ENERGY & GREENHOUSE GAS MANAGEMENT PLAN

City of Saskatoon

June 2009

The Sheltair Group

EXECUTIVE SUMMARY

The development of the Saskatoon Energy and Greenhouse Gas Management Plan is a collaborative initiative by the City of Saskatoon and Road Map 2020 that provides a framework to manage greenhouse gas emissions and reduce energy consumption. The plan fulfills Milestone 3 of the Federation of Canadian Municipalities' Partners for Climate Protection Program (PCP). The City of Saskatoon has established PCP targets, which are to:

- Reduce corporate (municipal) emissions by 10% below 1990 levels by 2013, and
- Reduce community emissions by 6% below 1990 levels by 2013.

To achieve these targets, the Plan is divided into four parts:

- Saskatoon's current context with respect to energy consumption and greenhouse gas emissions, (Chapter Two);
- the vision, goals and actions that have been developed to achieve the PCP targets (Chapter Three);
- the implementation plan (Chapter Four); and
- the monitoring framework (Chapter Five).

Chapter Two describes the physical characteristics of Saskatoon, demographics and the built environment. This section also provides baseline information on energy consumption and greenhouse gas emissions, based on an energy inventory produced by ICLEI Energy Services in 2005. Between 1990 and 2003 emissions from Saskatoon's municipal operations increased by 23%. In the community, emissions increased by 45%. The baseline information is used to forecast how energy and greenhouse gas emission trends might behave in the future, if current consumption patterns remain similar.

Chapter Three provides the vision and the goals (see side bar) that were developed through a comprehensive community process. This was a collaborative activity that included the input of Road Map 2020 Sustainability Champions, Task Group members, representatives of other community organizations, and City staff, resulting in the following vision statement:

Our vision is to become a leader in renewable energy, energy conservation and management of greenhouse gas emissions.

This process provided the context to develop actions and programs to meet the PCP targets. The programs have been specifically designed to address municipal or community actions, and estimate energy savings and greenhouse gas emissions.

Chapter Four introduces the framework to implement the Energy and Greenhouse Gas Management Plan. The implementation strategy is organized into two components - corporate and community-wide. The strategies focus primarily on energy efficiency and education outreach, with separate programs for corporate and community segments. It also provides instruction for program delivery, reporting requirements and the necessity of partnering with individual sectors to increase the effectiveness of program delivery.

Chapter Five provides the monitoring framework to track the effectiveness of the Energy and Greenhouse Gas Management Plan. Based on the six goals developed through the community process, indicators have been developed that can be measured against the baseline year of 2003 to see how Saskatoon is progressing toward meeting the targets.

This plan also satisfies Recommendation 38 of the Saskatoon State of the Environment Report, which was produced by the Saskatoon Environmental Advisory Committee and presented to Council in 2001.

The physical characteristics of Saskatoon such as land use, demographics and the built environment directly affect energy consumption and greenhouse gas emissions.

The Plan's Goals:

Goal 1: Build an Energy-Aware Community

Goal 2: Create a Healthy Community

Goal 3: Achieve a Diverse and Environmentally Sustainable Energy System

Goal 4: Design and Build Green and Smart

Goal 5: Be Responsible Stewards of Our Resources

Goal 6: Lead by "Green" Example

City of Saskatoon

ACKNOWLEDGEMENTS

The authors of this report would like to thank Road Map 2020 Sustainability Champions, Task Group members, participants of Road Map 2020 forums, City of Saskatoon staff and all citizens that provided their input during the public consultation phase.

This report was prepared by The Sheltair Group in consultation with City of Saskatoon staff and the community.

Saskatoon City Skyline at Night
Source: Tourism Saskatoon
www.tourismsaskatoon.com

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DEFINITIONS AND ABBREVIATIONS

Abbreviations

BAU	Business as Usual
CBIP	Commercial Building Incentive Program
CEP	Community Energy Plan
CO_2	Carbon Dioxide
DSM	Demand Side Management
EGH	Energuide for Houses
FCM	Federation of Canadian Municipalities
GHG	Greenhouse Gas
GJ	Gigajoules
LEED	Leadership in Energy and Environmental Design
MNECB	Model National Energy Code for Buildings
NOx	Nitrogen Oxides
PCP	Partners for Climate Protection
SFD	Single Family Dwelling
SOV	Single Occupancy Vehicle
tCO_2e	Tonnes Carbon Dioxide Equivalent
VKT	Vehicle Kilometres Travelled

Definitions

Built environment - refers to the man-made surroundings of an urban environment consisting of buildings and infrastructure such as roads, utilities and other improvements, that form the physical character of a city.

Carbon sink - a natural reservoir for carbon. Carbon sinks are typically plants and other organisms that use photosynthesis to remove carbon dioxide from the atmosphere and incorporate it into their structure. The ocean is another natural carbon sink – carbon dioxide (CO_2) is absorbed into the ocean from the air and is stored as dissolved CO_2.

Carbon dioxide equivalents (CO_2e) - refers to the total equivalent greenhouse gases, weighted by their global warming potential. Different gases have different global warming potentials. Global warming potential is a relative measure used to compare the ability of a gas to trap heat in the atmosphere relative to another gas. For example:
1 unit CO_2 = 1 CO_2e
1 unit CH_4 = 23 CO_2e
1 unit N_2O = 310 CO_2e

Demand side management (DSM) - refers to a wide range of actions to reduce demand for electricity (or gas) and/or to shift demand from peak to off-peak times. DSM is an important tool to help balance supply and demand in electricity markets, to reduce price volatility, to increase system reliability and security, to rationalize investment in electricity supply infrastructure and to reduce greenhouse gas emissions.

District energy system (DES) - also known as community energy systems, it distributes heat generated in a central location,

such as waste heat from a power plant or industrial process, via underground pipes to residential or commercial properties to meet individual heating requirements. A district heating plant is more efficient and has better pollution controls than small, individual boilers.

Food security - the ability of a geographic region, to grow food to sustain its population, reducing its vulnerability to fluctuating global food markets. Food security is being viewed as a positive step toward reducing the energy footprint of food, as in many parts of the world, agriculture is dependent on large fossil fuel inputs (fertilizers) as well as fuel costs to ship products to market.

Greenhouse gas emissions (GHGs) - air emissions that contribute to the greenhouse effect (global warming). Some greenhouse gases occur naturally in the atmosphere, while others result from human activities such as burning of fossil fuels such as coal. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. These gases allow sunlight to enter the atmosphere freely. When sunlight strikes the Earth's surface, some of it is reflected back towards space as infrared radiation (heat). Greenhouse gases absorb this infrared radiation and trap the heat in the atmosphere.

LEED - the nationally accepted benchmark for the design, construction, and operation of high performance energy efficient green buildings.

Smart Growth - an urban planning and transportation theory that concentrates growth in the center of a city to avoid urban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including mixed-use development with a range of housing choices.

FOREWORD

Saskatoon City Council is committed to fostering and supporting a healthy, vibrant, and inclusive community. One of our 11 core strategies is to exercise responsible, progressive environmental management in the provision of all civic services. Beyond that, I know that we need to work together as an entire community to be progressive in our approach to energy use and greenhouse gas reduction. The City of Saskatoon is proud to be a member of the Partners for Climate Protection program, a network of Canadian communities committed to reducing greenhouse gas emissions and acting on climate change.

The Energy and Greenhouse Gas Management Plan provides us with the blueprint to achieve our greenhouse gas reduction targets both corporately and within the community as a whole. We look forward to working with a broad group of partners to achieve a shared vision of a community that is energy-aware, healthy, and uses resources responsibly. The City of Saskatoon will lead by example, but we know that leadership will be evident throughout the community, and that only by everyone working together can we achieve real and meaningful change.

Donald J. Atchison

Mayor

1 INTRODUCTION

The PCP Program

In joining the PCP program, the City of Saskatoon voluntarily committed to complete the following five milestones:

Milestone 1: Create a greenhouse gas emissions inventory and forecast for both municipal operations and the community as a whole.

Milestone 2: Set an emissions reduction target.

Milestone 3: Develop a greenhouse gas emissions plan to set out how emissions and energy use will be reduced.

Milestone 4: Implement the greenhouse gas emissions plan through collaboration amongst local government and community partners.

Milestone 5: Monitor progress and report results regarding greenhouse gas emissions.

The City of Saskatoon is providing leadership in sustainability planning by developing this Energy and Greenhouse Gas Management Plan. The Plan fulfils Milestone 3 of the Federation of Canadian Municipalities' Partners for Climate Protection (PCP) program. Development of the Energy and Greenhouse Gas Management Plan also satisfies recommendation 38 of the Saskatoon State of the Environment Report, a report produced by the Saskatoon Environmental Advisory Committee to Council in 2001.

Background

The City of Saskatoon is committed to becoming a sustainable community and has developed the Energy and Greenhouse Gas Management Plan in order to improve the sustainability of the community by identifying energy efficiency and renewable energy opportunities. This commitment is clearly articulated in the City's Development Plan. The Plan states that:

"A sustainable community is one that meets its needs today without limiting the ability of future generations to meet their needs. This means a community that sustains its quality of life and accommodates growth and change by balancing long term economic, environmental and social needs."[1]

The City's Strategic Plan emphasizes the importance of environmental management. Specifically, the Plan identifies the following core strategy:

Responsible, Progressive Environmental Management

Saskatoon will be progressive in protecting and enhancing the beauty of our environment and it will continue to promote responsible use of natural resources[2]

The City of Saskatoon has already begun taking action towards achieving its commitment to becoming a sustainable community. In 2004, the City joined the Federation of Canadian Municipalities' (FCM) Partners for Climate Protection (PCP) program. The PCP is a voluntary program that encourages municipalities to reduce greenhouse gas emissions in a way that contributes to broader community sustainability objectives. The program uses a five-milestone framework to guide members' activities (see side bar).

The City has completed Milestones 1 and 2. Milestone 1, the greenhouse gas emissions inventory and forecast was completed in August 2005. Milestone 2, the greenhouse gas reduction targets were officially adopted by the City of Saskatoon in the fall of 2005. The City of Saskatoon has established PCP targets, which are to:

- Reduce corporate (municipal) emissions by 10% below 1990 levels by 2013, and
- Reduce community emissions by 6% below 1990 levels by 2013.

In 2004, the City began to support Road Map 2020, a community-wide multi-sectoral sustainability planning initiative. Through a series of forums, Road Map 2020 brought together a broad range of stakeholders that shared and learned about the successes others have had in adopting sustainable practices.

Footnotes:

[1] City of Saskatoon, 1998. City of Saskatoon 7799 Development Plan Bylaw, p.1.

[2] City of Saskatoon, 2004. City of Saskatoon Strategic Plan: Planning for the Future, p. 4.

INTRODUCTION 1

Task groups of community leaders have developed strategies and identified issues to be addressed in the Energy and GHG Management Plan.

Road Map 2020 initiatives have provided a wealth of information and a network to engage the community in development of the Energy and GHG Management Plan. Since 2004, Road Map 2020 has become an incorporated non-profit organization and has continued to lead the community engagement process throughout the development of the Energy and GHG Management Plan.

Why Manage Energy and Greenhouse Gases?

Canadians are amongst the most intensive users of energy in the world. Our climate, large distances and resource-based economy play a role in the consumption of energy. However, there are many areas where Canadians are not as energy efficient as we could be.

Our reliance on fossil fuel sources of energy poses serious challenges to our long-term economic, environmental and social sustainability. Fossil fuel supplies are becoming more restricted and prices are rising. This increases uncertainty around supply due to availability and political influence, leaving us vulnerable to price shocks. In addition to potential economic impacts, burning fossil fuels releases air pollutants which can have adverse health impacts, and greenhouse gases which contribute to global climate change. We have a responsibility to manage our energy consumption and work together to minimize our own impact on the global ecosystem.

On a per capita basis, we use more than two times the energy used in European countries and six times more than the world average. Human activities such as the burning of fossil fuels and the removal of carbon sinks (see sidebar) are resulting in increased concentrations of greenhouse gases in the atmosphere, thus contributing to global climate change.

Governments across the globe are recognising the serious threat that a temperature change of even a few degrees poses to life on this planet. Furthermore, lack of precipitation resulting from climate change may threaten the agricultural sector, which is an important part of Saskatoon's economy.

International treaties have been negotiated by national governments to address climate change. At the local level, municipal governments are doing their part by voluntarily joining the PCP program. As part of this program, communities are implementing plans that will help them reduce energy consumption and greenhouse gas emissions.

Community energy management involves adopting strategies with two main goals: to improve energy efficiency and to reduce potentially negative impacts resulting from energy consumption (i.e., greenhouse gas and other harmful air emissions). By improving energy management, communities can meet their energy needs reliably while at the same time reducing the associated economic, environmental and social impacts. Improved management will also contribute to broader community objectives such as a strong economy, healthy environment, and a socially vibrant community.

The City of Saskatoon is one of over 150 municipalities and regional governments in Canada that have now joined the PCP program. The only other member of the program in Saskatchewan is Regina, which has completed Milestone 3.

What are carbon sinks?

A carbon sink is a natural reservoir for carbon. Carbon sinks are typically plants and other organisms that use photosynthesis to remove carbon dioxide from the atmosphere and incorporate it into their structure. The ocean is another natural carbon sink – carbon dioxide (CO_2) is absorbed into the ocean from the air and is stored as dissolved CO_2.

1 INTRODUCTION

Key Elements of the Plan

The City of Saskatoon has recently created the Strategic Services Branch, a branch within the Insfrastructure Services Department. Their purpose is to better manage City assets over the long term, with a focus on energy saving initiatives such as life-cycle analysis.

The main body of the Energy and GHG Management Plan is a high-level summary of findings and recommendations, with detailed technical information in the appendices. It provides an action plan for both the City of Saskatoon's municipal operations and the community as a whole.

Municipal operations focuses on the municipal services and facilities managed by the City of Saskatoon. In the course of providing services to residents and visitors, the City consumes energy through the construction, management and delivery of municipal services, and the operation of facilities. This gives the City the opportunity to institute and manage energy reduction measures and position itself as a leader in reducing greenhouse gases.

Community consumption of energy is shaped by land-use practices, transportation systems, energy efficiency of the buildings, and the source of energy (e.g., the systems and fuel used to generate electricity). The City of Saskatoon influences these activities through land-use designations, bylaws, energy use standards, development charges, zoning requirements, relationships with local utilities, and communication with residents and local businesses. While the City is a major player in managing energy and greenhouse gas emissions, the consumption of energy in the community is also heavily influenced by the behaviour, and the choices and actions of residents, businesses and industry, all of which can significantly impact greenhouse gas emissions and contribute towards achieving the community reduction target.

This plan is divided into the following sections:

Section 2 – Setting the Stage

A description of the City of Saskatoon is key to understanding energy consumption and greenhouse gas emissions. This section provides energy and greenhouse gas emissions baseline data for Saskatoon, and forecasts of energy and emissions to the year 2013.

Section 3 - Achieving the Goals

This section articulates the goals that the community has developed, and proposes a series of actions.

Section 4 – Moving Forward

The framework for implementing the Energy and GHG Management Plan is introduced.

Section 5 – Monitoring Progress

This section proposes a set of indicators and targets for monitoring the progress of the Plan.

Developing the Plan

The Plan was developed based on input from the community (see next section "Involving the Community") collected during Road Map 2020 forums, the work of the three Task Groups, and meetings of the Task Groups and Sustainability Champions (see page 6), as well as input from the City of Saskatoon staff through workshops and meetings with the consultant team.

INTRODUCTION 1

City of Saskatoon Hybrid Diesel-Electric Bus. These buses reduce greenhouse gas emissions by 7% over a conventional diesel bus. Source: City of Saskatoon

2 SETTING THE STAGE

Involving the Community

Road Map 2020

More details on Road Map 2020 can be found at: www.roadmap2020.ca

Road Map 2020 began in 2004 as a partnership between the Meewasin Valley Authority (MVA), the Saskatchewan Environmental Society (SES), and the Saskatoon Environmental Advisory Committee (SEAC). Since then, Road Map 2020 has been building community awareness of the environmental, social and economic benefits of sustainable practices, and working to develop a multi-sector network of community leaders interested in building a more sustainable Saskatoon. This initiative started a series of forums that began to educate the community, and to focus on particular activities that would further the vision of a sustainable Saskatoon. These are described briefly below.

Road Map 2020 Forum 3, February 21, 2007
Source: Road Map 2020

Forums

The 2004 Forum brought together participants representing a broad range of stakeholders from the community. Out of the Forum emerged a multi-stakeholder group of 40 community leaders working on three Task Groups to build a local action plan for sustainability.

A second forum the following year focused on how to build a healthy and sustainable economy in Saskatoon while addressing social and environmental issues, with a particular emphasis on reducing greenhouse gas emissions. Participants shared their expertise in the areas of sustainable transportation, green buildings and sustainable neighbourhoods, using Saskatoon as the context.

This forum was also the launch of the Road Map 2020 Sustainability Champions Program, celebrating community leaders that have committed to sustainability and to promoting it. The Road Map 2020 Sustainability Champions, representing organizations from all sectors, signed a declaration that commits them to supporting the development of a local sustainability plan, providing leadership on sustainability, fostering partnerships and relationships, reducing greenhouse gas emissions and sharing lessons learned with the community.

Forum 2007 provided opportunities for the public to help shape Saskatoon's Energy and GHG Management Plan. Discussions were led about strategies, policies and approaches to planning that would facilitate the market transformations and cultural changes necessary for widespread adoption of measures to save energy and reduce greenhouse gas emissions. Participants were also exposed to economic opportunities associated with energy conservation and the development of renewable energy.

Community Initiatives

Founding partners of Road Map 2020, such as the MVA and the SES, have their own sustainability activities through their respective organizations. The MVA has a range of projects and opportunities to learn about and appreciate the natural and cultural heritage values of the South Saskatchewan river valley. The SES has been active in the city for over 35 years, with a current focus on eight issue areas: climate change, forestry, alternative transportation, energy, pesticides, water, hazardous materials and ecosystem protection. These organizations provide a valuable resource for Saskatoon.

SETTING THE STAGE 2

Landscape & Sense of Place

Saskatoon is situated on the banks of the South Saskatchewan River. The city covers an area of 170 square kilometres including over 120 hectares (1.2 km^2) of riverbank parklands.

This landscape is prime agricultural land, rich with natural resources. Its location on the South Saskatchewan River defines the city and its residents and contributes to their local identity. The Meewasin Valley Authority was created over 25 years ago to conserve the natural and cultural resources of the river valley running through Corman Park and Saskatoon. An important feature of the river valley is the Meewasin Valley Trail, which follows the South Saskatchewan River through the heart of Saskatoon, offering year-round recreation and views.

Saskatoon is in a dry-prairie/savanna biome and experiences warm summers and very cold winters. Temperatures range from -40°C in winter to 40°C in summer (-40°F to 104°F). The average annual precipitation is 347.2 mm (13.7 in), with the summer being the wettest season. These low levels of precipitation make Saskatoon one of the sunniest cities in Canada, averaging 2,381 hours of bright sunshine annually. Low humidity levels provide for a comfortable environment, and make the extreme temperatures tolerable.

Climate Change in the Prairies

Low levels of precipitation may become a stressor in the future, as a result of climate change. Human activities, in particular the burning of fossil fuels, are enhancing the natural 'greenhouse effect', through the release of greenhouse gas emissions. The result of this enhanced greenhouse effect is climate change. Due to the increasing consumption of fossil fuels, combined with on-going removal of carbon sinks, climate change is accelerating rapidly.

Most climate change projections for the prairies show an increase in temperature. The southern prairies could experience serious summer deficiencies in soil moisture by the end of this century. Most climate change projections suggest that semi-arid regions of the prairies such as Saskatoon and the surrounding area can expect an increase in the frequency of drought. However, not all parts of the prairies will experience the same effects.

Rising Temperatures

Air temperatures in the prairie provinces and across Canada have warmed over the past 50 years, which scientists attribute to climate change. The yearly average temperature has warmed by about 1.2°C over the last 50 years, but winter temperatures have warmed by about 3°C, and summer temperatures by about 0.2°C. Since 1948, seven of the top ten warmest years on the prairies have occurred after 1981.

Greenhouse gases (GHGs) are a group of gases that contribute to the "greenhouse effect" causing global climate change.

Most GHGs are created when fossil fuels - coal, oil, natural gas, petroleum - are burned, and when solid waste decomposes in a landfill, producing methane gas. The production of electricity also produces GHGs if it is generated from coal or gas-fired power plants.

The Parks Branch is exploring an automated irrigation system to control the watering of City parks and green spaces. The system will allow for "smart" watering based on rain events and ground moisture conditions.

Bridge Over the South Saskatchewan River.
Photo credit: Marikay Falby
Source: Saskatoon Image Bank

2 SETTING THE STAGE

Growing Seasons Getting Longer Over the Past 40 years

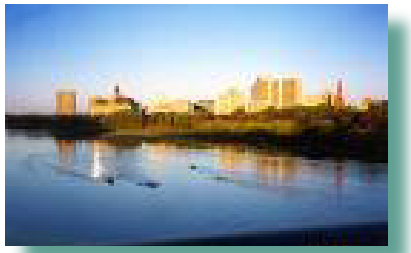
The date of the last spring frost has been occurring progressively earlier, and occurs about 10 days sooner now on average. The length of the growing season on the prairies has therefore increased, on average, by about 10 to 15 days compared to the 1940s and early 1950s. Snowfall has decreased, and spring runoff begins earlier now than in past years. The average amount of precipitation falling as snow has decreased as temperatures have risen.

Source, Figure 1:
City of Saskatoon Populace, Volume 8, Issue 1

Increased Drought Risk

Analysis of drought risks for southern Saskatchewan under several climate change scenarios indicates that the frequency and severity of drought could increase dramatically. During dry summers, higher temperatures will increase evaporation and intensify drought conditions. Conversely, there may also be wetter periods when temperatures are cool. Overall, this suggests that soil moisture conditions could become more variable, affecting agricultural production, which in turn could have implications for local food security and export capacity.

In 1990, the City's Parks Branch began landscaping parks and green-spaces using drought resistant grass and plants. Currently, about 35% of Saskatoon's parks are self-sustaining.



Downtown Saskatoon
Source: Saskatoon Image Bank

A Growing Community

Saskatoon is a growing city with a strong economy; both are contributing factors to increasing greenhouse gas emissions. The population of Saskatoon has been steadily growing since the beginning of the twentieth century, except for a slight decline in the 1930s during the Great Depression, when the prairies experienced a prolonged drought.

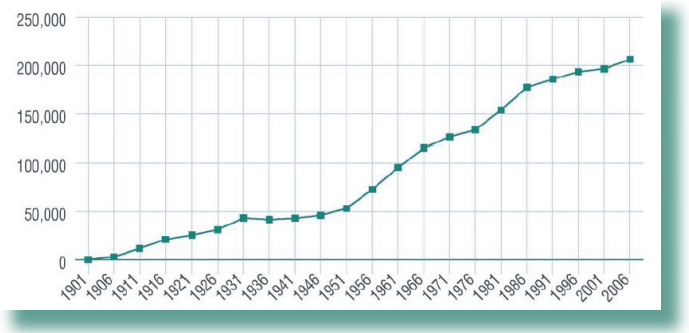


Figure 1: Saskatoon Population, 1911 – 2005

Saskatoon experienced growth of 1.6% between 1996 an 2001, and 2.8 % between 2001 and 2006, while the province as a whole experienced a decrease of –1.1% over the same period. Saskatoon has also increased its land base in the last five years, from 148 square kilometres to 170 square kilometres. This has decreased population density per square kilometres from 1326 people to 1184 people. The number of dwelling units has also increased since 2001, from 84,281, to 89,696 units.

Economy

Saskatoon has a rich history as an economic centre of agriculture and resource extraction, specifically potash. More recently, Saskatoon has become a centre for manufacturing and food processing. It is currently positioning itself as a leader for research in the biotechnology and value added agricultural processing sectors.

Saskatoon has a low cost of living, which is well below the North American average, and the lowest combined taxes and household charges in the country. Saskatchewan also has the

lowest provincial sales tax of provinces with PST and can boast one of the fastest growing economies in Canada.

The City's Built Environment

Growth in Canada's urban areas such as Saskatoon is attributed to urban form shaped by car-oriented planning. and increases in population. Like many other Canadian cities, the use of automobiles and the development of related infrastructure have caused employment to shift away from central core areas in Saskatoon.

Over the last 50 years, preferences in the location and type of home have also changed and accelerated the expansion of urban areas. Single-family homes, which consume more land than other dwelling types, as well as occupying relatively larger lots away from the central core, dominate the urban form. Industrial parks, recreational facilities, and shopping malls with their adjacent parking lots are all commonly found in suburbs. These types of developments all contribute to a need for more space to house a given population, and result in a decline in urban population density. This process is referred to as 'urban sprawl'. Urban sprawl contributes to higher infrastructure demands on municipal and other services including electricity, natural gas, water, sewer and transportation. These services consume energy, and other natural resources to install and maintain.

Residential Buildings

The residential building stock of Saskatoon is predominantly single-family dwellings, apartments, and small amounts of duplexes, rowhouses and townhouses. Based on the 2006 Census there were 89,646 privately occupied dwellings in Saskatoon. In 2001, close to 60% of these were comprised of single-detached houses as shown in Figure 2 below. Just under a quarter of all dwellings were within low-rise apartments that have fewer than five storeys. High-rise apartment buildings of five or more storeys make up only 6% of all occupied dwellings. Over the past ten years there has been little to no change in the composition of Saskatoon dwellings by structure type; only a slight decrease in the proportion of single-detached houses.

The term ***built environment*** refers to the man-made surroundings of an urban environment consisting of buildings and infrastructure such as roads, utilities and other improvements, that form the physical character of a city.

Did you know...
Almost 60% of privately occupied dwellings in Saskatoon are single family dwellings.

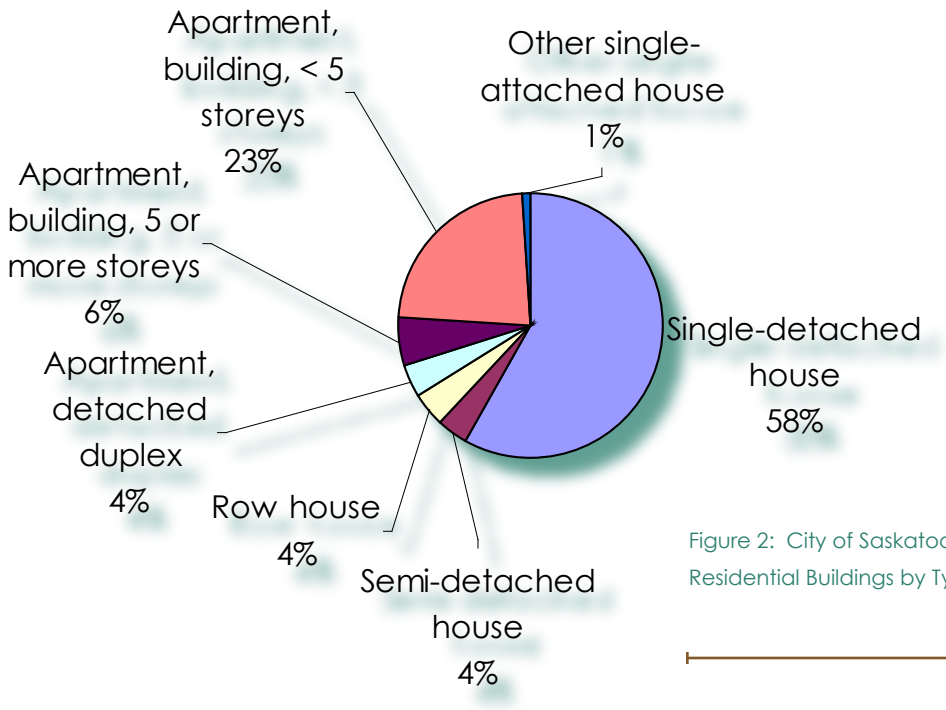


Figure 2: City of Saskatoon Residential Buildings by Type (2001)

2 SETTING THE STAGE

Did you know... the age of the building can significantly affect the amount of energy it uses and consequently, the GHG emissions it produces in the consumption of that energy. Older buildings are typically less energy efficient compared to newer buildings that are built using the latest building materials and techniques.

Did you know... the City of Saskatoon is the sole developer of industrial land in the City. There are 625 hectares of vacant industrial land within city boundaries.

Industrial activities are typically highly energy intensive, consuming large amounts of electricity and natural gas. As the sole developer of industrial land the City has an opportunity to reduce GHG emissions from this sector through specifying energy efficient building forms and land use.

Commercial Buildings

Based on the 2001 Census, over half (55%) of Saskatoon's building stock was constructed after 1970. Approximately 11% of commercial building stock was constructed prior to 1946 and another 15% was constructed between 1946 and 1960. The greatest proportion of commercial building stock (25%) was constructed between 1971 and 1980. These buildings likely have inefficient heating, ventilating and air conditioning (HVAC) and lighting systems, and insufficient control devices. Remediation of these buildings with energy-efficient products and systems could have a significant impact on reducing community energy use.

Industrial Land Use

Overall, there is a total of approximately 1,942 hectares of industrial land in Saskatoon, of which approximately 607 hectares is vacant. As the City of Saskatoon is the sole developer of industrial land in the city, this provides an opportunity to monitor energy use and provide incentives for encouraging energy efficient development. Rising industrial land prices have not deterred Alberta manufacturing companies from setting up shop in Saskatoon. With a booming economy, Saskatoon is seen as a viable location for manufacturing, and commercial realtors report significant interest from Alberta firms.

Transportation

There is a clear relationship between land use and energy consumption from mobile sources such as motorized vehicles. Increased proportions of mixed-use development generally result in lower use of single-occupancy vehicles and further use of alternative transportation modes including cycling, walking and public transit. Similarly, higher density residential and commercial development will result in increased ridership of public transit, resulting in reduced energy consumption from light duty vehicles.

Solid Waste

The City is responsible for both waste collection and disposal services within the city limits. Saskatoon is expected to grow at a rate of approximately 2% annually to 2027, which will increase the amount of waste being disposed of at the Saskatoon landfill. The practice of landfilling the organic portion of solid waste (e.g. yard and food waste) generates significant quantities of greenhouse gases, particularly methane and carbon dioxide. However, these gases can potentially be used to generate heat or electricity, making solid waste disposal an issue of interest in community energy planning.

Photo credit: City of Saskatoon

SETTING THE STAGE 2

Where are we now? The Baseline

In order to implement and monitor an Energy and GHG Management Plan, information must be collected for a variety of relevant indicators to establish a baseline of information. Once this information is collected, comparisons with additional information from future time periods can be analysed, with trends becoming apparent. Understanding trends is an important tool that can show communities and decision-makers how effective a plan is, and will allow the plan to adapt to changes in the city. There are two main components of Saskatoon's baseline inventory: the municipal inventory and the community inventory.

Corporate Operations Profile

Overall emissions from Saskatoon's corporate (municipal) operations increased 23% between 1990 and 2003 as shown in Table 1. The greatest absolute increase in emissions was in the water and wastewater sector, followed by the building sector. Emissions from the vehicle fleet, street lights and municipal waste all decreased between the inventory years.

Table 1: Municipal Emissions 1990 and 2003

	Total CO_2e (tonnes)	
Sector	**1990**	**2003**
Buildings	29,291	36,270
Vehicle Fleet	6,353	6,047
Streetlights	19,605	16,925
Water and Sewage	16,495	30,437
Corporate Waste	2,300	1,619
Total	**74,044**	**91,298**

Community Profile

Overall emissions in the Saskatoon community have increased significantly, particularly in the industrial sector, where the volume of greenhouse gas emissions has almost tripled and transportation emissions have increased by over 100,000 tonnes.

Table 2: Community Emissions by sector 1990 and 2003

	Total CO_2e (tonnes)	
Sector	**1990**	**2003**
Residential	632,958	659,433
Commercial	736,807	671,365
Industrial	618,179	1,641,199
Transportation	429,053	562,285
Community Waste	49,242	49,057
Total	2,466,239	3,583,339

Sources: Table 1, Table 2
ICLEI Energy Services, 2005. Greenhouse Gas Emissions Inventory, Forecast & Target, August 15, 2005.

CO_2e or carbon dioxide equivalents refers to the total equivalent greenhouse gases, weighted by their global warming potential. Different gases have different global warming potentials. Global warming potential is a relative measure used to compare the ability of a gas to trap heat in the atmosphere relative to another gas. For example:
1 unit CO_2 = 1 CO_2e
1 unit CH_4 = 23 CO_2e
1 unit N_2O = 310 CO_2e

2 SETTING THE STAGE

Where are we going? The Forecast

The Greenhouse Gas Emissions Inventory, Forecast and Target Report outlines three forecast scenarios: business-as-usual, typical and optimum. For the purposes of this report and determining the greenhouse gas reductions required to meet the targets, the business-as-usual (BAU)forecast has been used.

The BAU forecast is based on projections of demand for electricity in 2013 provided by Saskatoon Light & Power and SaskPower.

Corporate Operations Forecast

By 2013, greenhouse gas emissions from corporate operations are predicted to increase to approximately 103,480 tonnes CO_2e. This scenario assumes that energy use trends in corporate operations remains constant (see Figure 3). The addition of new buildings, streetlights, water and wastewater treatment to accomodate increased growth would increase energy consumption (ICLEI Report, 2005).

Targets

The City of Saskatoon has established two targets for the Energy and GHG Management Plan:

- To reduce corporate emissions 10% below 1990 levels by 2013, and
- To reduce community emissions 6% below 1990 levels by 2013.

The Forecasts

The ICLEI Inventory and Forecast report provides three scenarios for the future: Business-As-Usual, Typical and Optimistic. GHG reductions in this plan are based on the Business-As-Usual Scenario.

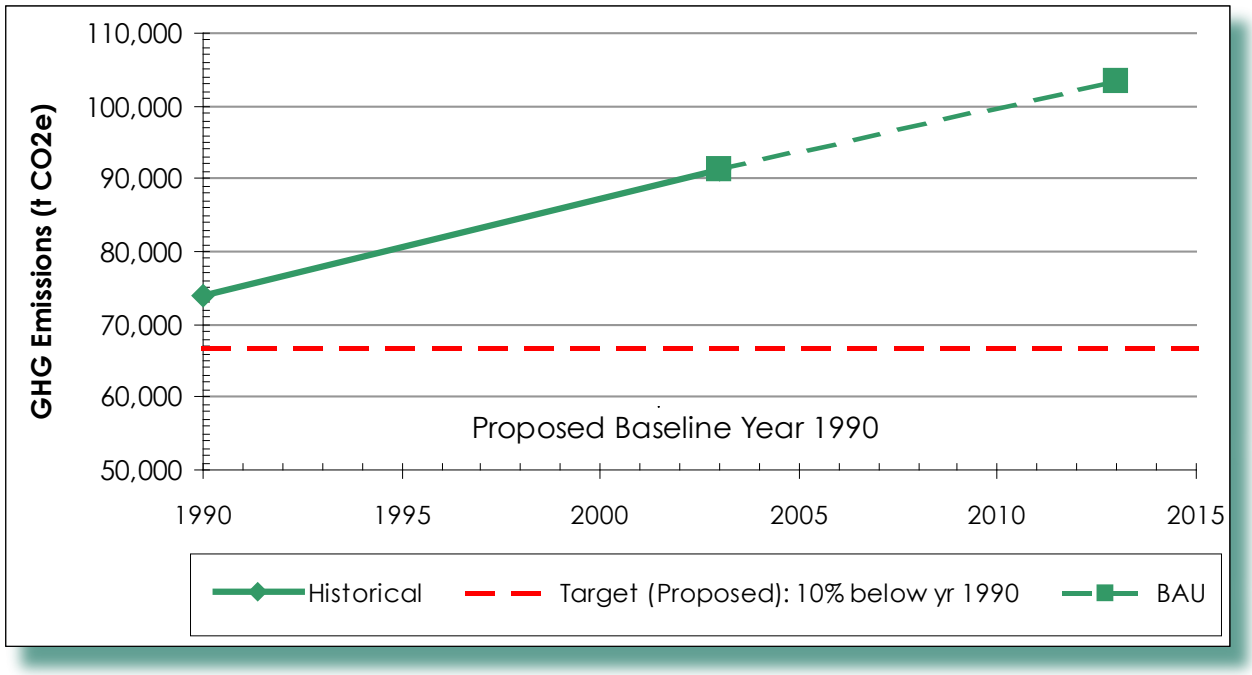


Figure 3: Business-As-Usual Corporate Operations Forecast

Sources: Figure 3, Figure 4
ICLEI Energy Services, 2005. Greenhouse Gas Emissions Inventory, Forecast & Target, August 15, 2005.

Community Forecast

By 2013, greenhouse gas emissions from the community under a BAU scenario are expected increase to 3.73 million tonnes CO_2e, a 4% increase over 2003 levels (see Figure 4).

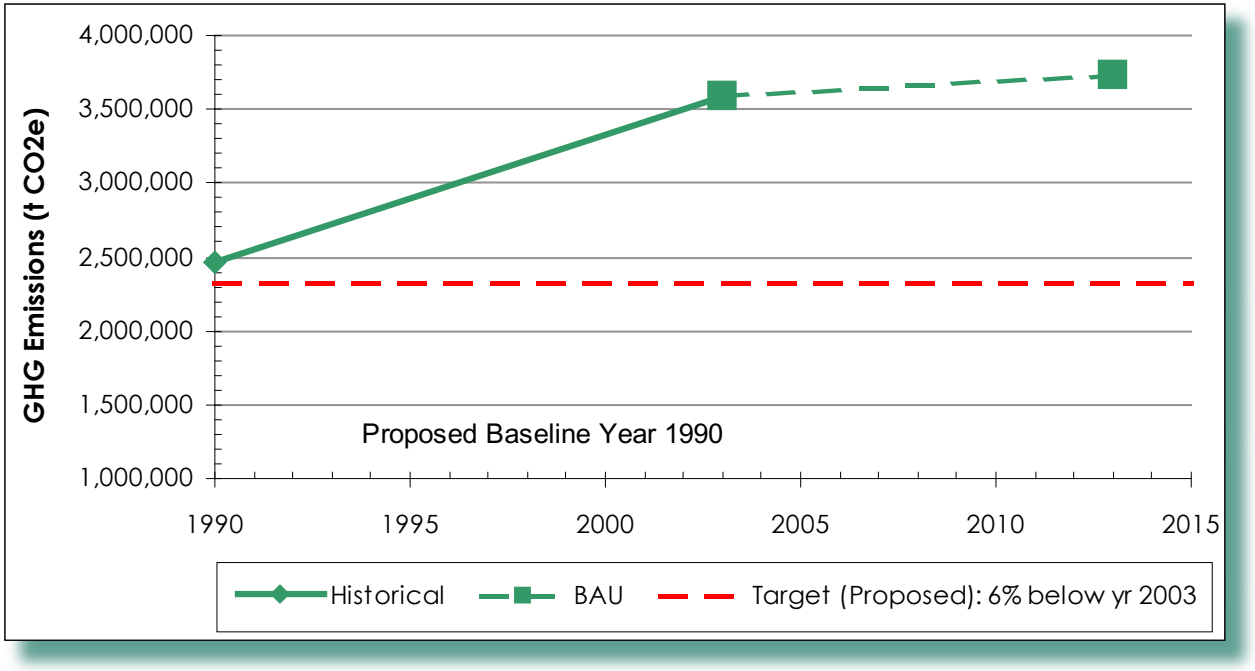


Figure 4: Business-As-Usual Community Forecast

Overall emissions from Saskatoon's corporate operations increased 23% between 1990 and 2003. The greatest absolute increase in emissions was in the water and wastewater sector, followed by the building sector. Emissions from the vehicle fleet, street lights and corporate waste all decreased between the inventory years. This demonstrates that there are areas of the City's operations in which new emissions reduction opportunities could be effective and that success in reducing greenhouse gas emissions has been realized in the past.

2 SETTING THE STAGE

Where do we want to go? Saskatoon's Energy and GHG Management Goals

A vision and accompanying goals for this Plan were developed with the input of Road Map 2020 Sustainability Champions, community groups, Task Group members, representatives of other organizations, and City staff.

Vision

Our vision is to become a leader in renewable energy, energy conservation and management of greenhouse gas emissions. We possess a wealth of resources and strong sense of community where residents and business work collectively. We will build on this foundation to enhance economic prosperity, and improve environmental and social health for future generations.

Our vision is to become a leader in renewable energy, energy conservation and management of greenhouse gas emissions.

Goals

Goal 1: Build an Energy-Aware Community

In 2013, Saskatoon residents will understand the importance of Energy and GHG Management and be effectively engaged in helping the community meet the Energy and GHG Management Plan vision. Business and industry will also be active partners in implementing the Energy and GHG Management Plan.

Goal 2: Create a Healthy Community

In 2013, energy planning has improved the quality of life of Saskatoon residents by enabling active modes of transportation and by decreasing energy-related emissions.

Goal 3: Achieve a Diverse and Environmentally Sustainable Energy System

In 2013, Saskatoon will have a diverse energy system that emphasizes the use of local resources and alternatives to fossil fuels. The energy system will create opportunities for local businesses and suppliers.

Goal 4: Design and Build Green and Smart

In 2013, energy efficient planning and "green" system design practices ensure that land use needs are met in a sustainable way and that sustainable choices are easily made.

Goal 5: Be Responsible Stewards of Our Resources

In 2013, energy planning has helped to ensure that the community can meet its needs without negative impact to the local and global environment. All decisions relating to the use of resources consider the full environmental cost.

Goal 6: Lead by "Green" Example

In 2013, the City will be a leader at implementing energy management best practices in municipal operations and as a result encourage action by residents, businesses and other municipalities.

SETTING THE STAGE 2

Did you know...
the City of Sasktoon owns and operates the electrical utility Saskatoon Light & Power, servicing about 57,000 customers within the 1958 city boundary. Saskatoon Light & Power provides the City with about 118 permanent jobs and contributes $3.1 million to the local economy through purchases of goods and services from Saskatoon businesses.

View of the City
Source: City of Saskatoon Image Library

3 ACHIEVING OUR GOALS

Based on the goals identified in the previous section, a comprehensive set of programs have been recommended to achieve the targets for corporate and community-wide greenhouse gas emissions reductions.

The programs include policies and actions that will assist the City and community in meeting the GHG emission reduction targets. A description of why each goal is important is also included in this section.

Through the community engagement activities of Road Map 2020 and the past experiences of other cities, barriers to behaviour change in Saskatoon have been identified. The Energy and GHG Management Plan will address these barriers.

For detailed descriptions of individual actions, see Appendix B. The actions are sorted by corporate ("A") actions and community ("B") actions, and by goal.

Goal #1: Build an Energy Aware Community

In 2013, Saskatoon residents will understand the importance of energy and greenhouse gas management and be effectively engaged in helping the community meet the Energy and GHG Management Plan vision. Business and industry will also be active partners in implementing the Energy and GHG Management Plan.

Why is this Goal Important?

Ensuring that all sectors of Saskatoon's community are aware of the implications of energy use and climate change issues is essential to the successful implementation of the Energy and GHG Management Plan. Community awareness on these issues will help to foster support and increase the success of actions outlined.

Surveys conducted in 2006-07 indicated that Canadians rank the environment and climate change among their top concerns. Feedback collected by Road Map 2020 during the development of this plan indicates that Saskatoon residents are concerned about the impacts of energy use and are supportive of finding ways to reduce energy consumption.

Public outreach and education activities contained in this plan have been developed to not only raise awareness but also initiate action. By strengthening awareness of these issues, residents and organizations will be further encouraged to take action.

There are many factors that can limit or prevent organizations and individuals from making environmentally responsible decisions. Overcoming these challenges requires creating acceptance for new ways of doing things, and educating people on the other benefits of more sustainable practices.

Corporate Program and Actions

Internal Education Program (Corporate "In-reach")

This program will facilitate corporate uptake of actions identified in this plan. It will include an education campaign on energy efficient transportation-related actions, and staff education on energy awareness. It will also provide updates on the progress of the Plan and highlight key staff initiatives. The purpose of corporate in-reach is to build awareness on energy and greenhouse gas issues within the corporation and ensure support for implementation of the Plan. This program also supports Goal #6: Lead by "Green" Example, through demonstrating the City's commitment to energy and greenhouse gas management in its own operations to residents and businesses.

Actions:

- A1-1: Conduct an Anti-Idling Education Campaign
- A1-2: Implement the SmartDriver Program for Vehicle Fleet
- A1-3: Promote Employee Trip Reduction
- A1-4: Develop an Energy Awareness Program for Staff
- A1-5: Provide Energy Management Training for Building and Facilities Managers

Community-Wide Programs and Actions

Public Outreach and Education Program

The actions encompassed by this program raise awareness in the community about energy and greenhouse gas management issues, and initiate behavioural change.

There are substantial barriers to achieving long-term change in

consumer behaviour. Some of these barriers are perception of the issue, awareness of programs, convenience and cost (either real or perceived), and ownership of the issue. To overcome these barriers, a substantial commitment for multi-year funding is required. This would ensure sufficient time for the programs and actions of the Energy and GHG Management Plan to enact behavioural change.

Actions:

- B1-1: Launch the Energy and GHG Management Plan
- B1-2 Develop Outreach Materials for Community Engagement
- B1-3: Promote the E-Waste Program (SWEEP)
- B1-4: Promote Community Wide Demonstration Projects and Encourage Green Development
- B1-5: Continue to Support Road Map 2020 Activities
- B1-6: Implement a Social Marketing Initiative
- B1-7: Promote Green Electricity Purchasing Options
- B1-8: Develop a Food and Energy Awareness Program

Energy Efficient Transportation Education Program

The actions included in this program will raise awareness in the community on transportation, energy and emission reduction measures. Since transportation contributes 17% of the community's emissions, small changes to individual transportation choices can have a significant impact on total emissions.

Actions:

- B1-9: Develop an Anti-Idling Program and Investigate Potential for a Bylaw
- B1-10: Promote Driver Training Programs to Teach Fuel-Efficient Driving Skills
- B1-11: Promote Carpooling and Car Sharing
- B1-12: Promote Commuter Trip Reduction
- B1-13: Implement an Alternative Transportation Awareness Campaign

Energy Efficient Buildings and Alternative Energy Education Program

Constructing more energy efficient buildings in the community requires the cooperation of a number of stakeholders. The actions described here focus on providing information to residents and builders on energy efficient buildings and the use of alternative energy sources.

Actions:

- B1-14: Provide Workshops on Smart Growth Principles and Green Buildings to Developers
- B1-15: Provide Workshops on Renewable Energy
- B1-16: Implement an Energy Efficiency Challenge for Schools
- B1-17: Promote Residential Energy Efficiency Programs
- B1-18: Encourage Increased Energy Efficiency in Industrial, Commercial and Institutional (ICI) Buildings

Water Conservation Program

Reducing water consumption in the community will reduce the amount of energy used in water treatment and pumping. Minimizing water consumption during peak times (e.g., early morning and evening) can also reduce the overall energy impacts of treating and distributing water.

Actions:

- B1-19: Implement Domestic Water Conservation Program
- B1-20: Review Rate Structure for Water Users
- B1-21: Promote Xeriscaping to Residents and Businesses

Engagement activities help to achieve GHG emission reductions in other programs and actions. For example, an education program on energy efficiency in residential buildings achieves reductions in the building category by informing residents of available programs and encouraging them to access these programs.

The efforts here are supportive to all the other goal areas.

Energy Efficient and Green Buildings

The limited regulatory authority of local governments in controlling energy consumption inhibits their ability to influence new building design (e.g., building codes are provincial jurisdictions). However, local governments have the ability to encourage energy efficient design through the property development and rezoning processes.

3 ACHIEVING OUR GOALS

Goal #2 Create a Healthy Community

In 2013, energy planning has improved the quality of life of Saskatoon residents by enabling active modes of transportation and by decreasing energy-related emissions.

Why is this Goal Important?

Creating a community that provides a supportive environment for active forms of transportation requires a multi-pronged approach. Programs need to target all groups and lifestyles in order to facilitate changes to a different mode of transportation. In addition to education and outreach programs, the City has the jurisdiction to create regulatory incentives (e.g., creation of adequate bike lanes on City streets) and remove barriers (e.g., providing information to planners, or bike racks on all buses) to different transportation options. The City can also build upon federal and provincial programs to gain momentum.

Active transportation options include walking, rollerblading and cycling, etc. Encouraging these as alternatives to driving will help to achieve this goal.

Corporate Program and Actions

Active Staff Program

The actions in this program help to educate City employees on the energy, greenhouse gas and health benefits of active transportation, and encourage the use of these alternatives.

Actions:

A2-1: Promote and Expand on Wellness Initiatives to Encourage Active Modes of Transportation
A2-2: Provide Incentives to Encourage Employees to Use Active Modes of Transportation
A2-3: Improve Alternative Transportation Infrastructure for Civic Facilities

Did you know...
that 10 seconds of idling can use more fuel than turning off the engine and restarting it again.

Community-Wide Program and Actions

Active Community Program

Improving active transportation options (see side bar) and encouraging the use of efficient transportation (such as incentives for commuters to shift from driving to alternative modes) will assist in encouraging active modes of transportation and improve air quality.

By increasing active modes of transportation and transportation options, many benefits can be realized in addition to greenhouse gas reduction. These include congestion reduction, parking cost savings, fuel cost savings, reduced accidents, improved accessibility for non-drivers, and increased community livability. Actions that increase walking and cycling activity also provide public fitness and health benefits.

Actions:

B2-1: Improve Active Transportation Infrastructure
B2-2: Expand Walking School Bus Program
B2-3: Promote Health Benefits of Active Transportation

An Example of Active Transportation
Source: The Sheltair Group

Goal # 3 Achieve a Diverse and Environmentally Sustainable Energy System

In 2013, Saskatoon will have a diverse energy system that emphasizes the use of local resources and alternatives to fossil fuels. The energy system will create opportunities for local businesses and suppliers.

Why is this Goal Important?

Much of the current energy supply systems serving Saskatoon are based on the provision of non-renewable fossil fuels. Automotive transportation is dependant on petroleum fuels, however, our buildings are also substantial energy consumers, using coal-based electricity and natural gas for heating and hot water.

Renewable energy technologies include solar, biomass sources, and wind power. There are also 'alternative technologies' which can provide heat or electricity and produce fewer greenhouse gases than current practices. These include heat pumps, and district heating and/or cogeneration based on renewable energy or biomass.

By utilising renewable and alternative sources of energy, the City will reduce overall dependence on fossil fuels as well as insulate consumers from the negative impacts of price volatility and fuel shortages. In addition, diversifying the energy supply makes the City less dependent on gas and electrical transmission lines, by creating a more resilient energy supply. These actions will help build the City's renewable energy sector, stimulate local economic development and help to retain energy dollars in the local economy.

Corporate Program and Actions

Alternative Energy Program

Increasingly, local governments are taking an interest in utilities and/or partnerships to support development of local renewable energy supplies. The City of Saskatoon already operates its own utility, Saskatoon Light & Power and can explore partnership opportunities with renewable energy providers.

Actions:

A3-1: Utilize Waste Methane and Improve Efficiency at the Wastewater Treatment Plant (WWTP)

A3-2: Purchase Green Energy

Community-Wide Program and Actions

Community Alternative Energy Program

A significant portion of the current energy supply system is based on non-renewable fossil fuels. Vehicle transportation is dependent on fossil fuels and buildings in Saskatoon are substantial energy consumers of natural gas for heating and hot water. The current electricity generation system is primarily based on burning coal and natural gas. Continued growth in Saskatoon, and in the rest of the province, may require more fossil fuel-based electrical generation.

Actions:

B3-1: Develop a District Heating System (catalyst action)

B3-2: Pursue a Wind Power Project

B3-3: Capture and Use Landfill Gas for Power Generation

B3-4: Research Centralized Organics Facility

The Utility Services department is actively engaged in the replacement of existing water and sewer pumps with more efficient models. For example, single speed drive pumps are being replaced with variable speed drive pumps. This will reduce the energy required to operate the pumps, which reduces greenhouses gas generation.

What is a Catalyst Action?

As the term implies, a catalyst action is designed to accelerate positive changes already occurring within the community at a pace that is neither too slow nor too fast. Catalyst projects combine the best features of pilot and demonstration projects and they also demonstrate and reinforce new directions and themes that may apply to many future developments. (Excerpt from Bridging to the Future in Squamish, BC - Summary Report)

3 ACHIEVING OUR GOALS

Goal #4 Design and Build Green and Smart

In 2013, energy efficient planning and "green" system design practices ensure that land use needs are met in a sustainable way and that sustainable choices are easily made.

Why is this Goal Important?

The concept of "green" buildings and design practices is a response to the realization that there is a significant opportunity to construct the built environment in ways that consume fewer resources. With the concern about energy and greenhouse gas management, embracing "green" design and "smart growth" supports smaller building footprints, mixed uses, and less urban sprawl, and will reduce the amount of infrastructure that is required. The programs in this section are focussed on activities that will promote building retrofits, and finance green buildings.

LEED Standards

Leadership in Energy and Environmental Design (LEED) is a green building rating system. Under this system, buildings are given points for their ability to meet criteria in the categories of: Sustainable Site Development, Water Efficiency, Energy and Atmosphere, Material Selection and Resource Use, Indoor Environmental Quality, Innovation and Design Processes. (Visit the Canada Green Building Council for more information at: www.cagbc.org)

Corporate Program and Actions

Energy Efficient City Buildings and Facilities Program

Reducing energy consumption in buildings will lower operating costs and reduce building related greenhouse gas emissions.

Actions:

- A4-1: Audit Existing Corporate Buildings and Facilities
- A4-2: Improve Energy Efficiency of Existing Buildings and Facilities
- A4-3: Achieve LEED Certification on All New Civic Facilities

Community-Wide Programs and Actions

Energy Efficient Buildings Program

Improving the energy efficiency of buildings in the community requires the cooperation of many stakeholders. Reducing energy consumption will lower operating costs for building owners and reduce building related greenhouse gas emissions. By improving the energy efficiency of low income housing, social benefits are also realized through the reduction of utility bills, freeing up income for other necessities. The actions described here focus on areas where the City can most effectively play a role.

Actions:

- B4-1: Develop Incentives to Promote Residential Building Energy Efficiency
- B4-2: Develop Incentives to Promote ICI Sector Building Energy Efficiency and Alternative Energy Systems
- B4-3: Explore Alternative Means of Financing New Energy Efficient and Green Buildings and Retrofitting Existing Buildings
- B4-4: Provide Incentives for Green Initiatives to Commercial and Industrial Sectors

Building Standards and Codes, and Saskatoon's Role

Building codes are regulated by the provincial government. However, the City can influence the energy efficiency of new buildings through providing education and incentives to developers as well as setting an example by constructing and retrofitting City buildings to the highest standards. In addition, the City can lobby the provincial government to change the Saskatchewan Building Code.

THE ROAD TO ACTION 3

Energy Efficient Land Use Planning Program

Land use planning is one of the most important determinants of a community's energy footprint. Integrating energy use and greenhouse gas emission considerations at early stages in the land use planning processes will have long term benefits, such as reducing energy consumption, reducing greenhouse gas emissions, and increasing the livability of the city.

Actions:

B4-5: Develop Guidelines for Complete and Compact Community Development

B4-6: Provide Incentives for Energy Efficient Land Use

Did you know...

The Parks Branch runs an extensive Urban Forestry Program which manages over 100,000 trees within the city, and plants an average of 3,000 new trees per year. The program recently won an award from the International Society of Arboriculture, and has been recognizsed nationally as a model for other cities.

Results of Schools Plant Legacy in Trees (SPLIT) program
Source: City of Saskatoon

Did you know...

The City is currently engaged in a water loss study which will allow for identification of water leaks and non-metered water use. The results of the study will be used to reduce water loss, thus eliminating the greenhouse gas emissions created to process that water.

What is Energy Efficient Land Use?

Energy efficient land use is a term that refers to land use practices that are actively intent on reducing energy consumption, e.g. closed loop heating systems, higher building densities that take maximum advantage of insfrastructure.

3 ACHIEVING OUR GOALS

What is Biodiesel?

Biodiesel is a fuel derived from biological sources, such as vegetable oils including palm oils, soybeans and canola, as well as animal fats and algae, which can be used in unmodified diesel-engine vehicles. In order to meet the annual demand for food ***and*** a 5% blend of biodiesel (B5), current canola production (for example) would need to increase to about 14 million tonnes annually (from about 8.5 million tonnes currently). Some regions of the world are removing their forests to plant palm trees, which provide one of the cheapest and highest oil yields per hectare source crops for biodiesel. The use of biodiesel has significant implications for ecological biodiversity and food security, nationally and globally. In terms of net carbon emissions, biodiesel produces fewer air emissions than fossil fuel derived diesel, except for nitrous oxide emissions, which can increase up to 14% depending on the source and blend of biodiesel.

Goal #5 Be Responsible Stewards of Our Resources

In 2013, energy planning has helped to ensure that the community can meet its needs without negative impact to the local and global environment. All decisions relating to the use of resources consider the full environmental cost.

Why is this Goal Important?

Exploring and developing sustainable practices for the management of our resources ensures that we will reduce our vulnerability to sudden shifts in energy supply. Increased efficiency provides a longer-term supply, which provides more time to explore energy reduction schemes and develop alternative energies. The transition to a more secure local energy supply is dependant on ensuring we have practices in place that provide alternatives to fossil fuel use.

Corporate Programs and Actions

Alternative Energy Program

Supporting the development of alternative energy for heating and the provision of electricity will assist Saskatoon in meeting its targets for greenhouse gas reduction and help to stimulate the renewable energy industry.

Actions:

A5-1: Develop an Alternative Energy Inventory
A5-2: Investigate Utilizing Solar Energy for Heating Municipal Swimming Pools
A5-3: Investigate Opportunities for Net Metering

Water and Wastewater Reduction Programs

Improving the energy efficiency at the water and wastewater treatment plants will help to reduce energy consumption and emissions associated with the electricity consumption. Reducing leaks in the water distribution system will also reduce energy consumption at the water and wastewater treatment plants.

Actions:

A5-4: Improve Energy Efficiency of Plant Operationss
A5-5: Develop a Leak Reduction Program

Transportation Emission Reduction Program

The actions contained in this program will help to reduce fuel usage in fleet vehicles, lowering greenhouse gas emissions. Reducing fossil fuel consumption in vehicles provides many other benefits such as reduced operating costs and improved air quality.

Actions:

A5-6: Implement a City Energy Efficient Vehicle Purchase Policy
A5-7: Run Fleet on a Biodiesel Fuel Mix
A5-8: Continue the Fleet Right-sizing Program

Community-Wide Programs and Actions

Transportation Emissions Reduction Program

Actions that improve transportation options and encourage the use of efficient transportation provide many benefits in addition to energy conservation, including reducing road congestion, decreasing road and consumer costs and increasing overall community livability.

Actions:

B5-1: Provide Preferential Parking for Energy Efficient Vehicles
B5-2: Hybrid Transit Vehicles
B5-3: Develop Car-Sharing Programs, and a Truck and Van Co-op
B5-4: Provide Incentives to Businesses with Fuel Efficient Fleets

Solid Waste Emissions Reduction Program

Through the diversion of compostable material from the waste stream, Saskatoon will be able to decrease the amount of methane gas emitted from the landfill. Compostable material such as food waste, leaves, grass, and other organic material degrade in the landfill, producing methane gas - a greenhouse gas twenty-one times stronger than carbon dioxide. By composting organic material, these damaging methane emissions can be avoided. This is a long-term action - the production of methane from material landfilled today can take more than 20 years to break down (see text box). There are many co-benefits to diverting material from the landfill such as increasing the life span of the landfill, reducing the need for virgin materials to make new products and providing nutrients for local gardens (from compost).

Actions:

B5-5: Implement Regional Transit Levy
B5-6: Implement and Organics Collection Program
B5-7: Implement Curbside Collection of Recyclables

The Wastewater Treatment Plant collects "biogas" from treatment processes, and converts it to energy. Biogas is a by-product created during the bacterial digestion of waste. Biogas is composed of approximately 65 percent methane, and is captured and used as a fuel for the boilers to heat the many buildings on site. By using the energy from biogas at the Wastewater Treatment Plant saves approximately $300,000 a year in heating costs and reduces greenhouse gas emissions. There are several wastewater treatment plants in North America that are using the biogas produced in their treatment process to generate electricity by powering small turbines. The use of biogas for electrical generation is being investigated at the Saskatoon Wastewater Treatment Plant as part of the City of Saskatoon's ongoing environmental commitment.

Organic material in landfills produce methane gas from the anaerobic decomposition over approximately 20 years. The benefits of diverting organic material from the landfill will be realised over the next twenty years, through a decrease in the production of methane gas.

Recycling materials like plastics and metals can also help to reduce GHG emissions. GHGs are produced when harvesting virgin materials such as aluminium for cans or oil for plastics and during the manufacturing process.

(this page) Hybrid Bus
Source: City of Saskatoon

(previous page) Biodiesel Bus
Source: City of Saskatoon

3 ACHIEVING OUR GOALS

Province of Saskatchewan: Leading By Example

In June 2007, the Government of Saskatchewan released the "Saskatchewan Energy and Climate Change Plan, 2007". The report proposes policy changes and recommendations for energy conservation and renewable energy that would make Saskatchewan a leader in these fields.

From the Throne Speech, Nov. 2005: "Given our wealth of renewable energy resources, it is the vision of my government that by the third decade of this century, the children of our Centennial will live in a province where one-third of their energy needs are met by renewable energy sources, and Saskatchewan will lead the country in energy conservation practices."

Goal #6 Lead by "Green" Example

In 2013, the City will be a leader at implementing energy management best practices in municipal operations and as a result encourage action by residents, businesses and other municipalities.

Why is this Goal Important?

Highlighting municipal leadership in energy and greenhouse gas management will encourage other sectors to undertake energy efficiency and renewable energy actions. Municipal leadership will also demonstrate local government commitment to sustainability.

The programs in this section include:

- providing support for demonstrations, pilot tests, and innovations. These may not always achieve large reductions in the short term but are part of developing a local culture of energy conservation and efficiency, and can stimulate the uptake of new technologies and practices throughout the community;
- developing long-term partnerships with utilities, other agencies and governments, industry organizations, and non-governmental organizations to facilitate efficient program delivery; and
- taking the first steps by implementing comprehensive energy management programs within the municipality's own operations.

Corporate Program and Actions

Greening Corporate Operations Program

Displaying municipal leadership in energy and greenhouse gas management will encourage other sectors to undertake energy efficiency and renewable energy actions.

Actions:

A6-1: Explore Partnership Opportunities with Local Utilities
A6-2: Complete LED Replacement Program
A6-3: Develop a Green Procurement Policy
A6-4: Incorporate Energy Efficiency Principles into Municipal Planning Documents

Community-Wide Program and Actions

Community Leadership Program

Displays of leadership by residents and businesses in energy and greenhouse gas management will inspire and encourage others to invest in energy efficiency and renewable energy. Demonstration of leadership will create a sense of pride and the community's commitment to sustainability.

Actions:

B6-1: Expand the Road Map 2020 Sustainability Champions Program
B6-2: Establish Demonstration Sustainable Neighbourhoods
B6-3: Develop a Renewable Energy Program to Meet Provincial Target
B6-4: Expand Community Tree Planting Program
B6-5: Develop a Green Bond
B6-6: Develop Green Business Standards

THE ROAD TO ACTION 3

(Top) Community Participants at the November 17, 2005 Forum.

Photos courtesy of Road Map 2020.

(Bottom)
Community Participants at the February 21, 2007 Forum.

4 MOVING FORWARD

Federal and provincial governments have the ability to control energy consumption in buildings through the Energy Star rating system and the Provincial Building Code. Local governments have the ability to encourage energy efficient design through property development and rezoning processes. Local governments may also influence the design of the buildings through the development of green building guidelines that serve to educate and inform developers of alternatives to conventional building techniques. Green building guidelines may stipulate performance expectations and provide recommended practices. To further encourage green buildings, local governments are also able to offer incentives, such as reduced development cost charges, for buildings that incorporate green design principles.

This section provides an implementation plan for the Energy and Greenhouse Gas Management Plan, together with a summary of its objectives, rationale, and program components. As noted previously, the City of Saskatoon has established two targets for the plan:

- To reduce corporate emissions by 10% below 1990 levels by 2013; and
- To reduce community emissions by 6% below 1990 levels by 2013.

Plan Overview

The Energy and GHG Management Plan is organized into two components - a corporate program and a community-wide program. The programs focus primarily on energy efficiency and education outreach with separate programs for corporate and community segments.

Corporate Implementation Program

The corporate greenhouse gas management plan will work with staff to reduce energy and greenhouse gas emissions from in-house activities, with a primary focus on buildings, water and wastewater, and fleet and a component on staff activities. The program will work to strengthen and expand ongoing activities at the City. Areas of program focus include:

- Corporate building retrofits;
- Water and wastewater treatment;
- New building design guidelines;
- Fuel switching and right-sizing for light and heavy duty vehicles;
- Driver training and enhanced vehicle maintenance program; and
- Staff education and awareness.

Community Implementation Program

Successful implementation of the Plan in the community will require the dedication of the City of Saskatoon as well as the commitment of other organizations and individuals. Some organizations are already engaged in reducing greenhouse gas emissions through the Sustainability Champions program. It will be essential to ensure the continued support of these stakeholders as well as attracting the participation of many other organizations and the broader community.

Short-term (less than a five year time horizon) community-wide program activities will focus on bringing together potential projects and partners with the available financial and information resources, both within the program itself and from the numerous potential external sources (e.g., federal or provincial funding programs). An important activity for the program will be the leveraging of resources for the implementation of Energy and GHG Management Plan projects in Saskatoon. Once projects are identified and underway, communication of the results to other organizations that may be able to undertake similar activities within the City will be a key area of activity. Areas of program focus include:

- Residential building retrofits through enhanced marketing

of the EcoENERGY program (formerly the federal EnerGuide for Houses Program);
- Land use planning that supports the principles of Smart Growth;
- Commercial building retrofits through education and provision of incentives;
- Support for the Community Energy Systems;
- Green building design guidelines for residential and commercial buildings;
- Transportation demand management; and
- Public engagement and outreach.

Other initiatives currently underway that may contribute to the overall success of the plan include:

- Community outreach and engagement initiatives (Road Map 2020);
- Environmental awareness and education (Meewasin Valley Authority, Saskatchewan Environmental Society, and the Saskatchewan Waste Reduction Council); and
- Energy saving programs (Natural Resources Canada, SaskEnergy, Government of Saskatchewan).

In the long-term (greater than five year time horizon), the program will continue to expand on the first five years of activities, building on existing actions or implementing additional actions. The Plan will continue to evolve, and programs and actions will be revised to ensure continued progress.

At this stage, program resources will work with senior levels of government to ensure that the goals and targets of the City of Saskatoon are supported through the Province, meeting its commitment to renewable fuels.

Rationale

The Plan focuses on cost-effective actions to reduce energy use and greenhouse gas emissions that provide significant environmental, economic and social benefits. As such, the programs are designed to achieve specific and measurable progress relative to the five milestones of the Partners for Climate Protection program in areas of land use, transportation, buildings and environment.

Expected Results

Experience with other action plan programs has demonstrated that communities, in collaboration with senior government, utility and industry stakeholders, can positively influence the rate of energy efficiency investment. Thus, this program has been designed to contribute to reducing energy and fuel consumption and greenhouse gas emissions.

Through the implementation of this plan, it is expected that the City of Saskatoon will meet its corporate greenhouse gas reduction target in 2013.

Implementation of the community-wide program will greatly contribute towards meeting the community greenhouse gas reduction target. However, a significant level of effort in all sectors of the community will be required to meet the 2013 target. Many of the actions have longer term greenhouse gas reduction impacts, and will contribute towards meeting the community target in the future.

Energy savings programs are offered through SaskEnergy, the Government of Saskatchewan and Natural Resources Canada. These programs include:

- Appliance Loan for Energy Star ® qualified appliances (SaskEnergy),
- Saskatchewan EnerGuide for Houses (Government of Saskachewan), and
- ecoENERGY Efficiency Initiatives (Natural Resources Canada).

Smart Growth is an urban planning and transportation theory that concentrates growth in the center of a city to avoid urban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including mixed-use development with a range of housing choices.

A ***community or district energy system*** is a system for distributing heat generated in a central location, distributing it via underground pipes to residential or commercial properties.

4 MOVING FORWARD

Reporting Requirements

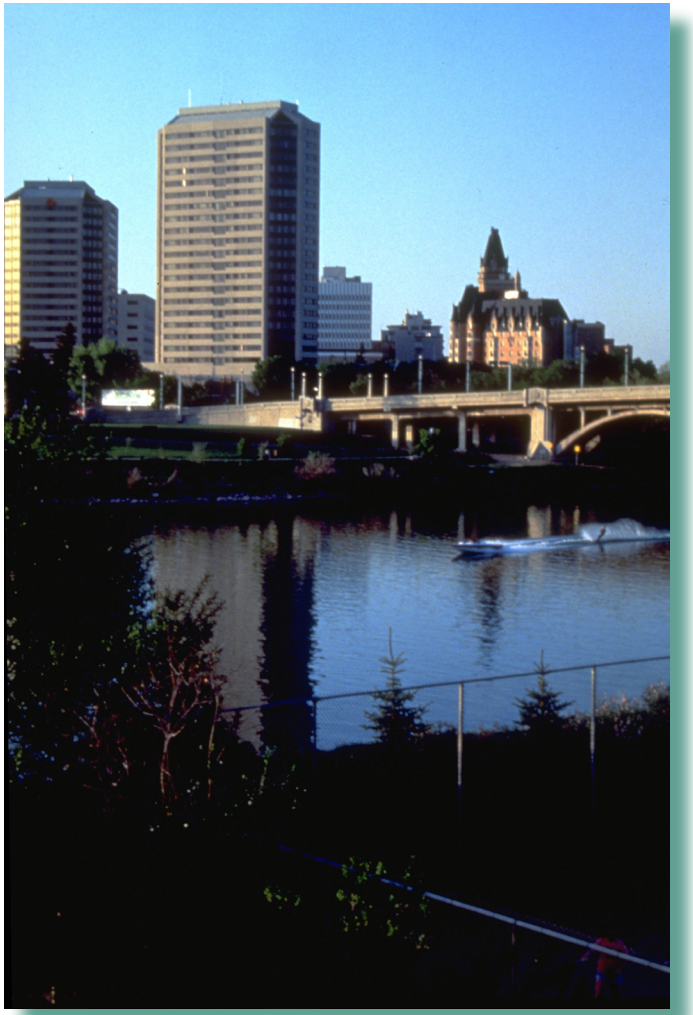
The success of the program will be measured by the results achieved relative to the expected outcomes described in the previous section. It is expected that, on a program level, this will consist of annual reports that describe energy consumption and greenhouse gas emissions reductions, and production and technical performance relative to expectations. Annual reporting is recommended in order to track progress towards the targets. Program-level reporting will be facilitated by submission of reports from program participants. These project-level reports could satisfy one or more of the following:

Minimum reporting requirements (Level I)

- Progress on implementation of the project, in terms of a description of the implementation status of each emission reduction measure;
- Actual performance in comparison with expectations, for example, the greenhouse gas emissions reduced compared to the target reduction;
- Total greenhouse gas reductions [Tonnes of CO_2e]; and
- Progress on implementation of initiatives which are supportive of other actions and promote behaviour change.

Additional reporting requirements (Level II)

- Qualitative assessment of project visibility and potential for replication (are people aware of the project, and has it spawned other projects?); and
- Qualitative assessment of project secondary benefits (economic, social and other environmental impacts).



View of Saskatoon Across the River
Source: Saskatoon Image Library

THE IMPLEMENTATION STRATEGY 4

Program Implementation Strategy

This section presents the program implementation strategy for meeting the Vision, Goals and targets outlined previously.

The success of the program will be judged on the achievement of results (outputs, outcomes and impacts). Therefore, how the program is implemented should reflect what features are most likely to contribute to reducing greenhouse gas emissions in a cost effective manner. The following aspects of the program design are examined:

- Target sectors and potential partners;
- Program delivery; and
- Investment and corporate resource requirements.

Each is further discussed below.

Target Sectors and Potential Partners

The primary sectors to be addressed in this program include:

- Residential buildings;
- Commercial and institutional buildings;
- Electricity generation and district heating;
- Light duty vehicles; and
- Heavy-duty vehicles.

There are a number of programs currently offered by agencies outside the City of Saskatoon that can be used to target these segments. It is recommended the City utilise these existing programs to deliver greenhouse gas reductions in the community. Implementation of this Plan using existing initiatives will reduce the cost of program design and allow the City to focus its efforts on areas where it can have the greatest impact, including engaging the public and businesses. A second potential role for the City is to act as a facilitator for the delivery of the programs identified below to residents and businesses located in Saskatoon. In that capacity, the City could assist in accessing technical resources, or assist with applications for program participants in order to reduce the uncertainty and transaction costs of program participation. A description of the resource requirements for these roles is presented below.

Program Delivery

To deliver the corporate program, it is anticipated that City Council will approve the creation of two new positions (see section "Resource Requirements"), which will coordinate the implementation of the Plan.

It is also anticipated that City Council will direct relevant staff to develop departmental business plans. These plans will identify activities, resource requirements, and timelines for implementation.

The City will lead implementation of the community portion of the Plan, with Environmental Services Branch managing the initiative, and coordinating the participation of the other branches. It is anticipated that the program will be delivered in cooperation with other agencies, which will provide engagement and outreach activities. In addition, it is expected that a technical resource person will be required to provide review and on-going technical advice related to the design, operation and monitoring of the programs.

The City's financial branch is exploring the integration of sustainability and environmental concerns into the budgeting process. Innovative concepts such as lifecycle costing, triple bottom-line accounting and reserve fund creation are being considered.

4 MOVING FORWARD

Corporate Plan Delivery

Table 3 summarises corporate emissions reduction by goal area, providing both an emission reduction target and highlighting departmental responsibility. Utility Services and Infrastructure Services will be responsible for the most significant reductions, reflective of their relative share of the City's corporate emissions.

Table 3: Corporate Emissions Reduction Targets for 2013 and Department Responsible

Activity Area	Target (tonnes)	Department Responsible
Build an Energy Aware Community	500	Environmental Services
Create a Healthy Community		Environmental Services / Employee Services
Achieve a Diverse and Environmentally Sustainable Energy System	5,000	Saskatoon Light & Power / Environmental Services
Design and Build Green and Smart	10,500	Facilities
Be Responsible Stewards of Our Resources	1,800 8,800	Environmental Services / Saskatoon Light & Power Facilities / Water and Wastewater Treatment
Lead by "Green Example	1,000	Purchasing, Finance
Total Impact	**27,600**	

Community Plan Delivery

Table 4 summarises community emissions reduction by goal area, providing an emission reduction target.

Although the City will lead the community Plan delivery, successful implementation of the Plan will depend on the coordination and cooperation of many organizations. This will include the Road Map 2020 Sustainability Champions as well the involvement of businesses and industry operating in Saskatoon. Support from the provincial government will also be important, especially in the area of reducing greenhouse gas emissions from the electricity supply.

The community's ability to meet its greenhouse gas emissions target is predicated on the Province achieving its target for green electricity.

Table 4: Community Emissions Reduction Targets for 2013

Activity Area	Target (kilo-tonnes)
Build an Energy Aware Community	100 KT
Create a Healthy Community	100 KT
Achieve a Diverse and Environmentally Sustainable Energy System	300 KT
Design and Build Green and Smart	200 KT
Be Responsible Stewards of Our Resources	200 KT
Lead by "Green Example"	500 KT
Total Impact	**1,400 KT**

THE IMPLEMENTATION STRATEGY 4

Investment and Resource Requirements

Implementation of the Plan will require investment by the City, local businesses and residents, as well as by senior levels of government. These investments in energy efficiency are cost effective and will provide positive paybacks over the life of the projects. This section provides an estimate of program implementation costs and incremental staff resourcing requirements for the City of Saskatoon.

Investment Requirements

Individual city departments will determine how best to implement emission reduction activities. It is expected that emission reduction measures will cost, on average, $5/tonne, which will translate into an incremental operating cost of $140,000/year for corporate activities.

To achieve community-wide emission reductions, a range of initiatives will be required. The investment in those measures may have costs ranging from $(40)/tonne to $75/tonne (see Figure 3).

Measures such as land use planning and consumer education are among the most cost effective, while providing incentives for residential retrofits and green electricity purchases are more costly.

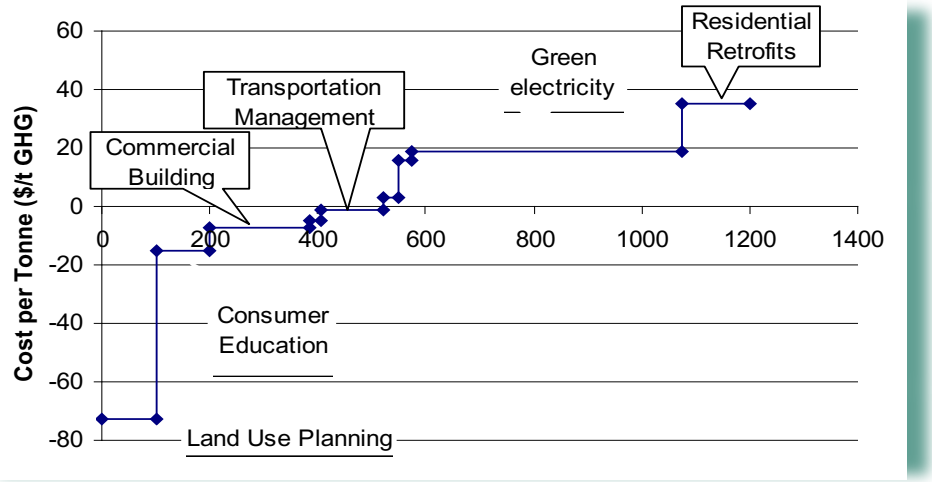


Figure 5: City of Saskatoon GHG Cost Curve

Source (Figure 5): The Sheltair Group

Ideally, the most cost effective measures will occur first to minimize expenditures. However, given the Province's recent commitment to increase the mixture of green electricity and the recent announcement of the ecoENERGY initiative by the federal government, the implementation of actions will be strongly influenced by initiatives beyond the control of the City.

Appendix B provides a summary of the investment requirements of the actions, as well as an estimate of the greenhouse gas emissions reductions.

4 MOVING FORWARD

Resource Requirements

The community program will require a core team that consists of a program manager, an outreach manager, and an energy manager. Note that it is assumed that the program manager is a full-time employee currently with a position in Utility Services. Two new positions will need to be created and staff hired for the positions of Outreach Manager and Energy Manager. In addition, it is expected that departments within the City will be tasked with leading specific initiatives.

The Outreach Manager will develop and implement education and outreach initiatives, including:

- Organising information and education initiatives;
- Identifing and engaging program partners; and
- Networking with partner agencies.

The Energy Manager will provide technical and financial tools to corporate departments and the broader community to:

- Audit businesses, buildings, and fleet;
- Identify business case opportunities for greenhouse gas management;
- Work with businesses to implement energy saving opportunities; and
- Monitor and evaluate impacts.

Note: It is assumed that the Outreach and Energy Managers would be hired early in 2008.

Funding Sources

To support program efforts, it is recommended the City apply for funding from federal and provincial organisations. It is expected that these funding sources will partially or completely cover program costs. A range of funding options exist to support implementation of the Energy and GHG Management Plan, including:

- Obtain Green Municipal Funds, Opportunities Envelope funding or funding through Infrastructure Canada programs;
- Work with the other Saskatchewan municipalities to co-fund a shared resource; and
- Source new funding such as from the federal ecoENERGY program.

THE IMPLEMENTATION STRATEGY 4

Next Steps

A sequence of activities is required to move from planning to action. Once City Council has endorsed this plan, staff will need to develop detailed work-plans. Critical steps include:

Step 1
Compile activities and evaluate impacts.

Step 2
Look for additional funding sources to support emerging programs.

Step 3
Work with existing partners to implement the Plan.

Step 4
Work with senior levels of the provincial government to ensure that the Province follows through on its commitment to provide green electricity.

5 MONITORING PROGRESS

Indicators and Targets

Table 5 on the next page outlines indicators and targets to measure success of the Energy and GHG Management Plan. Indicators have been developed that are easy to obtain data for, are not subject to short-term changes, and are responsive to changes in policy, i.e., they would be affected by the actions of this plan.

Indicators enable the City of Saskatoon to assess progress towards the City's Vision and to provide a basis for comparing one community to another. They also provide a means of looking back to establish trends, and to set targets for the future.

Targets establish the desired level of performance for an indicator. They are intended to be technically and economically feasible, but also to be challenging. Community-wide and corporate targets have already been established for total greenhouse gas reduction by 2013. However, it is useful to establish targets for indicators that will help assess overall progress towards the PCP program and Energy and GHG Management Plan goals.

MONITORING PROGRESS 5

Table 5: Indicators and Targets, Linked with Goals

#1 Build an Energy Aware Community	#2 Create a Healthy Community	#3 Achieve a Diverse and Environmentally Sustainable Energy System	#4 Design and Build Green and Smart	#5 Be Responsible Stewards of Our Resources	#6 Lead by Green Example	Indicator	Current (2003)	Target (2013)	Change
☑	☑	☑	☑	☑	☑	Per capita community-wide GHG emissions (tCO2e/capita/year)	17.5	11.7	6% below 1990 levels
				☑	☑	GHG emissions from City operations (tCO2e/capita/year)	0.44	0.40	10% below 1990 levels
☑	☑		☑	☑	☑	Per capita energy use (GJ/year)	233	These indicators will be used to track Saskatoon's progress on reducing energy and greenhouse gas emissions. Targets have not been identified for these indicators at this time.	
☑	☑			☑	☑	# of private vehicle kilometres travelled (VKT) per year (km/year)	1,476,784,852 (total)		
			☑	☑	☑	Corporate building energy consumption per sq m of floor space (GJ/m^2)	1.042		
	☑	☑	☑	☑	☑	Solid waste disposed per capita (tonnes/capita/year)	0.50		
☑	☑	☑		☑	☑	Total waste disposed (tonnes/year)	101,842		
☑	☑	☑	☑	☑	☑	% of commuters that *are not a driver* (%)	20		

Notes on some of the calculations:

1. Amount of waste diversion per capita/year = 597 kg (page 15 of Saskatoon's Waste and Recycling Plan: Current System Evaluation Report, 2005).

2. For Corporate building energy consumption per sq m of floor space, the total corporate floor space was 241,000 m^2 and the total energy consumed, electrical and natural gas was 250,989 GJ. Result: 250,989/241= 1.042 GJ/m^2.

3. Percent of commuters that are not a driver is based on 2001 Census data. It includes commuters that travel to work in a car, truck, or van as a passenger; use public transit, or other modes of transportation.

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11. Saskatoon Regional Economic Development Authority website: http://www.sreda.com/

APPENDICES

Appendix A - The Saskatoon Context

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List of Tables

Appendix B - Program and Actions Details

A APPENDIX - SASKATOON'S CONTEXT

The Built Environment

Comparing Saskatoon's population density with that of other Canadian cities provides a relative assessment of urban development. Reviewing the historical growth in land annexations provides an indication of how Saskatoon's footprint (in terms of land area occupied) has grown over the last 60 years, displacing agricultural land and natural areas.

The distribution of the type of new housing starts determines the population density for new neighbourhoods and also the resources necessary to build and service them. Single-unit dwellings use more land per dwelling than multiple-unit dwellings, consequently requiring proportionately more resources, and are greater contributors to urban sprawl.

In the course of providing services to residents and visitors, the City constructs, operates and manages buildings, infrastructure, and a fleet of vehicles. The City functions as a land developer for city-owned land and is subject to the same regulatory mechanisms as the private sector. The City of Saskatoon Land Bank program ensures serviced lots are available at reasonable and relatively stable prices. This gives the City the ability to directly influence the timing, pace and direction of city growth.

Currently: Saskatoon is responding to growth with a number of major projects.

- Studies on a north river crossing and south river-crossing were completed, and widening of the Circle Drive Bridge was approved as part of the 2006 Capital Budget.
- Design and construction work continued in several new neighbourhoods.
- Reviewed Growth Management Plan and Land Use Strategy.
- New neighbourhood density standards were implemented. The Development Plan will be revised.
- A review to determine the condition of the City's sanitary sewer system progressed through 2005. In the meantime, spot repairs using trenchless technology provided a new, less expensive method of rehabilitation.
- The City continued to encourage infill development through initiatives such as the Enterprise Zone, Urban Development Agreement, and tax incentives.

The City of Saskatoon will continue to address issues that impact growth, including final design of a south river crossing, the overpass at College Drive and Circle Drive (now completed), and widening of the Circle Drive Bridge (now completed).

Residential Buildings

In 2001, two thirds of Canadian homes were owner occupied. Saskatoon stood less than one percentage point behind the national home ownership rate at 65%. The percentage of Saskatoon residents who owned their own home was also slightly less than the percentage of people owning their own homes in the other major prairie cities. The higher rate of home ownership within the province of Saskatchewan compared to Saskatoon, may be indicative of the tendency of residents in rural areas and small centres with less than 10,000 people to own their own homes, a pattern found in other Canadian provinces.

Based on the 2001 census, over half (55%) of Saskatoon's

APPENDIX A

privately occupied dwellings were constructed after 1970. Approximately 11% of dwellings were constructed prior to 1946 and another 15% were constructed between 1946 and 1960. The greatest proportion of houses for a single decade (25%) were constructed between 1971 and 1980.

Corporate Emissions

Baseline data was collected and coordinated by ICLEI Energy Services, the technical services consulting arm of ICLEI, the International Council for Local Environmental Initiatives. ICLEI partners with the Federation of Canadian Municipalities to deliver the Partners for Climate Protection program. ICLEI provides services to help municipalities achieve their energy and emission reduction goals. Staff from ICLEI worked with City staff members to collect data for the years 1990 and 2003, and analyzed it to measure the percentage change over that time period, and provide the context to make energy forecasts for the future. The year 1990 provides a starting point which can be used to determine future changes in the environment, specifically greenhouse gas emissions.

Overall emissions from Saskatoon's corporate operations increased 23% between 1990 and 2003. The greatest absolute increase in emissions was in the water and wastewater sector, followed by the building sector. Emissions from the vehicle fleet, street lights and corporate waste all decreased between the inventory years (see Table A-1). This demonstrates that there are areas of the City's operations in which new emissions reduction opportunities could be effective and that success in reducing greenhouse gas emissions has been realized in the past.

Table A-1: Corporate Emissions and Energy, 1990 and 2003

	1990		2003	
Sector	**Total eCO2 (t)**	**Energy (GJ)**	**Total eCO2 (t)**	**Energy (GJ)**
Buildings	29,291	250,989	36,270	348,778
Vehicle Fleet	6,353	91,514	6,047	87,365
Streetlights	19,605	80,103	16,925	76,160
Water and Sewage	16,495	98,228	30,437	182,692
Corporate Waste	2,300	~	1,619	~
Total	**74,044**	**520,834**	**91,298**	**694,994**

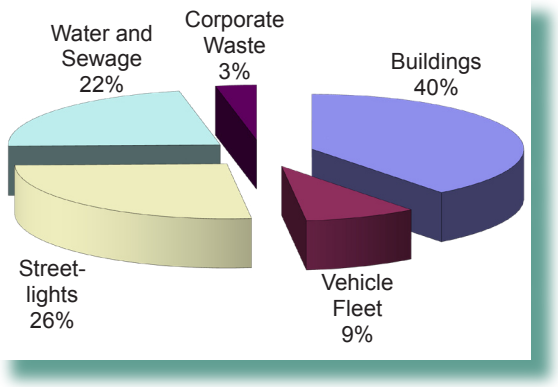

Figure A-1: Percentage of Coporate Emissions by Sector, 1990

A APPENDIX

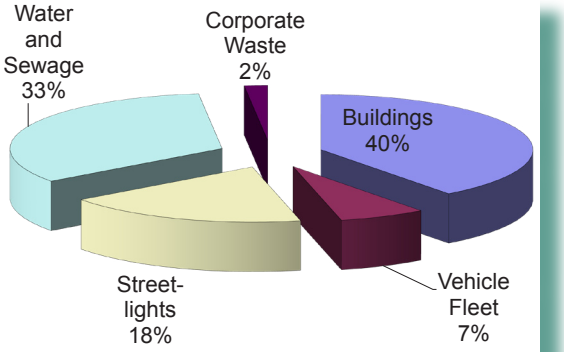

Figure A-2: Percentage of Corporate Emissions by Sector, 2003

Community Emissions

The graphs below show the change in the percentage of total emissions from 1990 to 2003 by sector. The greatest increase is in industrial emissions, which experienced growth of over 20%.

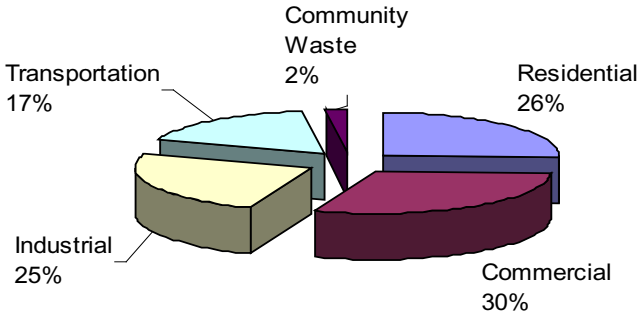

Figure A-3: Percentage of Community Emissions by Sector, 1990

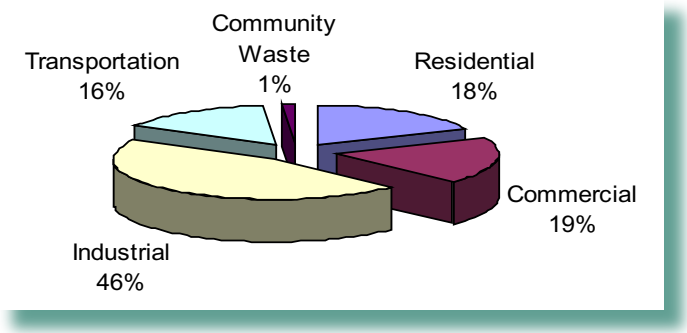

Figure A-4: Percentage of Community Emissions by Sector, 2003

Table A-2: Community Emissions and Energy, 1990 and 2003

	1990		2003	
Sector	Total eCO2 (t)	Energy (GJ)	Total eCO2 (t)	Energy (GJ)
Residential	632,958	8,432,754	659,433	8,831,730
Commercial	736,807	7,996,007	671,365	8,080,587
Industrial	618,179	5,895,404	1,641,199	22,951,175
Transportation	429,053	6,231,766	562,285	8,168,058
Community Waste	49,242	N/A	49,057	N/A
Total	2,466,239	28,555,931	3,583,339	48,031,550

APPENDIX A

Transportation

In 2001, 4% of Saskatoon residents walked or cycled to work. This is slightly higher than the provincial average (2.4%). The proportion of residents using a private vehicle for transportation to work is similar to provincial averages (see Figure A-5).

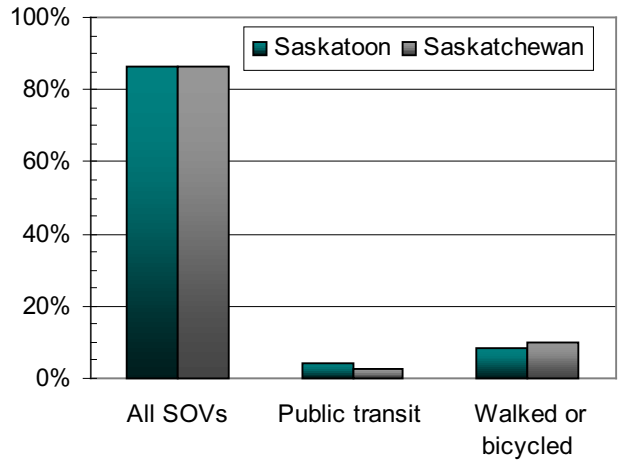

Figure A-5: Transportation Mode Split for People Travelling to Work

Solid Waste

Figure A-6 shows the variable rate of waste disposal for the City of Saskatoon from 1998 to 2005 compared to population growth. The waste disposal rate has been increasing since 2001, indicating that Saskatoonians are disposing of more waste to the landfill. In contrast, the recycling rate (Figure A-7) has fluctuated significantly over the seven years between 1998 and 2005, fluctuating between 55 and 60 kilograms per person per year. Both disposal and recycling of waste have impacts on energy and greenhouse gas emissions. Recycling materials can help reduce greenhouse gas emissions and reduce energy used in making new materials from virgin resources. Reducing the amount of waste landfilled will also assist with reducing greenhouse gas emissions.

Source (Figure A-5):
2001 Census of Canada

Source (Figure A-6):
Saskatoon Waste and Recycling Plan, Current System Evaluation (2006)

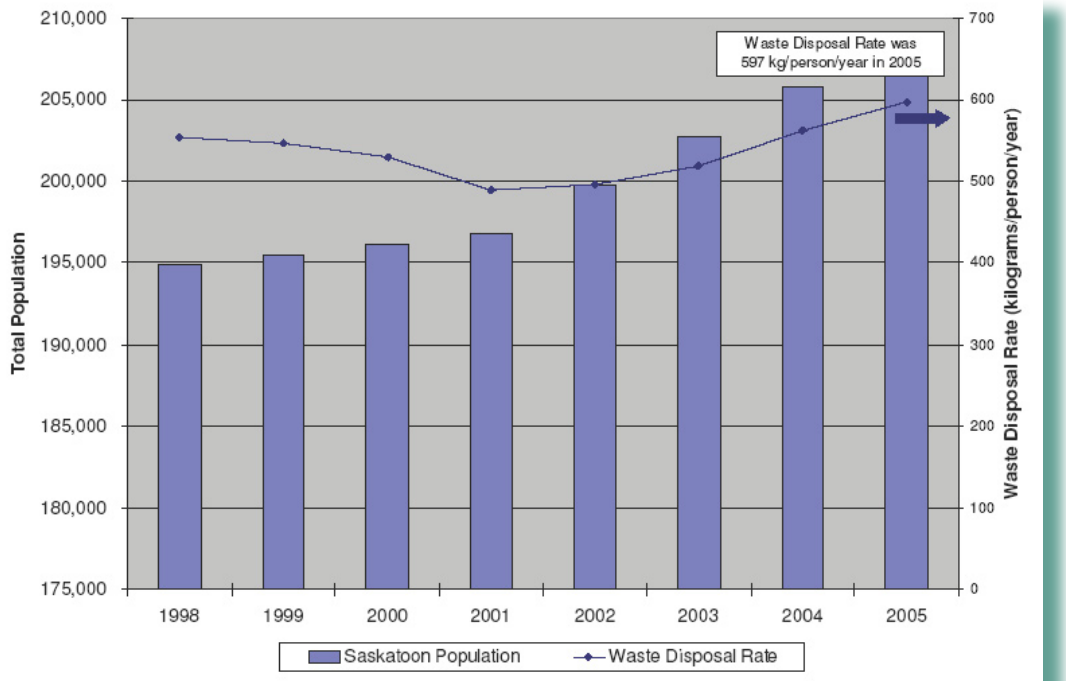

Figure A-6: Waste Disposal Rate and Population for Saskatoon, 1998 – 2005

A APPENDIX

Source (Figure A-7): Saskatoon Waste and Recycling Plan, Current System Evaluation (2006)

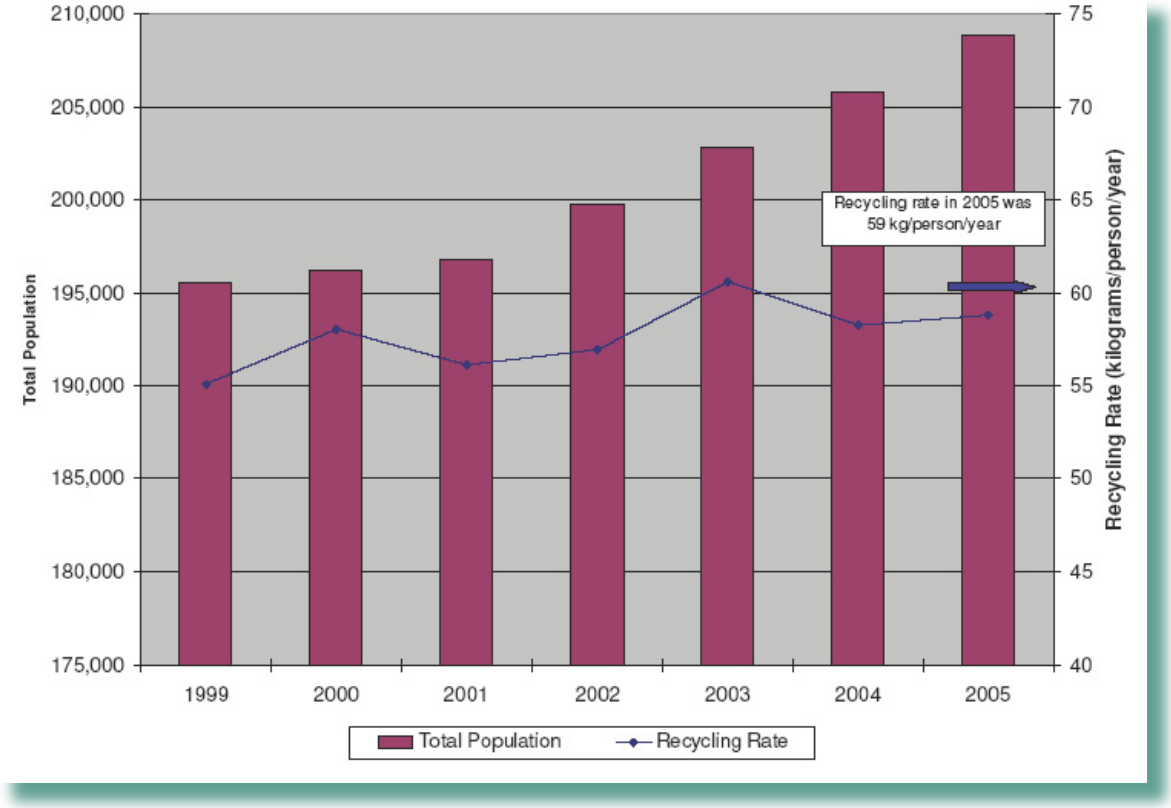

Figure A-7: Recycling Rate, 1999 - 2005

APPENDIX A

B APPENDIX B - PROGRAMS & ACTIONS

Introduction

High level targets were identified in Chapter 4 to support the development of program activities and resourcing. A qualitative estimate of greenhouse gas impact, energy savings, costs and cost effectiveness is presented below by activity. A qualitative approach was applied to reflect variability in potential costs and impacts associated with different implementation approaches. In particular, working through partnerships to develop and deliver the programs can significantly reduce costs.

This appendix describes in detail the actions and programs that were developed. A summary table of qualitative estimates for each program has been organized by goal area and can be found at the end of this section.

Goal #1: Build an Energy Aware Community

Corporate Program and Actions

Internal Education Program (Corporate "In-reach")
This program will facilitate corporate uptake and engagement in actions identified in this plan with assistance from the communications branch. It will include an education campaign on energy efficient transportation-related actions and staff education for energy awareness. It will also provide updates on the progress of the Plan and highlight key staff initiatives. The purpose of corporate in-reach is to build awareness on energy and greenhouse gas issues within the Corporation and ensure support for implementation of the Plan. This program also supports Goal #6, through demonstrating the City's commitment to energy and greenhouse gas management in its own operations.

Program Category: Education / Awareness

Barriers Addressed by Program: Knowledge

Sector: City operations

Target Stakeholders: City staff

A1-1: Conduct an Anti-Idling Education Campaign

Conduct an education campaign targeting City staff, and develop a formal policy on anti-idling for City vehicles. The campaign will access information and free graphic materials from Natural Resources Canada's Idle Free Zone, and will be incorporated into driver training programs. As part of this campaign, individuals and departments that have been successful at minimizing idling will be recognized and rewarded.

Vehicle idling consumes fuel and creates air emissions without providing any benefit to the operation of the vehicle. Targeting drivers through education is the first step to achieving behavioural change and long-term reductions in vehicle idling.

Resources: Natural Resources Canada, Idle Free Zone (www.oee.nrcan.gc.ca)

Responsibility for Implementation: Communications, Facilities, Environmental Services

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program and Goal #5 - Transportation Emission Reduction Program

PROGRAMS & ACTIONS - APPENDIX B

A1-2: Implement the SmartDriver Program for Drivers of the Vehicle Fleet

Implement SmartDriver Training seminars for staff that drive fleet vehicles as part of their job.

Natural Resources Canada's SmartDriver Training program can be used to teach fuel-efficient driving techniques to drivers in City fleets. The training course offers free practical advice on how to improve fuel-efficiency and reduce business costs. On average, a 10% reduction in fuel consumption has been achieved through implementing this training program in other municipalities.

Resources: Natural Resources Canada, SmartDriver Program (www.oee.nrcan.gc.ca)

Responsibility for Implementation: Facilities, Transit

Linkages to Other Programs: Goal #5 - Transportation Emission Reduction Program

A1-3: Promote Employee Trip Reduction

Educate City staff in, and promote, alternative commuting options, as well as provide incentives for staff to use these alternatives. This action involves the development of ride sharing, car sharing and guaranteed ride programs, providing transit pass discounts to staff, encouraging telecommuting, and allowing staff to work compressed or reduced weeks. Improving bike racks and shower facilities will help to further encourage active transportation. This action will also investigate opportunities to implement a pay parking system in staff parking lots with designated free parking for car pools.

To further raise awareness on commuter trip reduction, the City will join the National Commuter Challenge Event (held annually during the first week of June) and challenge local businesses and the community to participate.

Changing the way staff commutes to work can have significant and lasting impacts on greenhouse gas emissions from vehicles. Car sharing can reduce commuter air emissions by at least 50% (assuming two people per vehicle).

Resources: National Commuter Challenge Event (www.commuterchallenge.ca/)

Responsibility for Implementation: Environmental Services, Employee Services

Linkages to Other Programs: Goal #5 - Transportation Emission Reduction Program

A1-4: Develop an Energy Awareness Program for Staff

Develop and deliver a program to educate employees on the importance of energy awareness in the workplace. This action will encourage all staff to identify and undertake energy efficiency measures. As part of this action, staff and departments that have made the greatest effort in reducing energy use will be recognized and rewarded, encouraging others to follow suit.

Educational material will assist staff in making informed decisions on energy efficient options that are available and allow them to identify opportunities for energy conservation in the workplace. In addition, keeping staff up to date on the progress

B APPENDIX

of the Energy and GHG Management Plan will keep the profile of the Plan high and encourage increased effort.

Resources: Saskatoon Environmental Society programs

Responsibility for Implementation: Environmental Services

Linkages to Other Programs: All

A1-5: Provide Energy Management Training for Building and Facilities Managers

Provide training to building and facilities managers that assists them in managing energy consumption and in identifying areas where savings can be made. Natural Resources Canada's Office of Energy Efficiency offers a number of energy management training courses that range from introductions to customized workshops.

Resources: Natural Resources Canada, Office of Energy Efficiency – Dollars to $ense Energy Management Workshops (www.oee.nrcan.gc.ca)

Responsibility for Implementation: Environmental Services

Linkages to other programs: Goal #4 - Energy Efficient City Buildings and Facilities Programs

Community-Wide Programs and Actions

Public Outreach and Education Program

The actions encompassed by this program raise awareness in the community on energy and greenhouse gas management issues and initiate behavioural change.

There are substantial barriers to achieving long-term change in consumer behaviour. These include perception of the issue, awareness of programs, convenience, cost (either real or perceived), and ownership of the issue, among others. To overcome these barriers, a substantial commitment for multi-year funding is required. This would ensure sufficient time for the programs and actions of the Energy and GHG Management Plan to enact behavioural change.

Program Category: Education / Awareness

Barriers Addressed by Program: Knowledge

Sector: Community wide

Target Stakeholders: Residents and businesses

B1-1: Launch the Energy and GHG Management Plan

Develop a high profile campaign to launch the Energy and GHG Management Plan. This action will include an open house with displays and events to promote energy efficiency and greenhouse gas reductions. This will occur following plan approval, and include a program of activities over the 24 months following the launch. Activities could include showcasing the beginning of a pilot project, or funding announcements, etc. These should be designed to attract local media attention to the Plan and help the public realize that continuous progress is being made.

Key messages will be identified during the development of the launch program. Themes could include: energy planning has many benefits; energy efficiency is a sound business decision;

and the City is a leader in sustainability.

While primarily focusing on the general public, this campaign can also include targeted information for specific audiences.

Potential Partners in Implementation: City of Saskatoon, other environmental organizations, and Road Map 2020 Sustainability Champions

Linkages to Other Programs: All

B1-2: Develop Outreach Materials for Community Engagement

Develop outreach materials to highlight energy efficiency projects in the community and easy steps residents can take towards being more energy efficient. Outreach materials may include bill stuffers (to include in utility bills), mail drops, and one page spreads in the local newspaper or newsletters, as well as posting on Road Map 2020 and City websites.

A variety of media should be considered including local or community newsletters, municipal service or community calendars, and media stories and newspaper advertisements.

Potential Partners in Implementation: City of Saskatoon (lead), other community or environmental organizations

Linkages to Other Programs: All

B1-3: Promote the E-Waste Program (SWEEP)

Promote the new e-waste program run by SARCAN and the provincial stewardship program - Saskatchewan Waste Electronics Equipment Program (SWEEP) through bill stuffers (to include in utility bills) and community newsletters. The City will work with SARCAN to develop promotional materials.

Resources: SWEEP (www.sweepit.ca)

Potential Partners in Implementation: City of Saskatoon, SARCAN, and SWEEP

Linkages to Other Programs: Goal #5 - Solid Waste Emissions Reduction Program

B1-4: Promote Community Wide Demonstration Projects and Encourage Green Development

Promote community-wide demonstration projects and encourage the development of green and LEED certified buildings. These projects will be promoted through providing project recognition and highlights in the outreach materials (see Action B1-2: Develop Outreach Materials). In addition, the University of Saskatchewan, other large organizations, and private developers will be encouraged to promote their own "green" projects.

Possible projects include: River Landing Development, University of Saskatchewan Cogeneration project (with estimated reductions of 13,640 tCO2e), the Pleasant Hill Re-development project, a Sustainability Centre housing environmental organizations, "green" businesses, and green live/work spaces.

Partners in Implementation: City of Saskatoon, University of Saskatchewan, other large organizations and private developers.

Linkages to Other Programs: All

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Community Based Social Marketing

People's behaviours directly influence the sustainability of the world we live in. To promote sustainability, it is essential to effectively encourage individuals and businesses to adopt behaviours that are resource efficient.

Community-based social marketing (CBSM) provides a method for developing programs that encourage behaviour change. Using a CBSM approach, program planners can build an effective program that identifies all of the barriers to a desired activity and then design a program to systematically overcome these barriers.

B1-5: Continue to Support Road Map 2020 Activities

Support Road Map 2020 activities in the community through funding activities directly related to the Energy and GHG Management Plan.

These activities could include: administering a follow-up public survey to compare levels of awareness and attitudes on climate change, greenhouse gas issues; co-hosting public educational forums that target residents and businesses to keep the community up to date on the latest technologies and progress of the Energy and GHG Management Plan; support and expand of the Sustainability Champion Program (See Action B6-1: Expand the Road Map 2020 Sustainability Champions Program)

Potential Partners in Implementation: City of Saskatoon, Road Map 2020

Linkages to Other Programs: All

B1-6: Implement a Social Marketing Initiative

In partnership with Road Map 2020, the Saskatchewan Environmental Society and other non-profit environmental organizations and community actors, the City will promote energy efficiency, greenhouse gas reduction actions and green purchasing options to residents and businesses. The communication strategy for community education and awareness, also known as a community-based social marketing initiative, is intended to help change the attitudes and behaviours of Saskatoon citizens.

The City will utilize other successful social marketing campaigns, such as the City of Vancouver's One Day campaign (www.onedayvancouver.ca), to structure our initiative.

Resources: Community-based social marketing website (www.cbsm.com)

Potential Partners in Implementation: City of Saskatoon (lead), Road Map 2020, Saskatoon Environmental Society

Linkages to other programs: All

B1-7: Promote Green Electricity Purchasing Options

Promote green electricity purchasing opportunities for residents, businesses and industry through an advertising campaign. Green electricity can be purchased through SaskPower and Saskatoon Light & Power. Explore partnership opportunities to promote green electricity in Saskatoon. Activities may include advertising through bill inserts or on websites, promotion at home shows or other environmental events like Earth Day, or offering gift certificates for green power.

Potential Partners for Implementation: City of Saskatoon, Saskatoon Light & Power, SaskPower

Linkages to other programs: All

B1-8: Develop a Food and Energy Awareness Program

Develop an outreach program that promotes local food and educates people about the availability and benefits of purchasing locally and regionally grown food products, and the amount of

emissions that are created from imported foods. As part of this program, conduct workshops, and provide topsoil and plants to grow local food. The workshops will apply sustainable urban agriculture practices such as growing for oneself and growing for the local economy, and educate on water wise issues, composting and the trade-offs in emissions production.

Resources: CHEP (www.chep.org), Farm Folk City Folk (www.ffcf.bc.ca), Saskatoon Farmers' Market (www.saskatoonfarmersmarket.com)

Potential Partners in Implementation: City of Saskatoon, community and environmental organizations

Linkages to Other Programs: Goal #6 - Community Leadership Program

Energy Efficient Transportation Education Program

The actions included in this program will raise awareness in the community on transportation energy and emission reduction measures. Since transportation contributes 17% of the community's emissions, small changes to individual transportation choices can have a significant impact on total emissions.

Program Category: Education / Awareness

Barriers Addressed by Program: Knowledge

Sector: Community wide

Target Stakeholders: Residents and businesses

B1-9: Develop an Anti-Idling Program and Investigate Potential for a Bylaw

Develop an anti-idling campaign to reduce unnecessary fuel consumption and investigate the potential for establishing a bylaw. The campaign consists of two components: education and enforcement. Other communities across Canada have implemented anti-idling bylaws and Natural Resources Canada has developed a model bylaw. Using these resources, determine the best model for Saskatoon.

Prime targets for reaching drivers include school and daycare drop-off areas, recreational centres, and shopping malls. The education program, based on community-based social marketing (CBSM) techniques has proven effective in getting people to commit to turning off their vehicles when parked. Targeting drivers through education is a first step in reducing idling through behavioural change.

The next step is to phase in the bylaw. Due to Saskatoon's cold climate, the City may want to consider varying the idling times with temperatures.

Resources: Natural Resources Canada, Idle-Free Zone (www.oee.nrcan.gc.ca)

Potential Partners in Implementation: City, community and environmental organizations

Linkages to Other Programs: Goal #5 - Transportation Emissions Reduction Program

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B1-10: Promote Driver Training Programs to Teach Fuel-Efficient Driving Skills

In cooperation with local driving schools and community organizations, the City will promote or provide driver training programs such as Auto$mart and SmartDriver. Auto$mart is a highly interactive, easy-to-use multi-media teaching resource that helps driver educators instruct on fuel-efficient and safe driving practices via in-class and in-car teaching environments. The SmartDriver program is designed to teach professional drivers of all vehicle classes how to maximize fuel economy, from the pre-operating inspection to detailed instructions on driving techniques.

Resources: Natural Resources Canada Auto$mart Driver Education Program and SmartDriver Program (www.oee.nrcan.gc.ca)

Potential Partners in Implementation: City of Saskatoon, local businesses, institutions, and Road Map 2020 Sustainability Champions

Linkages to Other Programs: Goal #5 - Community Transportation Emission Reduction Program

B1-11: Promote Carpooling and Car Sharing

Promote carpooling and car sharing using carpool.ca - an online carpooling match service, combined with incentives like car pool lanes and preferred parking spaces for car pools. In particular, vanpooling services for longer-distance commuting should be considered with coordination and support comparable to what is provided for transit trips (e.g., provide a system for people to connect with van pools).

Note that Regina is the only city in Saskatchewan registered on carpool.ca. The City and other large organizations in Saskatoon will need to take the initiative and register for the program.

Resources: Trans Canada Carpool (www.carpool.ca)

Potential Partners in Implementation: City of Saskatoon, Road Map 2020 Sustainability Champions, local businesses and other community organizations

Linkages to Other Programs: Goal #5 - Transportation Emission Reduction Program

B1-12: Promote Commuter Trip Reduction

Promote commuter trip reduction programs to large employers. The City of Saskatoon is home to several large employers, including government, education, health care and industry that have the size to justify efforts on commuter trip reduction. Such programs can include ride sharing, car sharing, guaranteed ride programs, transit pass discounts, telecommuting, and compressed or reduced work weeks. Ideal candidates to pilot test these include local and regional government, the University and Innovation Place.

Potential Partners in Implementation: City of Saskatoon, local businesses and other community organizations.

Linkages to Other Programs: Goal #5 - Transportation Emission Reduction Program

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B1-13: Implement an Alternative Transportation Awareness Campaign

Develop a transportation demand management strategy and implement a marketing campaign to promote the user benefits of alternative modes of transportation. This campaign would use direct and targeted marketing, and would be promoted in conjunction with other transportation promotional events (e.g., free trial of vanpooling, or transit pass discounts).

Potential Partners in Implementation: City of Saskatoon, community and environmental organizations

Linkages to Other Programs: Goal #2 - Active Community Program, Goal #5 - Transportation Emission Reduction Program

Energy Efficient Buildings and Alternative Energy Education Program

Constructing more energy efficient buildings in the community requires the cooperation of a number of stakeholders. The actions described here focus on providing information to residents and builders on energy efficient buildings and the use of alternative energy sources.

Program Category: Education / Awareness

Barriers Addressed by Program: Knowledge

Sector: Community wide

Target Stakeholders: Residents and businesses

B1-14: Provide Workshops on Smart Growth Principles and Green Buildings to Developers

Provide a series of workshops for developers on Smart Growth, energy efficient development and green buildings. The City will look for opportunities to partner with organizations such as the Canada Green Building Council to provide workshops.

Educating and engaging this sector will help to support Goal #4: Design and Build Green and Smart.

Resources: Smart Growth Canada (ww.smartgrowth.ca); Green Building Council of Canada (www.cagbc.org)

Potential Partners in Implementation: City of Saskatoon (lead), Saskatchewan Chapter of the Canada Green Building Council

Linkages to Other Programs: Goal #4 - Energy Efficient Buildings Program, Goal #6 Community Leadership Program

B1-15: Provide Workshops on Renewable Energy

Provide a series of workshops to developers of residential and commercial buildings on renewable energy to encourage the incorporation of renewable energy technologies in new developments. The City, in partnership with local environmental non-government organizations will organize a series of workshops with guest speakers on incorporating renewable energy technologies in new and existing buildings. This action will support incentives for energy efficient land use and green buildings.

Potential Partners in Implementation: City of Saskatoon (lead),

What is Smart Growth?

Smart Growth is an urban planning and transportation theory that concentrates growth in the center of a city to avoid urban sprawl; and advocates compact, transit-oriented, walkable, bicycle-friendly land use, including mixed-use development with a range of housing choices.

Smart Growth values long-range, regional considerations of sustainability over a short-term focus. Its goals are to achieve a unique sense of community and place; expand the range of transportation, employment and housing choices; equitably distribute the costs and benefits of development; preserve and enhance natural and cultural resources; and promote public health.

Source: Wikipedia (en.wikipedia.org/wiki/Smart_growth)

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Prairie Ecovillage Development Corporation, SaskPower, Saskatoon Light & Power

Linkages to other programs: All

B1-16: Implement an Energy Efficiency Challenge for Schools

Create an energy efficiency challenge for schools or classrooms - both public and private (similar to the past One Tonne Challenge program). This action may include expansion of the Saskatchewan Environmental Society's Destination Conservation program.

Potential Partners in Implementation: City of Saskatoon, school boards, and Saskatchewan Environmental Society

Linkages to Other Programs: All

B1-17: Promote Residential Energy Efficiency Programs

Promote residential energy efficiency programs such as the federal ecoENERGY program (formerly the EnerGuide for Houses program). The City will improve participation in residential energy efficiency programs by promoting the ecoENERGY program.

ecoENERGY Retrofit for Homes is available to owners of single family homes including detached, semi-detached and low rise multi-unit residential buildings. Property owners can qualify for federal grants by improving the energy efficiency of their homes, and reducing their home's impact on the environment. The maximum grant one can receive per home or multi-unit residential building is $5,000; whereas the total grant amount available to one individual or entity for eligible properties over the life of the program is $500,000.

The City and applicable partners will provide workshops on energy use in the home that describe and illustrate how much energy people use. This program may include smart meters that can be easily used in the home so people will immediately identify particular household tasks with energy use.

Resources: Natural Resources Canada (www.oee.nrcan.gc.ca)

Potential Partners in Implementation: City of Saskatoon, Saskatoon & Region Home Builders' Association, Saskatoon Environmental Society

Linkages to Other Programs: Goal #3 - Alternative Energy Program, Goal #4 - Energy Efficient Buildings Program

B1-18: Encourage Increased Energy Efficiency in Industrial, Commercial and Institutional (ICI) Buildings

Encourage the institutional, commercial and industrial sectors to improve the energy efficiency of their buildings through participation in Natural Resources Canada's energy efficiency programs. These programs include: ecoENERGY for Industry, ecoENERGY Retrofit and the Canadian Industry for Energy Conservation (CIPEC) program.

Industrial sector businesses could improve their efficiency through general upgrades to lighting and heating, and more specific process-related upgrades. These measures can result in a 5%-10% reduction in energy use.

The ecoENERGY program for Small and Medium-Sized

Organizations provides a financial incentive of up to 25% of project costs to a maximum of $50,000 to help small and medium-sized commercial and institutional buildings and industrial facilities implement energy saving projects.

Resources: Natural Resources Canada (www.oee.nrcan.gc.ca)

Potential Partners in Implementation: City of Saskatoon, businesses and industry

Linkages to Other Programs: Goal #4 - Energy Efficient Buildings program

Water Conservation Program

Reducing water consumption in the community can help to reduce the amount of energy used in water treatment and pumping. Also, minimizing water consumption during peak times (e.g., early morning and evening) can help reduce the overall energy impacts of treating and distributing water.

Program Category: Education / Awareness

Barriers Addressed by Program: Knowledge

Sector: Community wide

Target Stakeholders: Residents and businesses

B1-19: Implement Domestic Water Consevation Program

Implement a domestic water conservation program using community-based social marketing techniques. This action will target lawn watering, replacement of traditional fixtures with low flow fixtures and rain barrels to reduce consumption of treated water. Educational and outreach campaigns have shown to reduce residential water consumption by 20% - 23%.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #4 - Energy Efficient Buildings Program, Goal #5 - Water and Wastewater Reduction Program

B1-20: Review Rate Structure for Water Users

Review the rate structure for residential, commercial and industrial water users. Flat rate structures historically do not encourage resource conservation. In this action, rate structures will be reviewed to determine which is most appropriate and will send the right message to water users.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #4 - Energy Efficient Buildings Program, Goal #5 - Water and Wastewater Reduction Program

B1-21: Promote Xeriscaping to Residents and Businesses

Promote xeriscaping to residents and businesses. The use of native and drought resistant plants can significantly reduce outdoor water use. The City will develop a campaign to educate residents and businesses on the benefits of xeriscaping. Activities may include booths at home and garden shows, local garden shops and bill stuffers.

Potential Partners for Implementation: City of Saskatoon

Linkages to Other Programs: Goal #4 - Energy Efficient Buildings Program

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Goal #2: Create a Healthy Community

Corporate Program and Actions

Active Staff Program

The actions in this program help to educate City employees on the energy, greenhouse gas emissions and health benefits of active transportation, and encourage the use of active alternatives.

Program Category: Education / Incentives

Barriers Addressed by Program: Knowledge

Sector: City operations

Target Stakeholders: City staff

A2-1: Promote and Expand on Wellness Initiatives to Encourage Active Modes of Transportation

Promote and expand on wellness initiatives underway at the City to encourage staff to use active modes of transportation. Promotion may include lunch-time information sessions, email newsletters, etc.

Responsibility for Implementation: Employee Services, Environmental Services

Linkages to Other Programs: Goal #1 - Internal Education Program

A2-2: Provide Incentives to Encourage Employees to Use Active Modes of Transportation

Provide incentives to encourage employees to use active modes of transportation for commuting to and from the workplace. This action will educate employees on the health and environmental benefits of walking or biking to work and encourage this behavior though the use of incentives. The program may include providing change rooms, showers, lockers, bike storage areas, and fleet vehicles (for use during the workday) for employees who commute using active transportation. See Action A1-3: Promote Employee Trip Reduction.

Responsibility for Implementation: Employee Services, Environmental Services

Linkages to Other Programs: Goal #1 - Internal Education Program

A2-3: Improve Alternative Transportation Infrastructure for Civic Facilities

Conduct transportation audits on civic buildings to ensure that there is adequate alternative forms of transportation. For example, the audit would look at the infrastructure requirements for staff and customers arriving to buildings by bicycle or transit. This may include secure and weather protected bicycle parking, changerooms and signage. Implement changes per audit results.

Responsibility for Implementation: Transit

Linkages to other programs: Goal #1 - Energy Efficient Transportation Education Program, Goal #2 (all programs)

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Community-Wide Program and Actions

Active Community Program

Improving transportation options and encouraging the use of efficient transportation (such as providing incentives for commuters to shift from driving to alternative modes) will assist in encouraging active modes of transportation.

The use of active modes of transportation has many benefits can that be realized in addition to energy conservation. Actions that increase walking and cycling activity provide public fitness and health benefits. Additional benefits include congestion reduction, road and parking cost savings, consumer cost savings, reduced accidents, improved accessibility for non-drivers, and increased community livability.

Program Category: Infrastructure improvements

Barriers Addressed by Program: Accessibility

Sector: Community wide

Target Stakeholders: Residents and businesses

B2-1: Improve Active Transportation Infrastructure

Improve and expand active transportation infrastructure by assigning designated non-motorized areas (e.g., greenways), that link neighbourhoods to places of work, shopping and services; improve pedestrian and cycling access to and across the bridges; update and fully implement the Bikeway-Cycling Network Plan; and establish bicycle parking and bike rental co-ops with depots throughout the city. Develop guidelines based on best practices that ensure high personal and public safety standards for new greenways, bike lanes and community walkways.

Potential Partners in Implementation: City of Saskatoon, local businesses, other community organizations

Linkages to Other Programs: All

B2-2: Expand Walking School Bus Program

Expand the Walking School Bus program to all schools city-wide by continuing to encourage schools to develop their own walking school bus programs. The Walking School Bus is a program where children walk to school with adult volunteers. Promote the program on the City website and in utility bill inserts, and recognize those schools that have the most participants. (See related Action B1-14: Implement an Energy Efficiency Challenge for Schools)

Resources: Pedestrian and Bicycle Information Center (www.walkingschoolbus.org)

Potential Partners in Implementation: Saskatchewan in motion™, schools, parents, City of Saskatoon

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program

B2-3: Promote Health Benefits of Active Transportation

Promote the health benefits of active transportation to the community and implement an Active Transportation Community Challenge initiative that integrates with outreach activities.

Potential Partners in Implementation: City of Saskatoon, Road Map 2020, Saskatchewan in motion™

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program

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Goal #3: Achieve a Diverse and Environmentally Sustainable Energy System

Corporate Program and Actions

Alternative Energy Program

Increasingly, local governments are taking an interest in utilities and/or partnerships to support development of local renewable energy supplies. The City of Saskatoon already operates their own utility, Saskatoon Light & Power, and can leverage other opportunities.

Program Category: Infrastructure improvements

Barriers Addressed by Program: Knowledge

Sector: Utility services

Target Stakeholders: City staff

A3-1: Utilize Waste Methane and Improve Efficiency at the Wastewater Treatment Plant (WWTP)

Utilize methane gas left over from waste water treatment processes to generate electricity, and improve the energy efficiency at the WWTP through equipment upgrades. This action will ensure that any future process upgrades include the highest energy efficient design and maximize the recovery of resources as well as effectively utilize waste methane gas produced during the treatment process.

Responsibility for Implementation: Utility Services

Linkages to Other Programs: Goal #1 - Build an Energy Aware Community, Goal #4 - Energy Efficient City Buildings and Facilities Program

A3-2: Purchase Green Energy

Purchase green energy to offset a portion of emissions from City operations. Investigate opportunities to purchase green electricity from local private producers and SaskPower. The City could negotiate a bulk purchasing deal or develop a purchasing policy to facilitate the purchase of green power by individual departments. The City will consider purchasing enough green power to offset between 2% and 10% of emissions.

Responsibility for Implementation: Individual City departments

Linkages to Other Programs: Goal #5 - Alternative Energy Program

Community-Wide Programs and Actions

Community Alternative Energy Program

A significant portion of the current energy supply system is based on non-renewable fossil fuels. Vehicle transportation is dependent on fossil fuels and buildings in Saskatoon are also substantial energy consumers of natural gas for heating and hot water. The current electrical generation system is primarily based on coal and natural gas fueled generation and continued growth in Saskatoon and in the rest of the province may require more fossil fuel-based electrical generation.

Program Category: Infrastructure improvements

Barriers Addressed by Program: Availability

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Sector: Community wide

Target Stakeholders: Residents and businesses

B3-1: Develop a District Heating System (catalyst action)

Investigate the potential for using waste heat from the Queen Elizabeth Power plant for a district heating system for the downtown core or for a greenhouse. Assess other opportunities to use waste heat and develop district heating systems in other areas of the city and in new developments.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #5 - Alternative Energy Program, Goal #6 - Community Leadership Program

B3-2: Pursue a Wind Power Project

Continue researching the development of a two-megawatt or larger (one to six turbines) wind power project. Initial steps are underway to determine feasibility.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #5 - Alternative Energy Program, Goal #6 - Community Leadership Program

B3-3: Capture and Use Landfill Gas for Power Generation

Utilize captured landfill gas from the Saskatoon Landfill for the generation of green electricity. Evaluate opportunities to use the electricity to offset landfill electricity consumption or for an electric vehicle.

The University of Saskatchewan and the City of Saskatoon are currently conducting a pilot project at the City landfill to estimate rates of landfill gas generation.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #5 - Alternative Energy Program

B3-4: Research Centralized Organics Facility

Continue to research the feasibility of a centralized organics facility, which would capture methane gas to create energy, and would create other useful by-products such as compost.

Potential Partners in Implementation: City of Saskatoon, private industry

Linkages to Other Programs: All

District Heating System

A district heating system is a system for distributing heat generated in a central location, such as waste heat from a power plant or industrial process, and distributing it via underground pipes to residential or commercial properties to meet individual heating requirements. A district heating plant is more efficient and has better pollution controls that small, individual boilers.

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Goal #4: Design and Build Smart

Corporate Program and Actions

Energy Efficient City Buildings and Facilities Program

Reducing energy consumption in buildings will lower operating costs and reduce building related greenhouse gas emissions.

Program Category: Building improvements

Barriers Addressed by Program: Availability

Sector: Facilities

Target Stakeholders: City staff

A4-1: Audit Existing Corporate Buildings and Facilities

Conduct energy and water efficiency audits of existing municipal buildings and identify opportunities for improvements. Develop a standardized audit system to ensure common criteria are applied across municipal buildings. Audits would be prioritized, starting with the largest consumers of energy and water. This action will identify cost effective retrofits for buildings that will help reduce building operating costs and greenhouse emissions.

Responsibility for Implementation: Facilities

Linkages to Other Programs: Goal #4 (all programs)

A4-2: Improve Energy Efficiency of Existing Buildings and Facilities

Improve the energy efficiency of existing buildings and facilities during renovations. The energy efficiency of some buildings has already been improved by 15%, and further energy efficiency improvements could reduce energy use in City buildings by an additional 20%. Where technically and economically feasible, energy efficiency should be maximized.

Some opportunities for improving the energy efficiency of existing buildings have been identified. These projects include renovation and expansion of police stations, arena expansions (capture heat generated by compressors within the arena for reuse in change rooms) and installation of heat exchangers on community pools.

Responsibility for Implementation: Facilities

Linkages to Other Programs: Goal #5 (all programs)

A4-3: Achieve LEED Certification for All New Civic Facilities

Establish a performance standard of LEED certification for all new municipal buildings with significant energy consumption. Incorporating energy efficient and green features during the design stage will help the City to conserve energy and reduce greenhouse gas emissions over the lifetime of the building. Although the construction cost may increase marginally, the incremental cost (compared to a building constructed to the provincial code) will be recovered through avoided energy costs. In addition, reducing energy consumption at City buildings will help insulate the City from increasing resource prices and

demonstrate to the community the benefits of energy efficient and green buildings.

Responsibility for Implementation: Facilities

Linkages to Other Programs: Goal #5 (all programs), Goal #6

Community Programs and Actions

Energy Efficient Buildings Program

Improving the energy efficiency of buildings in the community requires the cooperation of many stakeholders. Reducing energy consumption will lower operating costs for building owners and reduce building related greenhouse gas emissions. By improving the energy efficiency of low income housing, social benefits are also realized through the reduction in utility bills, freeing up income for other necessities. The actions described here focus on areas where the City can most effectively play a role.

Program Category: Incentives

Barriers Addressed by Program: Financial

Sector: Residential, commercial, industrial and institutional buildings

Target Stakeholders: Residents and business owners

B4-1: Develop Incentives to Promote Residential Building Energy Efficiency and Alternative Energy Systems

While the City cannot change building codes, it can provide incentives to promote building energy efficiency and the use of alternative energy systems for buildings. This action will examine potential incentives to encourage improved building energy efficiency and alternative energy systems. Incentives may include rebates on permit fees for buildings that incorporate energy and water efficient appliances and heating/cooling systems, or property-tax abatement incentives. As part of this action, the City will also consider developing policies that encourage residents to conduct an energy audit prior to undertaking renovations.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #5 (all programs)

B4-2: Develop Incentives to Promote ICI Sector Building Energy Efficiency and Alternative Energy Systems

Develop incentives to promote industrial, commercial, and institutional (ICI) sector building energy efficiency and alternative energy systems. In this action, the City will work with partners to develop an incentive program for new construction or building retrofits to encourage owners to construct or retrofit their buildings to higher energy efficiency standards or to include an alternative energy system in their building, e.g. solar panels.

Possible incentives may include partial property tax abatement,

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permit fee waivers for energy efficient development, or direct rebate programs.

The City will also consider encouraging businesses to set targets for energy conservation. Potential partnership organizations include SaskEnergy, SaskPower and Energy Service Companies (ESCOs).

Potential Partners in Implementation: City of Saskatoon (lead), SaskEnergy, SaskPower and ESCOs

Linkages to Other Programs: Goal #1 - Energy Efficiency and Alternative Energy Program

B4-3: Explore Alternative Means of Financing New Energy Efficient and Green Buildings and Retrofitting Existing Buildings

Use local improvement charges (LICs), variable development cost charges and/or property tax abatement programs to finance green buildings. In this action, funding is used to finance energy efficiency and renewable energy improvements to buildings.

Resources: The Pembina Institute (www.pembina.org)

Potential Partners in Implementation: City of Saskatoon, SaskEnergy and SaskPower

Linkages to Other Programs: Goal #1 - Energy Efficiency and Alternative Energy Program, Goal #5 - Alternative Energy Program

B4-4: Provide Incentives for Green Initiatives to Commercial and Industrial Sectors

Provide incentives, such as property tax or utility rate reductions, for companies initiating green improvements. Green improvements could include alternative transit options (e.g. carpool loading areas, bicycle parking and storage) or the addition of rooftop gardens or green roofs designed to reduce storm water loads.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #1 - Energy Efficiency and Alternative Energy Education Program, Goal #3 - Community Alternative Energy Program

Energy Efficient Land Use Planning Program

Land use planning is one of the most important determinants of a community's energy footprint. Integrating energy use and greenhouse gas emission considerations at early stages in the land use planning processes will have long term benefits in terms of reducing energy consumption, reducing greenhouse gas emissions, and increasing the livability of the City.

Program Category: Regulatory

Barriers Addressed by Program: Availability

Sector: Residential, commercial, industrial and institutional buildings

Target Stakeholders: Residents and business owners

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B4-5: Develop Guidelines for Complete and Compact Community Development

Defining criteria and developing guidelines will assist the City in making land use decisions that will support the development of compact communities.

A central requirement of this criteria is to ensure developing communities have access to transit services within 400 meters. This encourages people to walk and use public transportation more frequently.

The criteria can be used to evaluate land use decisions that will support the principles of "Smart Growth" and improve energy efficiency. While terms like Smart Growth and Complete Communities seem apparent when used, there may not be a consistent understanding of the definitions. By creating criteria and definitions, the success of a development in meeting the guidelines can be measured. In addition, the City should consider the use of modeling tools to evaluate the impacts of development (e.g. CommunityViz, INDEX or PLAC3S).

Note: the Development Plan and Zoning Bylaw are currently under review which is anticipated to be completed by 2009.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #1 - Public Education and Outreach Program

B4-6: Provide Incentives for Energy Efficient Land Use

Determine the feasibility of providing incentives to the development community through the development of policies that would allow preferential or accelerated review of the development permit process for projects that meet the Compact and Complete Communities criteria, and other green building criteria.

Providing other incentives such as property tax incentives, local improvement charges or variable development cost charges (DCCs) should also be investigated as a method to encourage energy efficient developments.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #5 - Alternative Energy Program

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Goal #5: Be Responsible Stewards of Our Resources

Corporate Programs and Actions

Alternative Energy Program

Exploring and developing sustainable practices for the management of our resources ensures that we will reduce our vulnerability to sudden shifts in energy supply. Increased efficiency provides a longer-term supply, which provides more time to explore energy reduction schemes and develop alternative energies. The transition to a more secure local energy supply is dependant on ensuring we have practices in place that provide alternatives to fossil fuel use.

Program Category: Natural resources management

Barriers Addressed by Program: Energy security

Sector: Saskatoon Light & Power

Target Stakeholders: Saskatoon Light & Power staff

A5-1: Develop an Alternative Energy Inventory

Develop an inventory to catalogue potential alternative energy sources within the Saskatoon region.

Some alternative technologies for electricity generation are not commercially available yet as many technologies are in the "near-commercial" stage of development. These technologies may be available for demonstration projects.

Responsibility for Implementation: Saskatoon Light & Power, Environmental Services

Linkages to Other Programs: Goal #3 (all programs)

A5-2: Investigate Utilizing Solar Energy for Heating Municipal Swimming Pools

Use solar energy to offset some of the heating demands for municipal swimming pools. Implement first as demonstration projects for public pools, later expanding this initiative to hotels and other private pools.

Responsibility for Implementation: Facilities

Linkages to Other Programs: Goal #3 (all programs)

A5-3: Investigate Opportunities for Net Metering

Investigate opportunities for Saskatoon Light & Power to implement a net metering program (similar to SaskPower's) for green power generators. Net metering is a method of crediting customers for electricity that they generate on site in excess of their own electricity consumption. In other words, it allows home and business owners to spin their electrical meters backwards using renewable energy that they produce from renewable energy such as solar panels or wind turbines.

To encourage this, consider paying the green power generators a premium for their electricity or at a minimum, the same price they pay for their electricity.

Responsibility for Implementation: Saskatoon Light & Power

Linkages to Other Programs: Goal #3 (all programs)

APPENDIX B

Water and Wastewater Reduction Program

Improving energy efficiency at the water and wastewater treatment plants will help to reduce energy consumption and emissions associated with the electricity consumption. Reducing the overall consumption of water will also help to reduce energy consumption at the water and wastewater treatment plants.

Program Category: Infrastructure improvements / regulatory

Barriers Addressed by Program: Energy security

Sector: Utilities Services

Target Stakeholders: City staff and residents

A5-4: Improve Energy Efficiency of Plant Operations

Improve energy efficiency at the water and wastewater treatment plants. This action will include the continued installation of variable speed drives at the wastewater treatment facility. Variable speed drives could reduce annual energy consumption by 5%.

Responsibility for Implementation: Water and Wastewater Treatment

Linkages to Other Programs: Goal #1 - Water Conservation Program

A5-5: Develop a Leak Reduction Program

Implementation of a leak detection and reduction program for water distribution could result in significant reductions in the amount of energy used for water treatment. Saskatoon currently experiences losses of up to 14%. The implementation of the International Water Association's standards for leakage reduction can reduce the amount of energy used for water treatment.

Responsibility for Implementation: Public Works

Linkages to Other Programs: Goal #1 Education and Outreach

Transportation Emission Reduction Program

The actions contained in this program will help to reduce fuel usage in fleet vehicles, lowering greenhouse gas emissions. Reducing fossil fuel consumption in vehicles provides many other benefits such as reduced operating costs and improved air quality.

Program Category: Transportation

Barriers Addressed by Program: Awareness

Sector: Corporate Transportation

Target Stakeholders: City Staff

A5-6: Implement a City Energy Efficient Vehicle Purchase Policy

Implement a City vehicle purchase policy requiring all vehicles to be hybrid electric, alternative or flex fuel, or within the top 20% efficiency in their class. Hybrid vehicles (e.g., garbage trucks) can use up to 50% less fuel and produce 80% fewer emissions than conventional motor vehicles. Vehicle replacement will be prioritized based on age and mileage, with a conservative estimate assuming five of the roughly 40 new

vehicles purchased each year will be hybrid.

In addition, the City will continue its initiative of "right sizing" its fleet, which entails selecting the appropriate class and model of vehicle for a specific function.

Responsibility for Implementation: Facilities, all departments

Linkages to other programs: Goal #1 - Energy Efficient Transportation Education Program

A5-7: Run Fleet on a Biodiesel Fuel Mix

Run the fleet on biodiesel fuel mix. Diesel powered vehicles could be run on a biodiesel fuel mix. A mix of 5% biodiesel has been tested in the transit fleet. Greenhouse gas emission reductions associated with biodiesel are approximately equivalent to the percentage of biodiesel in the fuel mix, i.e., a 5% biodiesel mix results in a 5% reduction in greenhouse gas emissions.

Currently, the entire Transit Services bus fleet runs on a 1% biodiesel mix.

Responsibility for Implementation: Facilities

Linkages to Other Programs: Goal #3 (all programs)

A5-8: Continue the Fleet Right-sizing Program

Continue the fleet right-sizing program as vehicles and equipment come up for replacement. A right-sizing program is implemented as the vehicle stock turns over. Each vehicle purchase is evaluated and the most fuel-efficient class of vehicle is defined for the role. A performance standard could also be enacted that would allow for selection of vehicles to be deployed, provided that they meet an efficiency standard (e.g., minimum fuel efficiency rating of 8L/100km city). As vehicles become more efficient in the future, the minimum fuel efficiency acceptable could be revised to reflect this.

This action will also identify opportunities to eliminate unneeded vehicles, and for trip-sharing.

Responsibility for Implementation: Facilities

Linkages to Other Programs: Goal #3 (all programs)

Community Programs and Actions

Transportation Emissions Reduction Program

Actions that improve transportation options and encourage the use of efficient transportation provide many benefits in addition to energy conservation, including reducing road congestion, decreasing road and consumer costs and increasing overall community livability.

Program Category: Transportation

Barriers Addressed by Program: Availability and accessibility

Sector: Residential and commercial transportation

Target Stakeholders: Residents and business owners

APPENDIX B

B5-1: Provide Preferential Parking for Energy Efficient Vehicles

Provide preferential parking spots in City-owned lots and metered areas for selected vehicles based on fuel efficiency, size, or fuel type (e.g. the City of Victoria has 3 meter parking spots for Smart Cars and other compact vehicles in the downtown core).

Potential Partners in Implementation: Municipal Engineering

Linkages to Other Programs: Goal # 1 - Energy Efficient Transportation Education Program

B5-2: Hybrid Transit Vehicles

Purchase of diesel hybrid vehicles for the transit fleet. Part of this action would be continually evaluating performance of the hybrid vehicles in terms of fuel consumption.

Potential Partners in Implementation: Transit

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program

B5-3: Develop Car-Sharing Programs, and a Truck and Van Co-op

Develop a truck and van co-op for small businesses or residents to access vehicles. This action will foster the development of car sharing programs in the private sector, and/or in public – private partnerships. This action will also initiate the development of a vehicle co-op to rent a variety of vehicles such as vans or trucks to small businesses when needed. A similar program, The Company Car, has been successfully implemented in Vancouver.

Resources: The Company Car (www.thecompanycar.ca)

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program

B5-4: Provide Incentives to Businesses with Fuel Efficient Fleets

Provide incentives to businesses that purchase and use fuel-efficient vehicles. Incentives could include business license reduction, parking considerations, etc.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program

B5-5: Implement Regional Transit Levy

Implement a regional transit levy on vehicle fuel to subsidize public transit.

Potential Partners in Implementation: City of Saskatoon, Transit

Linkages to Other Programs: Goal #1 - Energy Efficient Transportation Education Program

Solid Waste Emissions Reduction Program

Through the diversion of compostable material from the waste stream, Saskatoon will be able to decrease the amount of methane gas emitted from the landfill. Compostable material

such as food waste, leaves, grass, and other organic material degrade in the landfill, producing methane gas - a greenhouse gas twenty-one times stronger than carbon dioxide. By composting organic material, these damaging methane emissions can be avoided.

This is a long-term action, as the production of methane from material landfilled today takes more than 20 years. There are many co-benefits to diverting material from the landfill such as increasing the life span of the landfill, reducing the need for virgin materials to make new products and providing nutrients for local gardens (from compost). The actions in this section are supportive of recommendations put forward in the draft Saskatoon Waste and Recycling Plan.

Program Category: Regulation

Barriers Addressed by Program: Availability and accessibility

Sector: Residential and commercial

Target Stakeholders: Residents and business owners

B5-6: Implement an Organics Collection Program

Investigate the feasibility of implementing a curbside organics collection program. This may include expansion of the Leaves and Grass Collection program to increase the amounts of organic materials diverted and composted.

Potential Partners in Implementation: Environmental Services

Linkages to Other Programs: Goal #1 - Public Outreach and Education Program

B5-7: Implement Curbside Collection of Recyclables

Implement a curbside collection program for recyclable materials, including cans, plastics, paper products and cardboard, and provide recycling bins in public spaces. Greenhouse gas emissions are generated by landfilling but can be avoided through recycling.

Potential Partners in Implementation: Environmental Services, Cosmopolitan Industries LTD

Linkages to Other Programs: Goal #1 - Public Outreach and Education Program

APPENDIX B

Goal #6: Lead by "Green" Example

Corporate Program and Actions

Greening Corporate Operations Program

Displaying municipal leadership in energy and greenhouse gas management will encourage other sectors to undertake energy efficiency and renewable energy actions.

Program Category: Leadership

Barriers Addressed by Program: Knowledge / Awareness

Sector: All corporate operations

Target Stakeholders: City staff

A6-1: Explore Partnership Opportunities with Local Utilities

Explore partnership opportunities with local utilities to facilitate energy efficiency retrofits by residential, commercial and industrial customers. Funding could be obtained through a public goods charge added to utility bills. The City utilities would have to work closely with SaskPower and other utilities to incorporate this charge into regular billing practices.

Responsibility for Implementation: Saskatoon Light & Power, SaskPower, SaskEnergy

Linkages to Other Programs: Goal #1 - Public Outreach and Education Program

A6-2: Complete LED Replacement Program

Continue the LED replacement program to convert all holiday lighting and traffic signals to LED lighting, and continue researching other opportunities to use LED lighting, such as for street lighting. This action would convert all of the city's holiday lights to LEDs, which use approximately $^{1}/_{16}$th of the energy of standard coloured lights. In addition, the traffic signals replacement program will be continued until replacement with LED signals is completed in 2008, improving energy efficiency by approximately 78%.

Responsibility for Implementation: Saskatoon Light & Power, Municipal Engineering

Linkages to other programs: Goal #6 - Community Leadership Program

A6-3: Develop a Green Procurement Policy

Purchasing departments can develop and implement an energy efficient purchasing policy, which will specify the minimum energy performance and "green" requirements for major products. For example, a policy could dictate that wherever available, Energy Star rated equipment would be purchased, or products that are made from recycled material and can be easily recycled themselves would be purchased.

Responsibility for Implementation: Corporate Information Services

Linkages to Other Programs: Goal #1 Public Outreach and Education Program

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A6-4: Incorporate Energy Efficiency Principles into Municipal Planning Documents

Incorporate energy efficiency principles for land use and buildings into municipal planning documents to ensure that energy efficiency is considered (along with financial considerations) in municipal operations as major projects come on board.

Responsibility for Implementation: All departments

Linkages to Other Programs: Overarching, will provide policy direction for operations

Community Program and Actions

Community Leadership Program

Displays of leadership by residents and businesses in energy and greenhouse gas management will inspire and encourage others to invest in energy efficiency and renewable energy. Demonstration of leadership will create a sense of pride in the community's commitment to sustainability.

Program Category: Leadership

Barriers Addressed by Program: Knowledge

Sector: Residential and business community

Target Stakeholders: Residents and business owners

B6-1: Expand the Road Map 2020 Sustainability Champions Program

Further expand the Road Map 2020 Sustainability Champions program to promote information sharing on energy efficiency in businesses and organizations and this will promote community leadership and demonstration of greenhouse gas emissions reductions. The City and Road Map 2020 will work together to encourage businesses to join the Sustainability Champions network.

Potential Partners in Implementation: City of Saskatoon, Sustainability Champions, Road Map 2020

Linkages to Other Programs: Goal #1 - Education and Outreach Program

B6-2: Establish Demonstration Sustainable Neighbourhoods

Establish one or more neighbourhoods in Saskatoon as demonstration sustainable neighbourhoods. These neighbourhoods will be provided with incentives to improve energy efficiency and overall sustainability. As well as reducing actual greenhouse gas emissions, these neighbourhoods will serve as a positive example to other neighbourhoods in Saskatoon. They will form a network of sustainable neighborhoods under the Road Map 2020 Sustainable Neighbourhoods program.

The City and its partners will also consider the application of LEED Neighbourhoods standards to new developments.

Partners in Implementation: City of Saskatoon, Road Map 2020 Sustainability Champions, community associations, Prairie

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Ecovillage Development Corporation

Linkages to Other Programs: Goal #4 - Energy Efficient Buildings Program, Goal #5 (all programs)

B6-3: Develop a Renewable Energy Program to Meet Provincial Target

Develop a renewable energy program to meet the provincial target of one-third renewables for energy consumption. This program would encourage the use of renewable energy for all sectors of the community.

Potential Partners in Implementation: City of Saskatoon

Linkages to Other Programs: Goal #1 Energy Efficiency and Alternative Energy Program

B6-4: Expand Community Tree Planting Program

Implement a community tree planting program. Planting trees has numerous benefits for the community and local wildlife, including providing shade, helping to reduce building heating loads in summer, acting as carbon sinks and producing oxygen, among other things. Tree planting programs, such as Schools Plant Legacy in Trees (SPLIT) are a good way to get school children involved in the community.

Potential Partners in Implementation: City of Saskatoon, Road Map 2020, Meewasin Valley Authority

Linkages to Other Programs: Goal #1 - Public Outreach and Education Program

B6-5: Develop a Green Bond

Develop a Green Bond that will provide community members with the resources to invest in local economic, socially and environmentally sustainable initiatives.

Potential Partners in Implementation: City of Saskatoon, Saskatoon, Chamber of Commerce and other businesses

Linkages to Other Programs: All Goals and programs

B6-6: Develop Green Business Standards

Develop a set of green business standards and awards for development and marketing of business services and products.

Potential Partners in Implementation: City of Saskatoon, Saskatoon, Chamber of Commerce and other businesses

Linkages to Other Programs: All Goals and programs

Summary of Actions

A summary of each action's estimated greenhouse gas reduction and energy savings potential, investment and operation costs, cost effectiveness and responsibility for implementation included in the following pages.

Estimates of high, medium and low have been provided, however further study on each action will be required prior to implementation. The table below provides descriptions for each.

Schools Plant Legacy in Trees (SPLIT) - 2007 Finalist

The SPLIT program is an urban forestry project that offers young people an opportunity to learn about Saskatchewan's forests. The program fosters responsibility, stewardship, and an awareness of planting and caring for trees.

In 2006, the SPLIT program won the Gold Leaf Award from the International Society of arboriculture for outstanding landscape beautification activities. In the face of funding difficulties, the SPLIT program has been successful in engaging students in eco-action, and it is now expanding outside Saskatoon with the City of Prince Albert.

Excerpt from: Hometown Heroes - Recognizing Environmental Achievements, Earth Day Canada Inc. (www.earthday.ca/hometown/finalists/2007/split.php)