recommendations for future initiatives. . The document includes information gathered through a staff survey and through staff and management interviews, conducted in August, 2009, by Anika Steblin, a Master in Environment and Sustainability graduate from the University of Western Ontario. It is organized with a high-level summary of analysis and recommendations first, followed by a report of the results of the staff sustainability survey and a detailed summary of departmental initiatives and ideas for future.

## 5.0 Summary of Analysis

In general, the Town of Essex has taken some initial steps towards sustainability, as detailed for each department in Section 4. The Town of Essex is also demonstrating civic leadership by being a Member of Partners for Climate Protection Program and ICLEI's local Governments for Sustainability. The Town also works with local organizations, provincial and federal agencies to protect the environment by meeting their environmental criteria and following their recommendations. In particular, Essex works with the Ministry of Natural Resources (MNR), Essex Regional Conservational Authority (ERCA), Ontario's Species at Risk Policy (SAR) and the Department of Fisheries and Oceans (DFO).

However, the Town's employees have outlined numerous challenges in implementing sustainability endeavours. Surveys and interviews carried on during the last summer reveal that there are a few individuals who are not interested in pursuing sustainability initiatives, while others are concerned about the expense of implementing new initiatives. There is also

concern by some that the Town is trying to make it look like they are doing more sustainability initiatives than they actually are.

Therefore it is important to catalogue the existing baseline of operations, to have a transparent process and ongoing monitoring of progress in an accessible 'report card' format. Initiatives must be followed through and policies enforced. A Sustainability Action Plan also has to be entrenched in some fashion to make it more robust and to institutionalize the efforts, which are currently mostly ad-hoc.

To build on current initiatives and address key challenges, The Town of Essex should:

1. Develop long-term strategic sustainability goals for the Town of Essex (initially for the Town itself then for the broader community) to help align departmental efforts toward shared goals (e.g. achieve carbon neutrality).
2. Update the baseline analysis in this document to reflect performance through the lens of the long-term strategic sustainability goals.
3. Follow up on the recommended improvements set out in the municipal energy audit of 2008 (see Appendix 'B', for a more detailed analysis of this audit)
4. Provide initial sustainability training for all Town staff.
5. Capitalize on its ownership of E.L.K. energy by pursuing energy efficiency synergies and a collective community educational initiative to help move the community towards sustainability.
6. Run a column in the local papers to talk about various initiatives happening in the town. This regular column (either weekly or monthly) can have tips, stories and initiatives which would help education of residents on a variety of topics. Essex could publicize success stories rather than mandate action.
7. Display sustainability leadership by having a Green Fair, or having information booths at the Harrow Agricultural Fair or at the Essex Fun Fest.
8. Continue to encourage farmers markets and local food consumption by distributing Essex County Federation of Agriculture's Buy Local brochure.
9. Start or encourage sustainability lifestyle initiatives, like a local community garden, to stimulate individual sustainability efforts and the sharing of ideas and activities.

## 5.1 RESULTS OF STAFF SURVEY AND INTERVIEWS

For the internal staff survey, 46 employees were invited to participate. There was a response rate of 56.5%, with 26 employees completing the survey. Staff interviews occurred during June and July of 2009. Fourteen staff members were interviewed. They were Richard Beausoleil, Cheryl Bondy, Dan Boudreau, Kevin Carter, Andy Graf, Harry Hakim, Kayla Dallyn, Robin Hall, Donna Hunter, Heather Jablonski, Jason Jolicoeur, Shelley Marchand, Chris Nepszy and Ed Pillon. The results are provided below. An interview was also conducted with Mike Audet from E.L.K. Energy and Marlene Markham of the Essex BIA..

### 5.1.1 Staff Survey

The Town of Essex could benefit from a better understanding of what sustainability is. According to the internal survey, staff familiarity with sustainability was fairly low, with few people being very familiar with the concept (figure 2).

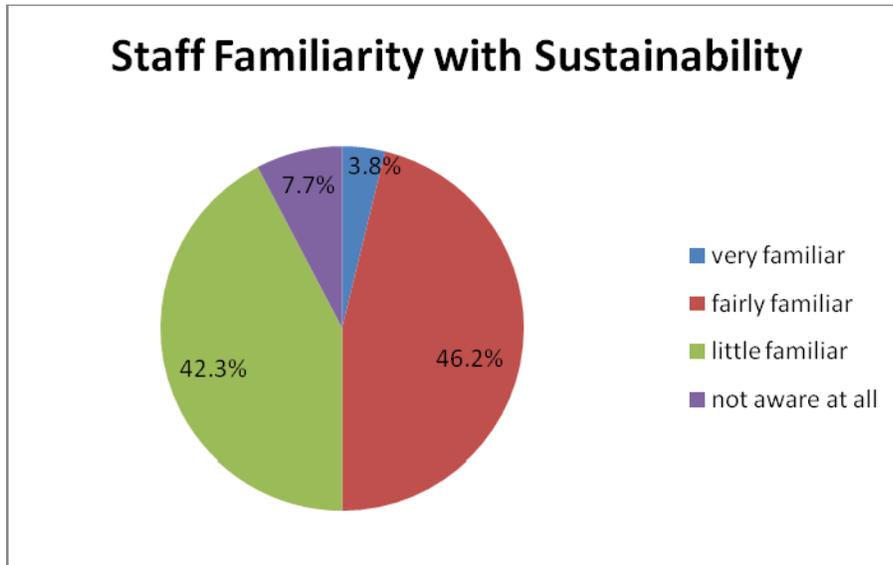


Figure 1. Staff familiarity with sustainability

Furthermore, there was no common language as all respondents had a different definition of sustainability. Staff expressed an interest in learning more about sustainability – with 43.8% of employees desiring more information, 12.5% interested in participating, and 37.5% wanting to contribute more proactively. Only 6.3% of employees indicated they were not interested in helping advance sustainability initiatives forward.

Employees have a varying perception of current sustainability progress (figure 3).

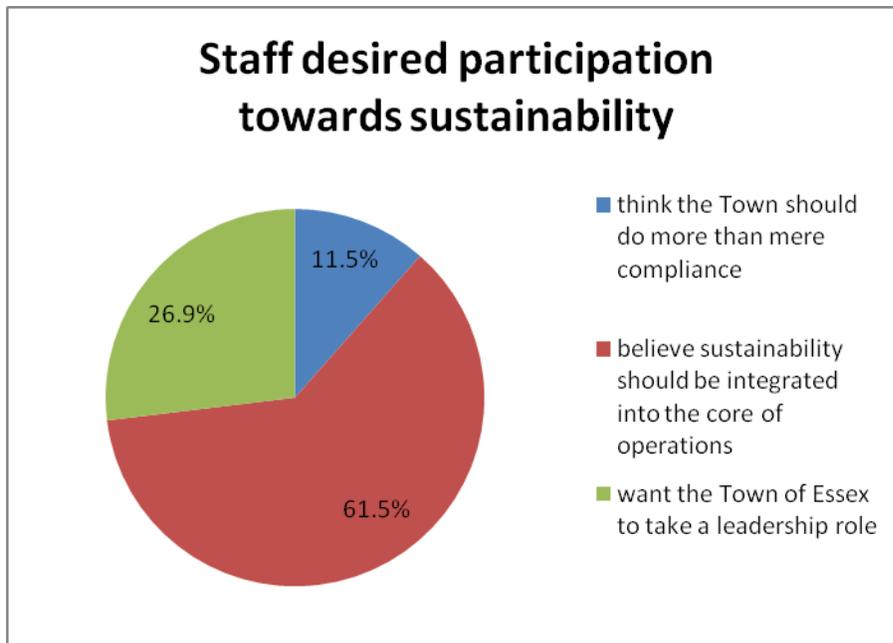


Figure 2. Staff perception of sustainability progress

Compliance means meeting existing laws and regulations. The town has standards and systems for managing, measuring and monitoring their performance. Environmental concerns are managed individually and social and financial priorities differ by individuals. There is little joint planning. Some staff mentioned that the Town of Essex frequently takes a reactive approach to many issues and does not proactively plan service provision at all levels.

Doing more than simple compliance is when towns begin to see the opportunities of social and environmental initiatives and begin to invest in extra initiatives which they might use to strengthen and promote their operations.

Staff desire more active participation vis-à-vis sustainability (figure 4).



**Figure 3. Staff desired participation towards sustainability**

Some staff mentioned that sustainability initiatives should not be segregated by departments and that sustainability should be an organizational and community-wide initiative that removes corporate barriers.

### 5.1.2 Sustainability Challenges Identified by Staff

There were many *sustainability challenges* identified by the staff in both the survey and interviews.

1. **Knowledge**  
Educating staff, Council and the public is necessary as many people do not appreciate the importance of sustainability or do not understand it.
  
2. **Resistance to change/Buy-in**  
People tend to resist change when they do not understand why change is necessary, what is going to change and what was wrong with the old ways of acting and living. Many people may need to see personal benefits to change their attitudes and actions (“what do I get out of this?”). In some instances, there will be increased efficiencies which may lead to monetary savings, self-satisfaction and a sense of community.
  
3. **Commitment**  
The County of Essex is in a very industrial county, with the top three private sector employers in the region being the major automotive manufacturers (10% of the region’s workforce). The total value of manufacturing shipments in 2003 in

Windsor-Essex County was approximately \$22.6 million, of which \$16.3 million were auto-related shipments. Essex County is a strong agricultural area, with 1,740 farms, (approximately 3% of all of Ontario's farms), with a high degree of mechanization and an extensive use of factory fertilizers and pest controls.

With this dependence upon traditional industries, it may be difficult to get everyone on staff and in town on board and cooperating. Overcoming this requires showing citizens and local businesses what's in it for them and how the community as a whole can benefit from sustainability initiatives.

4. **Thinking long-term**

The average worker sometimes has difficulty in thinking long term when faced with the immediate pressures of their day-to-day job. Managers must be prepared for the future and think-long term, particularly with respect to anticipated budgets. Like most municipalities, this may be a challenge for the Town of Essex, as the direction of the town is often influenced by many short term pressures, which sometimes take precedence over long-term measures.

It was also mentioned that creating a vision may be a difficult step for the Town of Essex. However, cooperation from the community in the visioning process legitimizes the sustainability plan and can help to entrench it as a community document.

5. **Cost**

Being an entity income dependent on a tax base, with the specter of a declining tax base, the financial cost to implement new systems for necessary change might be a limiting factor for the Town. The tax impact for implementation may also be of concern if there are unsupportive tax payers.

One staff member mentioned that it was important to decrease the tax burden. It is also typically cheaper to buy older technology which is generally not as good for the environment. It might be difficult to spend additional money for new buildings to 'go green'. There is also a lack of resources in staff time to implement and carry through on various initiatives. There are some governmental grants and rebates available to help implement sustainability and environmental initiatives.

6. **Assets and Infrastructure**

The Infrastructure is old and dated. As mandated by the Public Sector Accounting Board, the Town of Essex is currently analyzing the state of its assets. Although better off than many municipalities, it is projected that the Town of Essex will have an asset deficit.

Council will need to address the issue of updating and replacing aging and deteriorating assets. For instance, the road infrastructure has some roads that are poorly maintained and of inferior quality. This is of particular concern on the narrow gravel roads (along Lake Erie in Colchester) where it is a challenge to safely operate emergency services equipment quickly through these areas.

Also, age of equipment is an issue. For example, the fire service needs to replace equipment 25 years old as it affects the insurance rates of the local population (equipment condition and age are indicators of how well they are protected).

**7. Meeting existing Environmental Standards**

Meeting legislated environmental standards mandated by higher levels of government can often be costly and challenging.

**8. Large land area, no public transit**

There is a lot of driving within the Town of Essex, between the two main urban areas and to neighbouring municipalities. There is no public transit currently in operation, and it may be very difficult to get people to ride it due to a variety of factors.

**9. Dealing with the footprint that is already left, maintaining level of service and evaluating progress**

It is important to work with the Town of Essex's current assets, maintain levels of service and to improve and enhance them. It can also be difficult to employ a monitoring format that will evaluate progress on a regular basis, particularly if there is no staff in charge of this area.

**10. Addressing health issues**

Health rates are typically the downstream effects of a poorer quality environment or less disciplined lifestyle. When compared with the provincial or federal averages, Essex County suffers from higher rates of illnesses. For instance, cancer rates are above normal. Cardiac disease is 29% above the provincial average. The poor air quality in Essex County has also contributed to higher rates of respiratory illnesses with 7.6% of residents within Essex County suffering from asthma, compared to the federal average of 6.3%.

While there are some local impacts that we can improve on, such as minimizing the effects of crop spraying and car pollution, there are many issues in the air shed which go beyond our boundaries. The Town of Essex is impacted by Detroit and Ohio's air shed and their factories over which Essex has no control.

### 5.1.3 Sustainability Opportunities Identified by Staff

There were also many *sustainability opportunities* identified by staff.

1. **Setting an example to the community**

The Town of Essex can provide leadership to the community and show others how to work towards sustainability. There needs to be exposure and a visible example of the Town of Essex pursuing sustainability in its daily operations. An example suggested was to place solar panels on the roof of the building department. It was suggested that the Town launch public campaigns to educate the public and change public attitudes. Knowledge can lead to an attitude change, which could lead to a behavioral change.

2. **Location**

Being in the centre of Essex County was viewed as an asset. There is the tourism draw of Lake Erie and the wineries. Essex provides a countryside escape for City of Windsor residents. The rural landscape and the relatively low level of development were viewed as an opportunity to use this blank palette to create communities where others will want to live, work and play.

Educating people on local shopping and buying local foods, which is already being pursued by the Essex County Federation of Agriculture, would be an asset. There is small town community pride. Sustainability initiatives were identified as a method of developing and uniting the core communities. There is also some green space throughout the town, such as the Chrysler Canada Greenway, to provide rural/urban linkages.

Possible initiatives mentioned were to increase the number of trails, sidewalks, bike paths and walking lanes, which would improve the level of service to residents and support environmentally friendly methods of transportation. The provision of bike parking and temporary storage facilities could encourage people to ride bikes.

3. **Energy**

The Town of Essex as an operation can improve the energy efficiency if its buildings, as identified in the Energy Feasibility Study. All new construction projects should be built in an environmentally friendly fashion, and could incorporate environmental certifications such as LEED (Leadership in Energy and Environmental Design).

Another alternative, which might be an easier starting point, is to start following LEED principles but not necessarily following full certification. Essex could build to

LEED standards, but not pursue certification because of the costly procedure to become certified.

It can implement building practices such as green roofs. Municipal fleet gasoline usage can be further reduced and, when upgrading town trucks, for instance, buying low sulfur diesel trucks instead of gasoline would be a proactive and economically advantageous approach. Also, buying low mileage, lightly used vehicles would demonstrate a commitment to reuse and recycling. As a community, the Town of Essex is demonstrating leadership by supporting the development of renewable energy developments.

**4. Reuse, reduce, recycle**

Reducing waste and consumption of natural resources is important. Education is necessary to minimize contamination. The Town of Essex already has many initiatives in their own operations that demonstrate good reuse, waste reduction and recycling principles (see Public Works section).

**5. Government Funding and Grants for Green Initiatives**

There are government funds and grants which the Town of Essex is pursuing.

**6. Implement new technologies**

Continuing to rebrand with focus on the life cycle asset control would help to implement new technologies for improved service.

## **5.2 Departmental Initiatives – Current Practices**

Each department within the Town of Essex has a variety of current practices which impact on the environment and sustainability. Future sustainability endeavours were also suggested by the administrators interviewed.

### **5.2.1 Finance and Administration Department**

Finance and Administration have already identified and acted upon many different initiatives to reduce the environmental impact of their operations. The steps taken have been the initial, easier to implement procedural shifts, such as reducing office supply consumption and utility bills. However, there are many possible initiatives that Finance and Administration can pursue which truly demonstrate a commitment to sustainability, as they would become creating new policies that challenge current operations. For instance, Finance and Administration can develop a Green Procurement Strategy which will aid their buying decisions based on all of the products attributes, and social and environmental considerations, not merely the cost.

### *Department Responsibilities*

- Maintains overall budget control and monitor cash flows and expenditures
- Internal management
- Processes residential applications (i.e. marriage licenses)

### *Current Practices*

- Lowered office supply consumption and utility bills by implementing initiatives to decrease paper, energy and water consumption
  - Duplex printers, black-and-white printing
  - Print to PDF functions permitted emailing receipts instead of hard copies
  - Scan documents to computer and email for storage and distribution
- Council converted from paper reports to notebook computers in 2003, which decreased paper costs by roughly 25%
- Commissioned an energy audit by MCW Custom Energy Solutions Ltd. in November 2008 to understand the current baseline of building operations and to identify areas on which they can improve energy efficiency
  - Discovered that Essex already has a higher energy efficiency and a lower energy footprint than many other municipalities surveyed
- Accounting reports are all laser fiche
- Email signature now includes:  Please consider the environment before printing this email.

### *For Consideration - Future Initiatives*

- Act upon the ideas outlined in the energy audit
- Send tax bills online or through email
- Set aside excess money gained from decreased paper consumption, and increased water and energy efficiency into a green fund, and reinvest money in environmental initiatives that are more costly to implement
- Develop a Green Procurement Strategy to guide the selection of products and services that minimize the environmental impact, and reduce risks to human health and the environment
- Succession planning to minimize the upheaval when many municipal staff retire and the knowledge they possess is lost – however, this could represent a good time to implement corporate policy changes related to sustainability, as it may bypass resistance of staff to change.

## 5.2.2 Infrastructure and Development Department

Infrastructure and Development is a large core group, consisting of several departments. These departments are Public Works, Water, Drainage, Planning and Development, and Building and By-Law Enforcement. Within each department, there are numerous initiatives which lead to greater sustainability. However, there are still many initiatives which can be pursued which will further reduce Infrastructure and Development's operational footprint.

### Public Works Division

Public Works is a large department with numerous responsibilities and many tasks which impact the environment and sustainability. But they are very innovative in their approach to solutions which specifically fit the Town of Essex.

#### *Department Responsibilities*

- Provides services in the right of way (public property up to property lines)
  - Storm water management, sanitary sewers, roads, bridges, ditches, trees, streetlights, signage, and traffic signals
- Responsible for buildings
  - Maintenance and garage facilities, salt storage, sewage treatment plant, and pumping stations
- Waste disposal (garbage and recycling)
- Enforcement of the Ontario Building Code and minimum standards by-law and proactive planning through the adoption of a new official Plan and zoning by-law
- 

#### *Current Practices*

- Local residential garbage is collected by a contractor
  - Weekly garbage pickup, biweekly recycling pickup
  - Garbage collection initiatives include white goods, yard waste, household chemical waste and e-waste collection
- Empties public garbage cans along city streets
  - No recycling due to concern of increased labour costs of municipal employees to physically sort garbage
- Hosts the Windsor/Essex Solid Waste Authority Regional Landfill
- Recycles used materials
  - Crushes and reuses all concrete and asphalt used in construction
    - From 2008 to mid 2009, 15,000 tonnes of concrete and asphalt were crushed
  - Metal culverts
  - In garages:

- Motor oils, antifreeze fluids, boxes, aerosol/pop cans and metals are recycled
  - Metal truck parts are either recycled or used to rebuild trucks
- Specifies and mandates road materials to be recycled in Town contracts with construction companies
- Disposes of old tires properly through a tire pick-up service which costs \$2/tire
- Has a policy regarding tree removal to replant two trees for every one removed
  - Over 500 trees were planted in 2008, which is above the 2:1 replant ratio
- Purchased a larger lawn mower to decrease grass cutting time
  - Grass is cut for 2.5 weeks, grows for 6-8 weeks, and is cut again
  - At the sewage treatment plant, grass is cut biweekly
- Waters planter pots and hanging baskets using a truck and generator.
  - Initiated a pilot project in Colchester with a different planter pot design which drastically reduces the required watering time, which saves municipal staff time, gas, and prevents the generator from being run as frequently
- Controls dust on dirt roads using calcium magnesium (CaMg) brine, which is a by-product of the gas and oil industry
  - Uses another industry's waste product instead of purchasing a calcium chloride (CaCl) product from chemical manufacturers
- Uses computerized salt spraying equipment for winter road control, which detects truck speed and compensates the salt dumping rate to maintain a certain amount of salt on the roads
  - System has reduced salt usage by approximately 20%
  - Also has a pre-wet system wet the salt prior to usage which decreases salt amounts by another 30%
- Replaced the garage lights from metal halide to more efficient T8 fluorescent models
- Garages have an infrared heating system, which heats objects instead of air, and is thus more efficient
- Garages also have automatic door opener sensors, which further decreases heating costs
- Streetlights are gradually being replaced with Light Emitting Diode (LED) fixtures, instead of the traditional High Pressure Sodium (HPS) models
  - There are five new LED street lights going up this year
  - Hanlan St. streetlights are being replaced with LED models
  - The decorative lights in Harrow are going to change to LED
  - HPS lights have a shorter operational life, have many inefficiencies (such as converting energy into heat instead of light), have excess light pollution and contain elements which are environmentally damaging (such as mercury and lead). LED streetlights improve sustainability by decreasing energy consumption, reducing the toxicity of bulb waste, having a longer operational life (reduces maintenance costs), minimizing light pollution (mitigating negative effects on airborne nocturnal species such as migrating birds and

predators) and creating a more pleasant, and secure ambiance for city inhabitants

- Maintains vehicle fleet, which extends truck operational life up to twice as long as other fleets
  - Essex disposes of plow trucks in 15 years instead of the industry average of 7
  - Essex has rebuilt a 1986 road grazer to maintain gravel roads instead of buying a new machine (saved \$200,000, estimated life of 10-15 more years)
  - About to buy their third, 7-year old, used plow truck this year from Essex County (save \$150,000)
  - Sewage treatment sludge truck is a used dump truck (saved \$120,000)
  - While keeping older technology is good for the environment, as it consumes less raw materials and resources, while saving money, it also keeps older (more polluting) technology on the roads and those materials are not recycled into newer, more efficient trucks. It is a trade-off.
- Reorganizing their operational fleet to retrofit trucks to be multi-use.
  - Reduces the number of vehicles, while maintaining services by having truck bodies which can be placed on the truck frame according to the necessary job
  - There will be many applications on a truck, including dust control, winter control, dump truck, flat-bed truck, wood chipper, power washer, vacuum/excavation and a sign truck
  - Currently working on a water tank that will have its own excavation unit, power washer and dust control body
  -

#### *For Consideration - Future Initiatives*

- Town operations can implement a compost program and stress the importance of reusable bags
- Naturalize areas with higher native bush and shrub concentrations, such as the grass at the sewage treatment plant
- Investigate road dust control using local salt brine, produced in Windsor, instead of an oil by-product
- Pursue the possibility of a sand/salt mix for winter road control
  - Sand is more environmentally friendly, however, the amount of storage space would need to be doubled
  - Driving on a sand/salt mixture requires a different type of driving, and might need to be a county wide initiative
- Consider other streetlight technologies, such as induction lighting, which is even more efficient, has a longer life and is more versatile than LED
  - It is quite expensive, and existing HPS lights cannot be retrofitted to induction lighting

- Therefore, induction lighting could be considered when developing and expanding new areas in the Town of Essex, not when replacing existing light fixtures
- Choose less polluting vehicles when purchasing new equipment
  - All town trucks could be run on low sulphur diesel fuels
  - While alternative energy sources on vehicles may appear desirable, the use, function of the vehicle and age of technology must be considered. For instance, ERCA purchased hybrid vehicles but had to get rid of them as they performed poorly off road.

## Water Divison

The Water Department ensures that there is adequate, safe supply of municipal drinking water. With climate change, there are predictions of significant reductions in Great Lakes water levels. This could compromise the Essex water department's ability to provide safe supply, due to competing uses from other users (recreation, ecosystem, shipping, etc). The water department has already begun analyzing their operations and implemented methods to reduce wasteful practices. However, it could augment this with a public educational campaign about water usage and wastage.

### *Department Responsibilities*

- Ensures the provision of safe, clean drinking water to residents and businesses in the Town of Essex
- Ensures an adequate supply of water for customers
- Manages infrastructure and pursue long-term planning of water resources to ensure constant safe water supply in the future

### *Current Practices*

- Encourages conservation through their policies and procedures
  - Not through public education
- Converted Harrow to a metered water supply system from a flat rate system after the municipalities amalgamated in 1999
  - This decreased consumption approximately 30-35%, as customers now pay for the amount of water they consume, instead of a flat rate
  - Having lower water consumption also defers capital waste, as it does not wear out the infrastructure unnecessarily
- Two years ago, converted water meters to radio frequency so they can be monitored remotely and not inconvenience residents
  - This also permits the identification of problem areas and potential leaks
- The water infrastructure budget is based on user charges and rates, not taxes
  - User charges are revised every 2-3 years by C. N. Watson & Associates

- The base water rate is \$15/month, with consumption determining the remaining of the water bill (\$1.15 per cubic meter)
- Updating old infrastructure
  - In the past 10 years, the Town has spent \$2-3 million replacing water mains
  - There are no known lead pipe concerns. However, there may still be a few lead distribution lines to the property in the older areas of town, built prior to the 1940s. As they are discovered, they are replaced at no cost to the resident up to the property line.
- Gets water from Lake Erie
  - Some rural residents, particularly in Colchester South, are still on wells (estimated 10-15% of residents)
- One Water Treatment Plant and two other distribution systems:
  - The Colchester South Water Treatment Plant services the area south of 7<sup>th</sup> Concession Road
  - The northeast Town of Essex is serviced by Union Water Supply System
  - The northwest is serviced by the Amherstburg Water Supply System
- Water disinfection:
  - Colchester plant disinfects using chlorine
  - Union Water primarily disinfects with chlorine and secondarily disinfects using chloramination
    - Disinfecting with chloramination lasts longer and further reduces the risk of contamination of distributed water
  - Water quality is highly regulated from the government, and the Town of Essex meets all the regulations of cleaning and polishing water
- Has sophisticated leak detection equipment, which they can test to see how much water they are losing in pipe distribution
  - The acceptable level of unaccountable water loss is between 12-15%
  - Before the leak detection equipment implementation, where they can test sections of pipes for whether or not they lose water, unaccountable water loss was 17%
  - It had decreased to 14% by 2008
  - Leak detection is important to minimize loss of revenue, but also to ensure water quality, as leaks could create situations where groundwater contaminates drinking water in pipes
- Has a backflow prevention system, where a series of double checked valves protect the water from re-entering the pipes and becoming contaminated
- The Essex Region Conservation Authority (ERCA) is working on the Source Water Protection Act to protect the water surrounding water intake areas, and categorize potential, existing and significant threats to land use activities that impact water quality
  - ERCA has identified a few regions within the Town of Essex (in Colchester South) that have medium or high groundwater intrinsic susceptibility

- This does not mean that there is an actual problem; it provides a general indication of potential vulnerability to contamination due to the physical qualities of the watersheds.

#### *For Consideration - Future Initiatives*

- Pursue educational initiatives for residents on the value of water and wise water usage

### **Drainage Division**

The Drainage division follows mandated legislation with respect to their operations. They have taken some leadership responsibilities by helping to host the Agricultural Trade Show and having a disposable water bottle-less theme.

#### *Department Responsibilities*

- Responsible for drainage and maintenance of drainage easements, including street drains and ditches.
- Responsible for weed removal along ditches

#### *Current Practices*

- Helped put on the Agricultural Trade Show on June 2, 2009. Took a leadership role by having no bottled water available at the show and handed out lanyards made from plastic water bottles.
- Works to comply with ERCA's Watershed Plan, which is a land and water stewardship program. All new drains filter and clean water before it enters streams.
- Works with Species at Risk to help maximize spawn and survival in ditches while ERCA controls the natural water ways
- The pumping stations along the lake use vegetable oil for hydraulic fluids, which are biodegradable and minimize risk to the natural environment
- The pumping stations also have installed a drip system, which has very low leakage rates
- Unfortunately, the Drainage department sold the equipment to mechanically cut weeds for weed control, which is a more sustainable method than applying herbicides.
- Drainage is particularly concerned with removing invasive purpose loosertrife, cat tails and phragmitis. Currently, drainage applies Roundup, an oil-based herbicide, in August for maximum kill.

#### *For Consideration - Future Initiatives*

- Expand requirements of drains needing to filter and clean water before it enters streams from only new drains, to all existing drains as well.

- As mechanical activities are not always an effective method to remove plants, such as poison ivy, Drainage needs to continue to pursue looking for a sustainable, effective way to remove poison ivy.
- Put up silt curtains to prevent new gravel from being washed into ditches

## Planning and Development Division

Planning and Development plays an important role in land use planning and community and economic development within the Town, which are necessary for a healthy, viable and sustainable future. They create the Town plan, including the Town of Essex Official Plan, and by-laws which provide a broad planning framework to manage the future growth and change in the Town. Currently Planning and Development is pursuing sustainability by drafting a Sustainability Action Plan for internal use and ultimately for the community as a whole.

### *Department Responsibilities*

- Creates a comprehensive official plan guiding new development in the Town and zoning by-laws to implement the plan to accommodate new development
- Manages daily tasks related to land use planning and development

### *Current Practices*

- Wrote the Town of Essex's Official Plan, which includes sustainability policies
  - Contains objectives and policies established primarily to provide guidance for the physical development of a municipality while having regard to relevant social, cultural, economic and environmental matters
- Overseeing the creation of a Community Sustainability Action Plan
  - Overarching community plan will establish how the community will achieve sustainability with respect to meeting our social, economic and environmental needs without substantially limiting the health, well-being and productivity of future generations
- Supported renewable energy technologies in the Official Plan and draft comprehensive Zoning Bylaw

### *For Consideration - Future Initiatives*

- Working with residents to make the town more viable and sustainable could draw like-minded people and businesses to the Town of Essex
  - A growth in population and industry would increase the tax base, and make the town a better place to work, live and raise children
- Set sustainability policies that the town people could be involved in creating
  - Invite public participation

- There could be opportunities to designate organic farm areas, where all the local farmers work together to pursue organic farming, and reduce the risk of contamination which may revoke their organic farm licenses
- Work with industries to try to promote a local industry which would distribute local farm food, by preserving or canning the foods so local food is available over the course of the winter

## Building and By-Law Enforcement Division

Building and By-Law Enforcement inspects and enforces the policies, guidelines and by-laws developed by the Planning and Development Department and approved by Council, as well as the mandated regulations set by higher levels of government. They are the important front line, who act upon public grievances and regulation infractions and who work to maintain a high standard of public health and safety in the built environment.

### *Department Responsibilities*

- Enforces by-laws and regulations
- Performs site inspections to ensure compliance with legal requirements for buildings and safety standards
- Ensures compliance of non-conformers either with monetary fines or forced clean-up.

### *Current Practices*

- Have modified internal procedures to minimize car usage
  - Divided Town into two sections (north and south), each covered by a different Building Official
  - Residents can ask for appointment in morning or afternoon
  - Order of appointments is determined by proximity to minimize cross town driving
- The main concern raised by the Building Department is septic tanks
  - Newer septic tanks have higher standards which results in very low levels of pollution when they discharge into the surrounding lands and waters
  - Older systems contribute significantly to pollution
  - A lack of compliance and enforcement of septic tanks contributes to pollution
  - If septic tanks are below 10,000 L a day, it is regulated by the Town of Essex; if above 10,000 L a day, it is regulated by the Ministry of the Environment (MOE)
  - Generally, if owners are out of compliance, the owners are notified and the majority (roughly 75%) will improve their systems voluntarily
  - There is concern with MOE's ability to enforce bylaw violations for the larger polluters

### *For Consideration - Future Initiatives*

- Become familiar with sustainability ideas so as to share them with residents when visiting sites
- Encourage the public to learn and adopt these standards into new construction

### **5.2.3 Parks and Recreation**

Parks and Recreation may have the greatest success of being able to reach and educate residents. They can implement visible initiatives that impact their operations that users will be able to comment upon and learn about. They have had many successful initiatives in the past and are currently analyzing operations to look for further sustainability opportunities.

#### *Department Responsibilities*

- Provides active and passive recreational opportunities for residents in the form of arenas, fields, parks, trails and the marina

#### *Current Practices*

- Responsible for garbage and recycling within municipal buildings and inside parks
- Facilities began recycling three years ago
  - Every week, the pool usage alone fills six Herby Curby recycling bins (96 gallons each) with what was previous non-recycled waste
- Created educational posters two years ago on the effects of fertilizing lawns, washing cars and watering lawns
- Pool has no programmable thermostats, they are always set at 72°F
- Operating and cleaning facilities in a more environmentally friendly manner is a newer priority
  - Investigating the selection of appropriate environmentally friendly (“green”) products and cleaners
- Community in Blooms is an initiative that gives citizens pride in gardening and in their community
- Integrate environmental considerations in building facilities
  - New arena has ceiling fans and sodium argon lighting in the recreational room
    - Has in floor seat heating in the ice rink, which is more comfortable, provides a more constant heat and is more efficient (as the traditional heaters heat the entire room and increase the costs for keeping the ice frozen)

- However, the new arena did not challenge the traditional paradigm by installing a green roof or dumping the snow inside which could have been used to cool the building
- There are some murals throughout the Town
  - The band mural has a recording of the Kingsville Essex Band which is on a sensor
- Extending natural and walking trails for the past 5 years
- Introduced two waste segregating and recycling containers into Sadler's Park

#### *For Consideration - Future Initiatives*

- Mandate recycling in contracts with community groups
- Make recycling and garbage containers more accessible in public disposal areas with centralized bins in public areas (malls and arenas)
  - Provide specialty pick-ups, like cell-phone, battery and ink cartridge disposal
- Look into programmable thermostats
- Investigate alternate energy sources
- Redesign and use different methods of achieving the same level of satisfaction in recreational facilities
  - For example, splash pads could implement a method of reclaiming and reusing water
- Plant more trees in parks to reduce the need to cut grass (and run polluting lawn mowers) and provide shade, an important consideration with climate change
- Analyze the necessary height of grass
  - Grass can be maintained at a specific height on the soccer playing fields, but could be cut less frequently in other areas
- Pursue community plots (similar to community gardens)
  - Give space to residents to have a garden plot on town land (potentially along streets in urban areas or in parks)
  - Residents could then compete for prizes, pride and glory, grow food or contribute to the Community in Blooms beautification initiative

## 5.2.4 Fire and Emergencies Department

The Fire Department provides vital public protection and response services. Sustainability is about proactively addressing concerns which may become future issues. The Fire Department could lend their expertise about dealing with the public and their ability to mobilize a large volunteer force to an important cause.

### *Department Responsibilities*

- Protects the Town of Essex residents from fires
- Responds to other emergency and medical calls, such as car accidents

### *Current Practices*

- Abides by environmental standards in their protocol which have evolved over time
  - For instance, 20-30 years ago, when dealing with a gas and oil spill, it used to be washed into the drains
  - Now the fire department has spill control guidelines, must report spills to the Ministry of the Environment, and dispose of it properly
- New technologies require the fire department to adapt training procedures for their staff and volunteers
  - For instance, car crashes with hybrid vehicles require different safety procedures to safely remove people from the accident scene

### *For Consideration - Future Initiatives*

- Have a combined emergency service, with personnel trained in both fire and ambulance services
  - Has been piloted in Toronto. However, the fire department is comprised of volunteers, which saves taxpayers a lot of money (\$80,000/year/employee).

## 6.0 Conclusions

When working towards sustainability, it is necessary to establish the baseline of where the municipality is currently at with regards to sustainability practices and policies. This permits municipalities to establish their current state and highlights opportunities for change as it demonstrates the distance a municipality is from its sustainability vision.

From the staff survey and interviews, it is apparent that the majority favour a more sustainable approach to resource use and a more sustainable approach in day to day activities and long term decision-making. But they are generally cautious about the pace of change, the financial impact and the effects such endeavours might have on job responsibilities and their lives outside of the workplace. Many want to be proactive, but seek more direction and education about sustainable lifestyles and practices.

All departments have been making positive efforts to reduce the consumption of finite resources, the levels of waste generated and make better use of existing facilities and

equipment. These activities, as well as the other municipal initiatives described in the introduction to this report, have started the process towards sustainability.

## APPENDIX 'A'

### Growth Trends in the Town of Essex Since 1971

#### 1.0 Population

##### 1.1 Growing Canadian Trends

The fertility rate in Canada is 1.58 children born/woman (2009 estimate). A fertility rate of less than 2.0 denotes a shrinking population, as it is lower than the necessary replacement value to maintain the current population. However, there is a growing population in Canada, due primarily to immigration. The migration rate in Canada is 5.63 migrants/1000 population (2009 estimate). This migration rate accounts for 74% of the total population growth.

Population movement has steadily shifted toward urban centres and away from rural areas like the Town of Essex. The Essex County rural population dynamics have changed dramatically in the past century. In 1871, 78% of the Essex County population lived in rural areas. In 1911, 52% of the population were rural. Today, only xx% of the population live in rural areas.

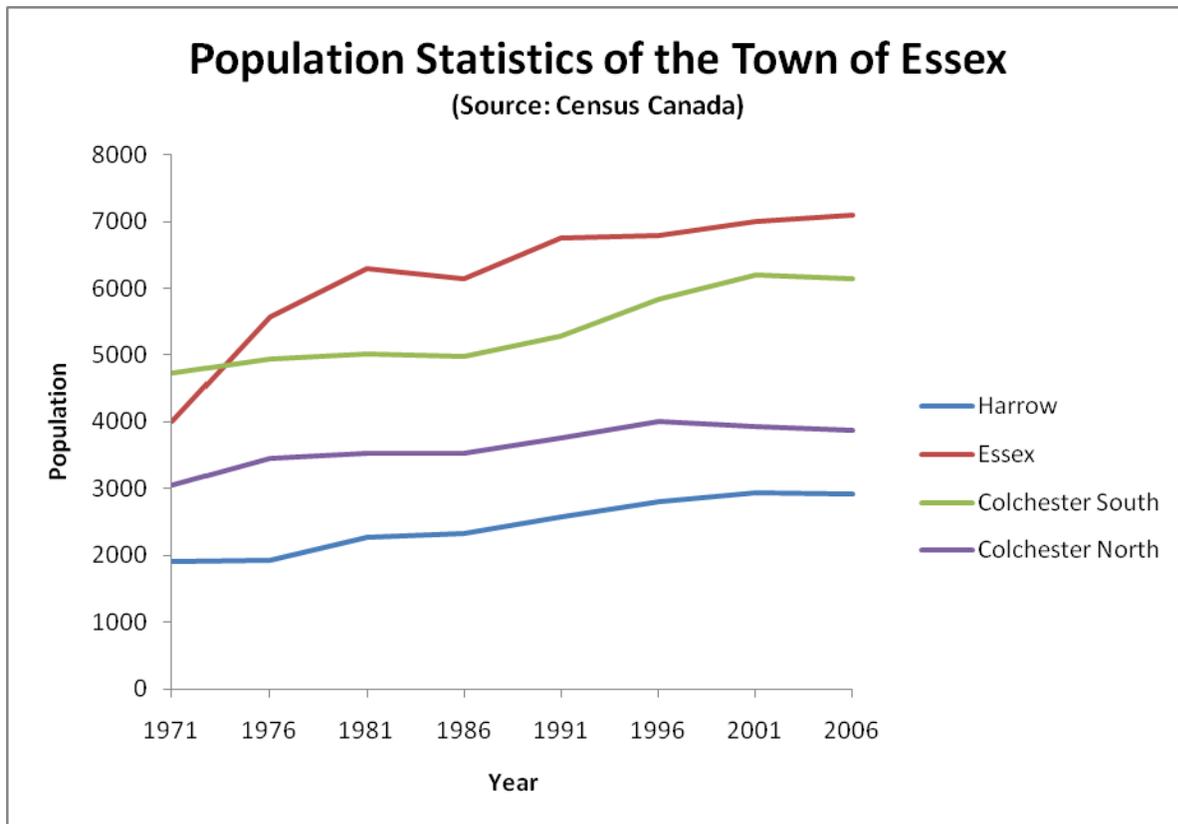
Furthermore, Canada is experiencing a demographic shift towards an aging population, with the population of working age people (15-64 years) expected to decline. It will be increasingly more difficult to support an aging population. In Essex County, 28% of the populations is within the "Baby-boomer" category between the ages of 41-64. This is expected to be the predominant population group for the next 20 years, given greater life expectancies and higher average incomes.

The Town of Essex has experienced a declining population and, despite its geographically central location in the county, it is the "hole in the donut". County growth has followed the waterfront east and west of Windsor, with expansion in Leamington as well. Essex Urban Centre (Essex UC) and Harrow have not enjoyed similar growth and will experience nominal or no growth in the future.

This has a direct impact on municipal asset management and maintenance associated with tax based budgets. In turn this supports the need for sustainable management practices when such issues as climate change and rising energy costs are also factored into the equation. Official Plan population growth forecasts are traditionally based on the assumption of steady growth with only the rate of growth to be predicted. This is not necessarily the case, at least in parts of Canada, including Southern Ontario. That means that policy makers must be flexible in their determinations and able to address the potential for positive or negative growth.

## 1.2 Population in the Town of Essex

Between the 1970s and early 2000s, the Town of Essex grew significantly. The majority of this growth occurred in Essex UC and Colchester South (figure 1). Growth is not distributed equally throughout the Town of Essex, as the population has actually dwindled in Colchester North since 1996 and has been rather low in Harrow and Colchester South, since 2001.



## 1.3 Population Growth Forecasts

Official Plans use growth forecasts to guide development and expansion services, to help prepare for demographic changes and needs in the Town of Essex. These growth forecasts provide a few different scenarios that are based on many factors and give an educated guess of the future growth and development of the Town. These scenarios give direction to the Town so that it can allocate monetary and staff resources to the various infrastructure projects that are necessary to accommodate growth, such as road, sewer and water infrastructure.

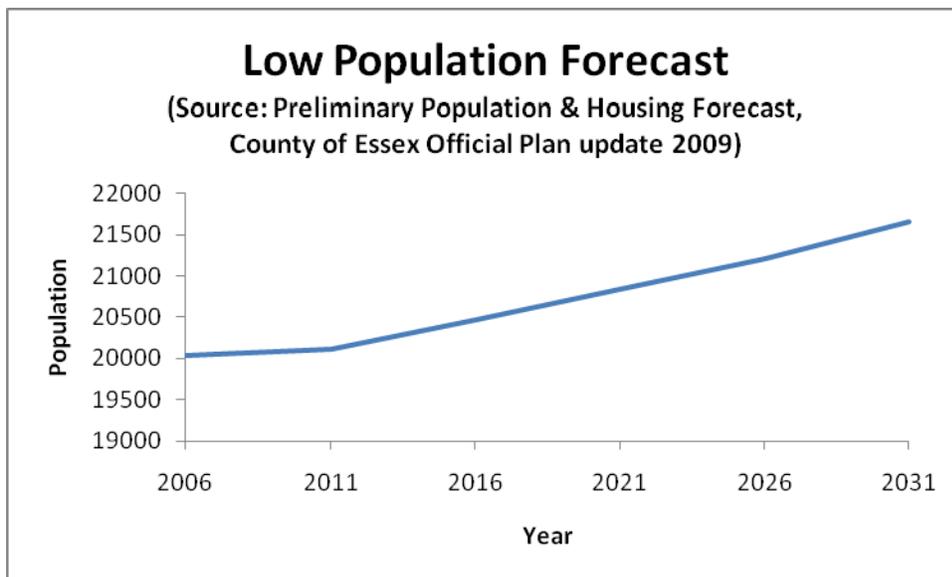
However, growth forecasts are complex and inexact. While predictions give good direction, they are frequently not an accurate picture of how growth actually occurs. By analyzing previous growth forecasts in the Official Plans for each of the former municipalities that comprise the Town of Essex, and comparing it to Census Canada's population statistics, it is

apparent that the previous population projections were both understated and optimistic for the time period 1991-2006 (table 1).

Official Plan	Year Written	Population Result
Town of Harrow	1985	• Above high population scenario
Town of Essex (Essex Centre)	1983	• Below low population scenario
Township of Colchester South	1985	• Above high population scenario
Township of Colchester North	1992	• Below low population scenario

Both Essex UC and Colchester North did not grow nearly as much as projected. Meanwhile, Harrow and Colchester South grew more than expected. The growth scenarios were quite ambitious for Essex UC and Colchester North, while the growth scenarios in Harrow and Colchester South were rather reserved. An important factor that constrained the growth and development of Essex UC was the limited sewage capacity. Also, Essex did not attract as much development along Highway 3 as potentially forecast. Conversely, Harrow had sewage capacity and sewers were extended in Colchester South west of Colchester. This would have encouraged growth and development and several cottages were constructed as or converted into permanent homes.

While growth in the Town of Essex has recently declined, the current growth forecast demonstrates the belief that the Town will begin to grow again in 2011, and proceed at a constant but modest rate for the next 20 years (figure 2).

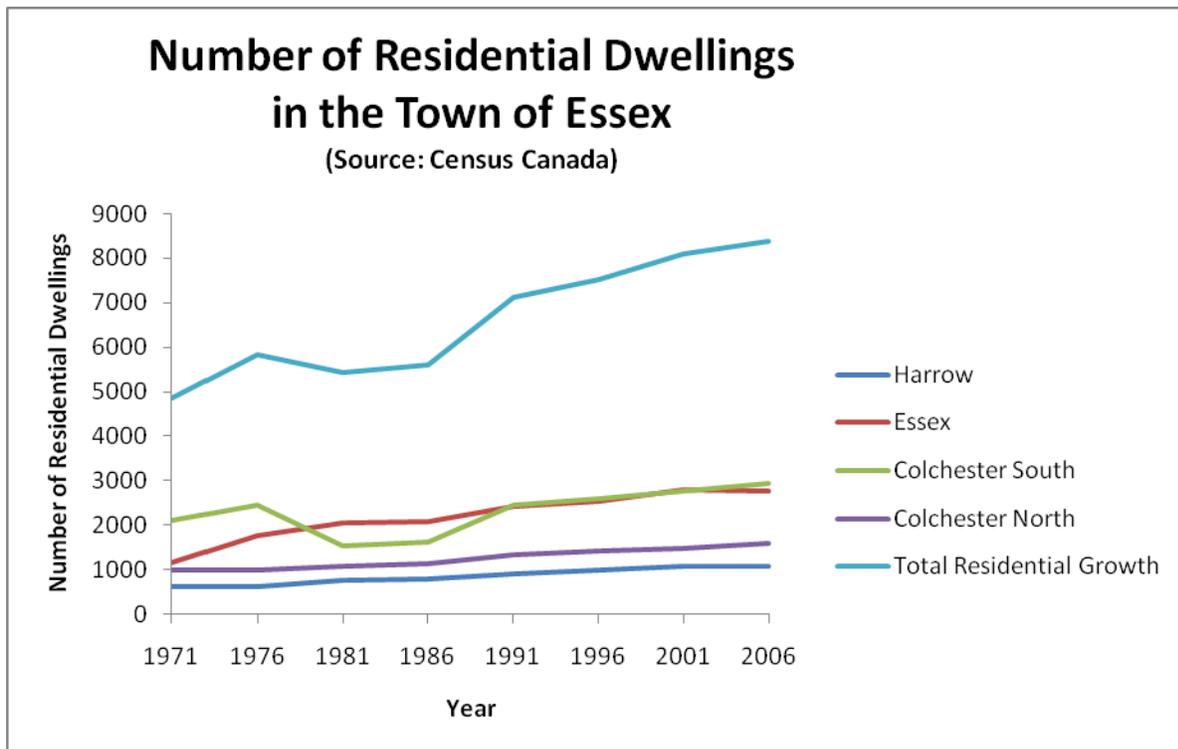


## 2.0 Residential Dwellings Development

### 2.1 Residential Dwellings in the Town of Essex

The changing population impacts on the number of residential dwellings within the Town of Essex (figure 3). The number of residential dwellings lags slightly behind the population growth. Harrow and Colchester North grew gradually, while Essex UC experienced a building boom in the 1970s, due to the commuter population living in Essex and working in Windsor.

However, there was also an unexplained drop in the number of homes in Colchester South from 1976-1981. This could have been due to natural occurrences, the demolition of substandard cottages or, possibly, the data could have been misrepresented by Census Canada.



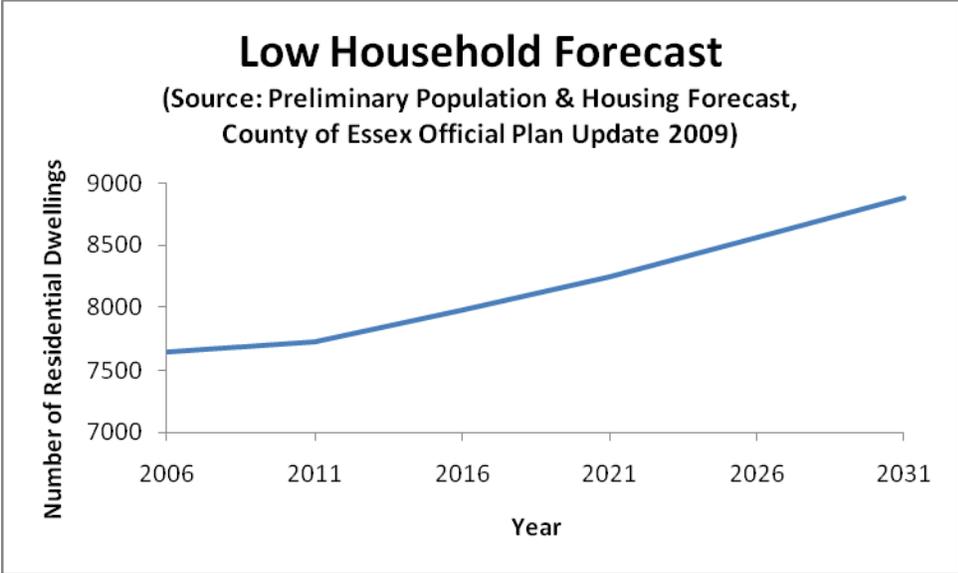
## 2.2 Residential Dwelling Growth Forecast

Official Plans also forecast the number of residential dwellings. These forecasts are related to the projected population scenarios. As such, they were also inaccurate for the Town of Essex during the time period 1991-2006 (table 2). The number of homes built in Harrow and Colchester South were above the amount predicted, which makes sense when the population growth amount is taken into consideration. Since the population grew more than predicted, the number of homes to accommodate them also grew more than expected. Similarly, the number of residential homes built in Colchester North was less than expected. The number of homes built in Essex UC was on schedule, despite having a lower population than expected.

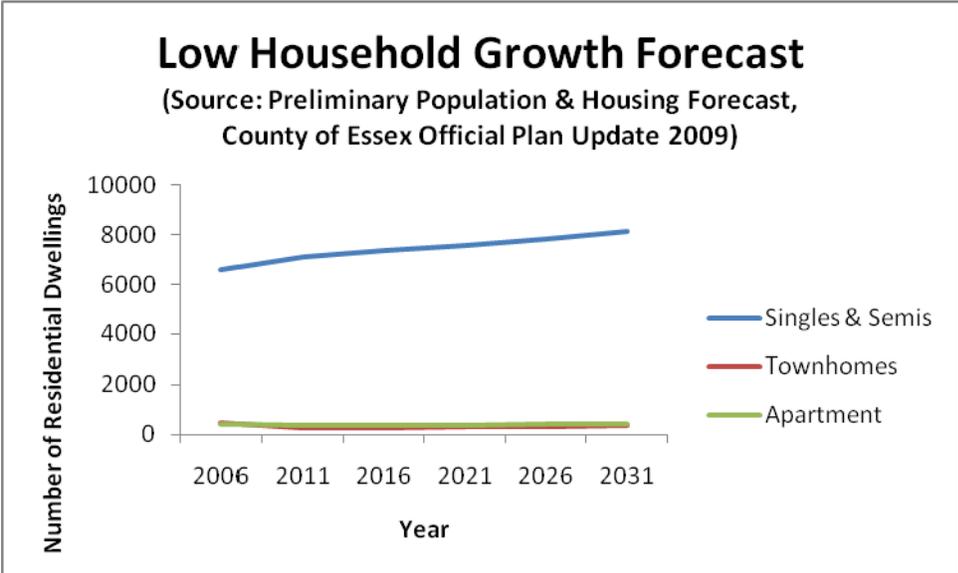
Official Plan	Year Written	Residential Dwellings Result
Town of Harrow	1985	<ul style="list-style-type: none"><li>• Above high dwelling scenario (133% of projected homes built from 1991-1996; 168% from 1996-2001)</li></ul>
Town of Essex (Essex Centre)	1983	<ul style="list-style-type: none"><li>• On pace with dwelling scenario (358 homes built in 10 years; 550-870 homes projected to be built in 20 years)</li></ul>
Township of Colchester South	1985	<ul style="list-style-type: none"><li>• Above high dwelling scenario (197% of projected homes built from 1991-1996; 248% from 1996-2001)</li></ul>
Township of Colchester North	1992	<ul style="list-style-type: none"><li>• Below low population scenario (77% of projected homes built from 1991-1996; 52% from 1996-2001)</li></ul>

There could be some anomalies in measurement between the growth projections and Census Canada. For instance, Census Canada counts all dwellings (including illegal dwelling units and mobile homes), while the Official Plans may not have taken these into account.

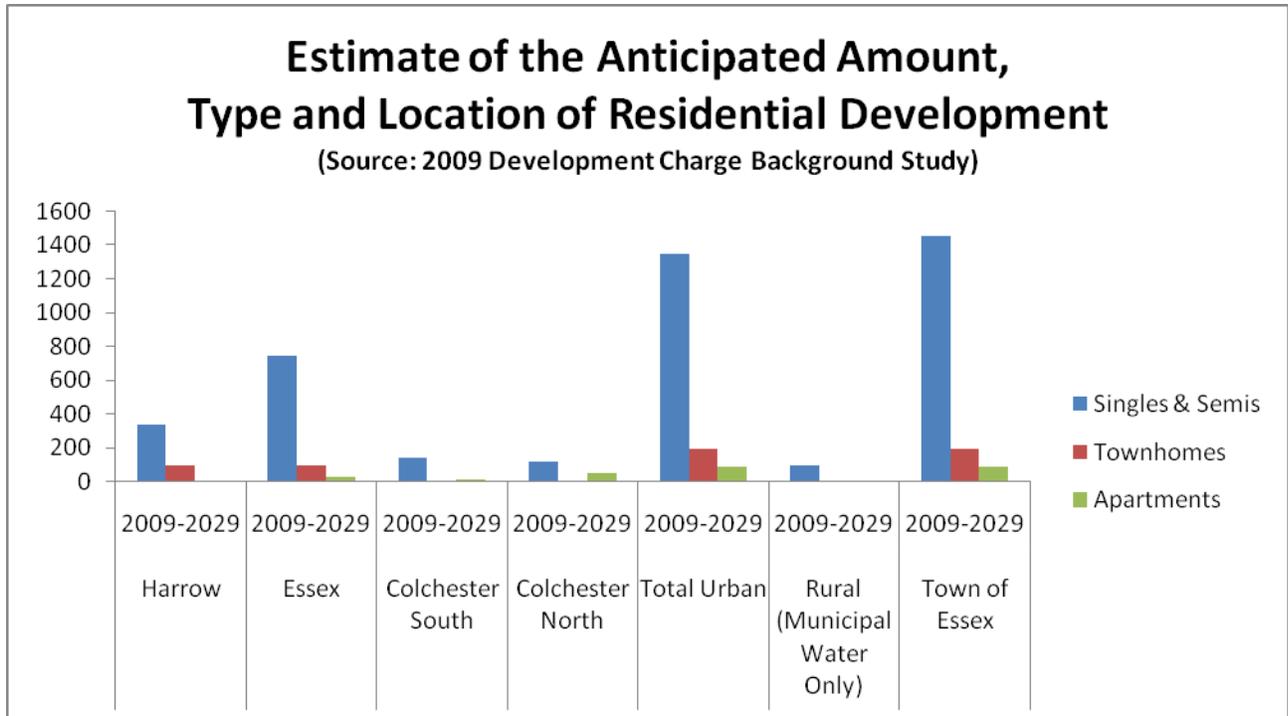
As population growth in the Town of Essex is projected to increase, the number of residential dwellings to accommodate a large population must also increase (figure 4).



The projected number of residential dwellings built can be further broken down into the type of dwelling constructed (figure 5). The 2005 Provincial Policy Statement and the new Official Plan support more development in a compact urban form and stress the importance of infilling and building vertically, instead of consuming more valuable Greenfield/farmland for housing. But this growth projection presumes that currently the majority of homes are single family residences or semi-detached dwellings and this trend is expected to continue. After 2011, both townhomes and apartments are expected to grow in an equal proportion to the total number of residential dwellings with townhomes comprising 3.5% of the total projected number of dwellings and apartments 4.8%).



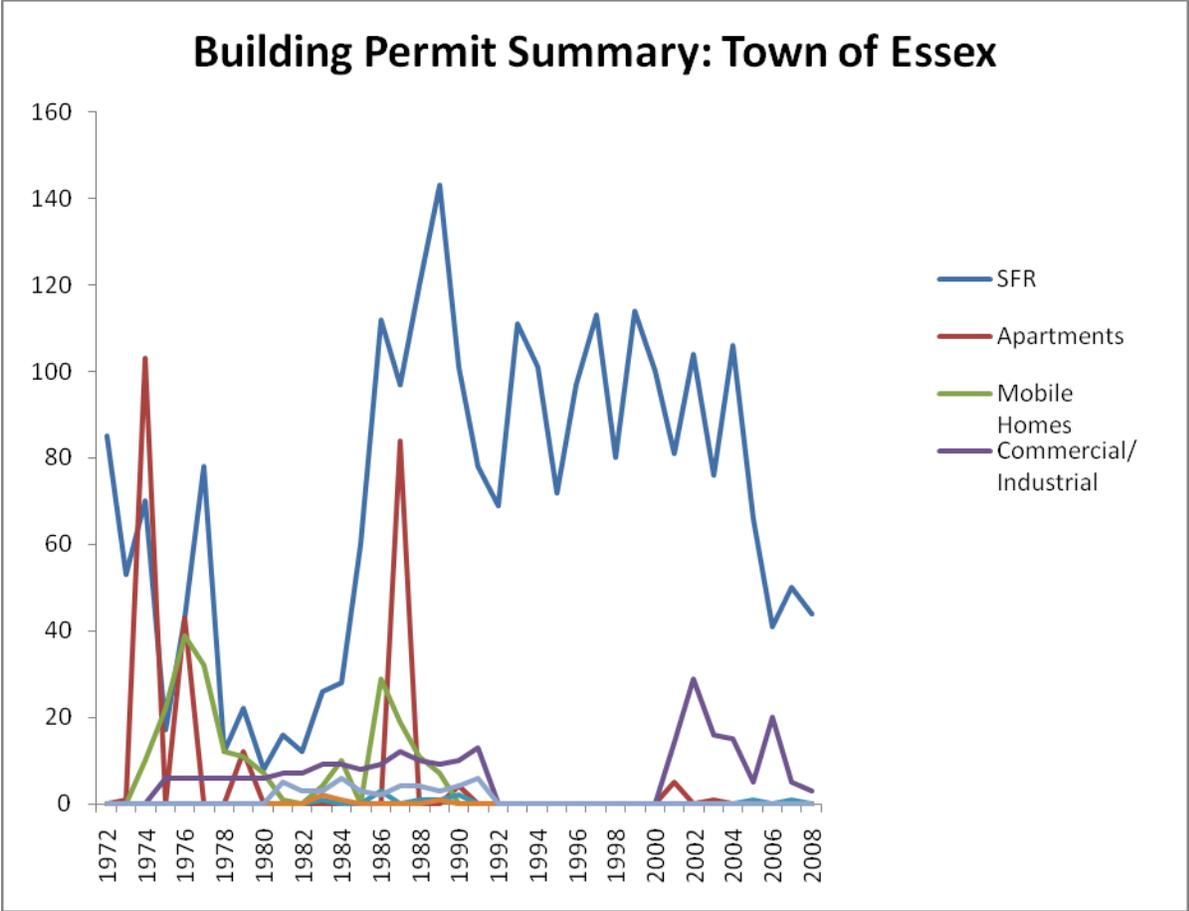
The amount of residential dwelling is not uniform throughout the Town of Essex. Each ward varies, with the most residential development projected to occur in Essex UC and secondarily, in Harrow (figure 6). This is due to the fact Essex UC has recently expanded its sewer capabilities and it has the more liberal zoning provisions for a mix of dwelling types.



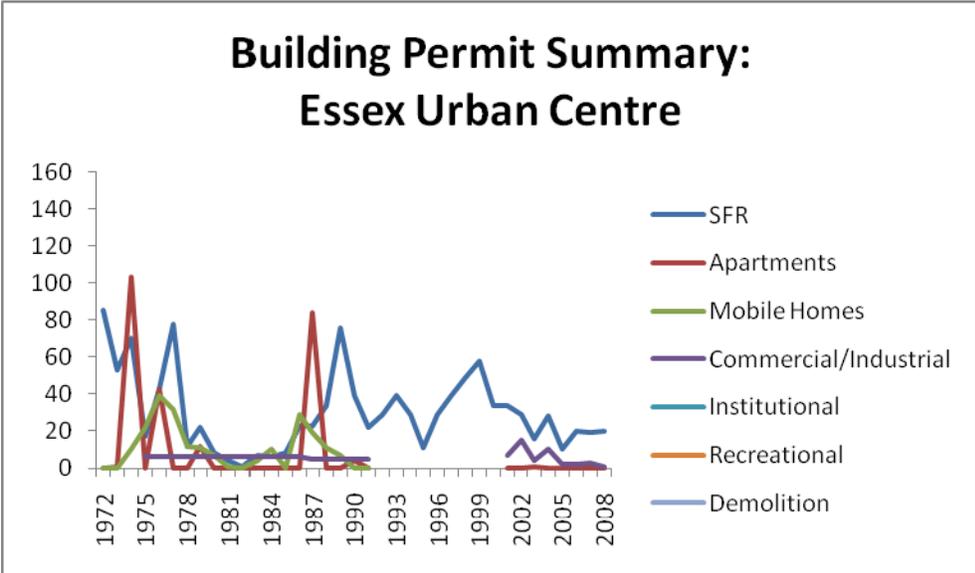
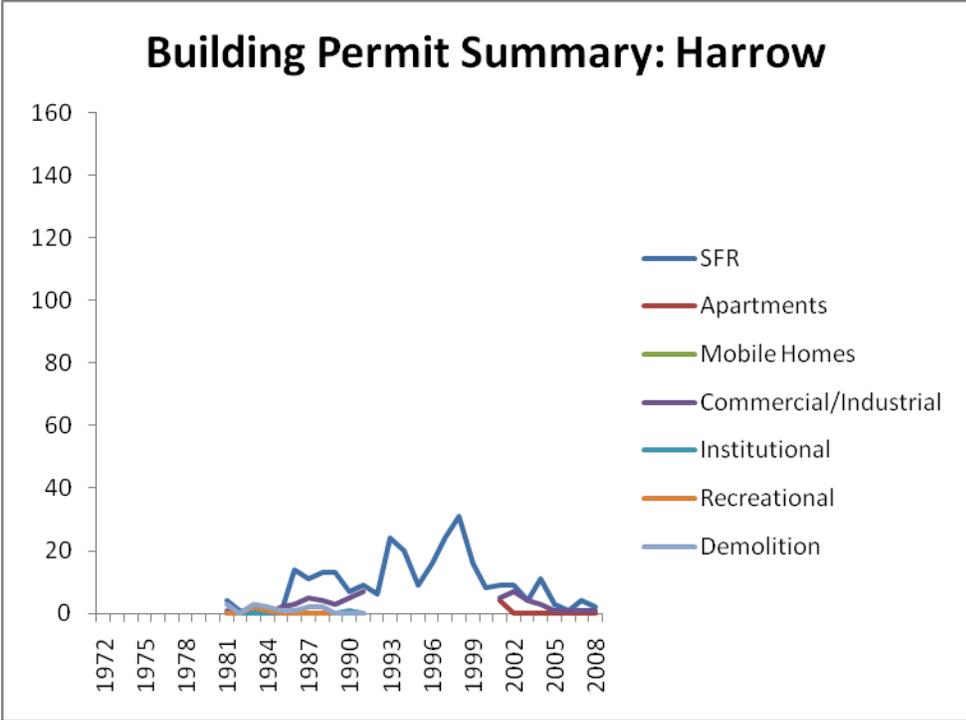
### 3.0 Development

#### 3.1 Development in the Town of Essex

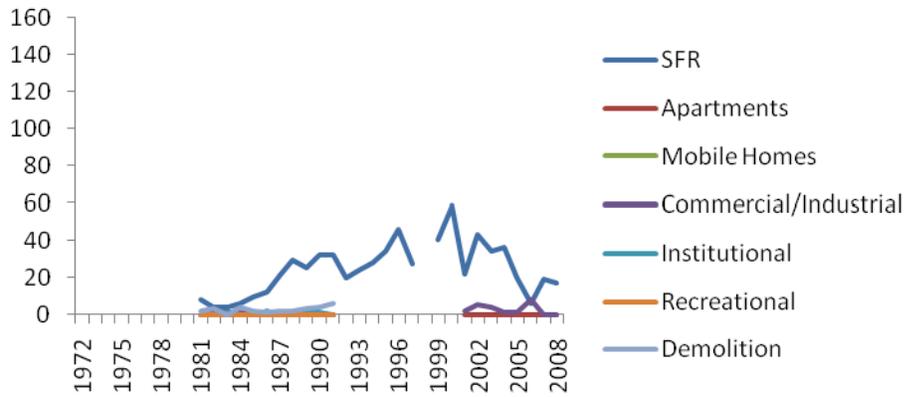
The data for the historical development of the Town of Essex is an incomplete data set (figures 7-11). The gaps do not represent data of 'zero', but of data that is not entered (recorded). The majority of the development is in Single Family Dwellings. Since 2006, there has been a substantial decrease in the number of building permits issued for SFDs. There are no obvious trends when analyzing the Building Permit data. Development fluctuates with a variety of factors, such as the market demand for housing, its affordability, the state of the economy and the availability of alternative housing in other municipalities. It appears as though Single Family Dwelling building permits had a cyclical pattern from 1992 to 2006.



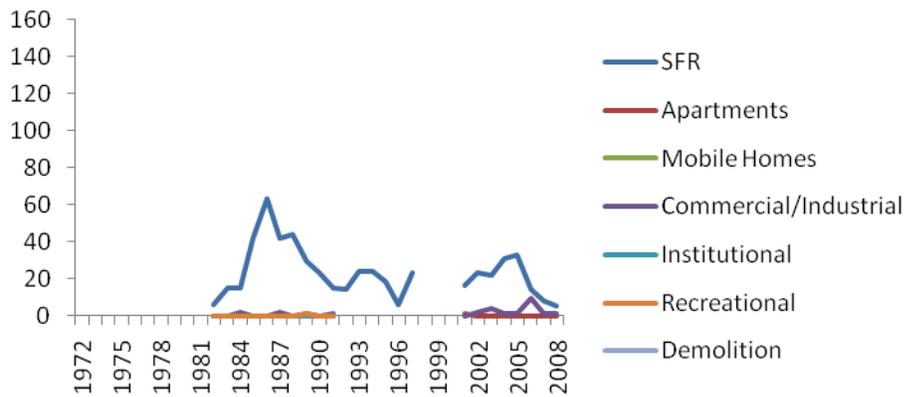
Building permits varied by ward in the Town of Essex. Harrow and Colchester North appear to have had the least amount of new development, according to building permits issued, while Essex Centre and Colchester South have had more.



### Building Permit Summary: Colchester South

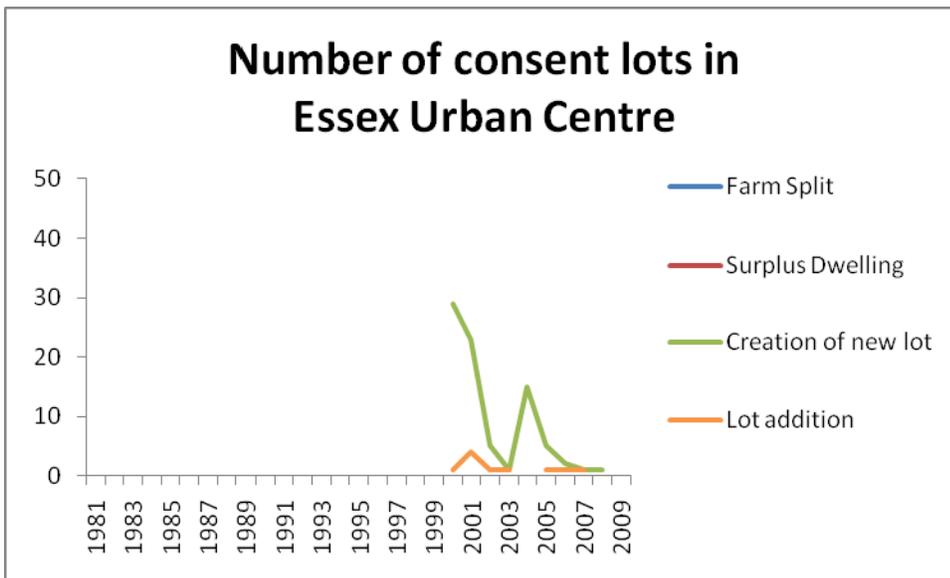
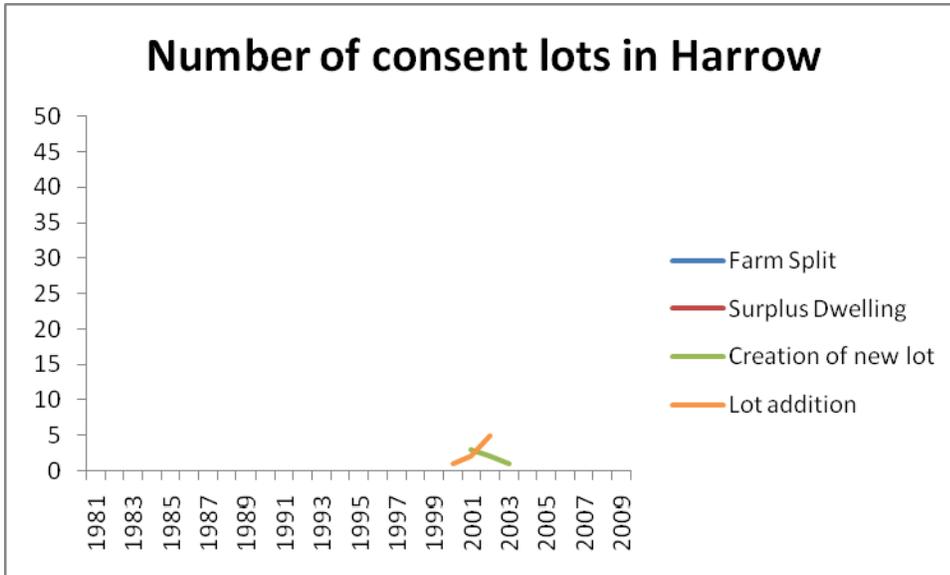


### Building Permit Summary: Colchester North

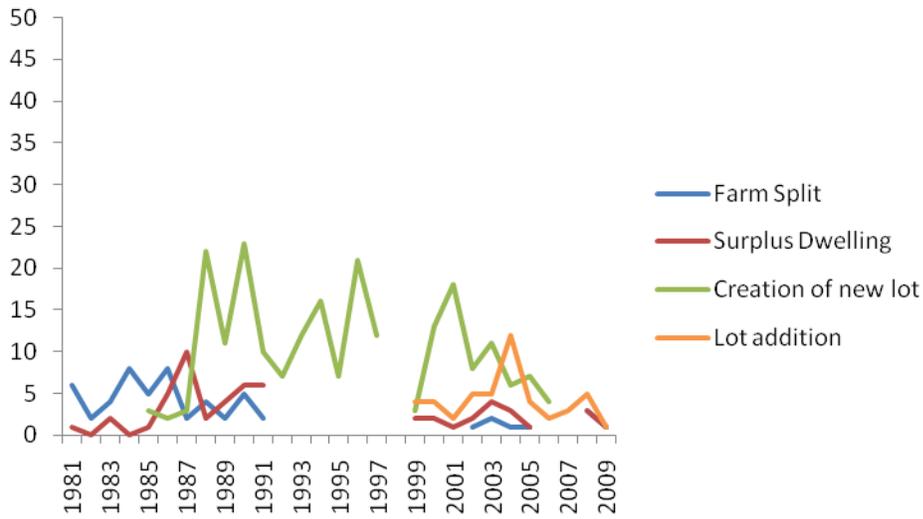


### 3.2 Consent lots

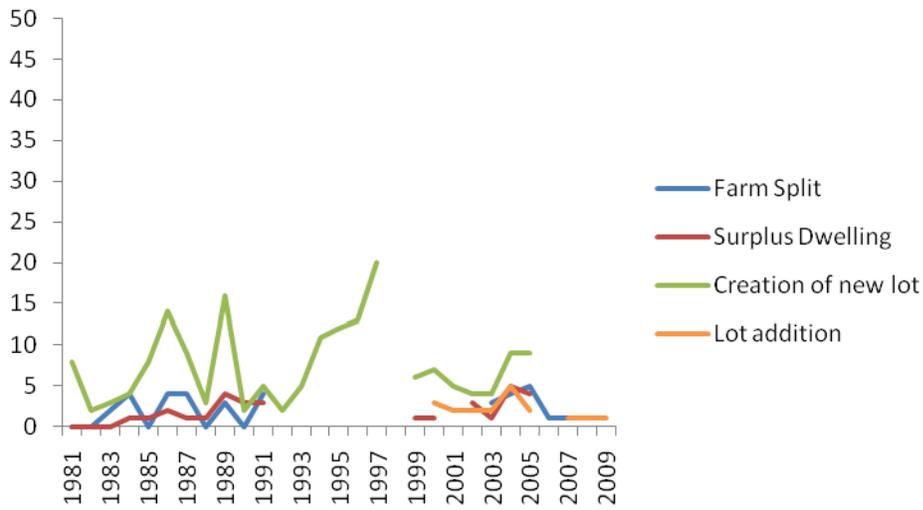
(figure 8-12).

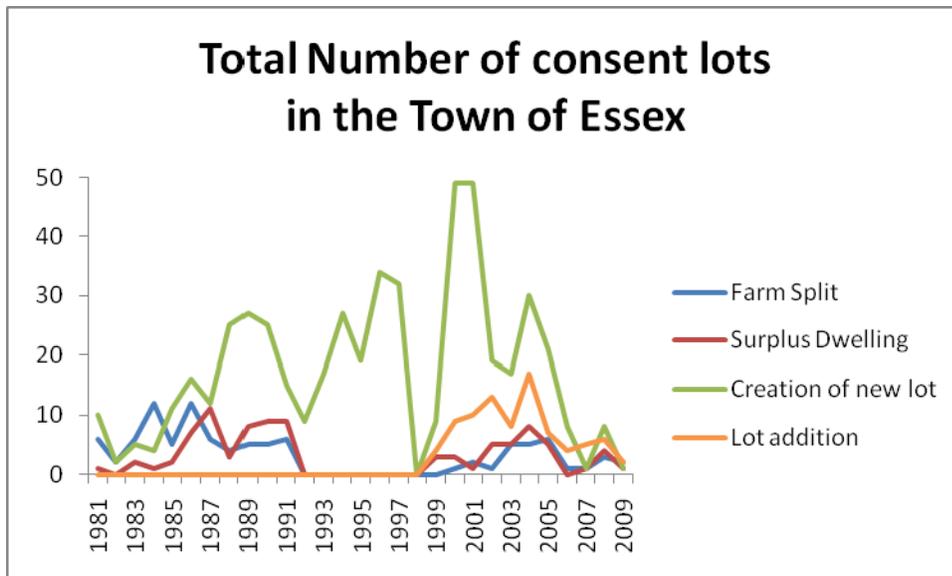


### Number of consent lots in Colchester South



### Number of consent lots in Colchester North





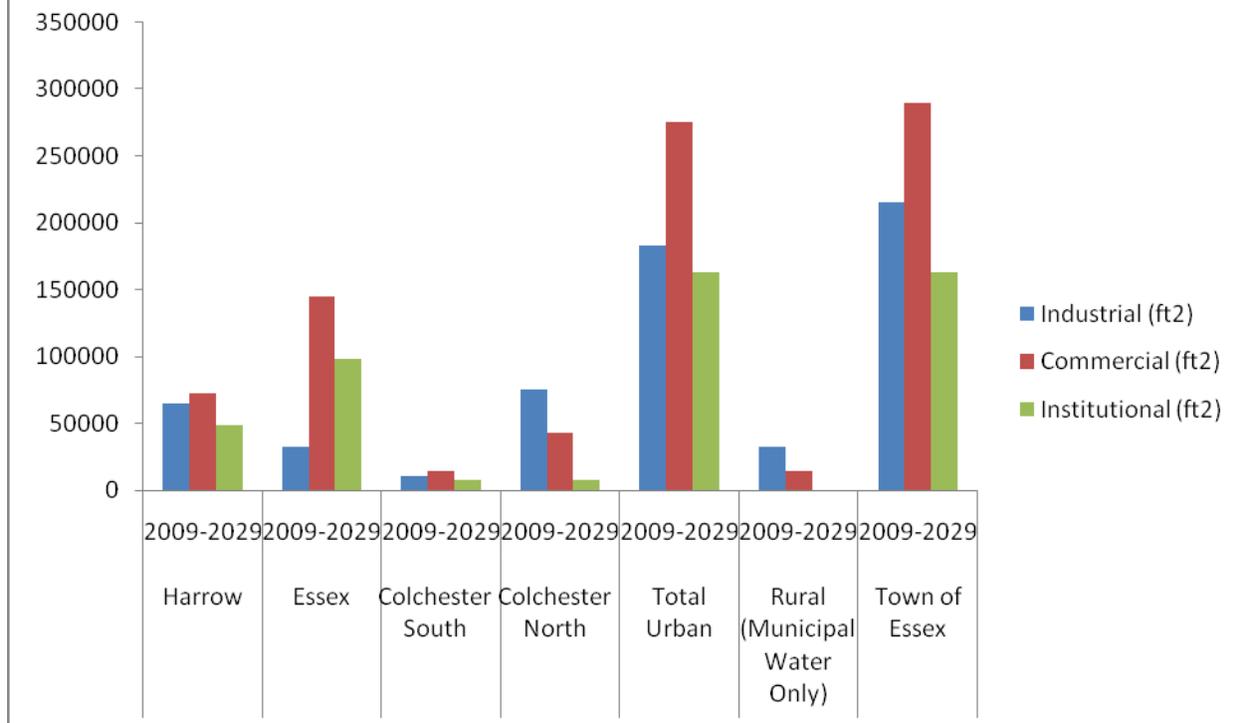
### 3.3 Development Growth Forecasts

The amount of Industrial, Commercial and Institutional Development is not uniform throughout the Town of Essex. Each ward varies, with the greatest amount of commercial and institutional development projected to occur in Essex UC, and industrial development to occur primarily in Harrow and Colchester North (figure 13).

The amount of industrial development is quite limited in Essex UC and Colchester South, with no land currently being zoned for industrial usage. There are potential Greenfield residential areas in both Essex UC and Harrow that could be redesignated and zoned industrial, but this has not yet occurred.

## Estimate of the Anticipated Amount, Type and Location of Development

(Source: 2009 Development Charge Background Study)

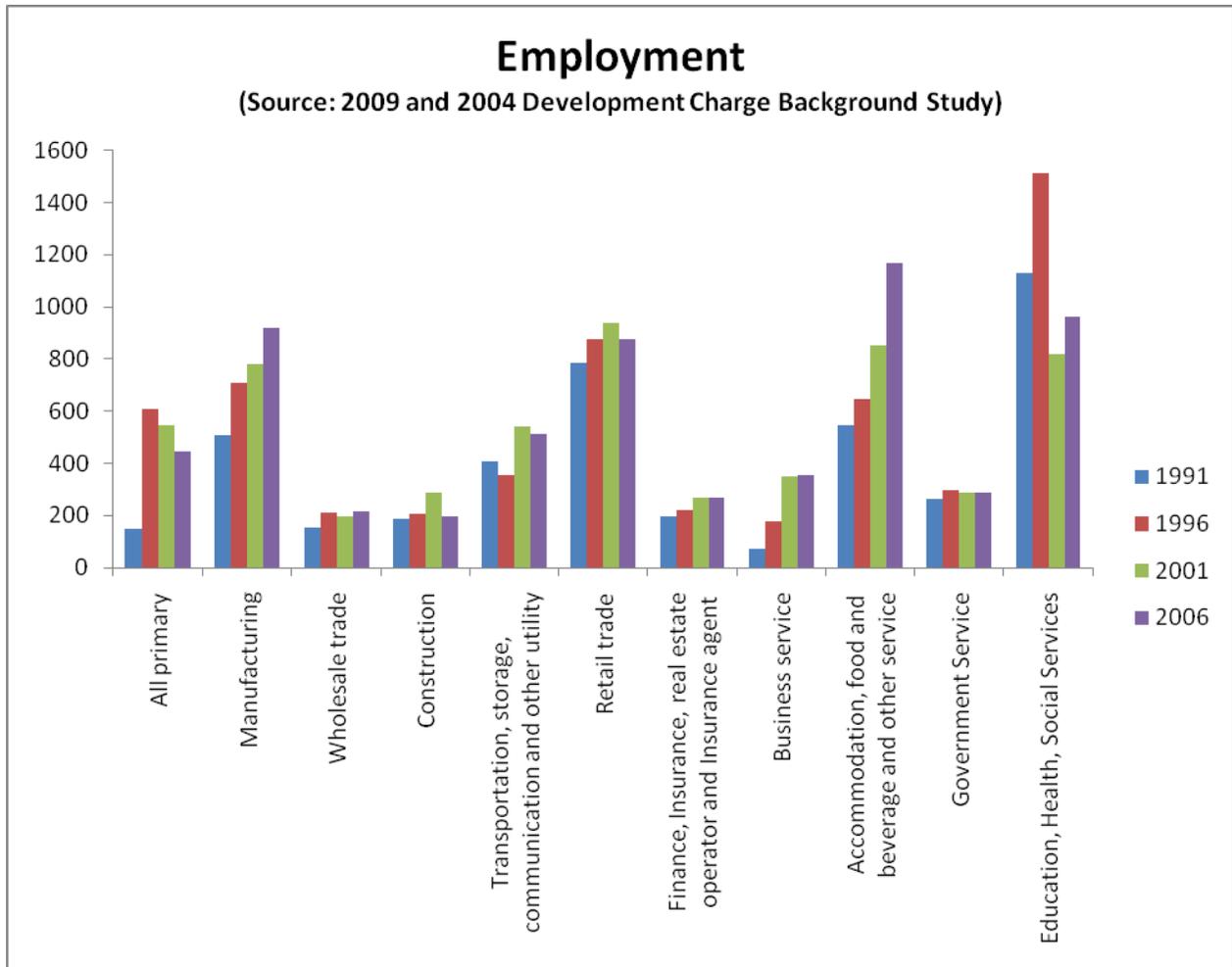


## 4.0 Employment

### 4.1 Employment in the Town of Essex

The data used in the employment graph (figure 14) came from Statistics Canada. The observable trend in the Town of Essex has been that primary employment has been decreasing over time. The 1991 level is extremely low and there is no apparent explanation for the large increase in primary employment from 1991-1996.

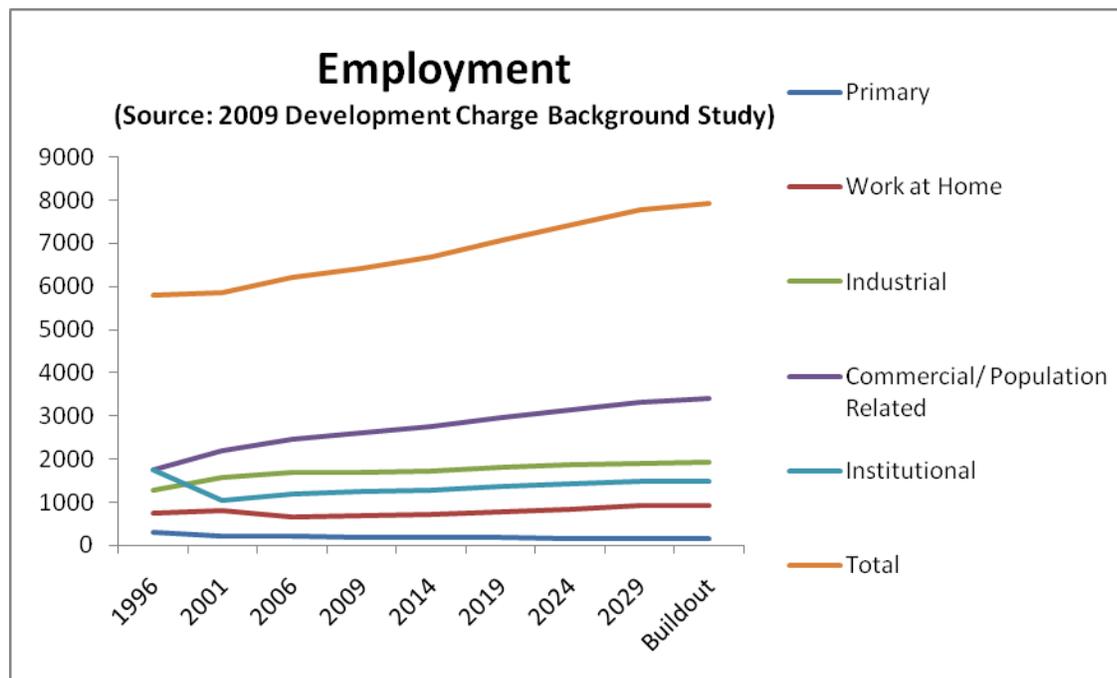
Employment levels have historically changed in the Town of Essex (figure 14).



Education, health and social services employment levels vary substantially among the years, with both significant increases and decreases.

A possible explanation for the large decrease from 1996 to 2001 could be the effects of the 1999 amalgamation. The amalgamation would have resulted in increased efficiencies and the possible elimination of redundant local health and social service facilities replaced by fewer, larger centres.

## 4.2 Employment Growth Forecast



Employment levels have also been projected to change upward in the future (figure 15), albeit quite modestly. The fastest growth is forecasted for the commercial sector and population related employment sectors. However, the distribution of employment is projected to shift in the future. When compared to the total employment levels, there will be a decrease of primary employment (farming and mining, which continues the current pattern), a decrease of the number of people working at home and a decrease in institutional employment (table 3). There will be an increase in industrial employment and population related employment. The Town of Essex currently needs to attract more industrial employment.

Employment sector	Proportion of total employment in 1996	Proportion of total employment projected for 2029
Primary	5.2%	2.1%
Work at Home	13.1%	11.7%
Industrial	21.9%	24.5%
Population Related	30.0%	42.7%
Institutional	30.0%	18.9%

## **APPENDIX 'B'**

### **SUSTAINABILITY REFERENCES**

#### **IN THE TOWN OF ESSEX**

#### **OFFICIAL PLAN**

### **1.0 GENERAL PROVISIONS**

### **1.3 PLANNING AUTHORITY**

#### **PROVINCIAL POLICY STATEMENT**

Ontario's long term prosperity and social well-being, and that of its local municipalities, is dependent on the maintenance of strong communities, a clean and healthy environment and a strong economy.

The Provincial Policy Statement (PPS), sanctioned under Section 3 of The Planning Act, provides policy direction on matters of Provincial concern regarding land use planning and development. It sets the regulatory foundation and framework for comprehensive, long term planning and sustainable development.

Local planning decisions "shall be consistent with" the policy statements in the PPS. Municipal decision makers and land developers must read the PPS in its entirety and take note of the interrelationships amongst all of the policies set out therein.

The three principles of the PPS are:

- a) **Building Strong Communities** -Efficient land use and development patterns that support healthy communities protect natural environments and public safety and promote economic growth will be established and maintained.
- b) **Wise Use and Management of Resources** -In order to maintain the long term prosperity of the Province and its communities, environmental health and social well-being, which depend on the protection of natural heritage, water, agriculture, mineral and cultural heritage and archaeological resources must be protected.
- c) **Protecting Public Health and Safety** Development shall be directed away from areas of natural or man-made hazards that pose the risk of public cost, safety and property damage.

#### **COUNTY OF ESSEX OFFICIAL PLAN**

### **b) Settlement Areas**

Future growth is directed to Settlement Areas. The Settlement Areas are conceptually represented on Schedule A – Land Use Plan and the detailed extent of these settlement areas and the range of permitted uses are to be identified in the local Official Plans. Settlement

Areas are to support and promote healthy, diverse and vibrant areas where all residents can live, work and enjoy recreational opportunities. The Plan supports cost effective development patterns which minimize land consumption, avoid the unnecessary/uneconomical extension of infrastructure, minimize environmental impacts, promote heritage preservation and mitigate public health and safety concerns.

## **2.1 PURPOSE OF THIS PLAN**

The Plan's purpose is:

- b) to further enhance the Town as a desirable place for living, working and leisure by helping to create healthy, safe, attractive and vibrant communities;
- d) to protect and enhance cultural heritage and natural heritage landscapes and resources, biological and ecological functions;
- e) to identify the present level of services available within the Town, the capacity of these services with respect to their expansion and the service extensions required to facilitate future development in an energy efficient and sustainable manner;
- h) to ensure that transportation facilities required for the movement of people and goods provide viable choices in a balanced transportation system, meet the goals proposed by this Plan and satisfy the needs of residents for sustainable, accessible, safe and efficient movement;
- i) to improve accessibility for persons with disabilities and the elderly by removing and/or preventing land use barriers which restrict their full participation in society;

## **4.0 GENERAL DEVELOPMENT POLICIES**

### **4.1 GENERAL PROVISIONS**

The policies in this Section apply to development proposals in all land use designations throughout the Town of Essex. It is the intent of this Plan to ensure that development takes place in an orderly and sustainable fashion in accordance with the PPS.

### **4.2 PLANNING PRINCIPLES**

- b) to provide a broad range of housing, employment and leisure opportunities for the increasing population in a sustainable and energy efficient manner;
- h) to protect and encourage the restoration and enhancement of remaining natural heritage features and other natural resources and, where possible, to enhance and expand them by exploring opportunities for linkages through innovative means that may include public/private partnerships;

- i) to encourage cultural heritage preservation and restoration efforts;
- j) to provide land reserves or corridors for future linear transportation and utility facilities and services and an accessible, sustainable and multifaceted transportation infrastructure;
- k) to accommodate future job creation and employment opportunities in an environmentally sustainable, energy efficient and cost effective manner;
- m) to provide cost effective, sustainable and environmentally sound municipal services that promote energy efficiency, reuse and recycling;
- r) to encourage energy efficient designs and the adoption and use of alternative and renewable energy sources;

#### **4.5 CULTURAL HERITAGE AND ARCHEOLOGICAL RESOURCES**

Significant built heritage resources and cultural heritage landscapes will be identified, recognized and, where proper management of these resources is possible, efforts will be made to ensure their conservation.

#### **4.8 AIR QUALITY**

It is the policy of this Plan that the Town strive to reduce air pollution by:

- a) requiring where feasible the provision of non-automotive forms of transportation infrastructure for walking and cycling as part of development proposals;
- d) preparing and adopting an urban forestry program and, at its discretion, a by-law for the preservation, maintenance and planting of trees. The Town is committed to a program of replacing trees that must be removed from municipal road allowances. It acknowledges that trees in urban settings improve air quality and reduce energy use through shading and protection as well as having an aesthetic value;
- e) considering the adoption of an anti-idling by-law and an educational programme for promoting the reduction of idling.

#### **4.9 ENERGY CONSERVATION**

The Town will promote the use of energy conservation and alternative and renewable energy sources. In all types of development proposals, designs which attempt to minimize energy costs for future residents, businesses and agriculture through transportation design, lot layout, building location, material usage and design, solar orientation and sun exposure, will be encouraged.

In both development and redevelopment, innovative building designs and construction techniques that conserve energy and lead to a reduction of energy consumption will be encouraged. Energy conservation lighting and heating systems will also be promoted.

Programs which would assist in the reduction of energy use within existing municipal buildings will be identified. Council will encourage the application of Leadership in Energy and Environmental Design (LEED) standards in building and neighbourhood design. The landscaping and siting of buildings on a lot to provide wind shelter and maximize sunlight exposure and its energy potential will be encouraged.

Where feasible, the Town will require an alternative transportation infrastructure such as sidewalks, recreationways and bicycle lanes, or a combination thereof, within new developments and will also consider the provision of bicycle lanes, recreationways and sidewalks along streets within existing built-up areas throughout the Town.

#### **4.10 SIGNIFICANT HABITAT OF ENDANGERED SPECIES, THREATENED SPECIES, FISH HABITAT AND WOODLANDS**

The Town will work with the Ministry of Natural Resources (MNR) and ERCA to identify significant Habitat of Endangered Species and Threatened Species and Species of Special Concern. MNR will approve Significant Habitat of Endangered Species and Threatened Species. Habitat of Species of Special Concern can be identified as Significant Wildlife Habitat. In co-operation with ERCA, this Plan will be updated from time to time to maintain or enhance policies for their preservation and protection.

When considering development proposals, the Town may require the land owner to enter into a site plan agreement for the preservation and enhancement of the trees and vegetation on the property. Where forest cover is to be provided as a condition of a development approval, the use of a variety of indigenous species of vegetation is encouraged.

It is the policy of this Plan to encourage restoration and tree planting.

#### **4.12 MANAGEMENT OF MINERAL, MINERAL AGGREGATE AND PETROLEUM RESOURCES**

It is the policy of this Plan that petroleum and salt resources/deposits, as generally depicted in Schedule "C" to this Plan, will be protected for long term use. It is expected that extraction will be undertaken in a manner which minimizes social and environmental impacts in accordance with the PPS.

#### **4.20 ALTERNATIVE AND RENEWABLE ENERGY FACILITIES**

This Plan adopts the objectives, policies and mandates of Official Plan Amendment 1, as the same may be amended from time to time, to the County of Essex Official Plan. The development of wind, solar and biomass energy systems and their ancillary and support facilities and their approval by planning application will be consistent with these policies.

#### **4.22 RESIDENTIAL INTENSIFICATION AND AFFORDABILITY**

The predominant residential land use within the Town is single detached dwellings. Most recent subdivision development has also been focused on low density residential land uses. The PPS provides that settlement areas shall have densities and a mix of residential land uses which efficiently use land and resources, are appropriate for the infrastructure and public service facilities, promote energy efficiency and opportunities for intensification and redevelopment.

#### **5.0 THE LAND USE PLAN**

##### **5.3 LANDS WITHIN THE “NATURAL HERITAGE OVERLAY”**

It is intended that the Plan will facilitate and support the preservation, protection and enhancement of remaining areas with significant natural heritage features.

The diversity and connectivity of natural features in an area and the long term ecological function and biodiversity of natural heritage systems should be maintained, restored and, where possible, improved, in recognition of the linkages between and among natural heritage features and areas, surface water features and ground water features.

##### **GOALS**

- a) To facilitate and support the preservation, protection and enhancement of remaining areas with significant natural heritage features;

##### **5.5 LANDS DESIGNATED “NATURAL ENVIRONMENT”**

Lands designated “Natural Environment” on Schedules “A-1” and “A-3” to this Plan are areas that have been identified as Areas of Natural and Scientific Interest (ANSIs), Environmentally Significant Areas (ESAs), Significant Woodlands, Significant Valleylands, and/or Significant Wildlife Habitat, that are being designated for protection and preservation by the landowner or by the Town.

##### **GOALS**

- a) to facilitate and support the preservation, protection and enhancement of natural environment areas with significant natural heritage features;

##### **5.7 LANDS DESIGNATED “RESIDENTIAL”**

## GOALS

The following goals are established for the areas designated "Residential":

- a) to provide areas in which residential development and neighbourhood serving support services may developed and maintained in a controlled, sustainable and energy efficient manner and to recognize existing residential development and areas presently designated for residential purposes;

### Provisions:

- i)
  - viii) incorporates sustainable and energy efficient design elements and is designed, where feasible, to maximize solar gain;

## 5.13 LANDS DESIGNATED "TOWN CENTRE"

### GOALS

- d) to create and maintain a town centre that includes civic components such as public squares, parkettes, shared parking facilities, cultural, recreational and administrative buildings, which will enhance and strengthen the civic identity of this community, and maintain a friendly, accessible, barrier free and visually attractive "gathering place" for a growing community;

### POLICIES

#### Permitted Uses:

- c) multiple dwelling units within a mixed-use commercial/residential development that:
  - iv) incorporates architectural and design elements which are in keeping with the area and contribute to a built form which is compact and energy efficient.
- j) through site plan control Council will:
  - iii) encourage development designed to maximize solar gain through building orientation, massing and the use of renewable energy systems and the preservation of sunlight in public spaces;

#### Provisions:

in general, new development will be free of barriers to persons with disabilities and will permit movement by pedestrians and bicyclists, the elderly and persons with special needs in a safe and efficient manner;

- FOUND UNDER SECTIONS:
  - 5.7 LANDS DESIGNATED "RESIDENTIAL"
  - 5.9 LANDS DESIGNATED "LAKESHORE RESIDENTIAL"
  - 5.12 LANDS DESIGNATED "HAMLET"
  - 5.13 LANDS DESIGNATED "TOWN CENTRE"

- 5.14 LANDS DESIGNATED "HIGHWAY COMMERCIAL CORRIDOR DEVELOPMENT"
- 5.15 LANDS DESIGNATED "HIGHWAY COMMERCIAL"
- 5.16 LANDS DESIGNATED "INDUSTRIAL"
- 5.17 LANDS DESIGNATED "PARKS AND OPEN SPACE"
- 5.18 LANDS DESIGNATED "COMMUNITY SERVICE FACILITY"

## **6.0 PROPERTY DIVISIONS POLICIES**

### **6.1 GENERAL PROVISIONS**

When considering consent applications or reviewing plans of subdivision, Council and the Committee of Adjustment will give consideration to the following requirements:

- d) if no lands are required to be conveyed for parks purposes, five percent of the value of the residential lot and two percent of the value of the commercial or industrial lot is to be conveyed to the Town for its park fund;

### **6.9 CONSERVATION EASEMENTS**

The owner of land may convey, without consent or plan of subdivision, an easement or may enter into a covenant with the Town or lawfully recognized conservation body for the purposes of:

- a) the conservation, maintenance, restoration or enhancement of all or a portion of the land or wildlife on the land;
- b) the protection of water quality and quantity, including the protection of drinking water sources;
- c) watershed protection and management;
- d) access to the land for the purposes described above.

### **7.0 COMMUNITY IMPROVEMENT**

Community Improvement generally encompasses those public and private initiatives that serve to maintain, rehabilitate and redevelop the existing physical environment in urban areas to accommodate social, cultural and economic priorities within the community.

It is important to recognize that declining public sector revenues, the cyclical performance of the region's economy and increasing demand for services require that all government levels plan for maximum efficiency and sustainability in the use and maintenance of public services and other resources. The need to improve infrastructure and to establish intergovernmental priorities make it essential that goals be set when allocating limited financial resources.

The adoption of community improvement policies is a prerequisite to the designation of specific Community Improvement Project Areas, the preparation of detailed Community Improvement Plans and municipal participation in Provincial and/or Federal funding

programs. The Community Improvement process demands a strategic planning approach to ensure that potential projects fit community goals and objectives. The inclusion of community improvement policies in this Plan represents the Town's commitment to the ongoing maintenance and upgrading of its built-up areas in a planned, coordinated, sustainable and fiscally prudent manner.

## **7.1 CRITERIA FOR A COMMUNITY IMPROVEMENT AREA DESIGNATION**

Considerations for improvement, redevelopment and revitalization are:

- f) the need to upgrade the transportation system through improvements to road conditions and intersections as well as to enhance the transportation infrastructure serving non-motorized forms of transportation such as walking and cycling;
- i) the presence of buildings or lands of architectural and/or heritage value that are in need of improvement, preservation or revitalization;
- k) the desire to improve energy efficiency and stimulate the use of renewable energy.

## **7.3 COMMUNITY IMPROVEMENT POLICIES**

It is the policy of the Town of Essex to:

- h) encourage energy conservation through energy efficient buildings and land uses;
- i) encourage public participation in the community improvement planning process;

## **7.5 IMPLEMENTATION**

Implementation of the Community Improvements will occur through:

- h) encouragement of private initiatives regarding conservation, rehabilitation, redevelopment and environmental remediation;
- j) partnering with local service clubs, community organizations and the County of Essex to secure funding and carry out projects particularly with respect to recreational, community facilities and the preservation and enhancement of natural heritage features and public open space;

## **8.0 MUNICIPAL SERVICES**

### **8.2 SERVICING REQUIREMENTS**

Sewage and water services will accommodate the expected growth in a manner that will ensure the sustainability of water resources, financial viability in the provisions and maintenance of water and sewer services, protect human health, promote water conservation and water use efficiency, integrate servicing and land use considerations in all stages of the planning process and permit lot creation only if it is demonstrated that sufficient sewage system capacity and reserve water system capacity is available.

#### **8.4 ELECTRICITY PROVISION**

The development of new electric power facilities will occur in an orderly manner to facilitate the efficient, sustainable and reliable provision of adequate electric power for future needs in accordance with the applicable provisions of Section 4 of the Plan.

#### **8.6 STORMWATER MANAGEMENT**

The Town will, where appropriate, encourage development proponents to enhance vegetation, wildlife habitats and corridors in and along the stormwater management system and receiving watercourses. In order to ensure that the location, size, configuration and grade of the land surrounding the facility can be efficiently incorporated as a component of a trail or open space system, the Town may require the proponent to prepare a landscaping plan prior to development approval.

#### **8.7 GROUND WATER AND SOURCE WATER PROTECTION**

The Town recognizes the need for efficient and sustainable use of water resources and to ensure that stormwater management practises minimize stormwater volumes and containment loads and maximize the extent of vegetative and pervious surfaces. Impacts on the function of sensitive ground water recharge/discharge areas, aquifers and headwaters may also need to be addressed by proponents of new development and redevelopment.

The Town will require measures to limit potential negative impacts on ground water and source water resources, as part of planning approval for new development, including the expansion of existing development. Where necessary, restrictions and other mitigative measures will be placed on development and site alteration to protect municipal drinking water supplies, sensitive surface and groundwater features, natural heritage areas and their hydrological functions.

#### **8.8 TRANSPORTATION NETWORK**

In order to facilitate the efficient, convenient and safe movement of goods and people and create a balanced and sustainable transportation system:

- i) for new development, Council may require the dedication of lands for public recreationways, walkways or other non motorized travel, and such facilities shall

be deemed to be public rights of way, to be conveyed in accordance with the provisions of this Plan and the Planning Act;

street/sidewalk networks will be designed to optimize walkability within and between neighbourhoods, to commercial centres, schools, recreation areas and other public destinations;

## **8.10 PARKLAND ACQUISITION AND DEVELOPMENT**

The Town will acquire and develop land for parks purposes on the following basis:

- l) the Town will continue to support the development and maintenance of recreational facilities, the acquisition, beautification and maintenance of public open space and the development of recreation programs in accordance with community needs and availability of resources;
- n) the Town will endeavour to work with neighbourhood residents, service clubs and organizations, the Trails, Walkways and Bikeways Committee, other interested groups and government agencies to satisfy the parks and open space needs of the community;
- o) the Town will work with the Essex Region Conservation Authority, in cooperation with nature conservancy groups, to acquire and develop lands linking natural areas for the movement of wildlife and the preservation and enhancement of ecological and biological functions;

## **9.0 IMPLEMENTATION AND INTERPRETATION**

### **9.2 INTERPRETATION**

This Plan applies to all lands within the Town of Essex. Its objectives and policies are intended to achieve the goal of balanced and sustainable development for the period that it is in effect.

### **9.9 HOLDING ZONES**

Holding provisions will be applied in order to satisfy one or more of the following:

- d) to satisfy policies of this Plan related to heritage conservation, site plan control, potentially contaminated sites, protection of the natural environment, community improvement and any other matters which are deemed by Council, the County or Province to be relevant to development or redevelopment of the lands;

### **9.13 SITE PLAN CONTROL**

Its objectives are:

- f) to ensure that policies of this Plan related to urban design, sustainability, heritage conservation, natural heritage protection, buffering and other municipal guidelines, objectives and initiatives are satisfied;

## Appendix 'C'

### TOWN OF ESSEX ENERGY USE

#### Utilities: Energy and Water

The process of generating electricity is the largest source of carbon dioxide emissions in the United States (41% of all CO<sub>2</sub> emissions). Improving energy efficiency, lowering total electricity consumption and increasing the share of electricity generated from renewable sources is vitally important to the Town of Essex. The source of the electricity directly determines the amount of emissions generated, as some sources of electricity are cleaner than others. Ontario's electricity composition is shown below.

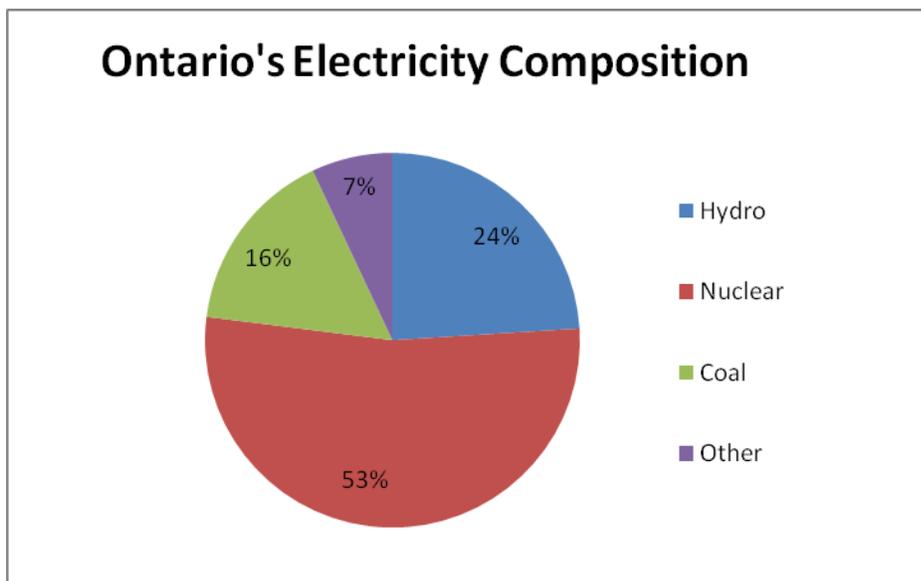


Figure 4. Ontario's Electricity Composition

**Energy Feasibility Study:** *(reproduced directly from MCW Custom Energy Solutions Energy Feasibility Study, February 2009)*

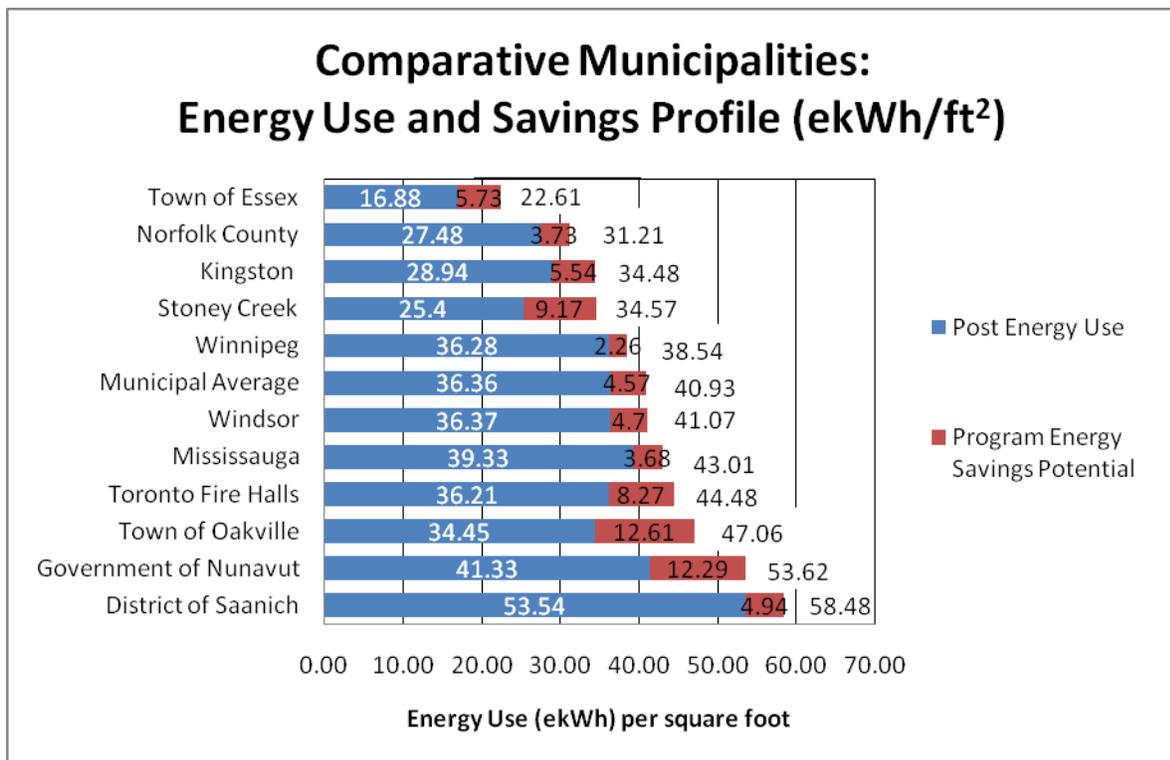
#### 1.1 EXECUTIVE SUMMARY

During November of 2008, MCW Custom Energy Solutions carried out a comprehensive energy audit of 7 Town of Essex buildings. The purpose of the audit was to identify potential for energy and water savings, the following specific areas were audited for energy performance:

- Lighting & Lighting Controls
- HVAC Systems

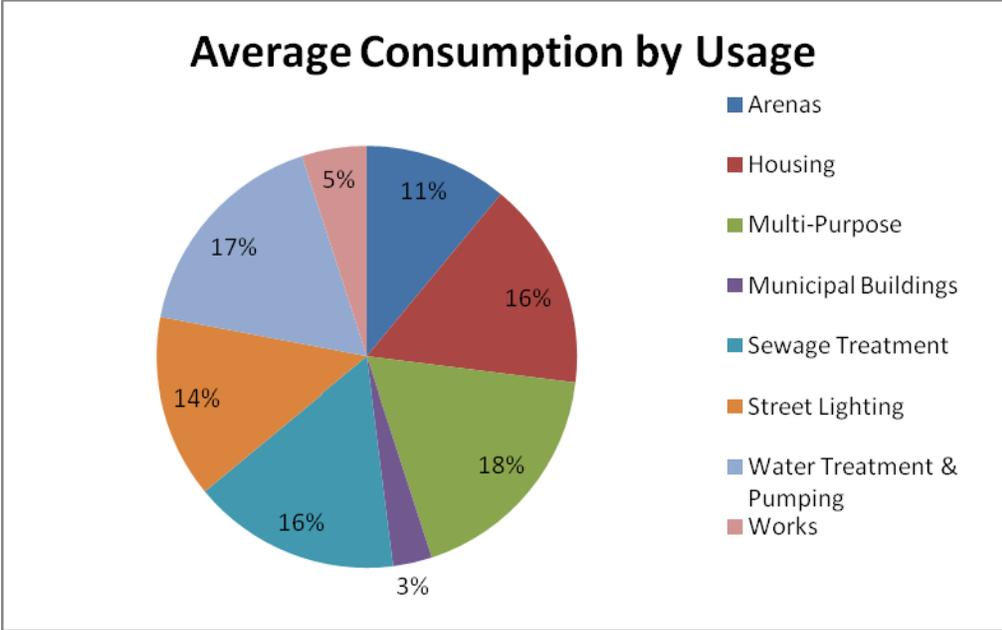
- Automated Building Controls Systems
- Building Envelope
- Domestic Water
- Renewable Energy Technologies

As shown below in **Figure 1.1**, the facilities audited as part of this study currently consume less energy per square foot than all of the other municipalities previously audited by MCW. The Building Energy Performance Index (BEPI) for the Town of Essex facilities was 22.61 ekWh/ft<sup>2</sup> which stands as evidence to the commitment that building occupants and facilities operations staff have made to energy efficiency. Moving forward, the Town would like to expand on their commitment and is interested in implementing a comprehensive energy management program to further reduce operation costs, improve environmental performance and help renew ageing infrastructure. This document outlines ways in which the Town can achieve this goal.



**Figure 1.1: Comparative Municipal Energy Use & Savings**

The pie graph located in **Figure 1.2** below, shows the average energy consumption by sector for a typical municipality. It provides a snapshot of where the highest savings potentials may exist but can vary for different municipality depending on the mix of facilities contained in the portfolio.



**Figure 1.2: Comparative Municipal Energy Use & Savings**

Energy savings measures were reviewed and the expected savings and costs calculated for each proposed measure. *Table 1.1* summarizes the costs and savings for the programs developed on a building by building basis. *Table 1.2* provides an overview of each of the measures proposed for each of the facilities. *Table 1.3* provides an overview of the window replacement measure proposed for two facilities. For a more detailed financial assessment of each of the proposed measures, refer to *Tables 2.2a & b* which includes all measures with the exception of window replacement and *Tables 2.3a & b* which includes all measures. Window replacement has been included as an option due to the long payback period associated with this measure.

The costs shown include the complete construction cost, as well as MCW’s fees. No guarantee premium has been included for this project, meaning that MCW would not provide a guarantee of the projected energy savings.

Should the Town of Essex wish, they can enter into an Energy Management Service Agreement with MCW in order deliver this project. In this case, all building upgrades can be paid from the energy savings actually generated.

Table 1.1 Building-by-Building Cost & Savings Summary (excl. Measure D02 Window Replacements)

Building	Annual Cost Savings	Measure Cost (w/Inc)	Simple Payback (Years)
Essex Municipal Building	\$4,766	\$41,963	8.8
Essex CC, Library & St. Michael's HS	\$18,295	\$311,766	17.0
Gesto Fire Hall	\$1,349	\$7,003	5.2
Harrow Fire Hall	\$438	\$2,891	6.6
Harrow Police Station	\$9,713	\$53,490	5.5
Ferris Yard	\$1,503	\$7,781	5.2
Harrow Arena	\$10,090	\$102,256	10.1
<b>Total</b>	<b>\$46,154</b>	<b>\$527,161</b>	<b>11.4</b>

Table 1.2 Building-by-Building Measure Summary

Measures	Essex Municipal Building	Essex CC, Library & St. Michael's HS	Gesto Fire Hall	Harrow Fire Hall	Harrow Police Station	Ferris Yard	Harrow Arena
<b>A – Lighting Retrofits</b>							
Lighting Retrofit & Redesign	X	X	X		X		X
Occupancy Sensors	X	X			X		X
<b>B – Mechanical Modifications</b>							
Heating Boiler Replacement		X					
Furnace Replacement							X
Infrared Heating Retrofit						X	
Piping Insulation		X					
Damper Replacements		X					
Garage Door Interlocks			X	X			
<b>C – Controls</b>							
Building Automation Controls	X	X			X		X
Programmable Thermostat Installation			X			X	
Programmable Thermostat Recommissioning			X				
Log One EMS Thermostat Installation				X			
<b>D – Building Envelope</b>							
Building Envelope Sealing	X	X	X		X		X
<b>E – Water</b>							
Domestic Water Retrofits	X	X			X	X	X
<b>F – Renewables</b>							

Table 1.3 Window Replacements

Building	Number of Windows	Annual Cost Savings	Measure Cost	Simple Payback (Years)
Essex Municipal Building	73	\$280	\$18,965	67.6
Essex CC, Library & St. Michael's HS	87	\$1,969	\$35,313	68.7
<b>Total</b>	160	\$2,249	\$154,278	68.6

## 1.2 OVERVIEW AND TERMS OF REFERENCE

Located in south western Ontario, the Town of Essex is a largely rural community with a population of around 20,000 persons. The Town of Essex has recently become a member of the Partners for Climate Protection Program as well as the ICLEI – Local Governments for Sustainability.

As a result of the Town's commitment to energy conservation, a RFP was issued in August 2008 seeking the services of an ESCo (Energy Services Company) to identify energy savings opportunities in several building owned and operated by the Town of Essex.

This document has been prepared for the Town of Essex (Essex) in response to a Request for Proposals for Building Energy Audits and Related Services. The Energy Feasibility Study document is the culmination of a comprehensive energy audit performed by MCW Custom Energy Solutions Ltd. (MCW) in November 2008. The audit looked at Municipally owned buildings, detailed in *Table 1.4*, to identify potential energy and water savings opportunities (Measures) that will realize energy savings and reduce the environmental impact of the Town of Essex.

The Energy Conservation Measures identified have been developed with the underlying design intent that existing building space conditions and occupant comfort will be, as a minimum, maintained, and in many cases improved. The Town of Essex intends to use the information in the Energy Feasibility Study to develop an Energy Services Performance Contract in partnership with MCW to implement the selected findings in the buildings.

## 1.3 PROJECT OBJECTIVES & GOALS

The overlying objective of this project is to determine the energy and water usage of Town of Essex and point out opportunities where Town of Essex may be able to reduce its utility use. To do so, MCW has reviewed systems in Municipal buildings within the Town of Essex portfolio of buildings.

This Energy Feasibility Study outlines measures in relation to these systems which MCW feels would best allow Essex to realize energy savings. It also describes the design and implementation necessary for each measure to succeed. This includes commissioning,

operation and maintenance training for staff, awareness training for end users, as well as the development of a monitoring system for energy consumption, and training for the use of such a system.

MCW has made every effort to minimize costs while still ensuring that Essex maintains its goal of lower utility usage, reduced greenhouse emissions and, where feasible, renewed building infrastructure. Opportunities to utilize government and utility based funding incentives have been identified.

The Town of Essex has made a commitment to energy conservation. In this Energy Feasibility Study, MCW has developed a means to realize and maintain this commitment through its proposed measures. It also provides Essex with the capacity to set a standard for energy use within its existing facilities as well as for any future acquisitions or developments.

#### 1.4 BUILDING SUMMARY

A detailed list of the Town of Essex buildings that are subject of this Energy Feasibility Study are listed in *Table 1.4*.

Table 1.4 Town of Essex Buildings

Bldg No.	Building Name	Address	Built	Area (ft2)
1	Essex Municipal Building	33 Talbot Street South	1967	9,975
2	Essex Community Centre	190 Talbot Street South	1971	14,948
	St. Michael's High School	190 Talbot Street South	1962	12,907
	Essex Public Library	190 Talbot Street South	1964	6,022
3	Gesto Fire Hall and Building Department	2610 Country Road 12	1963	5,915
4	Harrow Fire Hall	25 Centre Street East	1980	4,006
5	Harrow Police Station	44 King Street	1938	17,363
6	Ferris Yard/Public Works Building	2100 Ferris Road	1969	12,131
7	Harrow & Colchester S Community Complex	243 McAfee Street	1971	47,971
<b>Total</b>				131,238

A summary of the combined utility consumption for all eight sites is shown in *Table 1.5* following.

Table 1.5 Utility Baseline Summary – Town of Essex

Description	Units	
Number of sites	7	
Area of buildings	131,238	ft <sup>2</sup>
Energy Used (FY 2007/08)	2,967,244	ekWh
	10,690	GJ
Water Consumed (FY 2007/08)	6,063	m <sup>3</sup>

Utility Costs (at FY 2007/08 rates)	\$195,550
-------------------------------------	-----------

## 1.5 EXECUTIVE PROGRAM SUMMARY

### *Proposed Energy Retrofit Program*

Energy efficiency measures were reviewed and the expected savings and costs calculated. **Table 1.6 Energy Savings Program Summary** summarizes the costs, savings and incentives for the programs developed for the Town of Essex for all buildings and all measures. Program B includes the Window Replacement measure for the Essex Municipal Building and 190 Talbot St S, while Program A includes no window replacements.

Table 1.6 Energy Savings Program Summary

Program	Utility Savings (\$)	Total Cost (excluding incentives) (\$)	Incentives (\$)	Simple Payback (with incentives) (Yrs)
Program A – Table 2.2 a & b	\$46,154	\$553,732	\$26,570	11.4
Program B – Table 2.3 a & b	\$48,403	\$710,312	\$28,873	14.1

The savings (Program A) represent a **24%** cost savings from the energy cost for the respective buildings in FY 2007/08 using the adjusted savings rates carried.

In the energy audit, MCW Custom Energy Solutions Ltd. discovered that between 2006 and 2008 electricity consumption increased 2.4%, demand decreased 0.9%, and total electricity costs decreased 1.6%. Natural gas consumption decreased 1.0% and costs decreased 6.2%. Water consumption decreased 31.4% and costs decreased 27.9%. The overall energy use increased 0.3% and costs decreased 6.1%. The MCW audit demonstrated that the Building Energy Performance Index (BEPI) could be improved by lowering utility operating costs by \$0.35/ft<sup>2</sup> and reducing energy use by 5.73 kWh/ft<sup>2</sup>. The proposed modifications would cost approximately \$4.02/ft<sup>2</sup>; however, this does not include provision for asbestos removal, PCB ballast disposal and lamp recycling. As these buildings are all older, there is a higher risk of asbestos in the buildings, and safe handling and disposal practices would likely increase the project costs.

### Lighting Retrofits:

With respect to lighting retrofits, the Town of Essex has already been replacing T12 fluorescent lamps with T8 fluorescent lamps, which have a reduced input wattage, which results in a significant decrease in electrical demand (decreases electrical consumption and results in utility cost savings). MCW had many recommendations to retrofit the lighting systems; including converting all existing T12 lamps to T8, and adding custom fitted reflectors to certain fixtures to improve fixture efficiency where de-lamping is proposed.

MCW has also proposed the Town of Essex to take a leadership role with respect to dismantling PCB ballasts and recycling lamps. One of the lamp component parts is the hazardous substance mercury, and Essex could demonstrate leadership in promoting environmentally responsible behaviour by recycling the lamps into component materials and disposing of them properly. MCW proposed the installation of occupancy sensors to control lighting and energy consumption when areas are not in use (such as public washrooms). However, occupancy sensors have a long payback period.

#### *Mechanical Modifications:*

MCW proposed replacing the three heating boilers in the Essex Community Centre with two mid efficiency boilers, as not only are they relatively inefficient, but one of the three is corroding severely and could become unsafe to operate. The mid efficiency boiler has a thermal efficiency of 79-85%, and a low NO<sub>x</sub> rating.

MCW recommended replacing the furnace in the Harrow Arena with a high efficiency furnace. It was noted that there are already high efficiency furnaces installed in the Harrow Fire Hall, Harrow Police Station, and the Gesto Municipal Building. It was also proposed to pursue an infrared heating retrofit at the Ferris Public Works Building. Insulating pipes will also increase efficiency and lifespan of the product. A significant amount of non-insulated piping was found during the audit of the Gesto Municipal Building, the Essex Municipal Building, and the Essex Community Centre complex, but MCW only recommended piping insulation implementation at the Essex Community Centre complex due to the long payback for insulating domestic hot water piping.

MCW recommended replacing the two dampers in the Essex Community Centre, as they are in poor condition and remain open all the time, and result in a constant flow of fresh air to the gym. At the Harrow Fire Station and Gesto Municipal Building there are gas-fired unit heaters. MCW proposes the installation of an interlock between the truck bay doors and local thermostats, so that when the doors are opened, the thermostats will be disengaged and the heaters will turn off. This will prevent unnecessary heating and save energy.

#### *Building Automation Controls Measures:*

MCW proposes to expand and/or update existing control systems, replace obsolete and non-performing controls and install new Building Automation Systems for buildings of sufficient size which presently have conventional electric, pneumatic or other simpler controls. The proposed energy programs (vary slightly for each building) to be implemented on the new BAS systems are Time of Day Scheduling, Optimum Start/Stop, Night Setback/Set-up, Demand Control Ventilation or CO<sub>2</sub> Control, Economizer Control Optimization, Supply Temperature Rest, Night Cycle, Night Purge, and Load Reset.

Programmable thermostat installation utilizes the fact that a given space or building does not usually need as much heating or cooling when it is unoccupied. Also, some programmable thermostats already installed need to be recommissioned, as they were not properly set up,

with the unoccupied temperature set points the same as the occupied temperatures. The Log One (EMS) thermostat with proposed to be installed in buildings such as the Harrow Fire Hall, as it features a motion detector which gradually sets back the space temperature if no motion is detected in the space after a period of time, as this building is only occupied intermittently (once every two weeks or during fire calls).

#### *Building Envelope:*

Building envelope sealing will minimize air leakage. Door and window sealing (caulking and foam), and replacing weather-stripping and/or door sweeps will reduce air migration, resulting in lower energy bills, better occupant comfort and ultimately improved building longevity through reducing penetration of moisture. Other gaps will be sealed with a two component polyurethane foam material (around electrical, heating, air conditioning and telephone conduits, ducts, vents, exhaust fans and hatches). Window replacements with double-paned windows, framers and sliders can improve energy efficiency. MCW proposed replacing 8 windows in Essex Municipal Building, 79 in St. Michael's School and 73 in Essex Community Centre.

#### *Renewable Technologies:*

The installation of a 5 kW photovoltaic system was recommended by MCW at the Essex Community Centre.

#### *Water:*

There are a variety of domestic water retrofits that can be pursued. Water conservation initiatives can be seen through selection of toilet flush valve types, toilet gravity tank types, urinal flush valve types, urinal tank types, faucets and showers.





## Sustainability Action Plan Part 3 – Future Policies and Actions Discussion Paper

Town of Essex

Jeff Watson and Anika Steblin



December, 2009

**Table of Contents**

Executive Summary ..... 3

1.0 Introduction ..... 3

2.0 The Broad Principles ..... 5

3.0 Sustainability Objectives and Actions ..... 8

4.0 First Steps..... 22

## SUSTAINABILITY ACTION - PLAN PART 3

### GOALS AND FUTURE ACTIONS

#### EXECUCTIVE SUMMARY

In this section, sustainability goals, objectives and actions are identified in order to begin the process of integrating sustainability principles into our day to day activities and long term decision-making. A balanced sustainable community will proactively address the challenges our society faces, reduce its dependency on finite and non-renewable resources, maintain a strong sense of community and pave the way for a healthy and productive future for the generations of citizens to come.

A vision statement and six overall sustainability goals are set out and possible actions to help achieve these goals are listed for further discussion. It also identifies the need to establish a sustainability action committee to review internal municipal activities and planning and to determine specific directions and actions we should take to achieve our commitment to a sustainable future.

#### 1.0 INTRODUCTION

Part 1 of this Sustainability Action Plan outlined the rationale for the adoption of sustainability principles in day to day decision-making and in long term municipal strategic planning. It summarized the efforts of other municipalities to adopt such action plans.

Part 2 set out the opinions of municipal staff of the Town of Essex toward sustainability and identified the initiatives already taken by the different departments in achieving sustainability goals and objectives.

In this final section, Part 3, a comprehensive action plan is laid out for discussion. Adoption of an action plan will, over time, demonstrate by example to the larger community the benefits and practicality of integrating sustainability principles into day to day decision –making and long term strategic planning.

The goal of sustainability is to ensure that our decisions and actions meet the needs of our citizens without compromising the ability of future generations to meet their needs.

Sustainability is not just about the conservation of natural resources. Communities exist to provide many functions related to the supply of housing, employment, recreation, social interaction and culture. A “community” is not just an assortment of land uses; it also represents the social integration and interaction of people who carry on many activities which benefit them, their relations and the people comprising the Town of Essex.

A healthy, sustainable community is balanced, flexible and proactive. Balanced in the way it provides necessary services. If weak in certain areas, it strives to address these deficiencies in a sustainable way. It is flexible and adaptable to respond to changes in public needs and wants, budgetary constraints, economic pressures and all of the other influences that can positively or negatively affect our way of doing things. It will proactively address the challenges of climate change and peak oil and the needs of future generations. It strives to reduce risk to the community and to maintain a cohesive, strong public spirit in times of adversity or stress.

To do so successfully, a set of overarching goals must be adopted and their objectives met. This is an ongoing commitment.

It is anticipated that Essex will not experience significant population growth for the foreseeable future. This provides the opportunity to reflect on our future, the impact of outside forces on our quality of life and the need to maintain and enhance our sense of community. A sustainability action plan is not a panacea, but it does help us to focus on the future we hope to attain.

Essex will also see an aging demographic, as the “Babyboomers” move up through middle and old age. Housing demands will shift from the market preferences of young families and middle age groups to those of seniors. There will be a need for more compact housing, a higher level of convenience services in home and in the neighbourhoods and a greater need for in home care. Municipal response, in the form of expanded services and infrastructure improvements, must be flexible enough to provide for the needs of seniors over the next 20 years, but be sustainable enough to serve other age groups, as the demographic balance is restored over time.

## 2.0 THE BROAD PRINCIPLES

### 2.1 Vision Statement

The Town of Essex is a community which provides for the long term social, environmental, economic and cultural needs of its residents, while respecting the natural environment, natural resources and the natural processes that sustain us.

### 2.2 Our Goals

1. We will respect and enhance our community values, the health of our residents and the natural environment;
2. We will strive to meet the basic needs of our residents in a healthy and safe environment, with adequate food, affordable housing, opportunities for employment and access to education, balanced transportation and recreation;
3. We will maintain an environmentally sustainable community, minimize our contribution to waste and natural degradation and use our land, resources and energy most efficiently;
4. We will show civic leadership through green, eco-friendly practices, the management of our resources and procurement strategies;
5. We will support the principles of smart growth when considering major transportation and land use submissions;
6. We will foster public awareness of the need to adopt sustainable core values and principles.

### 2.3 Questions

How do we achieve the above-stated goals? In many ways, we have already taken steps needed to satisfy them. To date we have:

1. Adopted a new comprehensive Official Plan for the Town, which incorporates sustainability principals and policies;
2. Completed an energy audit for municipal buildings (2008);
3. Undertaken a public opinion survey concerning energy conservation and use (2008);

4. Secured Federal Gas Tax monies for infrastructure improvements (2008-);
5. Completed an asset management plan which uses life cycle costing;
6. Joined Partners for Climate Protection, an initiative of the Federation of Canadian Municipalities (2007);
7. Adopted administrative practises devoted to energy conservation and cost-savings (see Part 2 of this action plan for specific examples).

But it is necessary to explore options in greater detail for discussion. The following table lists the basic areas for consideration in order to establish the broad objectives and possible actions to achieve these goals.

Table 1- Sustainability Issues

Issue Area	Description
Affordability in Housing	How do we make living in our community affordable, flexible and sustainable for residents?
Archaeology and Heritage	How will our heritage be supported and enhanced ?
Built Environment	How will we develop and renew buildings, neighbourhoods and facilities that will continue to make our community cohesive, live-able and sustainable?
Economic Development	How will we create a strong local economy and develop and maintain successful, resilient businesses that help move the community towards sustainability?
Energy	How will we meet our community's energy needs in an efficient sustainable way, while managing greenhouse gas emissions and air quality?
Food	How will we help to ensure a nutritious and sustainable food supply that maximizes opportunities to build the economic capital of the local community?
Governance & Partnerships	How will we and other stakeholders organize and collaborate in the community wide implementation of the SAP?
Health and Social	How will we help to meet the health and social (physical, mental and spiritual) needs of the community?
Learning	How will we help to meet resident needs for lifelong learning?
Materials Management and Solid Waste	How will we meet our community's need for material supply and disposal through the most efficient use and reuse of sustainable materials and keeping waste out of the natural environment?
Natural Areas	How will ecosystem integrity and biodiversity be protected and,

Issue Area	Description
	where possible, restored in our community/region?
Recreation & Leisure	How will recreation and leisure activities for both residents and visitors be delivered to exceed expectations while protecting the environment?
Transportation	How will we move residents, employees, visitors, and materials to, from and within the community in a more sustainable manner?
Water	How will we provide a dependable supply of high quality water in a way that maintains healthy aquatic environments and uses water efficiently?

### 3.0 SUSTAINABILITY OBJECTIVES AND ACTIONS

In general terms, the Town of Essex is currently taking sustainability actions on different fronts, even if such actions are not identified as such. But they are relatively uncoordinated with no overall corporate wide mandate or plan of action. In this section, objectives and actions to meet the six sustainability goals are identified for further discussion, under the same headings set out in Table 1.

It is recommended that the Chief Administrative Officer and department heads first determine the necessary set of actions to progress to sustainability in municipal operations. Each department head would then review with his/her key staff members the departmental initiatives to be implemented and the timetables to achieve their respective objectives. Progress in achieving municipal goals would be set out in an annual report to Council, a municipal report card.

The actions listed below are for discussion. They are not all inclusive nor are they necessarily the best options. They must be considered within the context of the sustainability goals adopted, their financial feasibility and cost benefit, their social benefit, potential staffing demands and the available funding opportunities from other levels of government.

#### 3.1 Affordability in Housing

*Objective: The Town of Essex will strive to maintain long term housing affordability and housing sustainability for its residents.*

##### 3.1.1 The Official Plan:

encourages a variety of residential densities and types of housing accommodation;

sets a minimum target for housing intensification throughout the community;

promotes home based businesses;

recommends the use of green technology in energy use and dwelling energy efficiency;

provides broader options for community improvement programmes to address brownfield redevelopment, new energy efficiencies in residential and non-residential land use and housing renewal.

### 3.1.2 Future Actions for Consideration

- i) Adopt a new comprehensive zoning by-law to permit flexibility in residential densities and housing types for new subdivisions and for infill properties;
- ii) Zone for secondary suites and for residential accommodation in town centres;
- iii) Encourage co-operative housing and non-profit housing by groups such as Habitat for Humanity, by acquiring and setting aside municipal lands for such purposes;
- iv) Reduce development charges and/or permit fees for non-profit housing in core areas or green initiatives in new developments;
- v) Use community improvement incentives for residential rehabilitation, intensification and greater energy efficiencies;
- vi) Encourage the construction industry to adopt energy efficiency guidelines such as LEED or Energystar.

## 3.2 Archaeology and Heritage

*Objective: The Town of Essex values its heritage and will work with organizations to protect and preserve significant buildings and enhance our cultural heritage.*

### 3.2.1 The Official Plan:

encourages the identification and management of heritage resources;

incorporates heritage conservation into the planning approval process and requires compatibility between proposed new development and an identified heritage resource;

requires archaeological assessments to be conducted where new development might impact on areas of archaeological significance.

### 3.2.2 Future Actions for Consideration:

- i) Work with the Municipal Heritage Committee to develop a formal heritage inventory and conservation policies;

- ii) Explore the giving of municipal heritage grants and awards to encourage heritage conservation;
- iii) Work with the Ministry of Culture to identify areas of archaeological interest and create an Archaeological Master Plan to preserve and enhance these resources;
- iv) Develop programmes and partnerships with other organizations that will engage youth and seniors in community-building and heritage projects e.g. heritage building restoration, creation of municipal gardens and the development landscaped streetscapes to complement heritage buildings and streets.

### 3.3 Built Environment

*Objective: The Town of Essex will act to preserve the built environment in sustainable, energy efficient and cost-effective manner.*

#### 3.3.1 The Official Plan:

expands community improvement policies related to the provision for non-motorized transportation, energy efficiency and opportunities for new employment in addition to the more conventional goals of a CIP;  
Identifies potential community improvement areas and prioritizes them;

expands site plan control mandates to consider streetscape improvements and other off-site improvements related to non-motorized vehicle parking, facilities for persons with disabilities and the massing and conceptual design of buildings;

promotes compact urban form and intensification.

#### 3.3.2 Future Actions for Consideration:

- i) Complete a review of existing building and land use conditions in delineated CIP areas and establish a formal priority list of CIP actions;
- ii) Explore CIP funding options and sources with the County;
- iii) Continue with the upgrading of municipal services in accordance with an asset management plan;

- iv) Encourage urban infilling through new housing and mixed use developments and Brownfield redevelopment to make better utilization of the existing physical infrastructure and schools;

### 3.4 Economic Development

*Objective: The Town of Essex will provide services and infrastructure for broad based employment activities, explore investment opportunities and proactively assist in the establishment of new businesses.*

#### 3.4.1 The Official Plan:

designates employment lands (commercial/industrial/business park lands) in recognition of present and future needs;

provides for appropriate infrastructure and an appropriate level of municipal services;

can require the submission of a market impact assessment to determine the impact of new commercial development on existing commercial activities and on the town centres.

#### 3.4.2 Future Actions for Consideration:

- i) Develop guideline plans for the key urban centres, including the identification of the area's economic strengths and weaknesses, the opportunities for new investment and the necessary strategies to stimulate new investment in employment uses;
- ii) Examine the opportunities for OP land use redesignation from Residential to employment lands within Essex and Harrow Centres;
- iii) Explore opportunities to integrate farm support industries and services into the settlement areas to take better advantage of the strong agricultural activities throughout the municipality;
- v) Create an economic development committee (EDC) of civic leaders to identify investment opportunities and incentives to attract industry, maintain a healthy rural economy and create a diversified local economy;
- vi) Encourage the Harrow town centre to form a Business Improvement Area;

- vii) Work with local business leaders and the EDC to identify the town's strengths and weaknesses in attracting and maintaining employment activities;
- viii) Work with organizations dedicated to the protection and enhancement of local farming;
- ix) Look at the potential of local arts, culture and heritage as employment generators.

### 3.5 Energy

*Objective: The Town of Essex will reduce its green house gas emissions through energy conservation, by maximizing energy efficiency and by reducing our use of and dependence on finite natural resources.*

#### 3.5.1 The Official Plan:

encourages energy conservation through energy efficient new construction and rehabilitation;

encourages partnering with other municipalities, agencies and organizations to find new ways to achieve sustainability in energy use;

endorses the adoption of LEED standards in building construction and in neighbourhood design;

supports non-motorized transportation and compact urban form.

#### 3.5.2 Future Actions for Consideration:

- i) Determine our municipal carbon footprint (see Appendix "A") and set that as the baseline for future action on energy savings and consumption of finite natural resources;
- ii) Set specific goals to reduce greenhouse gas emissions and increase energy efficiency by set amounts e.g. reduce GHG emissions by 10% by 2015 and increase energy efficiency by 20% in the same period.
- iii) Implement the recommendations of the MCW Custom Energy Solutions Feasibility Study (Feb 2009);
- iv) Adopt LEED or similar design guidelines for new municipal building construction and retrofitting;

- v) Adopt an anti-idling strategy for municipal vehicles, tire inflation and fuel efficient driving protocols;
- vi) Work with ELK to encourage community wide acceptance of energy saving initiatives and to explore further energy savings in municipal facilities and operations;
- vii) Invest in alternative energy options for heating, lighting and transportation;
- viii) Develop an action plan to ultimately make municipal operations carbon neutral;
- x) Set up a demonstration facility to show options for energy conservation and efficiency, e.g. an energy efficient house, an Ecopark (see Appendix "B");
- xi) Explore opportunities for acquiring green industry;
- xii) Establish a sustainability, green energy and low carbon footprint information centre.

### 3.6 Food

*Objective: The Town of Essex will work to maintain and enhance a sustainable local food supply.*

#### 3.6.1 The Official Plan:

protects agricultural lands from intrusive non-agricultural uses;

restricts non-agricultural uses to the designated settlement areas;

adopts Provincial mandates regarding farm lot severances;

incorporates minimum distance separation requirements related to the location of sensitive land uses near farm operations;

provides for a wide variety of agricultural activities.

#### 3.6.2 Future Actions for Consideration:

- i) Support the "Buy Local" programme by purchasing local products for municipal facilities and events;

- ii) Explore the potential for new agricultural support activates to enhance local agriculture;
- iii) Explore funding opportunities for resource conservation, ground water protection and erosion control;
- iv) Support and assist organizations and agencies devoted to farm stabilization and the support of local farming;
- v) Establish a farmer’s market in Essex Centre and other “eat local” initiatives with like-minded groups and agencies e.g. Windsor Essex County Health Unit and farm support organizations.

### 3.7 Governance and Partnerships

*Objective: The Town of Essex will work with agencies, other municipalities and levels of government toward the achievement of fully sustainable municipal operations and capital spending.*

#### 3.7.1 The Official Plan:

encourages cooperation with the County and adjacent municipalities in guiding new development, adopting a balanced transportation system, implementing community improvement plans and other initiatives;

requires cooperation with the Essex Region Conservation Authority in the protection of natural areas, land conservation and the preservation of ecological/biological functions;

recommends participation with Provincial ministries in the protection of agricultural lands, archaeological resources, mitigation of negative impacts on sensitive land uses and other matters of significance to the Province and the Town.

#### 3.7.2 Future Actions for Consideration:

- i) Complete the Asset Management Plan and begin life-cycle budgeting for the Town (see the description in Part 2, subsection 3.1, Asset Management and Sustainability);
- ii) Approve a Green Procurement By-law based on life cycle budgeting and carbon reduction principles;

- iii) Continue working with the County and county municipalities on a new comprehensive Official Plan for the County of Essex;
- iv) Promote the incorporation of sustainability principles into the County OP;
- v) Promote public awareness of the need for sustainability actions and invite participation in the efforts to reduce our carbon footprint on a municipal administration and, ultimately, on a community-wide basis;
- vi) Involve young people specifically in community governance to prepare new community leaders. Examine other municipal models e.g. The City of Hampton Virginia, Coalition for Youth ([http://www.hampton.gov/foryouth/iframe.html?linkfrom=ycei&bc=Young%20Voices,%20New%20Visions&link=young\\_voices\\_new\\_visions.pdf](http://www.hampton.gov/foryouth/iframe.html?linkfrom=ycei&bc=Young%20Voices,%20New%20Visions&link=young_voices_new_visions.pdf));
- vii) Promote volunteerism and community involvement in such activities as community clean-ups, environmental stewardship, schoolyard naturalization, trail blazing, environmental outreach and heritage conservation;
- viii) Establish a community link to provide information services, a database of resources, volunteer lists and no format chats about sustainability, climate change and peak oil;
- ix) Establish a Green Awards programme to recognize excellence in environmentalism and sustainability, to encourage environmental stewardship and to reward outstanding community efforts.

### 3.8 Health and Social

*Objective: The Town of Essex will strive to maintain a safe and healthy environment for its citizens and to meet the social and physical needs of the community.*

#### 3.8.1 The Official Plan:

requires the provision of buffers between sensitive land uses and hazardous and nuisance land uses;

incorporates minimum distance separation provisions between sensitive land uses and incompatible farm uses, industries, extraction activities and flood zones;

incorporates bonusing provisions for new development to enhance such features as parkland, heritage conservation, community facilities;

expands site plan control provisions to address such matters as barrier free accessibility, heritage conservation, protection of natural features and reduced light pollution;

for new development, requires the submission of support studies for such matters as noise and vibration, storm water management, built heritage impact and natural features impact.

### 3.8.2 Future Actions for Consideration:

- i) Work with local agencies, such as the Windsor Essex County Health Unit, on ways to improve community health and safety;
- ii) Recognize the changing demographics of an aging population and plan for shifting needs in service provision and physical accommodation;
- iii) Continue to adjust municipal facilities to make them barrier free;
- iv) Establish urban garden plots and explore green initiatives which promote socialization and physical activity.

## 3.9 Learning

*Objective: The Town of Essex will provide opportunities for public/private education and the efficient use of school facilities.*

### 3.9.1 The Official Plan:

recognizes the jurisdiction of the Greater Essex County District School Board and the Windsor-Essex Catholic District School Board;

encourages the placement of new schools in combination with municipal parks and recreation corridors.

provides for community serving mixed use in local schools.

### 3.9.2 Future Actions for Consideration:

- i) In the new comprehensive zoning by-law, permit the general location of public and separate schools in any zoning district, and

- ii) Permit public service and public/private educational facilities in schools during off hours to maximize the use of the school building and provide multi-use opportunities for further learning;
- iii) Establish public outreach programmes and set up class projects with the boards of education regarding sustainability education, actions and civic involvement.

### 3.10 Materials Management and Solid Waste

*Objective: The Town of Essex will minimize its waste generation and maximize its reuse and recycling of goods and resources.*

#### 3.10.1 The Official Plan:

identifies the regional landfill site and sets protective buffers between it and sensitive land uses;

requires buffer zones for sensitive land uses from other operating and closed waste disposal sites;

encourages maximization of the three r's - reduce, reuse, recycle;

#### 3.10.2 Future Actions for Consideration:

- i) Seek out new methods and practices for waste reduction and reuse in the workplace;
- ii) Reduce the municipal use of non-biodegradable products and eliminate the sale of non-biodegradable products at public events e.g. bottled water;
- iii) Mandate recycling and the use of bio-degradable and green products in contracts with community groups;
- iv) Decrease the frequency of waste pickup (the City of London's shift to a 6 day pickup schedule saved the city \$1.25 million annually); set a maximum waste pickup limit per household (use the tag system whereby property owners purchase tags for excess garbage, such monies to be used for waste recovery, public education or other green initiatives);
- v) Fully integrate collection services between Parks and Public Works where feasible;

- vi) Investigate greener alternatives to road dust and ice control, street lighting, municipal refuse containers, heating and cooling, pool chlorination and the benefits of green technology for other municipal activities and facilities.

### 3.11 Natural Areas

*Objective: The Town of Essex will assist in the protection, preservation and enhancement of natural areas*

#### 3.11.1 The Official Plan:

establishes designated Natural Environment and Wetland land use designations;

reinforces the floodplain and natural heritage overlays to protect natural areas and natural systems and to reduce flood damage;

establishes policies for the protection of wildlife habitats, woodlands, groundwater and source water and fish habitat;

promotes the use of native plant species in the landscaping of new developments;

#### 3.11.2 Future Actions for Consideration:

- i) Naturalize portions of municipal parks and other public lands;
- ii) Work with ERCA to extend wildlife corridors on public lands and to encourage them on private lands;
- iii) Expand the use of natural filters and naturalized buffers to maintain ground water quality in streams and ditches;
- iv) Consider the adoption of a tree-cutting by-law or public incentives to preserve mature trees.

### 3.12 Recreation and Leisure

*Objective: The Town of Essex will provide a broad range of recreational activities and facilities for its residents and visitors.*

#### 3.12.1 The Official Plan:

sets a minimum parkland ratio of 2.5 hectares per 1000 people;

establishes basic standards for park location and design and a minimum parkland dedication as a condition of new development;

encourages the construction of rural/urban recreationways and corridors and urban amenity areas.

### 3.12.2 Future Actions for Consideration:

- i) Complete the parks and recreation master plan;
- ii) Set specific annual goals for the construction of trails and recreationways;
- iii) Work with the County and abutting municipalities on a comprehensive recreationway master plan;
- iv) Construct an Ecopark (see Appendix "B") for recreational and educational purposes;
- v) Look at other green themed alternatives for recreational facilities and attractions e.g. splash pads using recycled water, rainwater reservoirs for irrigation;
- vi) Continue to develop promotional/marketing plans to attract residents and visitors to municipal recreational facilities and parks;

## 3.13 Transportation

*Objective: The Town of Essex is committed to the creation and maintenance of a balanced and sustainable transportation system.*

### 3.13.1 The Official Plan:

emphasizes the need for a balanced transportation system serving people in motor vehicles, pedestrians, bicyclists and the physically disadvantaged;

provides for the creation of safe, convenient, clearly delineated bicycle and pedestrian networks both on and off road;

establishes policies for off street parking, for traffic calming and for reduced parking space requirements under specific conditions;

provides for the dedication of lands for public rights of way (including connecting corridors and trails) and establishes minimum widths for local, collector and arterial roads for a balanced transportation system;

places emphasis on town centres as primary places of commerce, gathering and social interaction and sets policies for site plan and rezoning approval to protect and enhance those functions.

### 3.13.2 Future Actions for Consideration:

- i) Add to the zoning by-law provisions for bicycle parking and parking for the physically challenged;
- ii) Add to the zoning by-law provisions for reduced parking space requirements in accordance with OP policies to encourage alternative transportation;
- iii) Continue with the development of a bicycle network and pedestrian walkways/trails, both locally and as part of a county-wide initiative and encourage residents to use alternative transportation;
- iv) Consider traffic measures to enhance pedestrian and bicyclist safety;
- v) Establish programmes with the boards of education to encourage travel to school by non-motorized methods;
- vi) Review opportunities for a regional transit system between Windsor and the Town;
- vii) Consider an anti-idling by-law.

## 3.14 Water

***Objective:** The Town of Essex will maintain a dependable and safe water supply, make efficient use of its fresh water and work with other agencies for a healthy aquatic environment.*

### 3.14.1 The Official Plan:

requires pre-submission consultation with ERCA and MOE prior to development review to protect groundwater, minimize nutrient flows, manage stormwater and protect water supplies;

encourages the Town to assist ERCA in the establishment of groundwater monitoring stations and set restrictions to mitigate ground water impacts and protect natural areas and their hydrological functions;

protects existing watercourses and minimizes development encroachments into natural areas and along waterways.

#### **3.14.2 Future Actions for Consideration:**

- i) Continue to work with ERCA on source water protection and with ERCA and farm organizations on ground water protection;
- ii) Educate the public about the importance of fresh water conservation, grey water and rain water recycling and waste water reduction.

## 4.0 FIRST STEPS

Integrating sustainability principles into day to day thinking and long term planning, in other words, “walking the walk”, is not a quick and simple process. It requires top down commitment and co-ordination and grassroots participation. Ultimately budgeting, strategic planning and resource allocation will have a strong sustainability decision-making basis and the Town will make every effort to look for sustainability opportunities and support funding. Progress toward sustainability is measured in years; progress is continual and it needs to be monitored and assessed on a regular basis.

As stated throughout this report, it is intended that sustainability actions be taken within the municipal administration and that the Town demonstrate to its residents the value of a sustainable community by example. As solid progress is made, public outreach and education will follow, as staff resources are available and community partnerships formed.

Building partnerships is a strategic long term component of the overall plan of action. It begins with co-operation with and assistance from organizations and agencies normally associated with municipal activities, such as ERCA, Essex Heritage Committee and the Windsor Essex County Health Unit. It evolves through greater interaction with civic leaders, local organizations with specific mandates dealing with sustainability issues, community building, economic development and social support. Throughout this effort, public comment and greater levels of participation will be sought and welcomed.

### 4.1 Priorities

Movement toward sustainability can look quite overwhelming and it must be recognized that it will be a long term and ongoing process. The general actions set out in [Section 3](#), above, cannot be evaluated and addressed all at once. It is necessary to group them under broad themes with first priorities agreed upon.

For the first steps, the following order of investigation is recommended:

1. Determining our greenhouse gas emissions – carbon footprint (assistance offered through Partners for Climate Protection, of which the Town is a member).
2. Deciding what actions we can take to reduce it and setting reduction targets, including implementation of the 2008 municipal energy audit recommendations.
3. Determining how we can reduce our dependence on other finite and non-renewable resources.
4. Implementing a green procurement by-law and life cycle budgeting.
5. Undertaking individual departmental reviews of short term (then long term) sustainability actions that can help achieve our stated goals.
6. Evaluate, refine, and augment the action items set out in Section 3.

7. Chose the most feasible, beneficial and cost effective actions; set priorities and timetables for their implementation.
8. Working with organizations and agencies develop and formalize the public outreach and education phase of this plan.

## 5.0 CONCLUSIONS

It is neither quick nor simple to integrate sustainability practices into day to day actions or long term decision-making, but it is a necessary task. The consequences of climate change, peak oil, resource degradation, changing economies and demographics could have quite negative impacts on our lives and that of future generations. The evolution of the Town of Essex as a sustainable community will take time and effort, but it will reward us with a healthier community and a greater confidence about our future.

## APPENDIX "A"

### MUNICIPAL CARBON FOOTPRINT

(Source: State of California EPB)

A **carbon footprint** is the measurement of total greenhouse gas emissions directly and indirectly contributed by a person, household, business, facility, or community over the course of a year. It takes into account greenhouse gas emissions from stationary combustion of fuel in a fixed location, mobile combustion of fuels from transportation sources and off-road equipment, process emissions from physical or chemical processing, fugitive emissions that are not physically controlled, and indirect emissions from electricity usage. A life-cycle approach to measuring a carbon footprint also estimates cradle-to-cradle greenhouse gas emissions associated with food choices and goods and services such as clothing, furniture and appliances.

A **carbon calculator** estimates carbon footprints. It measures greenhouse gas emissions for a snapshot in time. Carbon calculators are used to calculate **greenhouse gas inventories** of facilities or operations in order to determine the amount of greenhouse gases produced for a specified year. The results can be used to prepare plans for actions to reduce the amount of greenhouse gas emitted annually or by a target year.

Being **carbon neutral**, or having a net zero carbon footprint, refers to achieving net zero carbon emissions by balancing a measured amount of carbon released with an equivalent amount reduced, sequestered or offset emissions.

**Greenhouse gas (GHG)** emissions are those gaseous constituents of the atmosphere, both natural and anthropogenic (caused by human activity), that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself, and by clouds. This property causes the "greenhouse effect." Water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and ozone (O<sub>3</sub>) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances. Still other greenhouse gases are sulphur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). (Source: Intergovernmental Panel on Climate Change)

**Modeling tools** estimate greenhouse gas emissions and potential reductions for various scenarios. They are typically used for climate action planning.

**Protocols** provide a standardized set of guidelines, methodologies and calculations to quantify and report greenhouse gas emission inventories.

## **Carbon Calculators for Local Governments**

Although the field is evolving, new tools are emerging to make the process of calculating carbon emissions from one's home, business trip or city hall easier and more accurate. The following provides an overview to help understand the growing field of carbon calculators and carbon footprints.

### **Climate Registry Information System (CRIS) – from The Climate Registry**

[www.theclimateregistry.org/resources/climate-registry-information-system-cris/](http://www.theclimateregistry.org/resources/climate-registry-information-system-cris/)

Several cities and counties have historically used the California Climate Action Registry's On-Line Tool (CARROT) to calculate and report greenhouse gas emissions. However, the California Climate Action Registry is no longer registering greenhouse gas emission inventories. The California Climate Action Registry formed The Climate Registry, which offers the next generation of online reporting through The Climate Registry Information System (CRIS). Cities and counties can use CRIS to report their greenhouse gas emission inventories, which is third-party certified and available for public review.

### **Clean Air and Climate Protection (CACP) Software 2009**

[www.icleiusa.org/cacp](http://www.icleiusa.org/cacp)

Local governments can use the Clean Air and Climate Protection (CACP) software to determine greenhouse gas emissions and criteria pollutants from government operations and communities. CACP is a downloadable spreadsheet, which ICLEI – Local Governments for Sustainability members can use to input aggregate information about energy usage, waste generation, and vehicle miles traveled (VMT) to calculate a greenhouse gas emission inventory. CACP was updated in April of 2009 to include the calculation methods of the Local Government Operations Protocol (LGOP), adopted in 2008 by the California Air Resources Board.

### **Local Government Operations Protocol**

[www.arb.ca.gov/cc/protocols/localgov/localgov.htm](http://www.arb.ca.gov/cc/protocols/localgov/localgov.htm)

Since both the Climate Registry Information System and Clean Air and Climate Protection calculators require a membership fee, some local governments may be interested in

calculating their own greenhouse gas emission inventories. The Local Government Operations Protocol (LGOP) provides a standardized set of guidelines, methodologies and calculations for local governments to quantify and report greenhouse gas emission inventories from municipal operations. While there is not a calculator for the LGOP, it provides the option for a 'free' method to calculate greenhouse gas emissions from municipal operations.

## **Other Resources**

### **Greenhouse Gas Equivalencies Calculator**

[www.epa.gov/cleanenergy/energy-resources/calculator.html](http://www.epa.gov/cleanenergy/energy-resources/calculator.html)

This calculator, developed by the U.S. Climate Technology Cooperation, expresses quantities of greenhouse gases in terms of metrics such as number of cars, gallons of gasoline, acres of forest, and others.

### **Recycled Content (ReCon) Tool**

[www.epa.gov/climatechange/wycd/waste/calculators/ReCon\\_home.html](http://www.epa.gov/climatechange/wycd/waste/calculators/ReCon_home.html)

The Recycled Content (ReCon) Tool calculates greenhouse gas emissions and energy consumption resulting from purchasing recycled products. For example, the tool estimates the greenhouse gas emissions and energy benefits of purchasing office paper with 35 percent recycled content instead of 25 percent recycled content...

### **WAste Reduction Model (WARM)**

[www.epa.gov/climatechange/wycd/waste/calculators/Warm\\_home.html](http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_home.html)

The WAste Reduction Model (WARM) calculates and totals greenhouse gas emissions of baseline and alternative waste management practices—source reduction, recycling, combustion, composting, and landfilling.

### **Center for Urban Forest Research (CUFR) Tree Carbon Calculator**

[www.fs.fed.us/ccrc/topics/urban-forests/](http://www.fs.fed.us/ccrc/topics/urban-forests/)

The CUFR Tree Carbon Calculator for California climate regions produces carbon storage and sequestration values for a tree plus the associated energy conservation and emission reductions. The CUFR Tree Carbon Calculator is the only tool approved by the California Climate Action Registry's Urban Forest Project Reporting Protocol for quantifying carbon dioxide sequestration from tree planting projects.

### **Energy Star Portfolio Manager**

[www.energystar.gov/index.cfm?c=evaluate\\_performance.bus\\_portfoliomanager#manage](http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager#manage)

Portfolio Manager is an interactive energy management tool that allows users to create an inventory of greenhouse gas emissions from public buildings, set efficiency investment priorities, identify under-performing buildings, verify efficiency improvements, and receive EPA recognition for superior energy performance.

Portfolio Manager generates a Statement of Energy Performance for each building, summarizing important energy information including carbon emissions.

### **Household Carbon Footprint Calculators**

<http://coolcalifornia.org/article/carbon-calculator>

There are many different household carbon footprint calculators available to help individuals gain a better understanding of the greenhouse gas emissions related to personal choices made on a daily basis. The Cool California Carbon Footprint calculator takes a life-cycle approach to measuring carbon footprints, including direct and indirect greenhouse gas emissions from transportation, household energy, food, goods and services. The calculator also acts as a benchmarking tool where individuals can compare their results to typical households in their city or region and the U.S. or global average.

### **General Information**

ICLEI – Local Governments for Sustainability - [www.icleiusa.org/](http://www.icleiusa.org/)

The Climate Registry - [www.theclimateregistry.org/](http://www.theclimateregistry.org/)

Local Government Commission - [www.lgc.org/issues/climatechange.html](http://www.lgc.org/issues/climatechange.html)

CAPCOA - [www.capcoa.org/climatechange/](http://www.capcoa.org/climatechange/)

Flex Your Power – [www.flexyourpower.com](http://www.flexyourpower.com)

## APPENDIX "B"

### ECOPARK EXAMPLE

<http://www.fondscommunautaireaviva.org/ideas/acf1293>



#### **EcoPark: an Educational Wonderland**

Source: Boys and Girls Club of London

From what used to be a gravel pit, emerged the Gail Graham EcoPark, a 10 hectare, self-sustainable ecological gem located northeast of London, Ontario. The concept created is to bring a unique and integrative environmental, recreational and educational experience that is universally accessible to families and children in need. The current main use of EcoPark is for the Boys and Girls Club of London's Summer Day Camp program. The natural development of the park is important to further fit the needs of the Boys and Girls Club of London's children's programs to introduce the resources and facility to other non-profit, service, school and other groups throughout the London community.

#### **Gail Graham EcoPark Mission and Values:**

- Be universally accessible to differently-abled children, youth and adults.
- Provide a "From the Curb Back to the Earth" Recycling Program which shows visitors what happens to their recyclables as they leave their home and travel to the TRY Recycling plant next door and is produced into reusable materials used in such places as EcoPark.
- To provide a lookout to TRY Recycling at EcoPark to give visitors a glance at what occurs at the plant.
- The park will provide intergenerational programming including activities for children to seniors, ensuring equal access and inclusion to all of those in need.
- To keep the uniqueness of the park, duplicating other facilities or trying to be all things to all people will be prohibited at EcoPark.

- EcoPark will be based on environmental and green self-sustainable principles in all aspects, by maintaining the balance between education and recreation, ensuring the park will not be overused.
- By limiting the use throughout EcoPark it can ensure the environment attracts wildlife and protects a wide variety of local ecosystems.

#### **Gail Graham EcoPark Goals for Growth:**

- Bring alternative energy systems such as a solar farm and wind turbines to power EcoPark to decrease its carbon footprint and promote conservation to its visitors.
- Provide a vegetable garden and an orchard which can be used to feed park participants, donate to food banks and used in programs to create non-perishable food items for sale.
- Butterfly and sensory gardens will not only provide park beautification but also allow visitors with special needs the chance to enjoy nature that has been adapted for their participation.
- Provide an Island Study Area that will give children and families in need the chance to get up close and personal with aquatic life and ecosystems and participate in hands-on learning techniques.
- Display lookout points throughout the park to allow visitors the chance to observe nature and farm land in the area and learn first hand the different ecosystems and habitats located in the area where they live.
- Provide nature and fitness trails throughout the park and links to nearby parks and protected areas for park participants to explore and observe wildlife while immersed in vegetation.
- Create a permanent Interpretive Center which will provide a sheltered classroom facility and storage for environmental education supplies and informational displays.
- Allow school groups to visit EcoPark on educational field trips.
- Be used by other non-profit organizations who can utilize this unique space for their members to participate in recreational, social and educational activities within the park.
- EcoPark's design will be beneficial for therapeutic purposes giving visitors the chance to enjoy the outdoors, escape from the norm with a change in scenery and strengthen their mind, body and soul.

The Boys and Girls Club of London has over 80 partnerships in the London community including TRY Recycling, Upper Thames River Conservation Authority and Fanshawe College where resources can be utilized for the growth of the park. The development of EcoPark and the expansion of programs for children and youth will continue to teach the fundamental importance of environmental conservation and responsibility to youth and their families in the London community.



### **A Beautiful Fall Day**

Taking in the fall colours, overlooking the pond at EcoPark.

octobre 15, 2009 @ 1:57



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### **Exploring EcoPark**

Two little girls learn first hand the wonder of nature at EcoPark.

octobre 15, 2009 @ 3:21



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### **Learning to Fish**

Children can participate in many interesting outdoor activities, like fishing, that they wouldn't have the chance to do in their everyday lives.

octobre 15, 2009 @ 3:22



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### **Outdoor Adventures**

Boys and Girls Club summer campers enjoy rafting, immersed in vegetation at EcoPark,