

Leaders in Eco-Responsibility: Virden's CLER Action Plan



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March 4, 2010



Forward

The very essence of life is impossible without the environment which sustains us. While always true in nature, we as a society have only recently become aware of the impact the actions we take during our lives have on the environment. We are learning that the environment is fragile, that the **rate** of climate change is primarily attributed to human activity, that our supply of natural resources is finite, and that our energy demands upon these resources contribute to the phenomena of global warming.

We cannot ignore the conclusions drawn by scientists and we must agree that we cannot expect the earth to survive unchecked resource exploitation or pollution.

We cannot choose to do nothing.

This report is Virden's first summary of environmental energy-related activity and affiliated emission reduction strategy for both the municipality as a corporation and the community at large. Virden, as a municipality and a corporation, must lead by example and serve as a leader in eco-responsibility to the members of our community.

This plan is a cooperative effort with input and assistance provided by the Town of Virden staff, management and councillors, the Emissions Reduction Advisory Committee, various local individuals, The Government of Canada, The Province of Manitoba, The City of Winnipeg, The City of Brandon, The Upper Assiniboine River Conservation District, Manitoba Hydro, as well as individuals from Climate Change Connection. Thank you to each and everyone involved in the project for your individual contributions and assistance.

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Executive Summary

The enclosed Action Plan is Virden's response to its participation in Manitoba's Community Led Emissions Reduction (CLER) program. The Plan is an accumulation of public and municipal input and proposes opportunities for greenhouse gas (GHG) reductions, cost recovery, and additional social, economic and health benefits. Specific opportunities for the corporate sector include low-cost initiatives such as an Anti-Idling Bylaw, a Green Procurement Policy, and a Water and Energy Conservation Policy, to name a few. Opportunities involving greater financial investment include the installation of two wells in Victoria Park to reduce the need for treated potable water for Virden's watering operations in Victoria Park, the multi-purpose facility energy capture system, as well as the Town of Virden Water Quality Improvements and Use and Loss Reduction Project. Specific opportunities for the community sector include a rebate program with local businesses and a comprehensive public education and awareness campaign, to list a few.

Virden will work to implement low and no-cost initiatives during the summer of 2010 and will allocate funding to projects in a manner that maximizes GHG reduction and cost benefit for the municipality and its residents. In addition, the Action Plan will serve as a guide to Virden and its Council on opportunities for practicing environmental stewardship and strengthening the sustainability of the Town.

Through the vigilant measure of our progress, Virden will modify the Action Plan to fit its evolving needs and ensure the continued implementation and action results in quantifiable emissions reduction for the purpose of Virden's involvement with the CLER program.

Introduction

If a trademark distinguishes one thing from another, then the “Proud Heritage, Strong Future” mark adopted by the Town of Virden identifies its people as proud pioneers and visionaries who control their own destiny. It is a town uniquely proud of the diversity and history of its residents, the growth of its economy, and the beauty of its environment.

Dubbed “The Oil Capital of Manitoba”, a significant portion of Virden’s economic and population growth is directly attributable to the oil industry. Virden is directly impacted by exploration, drilling, and transporting this non-renewable resource just as much as Virden is impacted by the depletion of this resource and the human capacity for manipulating it. Around the globe, human exploitation of natural resources has led to unprecedented amounts of greenhouse gases (GHG) - mainly carbon dioxide, methane, water vapour, nitrous oxide and ozone - in the atmosphere which scientists attribute to the unparalleled rate of climate change. Weather patterns are shifting. We are seeing the growing increase in the frequency and severity of drought and flooding. Many countries are experiencing devastating heat waves and, for some, the coldest temperatures in recorded history. The threat to our very existence has compelled many countries, including Canada, to take action and commit to reducing emissions on national and local levels so we, as a people, can have a sustainable future here on earth.

The enclosed action plan follows from Virden’s commitment to developing a local solution to the global issue of climate change.

The CLER Program

Municipalities play a key role in helping Canada meet commitments for both significant and long term greenhouse gas emission reductions. Actions taken by municipalities contribute to substantial and cost-effective GHG emission reductions. In January 2009, the Town of Virden passed a resolution to participate in the Province of Manitoba's Community Led Emissions Reduction (CLER) four-year pilot program to develop a local solution to the global issue of climate change.

The CLER program is a four-year (2008-2012) pilot program run by the Province of Manitoba to support community-led action to reduce greenhouse gas (GHG) emissions. It contributes to the Provincial commitment to meet the Kyoto Protocol target of reducing GHG emissions by 6% below 1990 levels by 2012.

The CLER program is directly modeled on the five milestones of the Federation of Canadian Municipalities' (FCM) Partners for Climate Protection (PCP) program. The five milestones are as follows:

1. Establish a GHG emissions inventory.
2. Set a GHG emissions reduction target.
3. Develop a climate change action plan with public input.
4. Implement GHG emissions reduction projects from the plan.
5. Monitor progress and report results.

The program's goal is to work with municipal governments and community organizations to engage the public and develop local projects and incentives that will reduce GHG emissions by 2012 and contribute to longer term changes that will make communities more sustainable.

The CLER pilot program is being delivered to selected communities in two streams:

- The municipal stream is delivered in partnership with 12 local governments, including Virden, and aims to reduce greenhouse gas emissions from municipal corporations and the broader community.
- The neighbourhood stream is delivered in partnership with not-for-profit community organizations such as schools, community centres and neighbourhood renewal corporations, and aims to support individual behavioural change amongst local residents, small businesses and other local community institutions.

The CLER program assists and encourages individuals, households, businesses and local organizations in communities to take immediate steps to reduce GHG emissions in the short-term by providing resources, tools, incentives and capacity-building. In addition, the CLER program provides funding to support communities to hire local coordinators, complete GHG emissions inventories, and implement GHG emissions reduction projects and activities.

Eco History

Named the “Most Beautiful Town in Canada” by the 1996 Communities in Bloom, Virден’s eco history is primarily accredited to gardening activities by local residents. In addition, Virден became known as the “little tree town of the west” due to early efforts to establish vegetation so as to provide protection from the harsh prairie winds. In 1920, it was nicknamed “Virден, the Beautiful” by press writers of the Winnipeg Tribune. Members of the community group Virден in Bloom maintain the natural beauty of the town through seasonal horticultural activities and initiatives.

In recent years, Virден has participated in a Manitoba Hydro program to replace seasonal outdoor lighting to the more efficient LED variety. Virден also implemented a local ‘blue box’ recycling program in 2003, with bi-monthly curb side pick-up as well as a local composting program in **the early 1990’s**. Since then, Virден has diverted thousands of tonnes of organic material out of the landfill and back into local gardens.

In 2007, the *Town of Virден Water Quality Improvements and Use and Loss Reduction Project* was spearheaded whereby the Town proposed to upgrade the existing water treatment process to improve water quality exceeding the Canadian Water Quality Guidelines. Acute water quality issues related to the water supply included high levels of arsenic that is extremely complicated to reduce to acceptable health limits. In addition, Virден’s current water is high in total dissolved solids, colour, turbidity, organics and iron. The Town proposed to retrofit high efficiency multi-stage reverse osmosis membranes to provide high quality water to all the utility customers as well as for use to surrounding jurisdictions (enhanced regionalization). The project endeavoured to utilize limestone contactors (Manitoba-sourced crushed limestone), as an alternative to phosphate-related chemicals for water stabilization. The complete process is low in treatment chemical use reducing the overall carbon footprint of the facility related to chemical procurement, manufacturing and delivery.

In addition, project proposed to implement additional demand side management techniques including distribution piping leak detection and upgrading program, promoting and enacting bylaws related to low water use (low flush toilets, showerheads, clothes and dish washers), leading by example, promoting low water use landscaping practices as well as adopting this initiative for Town facilities and parks. The project also proposed to initiate public education programs to encourage local ownership of water stewardship initiatives by the utility. The proposed water treatment plant process upgrades will reduce water loss in the production of water by utilizing multi-stage, multi-pass membranes. These new membranes operate at a greater efficiency (90% water recovery) vs. older membrane technologies (70%). Best industry practices will be implemented to optimize operations and process residuals will be directed to a local golf course seasonally for irrigation, to reduce the volume of reject water discharges to the existing receiving stream.

The proposed project will reduce water use in the production of potable water by up to 10% or over 300 cubic meters per day (~0.1 cubic meters per day per capita). Also, demand side management is expected to reduce demands by over 8% or over 240 cubic meters per day (~0.08 cubic meters per day per capita).

The *Town of Virden Water Quality Improvements and Use and Loss Reduction Project* is currently underway.

As Virden has not actively planned or initiated any other eco initiatives the town will benefit considerably from the activities in the action plan.

Current Environmental Context

Before we delve into emission reduction strategies, we must first understand the current context from which these strategies will be implemented. According to a 2006 CAA Public Opinion Survey, the majority of Canadians want climate change to be a top federal priority and ninety-one per cent of Canadians during CAA's Public Opinion Survey indicated they were concerned about climate change¹. In addition, a recent international study by Haddock Research found that the majority of Canadians think that climate change is caused by human activity, and a majority also thought it to be a very serious threat to the planet. 92% of Canadians know at least something about climate change².

The following statistics were compiled from the 2006 CAA Public Opinion Survey results:

- 55 per cent of Canadians indicated they are concerned or extremely concerned about climate change and global warming;
- 48 per cent of Canadians give our federal Conservative government a rating of poor when it came to addressing the issue of climate change;
- 88 per cent have heard about the Kyoto protocol; and
- 74 per cent of Canadians are aware of Canada's obligations under Kyoto, up 10 per cent from last year (2005)

(The survey was conducted by Decima Research who randomly surveyed 2,800 Canadians on issues of infrastructure, climate change, government priorities and traffic safety. The on-line survey was conducted during the last week of February and first week of March. The margin of error on this study is 2.0 per cent 19 times out of 20 and is accurately weighted for region, age, gender and education according to the most recent Canadian demographics available.)

Effects on Health and the Environment

Climate change is more than a warming trend that will continue to produce milder winters and longer summers for Canadians. While warming patterns, precipitation and extreme weather events will vary from region to region, one thing is certain: climate change will have negative implications on the environment and our health.

Health

Increasing temperatures and greater variations in weather mean that the health effects from climate change will vary from region to region. Young children, the elderly, people in poor health or those living in poor quality housing will be most vulnerable to stresses related to weather extremes such as poor air quality, infectious diseases, allergies and poor water and food quality.

Heat-Related Diseases

In Canada, climate change will mean that we will experience shorter and milder winters. Climate change scientists similarly conclude that over the coming century, we can expect hotter summers with heat waves that occur more frequently, last longer and have higher levels of humidity.

More intense heat waves will perpetuate many heat-related illnesses such as heat stroke and dehydration.

Air Quality

Warmer temperatures and prolonged heat waves combined with an increase in VOCs (volatile organic compounds) in our urban and industrialized areas will contribute to poorer air quality and more smog. This is because ground-level ozone is created when sunlight interacts with VOCs, which are produced from burning fossil fuels (such as vehicle exhaust). Ground-level ozone is a primary ingredient of smog which has been linked to increases in both the rate and severity of respiratory diseases.

Children are especially vulnerable to air pollution: they are smaller in size and their lungs are still developing, they also tend to spend more time being active outdoors when compared to adults. Hotter, more humid weather will pose special health risks for children who already suffer from asthma. Changes in wind and weather patterns can also alter the amount of fungi, moulds and pollen in the air, affecting people with allergies.

Infectious Diseases

Warmer temperatures will increase the range of some parasites and the diseases transmitted by insects and ticks possibly bringing new infectious diseases to communities they would not otherwise reach. A prime example is the recent and extremely rapid spread of West Nile virus across the US and Canada. Climate change may also favour the northward spread of mosquitoes capable of transmitting dengue fever, yellow fever, and malaria.

Water and Food Quantity and Quality

Warmer temperatures also mean lower water levels in our lakes, and warmer bodies of water, which are breeding grounds for microorganisms that threaten our health. In Eastern Ontario, there are already cases of recreational beaches having to close each year for weeks at a time

due to outbreaks of microorganisms that not only can cause infections and rashes, but can also increase chances of food poisoning in sea life (shellfish) and local game that drink from these bodies of water.

Scientists have concluded that during the next 50 years heat-related deaths will increase, particularly in large cities in southern Canada where our green spaces continue to be replaced by buildings which trap heat through roofs and walls, making our cities feel even hotter.

Environment: Extreme Weather Events

A warmer climate is likely to cause more frequent and more intense severe weather events, such as hurricanes, tornadoes, thunderstorms, floods and droughts. These events have many potential health impacts, including direct physical injury or death, psychological distress due to the loss or injury of loved ones and property, mass evacuations and homelessness.

Although it is not possible to link recent severe weather events directly and solely to climate change, the following historical examples suggest the types of risks to health and well-being that Canadians may continue to face.

- The Red River flood in May 1997 caused the evacuation of more than 29,000 people in southern Manitoba, and resulted in \$815 million in damages.
- The ice storm that hit eastern Ontario and western/southern Quebec in January 1998 resulted in massive power outages affecting 4.7 million people. More than 600,000 people had to be evacuated and there were 28 deaths and 945 injuries reported. Total damages were estimated to be \$5.4 billion.
- Power suppliers are increasingly warning of summer blackouts due to increased reliance on air conditioning, and an inability for base load power supply to keep up with demand. Although the catalyst of the Ontario blackout of August 2003 was a technical malfunction, it was aggravated by overload. The darkness gave us a taste of what's in store as more than 50 million individuals in Ontario and the Northern United States lost power for 2–3 days in the summer heat.

1. Source: <http://www.caa.ca/eco/english/what/canadians.html>

2. Source: <http://www.haddock-research.com>

The Commitment

Virден's participation in the CLER program commits Virден to municipal emission reductions of 20% and community reductions of 6% from 2003 levels by 2012. The Action Plan which follows is designed to accomplish this.

Objectives of Virден's Climate Change Action Plan

- To make Virден a leader in eco-responsibility
- To be in the best interests of the community
- To serve as a template for future action & decision
- To ensure that progress is measurable and reportable
- To serve as a template for engaging and educating the public
- To focus on immediate efforts to reduce GHG emissions, with longer-term, greater investment initiatives in further plans

Public Engagement Strategy

Virden's Local Climate Change Action Plan (LCCAP) is the cooperative effort of municipal staff and public residents. In this regard, an Emissions Reduction Advisory Committee was formed to guide the project and two public consultation sessions were held to gather feedback and input from the public.

Emissions Reduction Advisory Committee (ERAC)

Virden's participation in the CLER program required an advisory committee to provide input and feedback and advise upon the actions taken during the course of the program. The committee consisted of 5 members including councillors Jeff McConnell and Tony Schneider, resident and teacher Ray Cochrane, resident and web writer Heather Reimer, and Upper Assiniboine River Conservation District Manager Ryan Canart. ERAC was guided by the following plan:

Mission

Virden's voluntary Emission Reduction Advisory Committee (ERAC), in order to achieve emissions reductions targets as part of the CLER program and larger Kyoto Protocol objectives, will guide the program via the CLER Coordinator, by providing input and feedback on program initiatives, using the public interest and emissions reductions as measuring tools.

Objective

To provide input, feedback, and advise the CLER Coordinator during the consulting, planning, implementation, and monitoring stages of the program.

Strategy

Members of the Advisory Committee will meet monthly in the Green Room at the Town Office at an agreed upon, regularly scheduled, time for no more than two hours. In addition to meetings, members will be emailed weekly updates from the CLER Coordinator, for member review. Members may communicate via email or phone throughout the course of the program to provide input, feedback, advise the CLER Coordinator, or request information.

Result

ERAC members met for two hours on January 28 to discuss the results of the Public Information Session held on January 20. Members discussed additional ideas including adopting a Snow Clearing and Sidewalk Maintenance policy. ERAC briefly discussed the action plan draft, with a focus on researching the feasibility of proposed ideas. ERAC also met on February 25 to review the action plan draft.

Public Consultation Strategy

Public Consultation was critical to the success and approval of the project. Consultation commenced at the onset of the project, and will continue throughout the planning and implementation stages, as the project cannot proceed without public input or feedback, nor will it garner the support required for success.

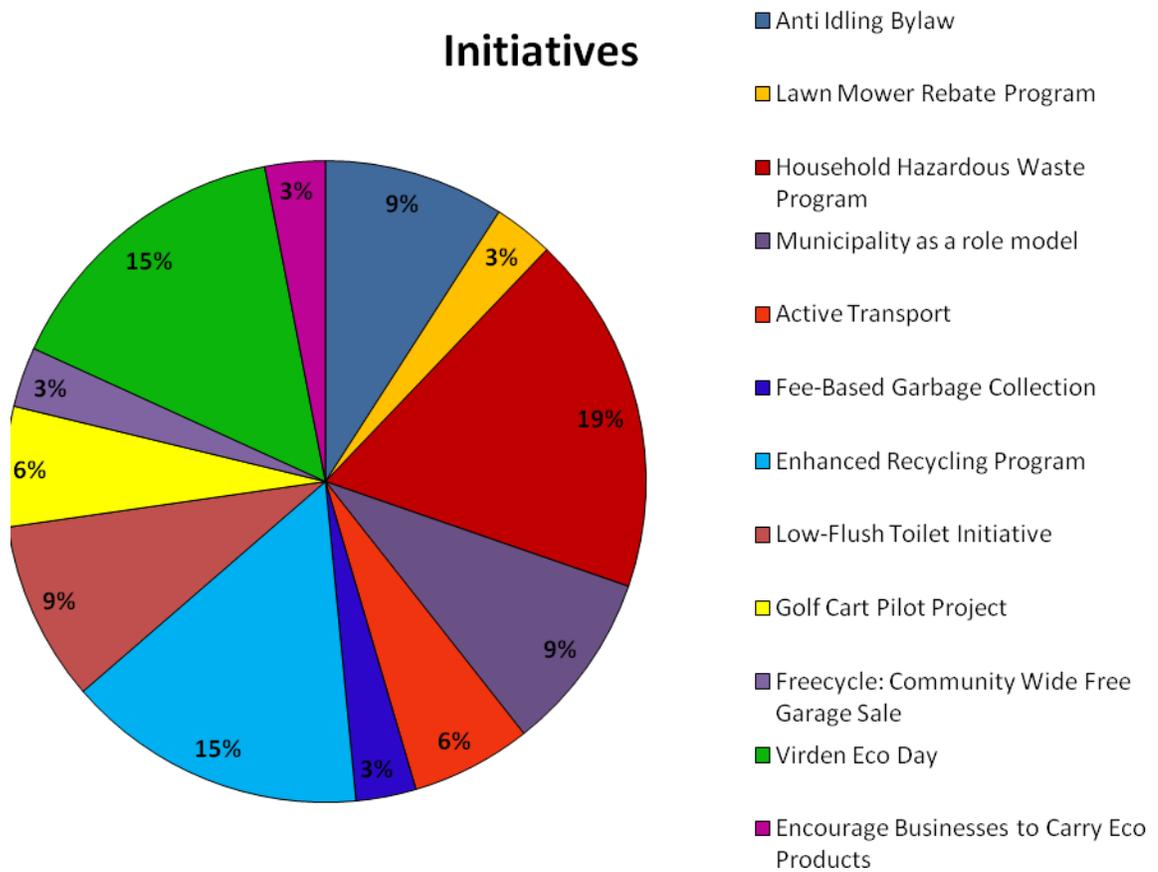
In this regard, the Town of Virden coordinated two Public Information Sessions to gather input and feedback on the project. The information sessions were advertised on the town website, in print, and on TV and radio. Detailed information on the affiliated media campaign can be found in the enclosed Media Schedule. The first information session on Wednesday, January 20, drew 11 residents including 4 councillors. Participants were given a climate change presentation by Climate Change Facilitator Shoni Litinsky and shown a short video called "Think Different". Participants were then asked for their emission reduction ideas. Ideas collected at the event are as follows:

- Active Transport
 - Charge for Parking
 - Prioritize parking on main streets for seniors and expectant mothers and parents with young children
 - Keep busses for students, but reduce idling time
- Re-use shopping bags and other items
- Freecycle: Host a community-wide free garage sale where municipality sets up tables and residents bring items they don't want any more. People are encouraged to take what they need and re-use items instead of throwing them away
- Eco day: Plan a Virden Eco Day with eco-activities, seminars, and the like
- One Councillor would like some information on fireworks emissions
- Programmable thermostats
- Rain barrels: One resident uses an old rain barrel from the oil patch and suggests others do the same. On the other hand, residents need to be weary of what materials were previously stored in the barrels as chemicals can leech into the plastic and end up in the water.
- Education on eco lawn care
- Encourage local businesses to carry eco products
- Green space development
- E-Waste: address commercial stream and ban from solid waste facility
- Making community more pedestrian friendly. Winter walk-ability. Ensure sidewalks are clear and have access to bike stands.
- Limited Garbage collection. Fee per use system.
- Recycling Program:
 - Increase frequency to weekly
 - Education initiative

- Larger bins
 - Mandate commercial recycling
- Biomass Energy: Redirect Waste Materials
- Low-flow toilets, shower heads, etc.
 - New construction bylaws mandating low-flow products
- Pilot Project: Electric Golf Carts for residents
- LED street lights, or solar
- Anti-idling bylaw
 - Preceded by public education
 - Allow for extreme temperatures
 - Diesel and gas categories
 - Eco Driver
 - Block heater temperature control
- Lawn mowers
 - Rebates on electric or push mowers if old one is brought in
- Lights
 - Rebate program on energy-efficient bulbs
 - Project Porch Light: Change people's porch lights
 - Motion sensor rebate
- Household Hazardous Waste
 - Education and awareness campaign
 - Pick-up program
 - RBRC Boxes for batteries and cell phones
- Get schools and kids involved, support teachers
- Ensure town actions serve as a role model to residents
- Use vegetable grease for diesel vehicles

Once ideas were discussed and collected, participants were each given 3 dots to place next to the initiatives they would like to see implemented. The results are represented in the following charts:

Initiative	# Dots	% representative
Anti Idling Bylaw	3	9.09%
Lawn Mower Rebate Program	1	3.03%
Household Hazardous Waste Program	6	18.18%
Municipality as a role model	3	9.09%
Active Transport	2	6.06%
Fee-Based Garbage Collection	1	3.03%
Enhanced Recycling Program	5	15.15%
Low-Flush Toilet Initiative	3	9.09%
Golf Cart Pilot Project	2	6.06%
Freecycle: Community Wide Free Garage Sale	1	3.03%
Virden Eco Day	5	15.15%
Encourage Businesses to Carry Eco Products	1	3.03%
Total:	33	100.00%



In the second public information session on Thursday, February 18, which drew 5 participants, residents were then presented with a report on ideas taken from the previous session including scope and feasibility. Attendees were then asked to select emission reduction initiatives they would support in the community. The resulting action plan is the culmination of municipal and public input.

Further information can be found in the enclosed Communication Plan.

Corporate Environmental Initiative and Action Summary

Initiative A: Adopt an Anti Idling Bylaw

- Objective AA: Reduce emissions discharged from Town operations and vehicles
- Objective AB: Reduce the amount of GHG generated in the community as a result of vehicle use
- Objective AC: Serve as a leader to the residents of Virden

Initiative B: Adopt a Green Procurement Policy

- Objective BA: Reduce impact on environment from corporate operations
- Objective BB: Serve as a leader to the residents of the Town of Virden

Initiative C: Adopt a Snow Removal and Sidewalk Clearing Policy

- Objective CA: Encourage active winter transportation as a method of reducing emissions
- Objective CB: Encourage mobility as part of a healthy lifestyle to residents of Virden

Initiative D: Adopt an Eco-Friendly New Construction Bylaw

- Objective DA: Reduce emissions from the onset of construction
- Objective DB: Encourage eco-friendly building practices
- Objective DC: Show that Virden takes the environment seriously

Initiative E: Corporate Building Retrofit

- Objective EA: Reduce emissions from corporate operations on municipality-owned property
- Objective EB: Serve as a leader to the community

Initiative F: Multi-Purpose Recreational Facility Energy Capture System

- Objective FA: Reduce energy consumption from facility operation
- Objective FB: Show that Virden strives to be environmentally responsible, and encourage the public to do the same

Initiative G: Seasonal Lighting Retrofit

- Objective GA: Reduce energy consumption from seasonal lighting operation

Initiative H: Victoria Park Well

Objective HA: Reduce the consumption of treated potable water from seasonal watering activities

Objective HB: Serve as an example to the community

Initiative I: Adopt a Fleet Fuel & Mileage Tracking Policy

Objective IA: Gain awareness into daily fleet operations and energy consumption

Objective IB: Ensure accuracy and availability of information for 2012 inventory

Initiative J: Adopt an Energy Conservation and Water Usage Policy

Objective JA: Reduce emissions from the treatment of water used for municipal watering operations

Objective JB: Reduce energy usage for municipal watering operations

Initiative K: *Town of Virden Water Quality Improvements and Use and Loss Reduction Project*

Objective KA: Reduce consumption of potable water from treatment operations

Objective KB: Improve water quality for the Town of Virden

Objective KC: Reduce energy usage and emissions from water treatment operations

Note: All environmental initiatives undertaken by the Town of Virden will serve as examples to the community at large, with reductions in consumption resulting in cost savings for the municipality.

Community Environmental Initiative and Action Summary

Initiative A Public Education and Awareness Campaign

- Objective AA: Educate the public on the environment, energy consumption, and how they can become good environmental stewards
- Objective AB: Encourage action and offer support
- Objective AC: Promotion of existing programs to assist residents in reducing their footprint on the environment

Initiative B Town of Virden – Home Hardware Rebate Program

- Objective BA: Reduce GHG emissions from residential operations
- Objective BB: Encourage residents to take action sooner rather than later
- Objective BC: Show residents that there are environmentally-friendly alternatives for many household activities

Initiative C Walking Trail Design

- Objective CA: Encourage active transportation throughout the Town of Virden
- Objective CB: Encourage green interaction and learning with the natural environment
- Objective CC: Encourage active lifestyles through increased mobility
- Objective CD: Serve as a cornerstone for the broader vision of a longer-term green space master plan

Initiative D Recycling Bin Purchase

- Objective DA: Encourage waste reduction in the community

Initiative E Corporate Environmental Responsibility

- Objective EA: Work with corporate community to encourage environmentally friendly practices and operations
- Objective EB: Encouraging corporate commitment to eco products and services
- Objective EC: Increased attainability of eco products and services

Initiative F Bike Racks

- Objective FA: Encourage active transportation throughout the Town of Virden
- Objective FB: Encourage physical activity

PROJECTS

Strategy: Develop a stronger active and alternative transportation strategy to increase fuel efficiencies, reduce reliance on alternative transportation for short commute trips, and gain awareness into municipal fleet operations.

Corporate Initiative A:

Anti-Idling Bylaw

The Town of Virden will adopt an Anti-Idling Bylaw modeled after Chapter 517 of Toronto's Municipal Code. The by-law is intended to reduce unnecessary idling and limits idling to no more than three minutes in a given 60 minute period. The by-law allows transit vehicles to idle when picking up or discharging passengers and also allows limited idling when transit vehicles are waiting for passengers. As well, the by-law provides for idling during extreme outdoor temperatures to ensure heating or cooling inside a vehicle.

Virden's intention is to achieve compliance with the by-law through voluntary measures. If these measures are not successful, the by-law provides for a fine of up to a maximum of \$1,000 for infractions of the by-law.

Objective AA: Reduce emissions discharged from Town operations and vehicles

Objective AB: Reduce the amount of GHG generated in the community as a result of vehicle use

Objective AC: Serve as a leader to the residents of Virden

Leads and Partners:

Municipal staff member to write the bylaw, Town Council to endorse it, and municipal staff to educate the public.

Timeline:

Virden will seek Council endorsement of the bylaw in spring, 2010

Estimated GHG Emission Reduction Potential: 404.17 tonnes

According to NRCan, the average Canadian idles 5-10 minutes a day. Reducing idling by 5 min/day saves 0.00036 tonnes CO₂e/day per person. Therefore, 0.00036 tonnes CO₂e/day x 365 days = 0.13 tonnes per year/person. With 3109 residents, Virden has the potential of decreasing emissions by 404.17 tonnes. (Source: NRCAN Idling Calculator). (In 2003, Virden had 3,802 vehicles registered within the municipality. Our assumption for the above calculation is that, through mandatory compliance, the *equivalent* of 3,109 people will reduce idling by a minimum of 5 minutes per day.)

Additional Benefits Expected:

In addition to lowering vehicle emissions, the bylaw is expected to increase the local air quality, and improve the health of citizens.

Budget: \$500.

The Anti-Idling Bylaw is a low-cost initiative to target the reduction of local emissions. Costs include the time of municipal staff to write and endorse the bylaw. Additional costs will include educating the public and making the public aware of the new bylaw, through newspaper ads, bulletins, memos on municipal billing, and the Town of Virden website.

Reporting:

The key measure of success will be a reduction in municipal and community idling times. This measurement will be visual by all residents and municipal staff.

Corporate Initiative C:

Snow Removal and Sidewalk Clearing Policy

The Town of Virden will adopt a Snow Clearing and Sidewalk Maintenance Policy whereby Virden will take appropriate measures to ensure snow is cleared and sidewalks are maintained to encourage active transportation during winter months

Objective CA: Encourage active winter transportation as a method of reducing emissions

Objective CB: Encourage mobility as part of a healthy lifestyle to residents of Virden

Leads and Partners:

Municipal staff member to write the policy, Town Council to endorse it, and municipal staff to educate the public.

Timeline:

Virden will seek Council endorsement of the policy in spring, 2010

Estimated GHG Emission Reduction Potential: 162.5 tonnes

It is likely that the policy will enable more people to seek the alternative of active transportation during winter months, ultimately leading to a decrease in short-distance vehicle trips to the Town's inner core, and lowering related GHG emissions. A moderate estimation would suggest an additional 50 people utilizing active transportation instead of short vehicle trips. With an estimated round-trip rural average of 5 km per week day, Virden may see the benefit of 250 km less vehicle kilometres travelled per week day. With approximately 260 work days per year, Virden would see 65,000 less VKT per year. Based on average fuel efficiency, each kilometre travelled emits approximately 2.5 eCO₂, therefore this initiative has the potential of reducing emissions by 162.5 tonnes. (65,000 KM x 2.5 kg eCO₂/km).

Additional Benefits Expected:

In addition to lowering vehicle emissions, the bylaw is expected to increase the local air quality, and improve the health of citizens.

Budget: \$500.

The Snow Removal and Sidewalk Clearing Policy is a low-cost initiative to target the reduction of local emissions by encouraging the alternative of active transportation. Costs include the time of municipal staff to write and endorse the policy. Additional costs will include educating the public and making the public aware of the new policy and encouraging active transportation during winter months, through newspaper ads, bulletins, memos on municipal billing, and the Town of Virden website.

Reporting:

The key measure of success will be an increase in municipal and community active transport during winter months. This measurement will be visual by all residents and municipal staff. Virden may also survey residents on personal transportation changes as a result of the implementation of the initiative.

Corporate Initiative I:**Fleet Fuel and Mileage Tracking Policy**

The Town of Virden will adopt a Fleet Fuel and Mileage Tracking Policy with the purpose of monitoring fleet fuel consumption and energy usage. This information will be instrumental in developing the 2012 Corporate Inventory report.

Objective IA: Gain awareness into daily fleet operations and energy consumption

Objective IB: Ensure accuracy and availability of information for 2012 inventory

Leads and Partners:

Municipal staff member to write the policy and municipal lead to educate staff on it.

Timeline:

Virden will work to implement the policy in spring, 2010

Estimated GHG Emission Reduction Potential: 3.2 tonnes

It is likely that the policy will enable the Town of Virden to understand its fleet operation and make any necessary changes to ensure maximum efficiency and lower GHG emissions. If we assume that these changes will increase efficiency and lower emissions by 10%, Virden may realize a reduction of 3.2 eCO₂ tonnes.

Additional Benefits Expected:

In addition to providing insight into fleet operations, the policy will ensure the municipality is better prepared for the next inventory period.

Budget: \$250

The Fleet Fuel and Mileage Tracking Policy is a low-cost initiative to gain awareness into municipal fleet operations. Costs include time of the municipal staff member to write the policy and develop affiliated tracking sheets, as well as educating municipal staff on utilizing the sheets to monitor fuel consumption from fleet operation.

Reporting:

The key measure of success will be having required fleet data available during the 2012 inventory period. Additional indicators include a heightened awareness of fleet operations by municipal staff.

Community Initiative C:

Walking Trail Design

Virden will partner with the Upper Assiniboine River Conservation District in the design and construction of a walking trail linking the Kenderdine subdivision to the trails in town as well as a design of a Green Space Master Plan. Virden will complete the design on the first phase of the walking trail by 2012. Construction on the design, design on the remaining phases, and the design on the Green Space Master Plan exist in the Town of Virden's long-term strategy.

Objective CA: Encourage active transportation throughout the Town of Virden

Objective CB: Encourage green interaction and learning with the natural environment

Objective CC: Encourage active lifestyles through increased mobility

Objective CD: Serve as a cornerstone for the broader vision of a longer-term green space master plan

Leads and Partners:

Partners include municipal Parks and Recreation staff, Municipal Management, landscape architects, and the Upper Assiniboine River Conservation District,

Timeline:

Virden envisions the design on the trail by 2012.

Estimated GHG Emission Reduction Potential: 162.5 tonnes

There is no reduction on the design of the trail; however, it is likely that the construction of the trail will lead to a decrease in short-distance vehicle trips to the Town's inner core, therefore lowering related GHG emissions. A moderate estimation would suggest an additional 50 people utilizing active transportation instead of short vehicle trips. With an estimated round-trip rural average of 5 km per week day, Virden may see the benefit of 250 km less vehicle kilometres travelled per week day. With approximately 260 work days per year, Virden would see 65,000 less VKT per year. Based on average fuel efficiency, each kilometre travelled emits approximately 2.5 kg eCO₂, therefore this initiative has the potential of reducing emissions by 162.5 tonnes. (65,000 KM x 2.5 kg eCO₂/km).

Additional Benefits Expected:

In addition to lowering vehicle emissions, the trail is expected to increase the local air quality, and improve the health of citizens.

Budget: \$6,000 + disbursements

Current estimates for the walking trail design are approximately \$6,000. Grant funding from several sources is available for the project, however Virden cannot receive funds on design alone, as funding requires the physical construction of any proposed design.

Reporting:

The key measure of success for the walking trail project will be physical pedestrian counts on the trails, allowing Virden to comprehend how many people are using the trails. In addition, the increased availability of parking in Virden's down town core would suggest an increase in active transportation. Virden may also survey its residents on personal transportation changes as a result of the construction of the walking trail.

Community Initiative F

Bicycle Racks

To encourage active transportation, Virден will purchase and install 4 bike racks to be installed in various locations throughout Town core.

Objective FA: Encourage active transportation throughout the Town of Virден

Objective FB: Encourage physical activity

Leads and Partners:

Partners include local businesses near designated bicycle parking areas as well as municipal staff to purchase and arrange rack placement and installation

Timeline:

Virден will work to purchase and install the racks during the spring of 2010

Estimated GHG Emission Reduction Potential: 40.625 tonnes

It is estimated that the installation of bike racks will reduce the number of short distance vehicle trips to the Town's inner core, therefore lowering related GHG emissions. A moderate estimation would suggest an additional 25 people utilizing active transportation for short vehicle trips. With an estimated round-trip rural average of 5 km per week day, Virден may see the benefit of 125 km less vehicle kilometres travelled per week day. With approximately 130 snow-free work days per year, Virден would see 16,250 less VKT per year. Based on average fuel efficiency, each kilometre travelled emits approximately 2.5 kg eCO₂, therefore this initiative has the potential of reducing emissions by 40.625 tonnes. (16,250 KM x 2.5 kg eCO₂/KM).

Additional Benefits Expected:

In addition to lowering vehicle emissions, the bylaw is expected to increase the local air quality, and improve the health of citizens. Citizens choosing to use bicycles as their primary mode of transportation will see substantial savings the longer they opt away from vehicle use.

Budget: \$2,500

The quote received from Reliance Foundry Co for the purchase and shipment of 4 double-sided bike bollards is \$1,746.08. The above mentioned budget allows for the purchase and shipment of the bollards as well as installation of the bollards by municipal staff. Additional costs will include educating the public and making the public aware of the new equipment and encouraging active transportation throughout the year, through newspaper ads, bulletins, memos on municipal billing, and the Town of Virден website.

Reporting:

The increased availability of parking in Virден's down town core would suggest an increase in active transportation. Visual inspection that the bollards are being used is also an indicator of success. Virден may also survey its residents on personal transportation changes as a result of the construction of the walking trail.

Strategy: Develop a municipal development strategy to reduce waste and increase energy efficiencies.

Corporate Initiative B:

Green Procurement Policy

The Town of Virden will adopt a Green Procurement Policy modeled to the Government of Canada's Green Procurement Policy whereby:

As part of its ongoing commitment to improve the environment and the quality of life of residents of the Town of Virden, this policy seeks to reduce the environmental impacts of government operations and promote environmental stewardship by integrating environmental performance considerations in the procurement process.

Green procurement is set within the context of achieving value for money. It requires the integration of environmental performance considerations into the procurement process including planning, acquisition, use and disposal. In this context, value for money includes the consideration of many factors such as cost, performance, availability, quality and environmental performance. Green procurement also requires an understanding of the environmental aspects and potential impacts and costs, associated with the life cycle assessment of goods and services being acquired. In addition, the supporting administrative processes and procurement methods can also offer opportunities to reduce the environmental impacts of government operations.

The policy also supports the Town of Virden in targeting specific environmental outcomes where procurement can effectively be used to mitigate the impact of environmental issues such as Climate Change and can support the protection of biodiversity, natural areas, air, soil and water. Where decisions are made to move forward on realizing specific environmental outcomes through procurement, it is expected this will:

- Demonstrate environmental leadership and influence local industry and citizens to use environmentally preferable goods, services and processes;
- Stimulate demand for environmentally preferred goods and services, and
- Support emerging local and provincial environmental technologies.

Objective BA: Reduce impact on environment from corporate operations

Objective BB: Serve as a leader to the residents of the Town of Virden

Leads and Partners:

A designated municipal staff member will lead the project, writing the policy, and submitting it to Council for endorsement. Additional leads will include any municipal staff members purchasing on behalf of the Town of Virden.

Timeline: Virden will work to endorse the policy in the spring of 2010

Estimated GHG Emission Reduction Potential:

Environmental considerations in procurement decisions will impact the amount of GHG's emitted by Virден as a municipality; however, reduction measurability will only be apparent at time of specific procurement.

Additional Benefits Expected:

The policy will help Virден to reduce its carbon footprint from municipal operations and help Virден to serve as a leader in environmental stewardship.

Budget: \$250

The Green Procurement Policy is a low-cost initiative to ensure environmental stewardship is at the forefront of any municipal procurement decision. Costs include time of the municipal staff member to write the policy for Council endorsement.

Reporting:

An increase in the procurement of eco products and services will serve as indicators of success.

Corporate Initiative D**New Construction Energy Efficiency Bylaw**

The Town of Virден will adopt a new home and building construction by-law mandating the use of low flush toilets and programmable thermostats.

Objective DA: Reduce emissions from the onset of construction

Objective DB: Encourage eco-friendly building practices

Objective DC: Show that Virден takes the environment seriously

Leads and Partners:

A designated municipal staff member will lead the project, writing the bylaw, and submitting it to Council for endorsement.

Timeline:

Virден will work to endorse the bylaw in the spring of 2010

Estimated GHG Emission Reduction Potential: 8.508 tonnes

In recent years, on average, 10 new buildings are constructed in Virден each year. When compared to non-efficient toilets, each low-flush toilet will save owners and the municipality 41,062.5 litres per year, for a total of 410,625 litres. Each litre saves 0.00000002 tonnes eCO₂, therefore saving 410,625 L of water will reduce emissions by 0.0082125 tonnes. Each programmable thermostat will save owners and the municipality 0.85 tonnes eCO₂, for a resulting total of 8.5 less tonnes per year on thermostats alone.

Additional Benefits Expected:

The policy will help lower private operating costs as well as help to ensure Virден's current energy systems are not over-burdened.

Budget: \$500

The New Construction Energy Efficiency Bylaw is a low-cost initiative to ensure environmental stewardship is at the forefront of new local construction. Costs include time of the municipal staff member

to write the policy for Council endorsement. Additional costs will include educating the public and making the public aware of the new bylaw, through newspaper ads, bulletins, memos on municipal billing, and the Town of Virden website.

Reporting:

A key measure of success will be a reduction in affiliated residential and/or commercial operating costs.

Corporate Initiative F

Multi-Purpose Recreational Facility Energy Capture System

Currently, Virden owns and operates a local arena for the benefit of the community. Originally built in the early 1950's, the energy mechanisms of the arena are outdated and inefficient. With this in mind, coupled with the community's need for a larger, integrated facility capable of housing banquets, events, and fitness programs, the Town of Virden planned a new recreation facility, with geo-thermal heating components. The mechanism is described as follows:

Every arena is dependent on having a large commercial refrigeration plant to provide the cooling required to make and maintain the ice surfaces. In traditional arena configurations the process energy required by this refrigeration plant accounts for a large amount of the energy consumption, and heat produced as a by-product of the refrigeration cycle is piped from the arena and wasted to the atmosphere through the use of a fluid cooling tower.

A second major contributor to energy usage in this type of facility is the heating, ventilation and air conditioning system (HVAC) which is used to provide the climate controlled atmosphere throughout the interior of the facility. In a traditional facility this HVAC system will often employ gas fired roof top units (RTU's) for the heating component, and separate electrically powered air conditioners to provide cooling.

These two major components are often at odds with each other, one running to cool portions of the facility down to maintain the ice surfaces, while the other is running to keep the ambient air temperature at a comfortable level for the building occupants.

The mechanical design for the Virden Recreational Multi Purpose Facility is based off of the 2009 Schreyer Award winning design first implemented by Tower Engineering at the South Interlake Recreation Centre located in Warren, Manitoba. The design takes a holistic approach to the mechanical system and attempts to integrate components from Earth Science, Building Envelope, Refrigeration, HVAC, and Electrical **to reduce the overall energy usage of the facility to less than half of a conventional arena system.**

At the core of the system is an ammonia based commercial refrigeration plant to provide the approximately 180 tons of cooling required by the facility for both the ice surfaces as well as the air conditioning. An ammonia plant was chosen over a Freon based system for both the increased efficiency relative to a Freon based system (more cooling produced for less input process energy) and for

environmental reasons (avoidance of a CFC refrigerant). This plant provides refrigeration for the ice surfaces during winter operations as well as cooling for the building HVAC systems during summer months.

The ice plant is interconnected through heat exchanger plates with both the building heating and building cooling systems. During winter months the waste heat is recovered from the refrigeration process and can be stored in a thermal buffer, a 12 inch thick layer of granular material underneath the facility. Additional piping located in the thermal buffer can then draw on the heat stored there as needed to recycle the waste process heat back into the main facility through the in-floor heating piping. Advantages of providing heating to the building through in floor heating compared to traditional forced air from the RTU's include:

- Results in a more even and comfortable heat
- No fans, filters or belts required
- Thermal buffer and thermal mass of concrete floor slabs can retain heat for prolonged period of time, allowing for adequate performance during prolonged power outages
- In floor heating can be provided with low-grade heat recovered from the process.

In addition to the low-grade in floor heating loops, high-grade heat recovered from the process can be used to supplement domestic hot water and flood water heating systems.

Finally, facility heat is further recycled through heat recovery ventilators to preheat incoming makeup air prior to being exhausted, ensuring that the waste heat created by the required refrigeration plant is utilized as fully as possible before being vented to the atmosphere.

In summer months, when there is no demand for refrigeration from the ice surfaces, the same refrigeration plant is used to provide cooling that can be stored in the thermal buffer. Once again, this stored cooling energy can be drawn on demand from the thermal buffer to provide cooling to the interior spaces as required. Waste heat produced as a result of the air conditioning/cooling loads is intended to be pumped from the facility to a heat exchange plate located in the existing pool mechanical room. This heat can then be used to replace a percentage of the natural gas currently being used to heat the pool water. **Preliminary estimates indicate that up to 25% of the heating provided by the current natural gas boilers can be replaced with reclaimed heat from the Virden Recreational Multi Purpose Facility mechanical system.**

Finally, the system is designed to allow fine control of the components of the ice plant. Through the use of multiple compressors, each with variable speed drives, the refrigeration energy being produced can be tailored more closely to the actual building demand. Furthermore, the ability of the thermal buffer to accept and hold the process energy for long periods of time with the ability to call on it when needed means that the cooling can be produced at off peak times and stored until required.

In addition to the heat capture system, the new facility features an array of energy-efficient measures including motion sensor activated lights in the dressing rooms, washrooms, and offices. A lighting schedule programmable to facility schedule will also conserve energy while a programmable heating and

cooling feature on the DDS system can ensure the building is heated appropriately during peak and closing hours. Waters systems in each area will have water saving and tempered control systems and make up air for the entire facility will be pre-heated by a solar panel located outside the new facility, and circulated throughout the mechanical system.

In March, 2010, Virден will break ground on the new Recreational Multi-Purpose Facility.

Objective FA: Reduce energy consumption from facility operation

Objective FB: Show that Virден strives to be environmentally responsible, and encourage the public to do the same

Leads and Partners:

Tower Engineering, Public Works Department, and municipal management

Timeline:

Virден will break ground on the Multi-Purpose Recreation Facility in March, 2010. Completion estimate is Summer 2011.

Additional Benefits Expected:

The policy will help lower municipal operating costs as well as help to ensure Virден's current energy systems are not over-burdened. Annually, the system is estimated to save \$4,000-\$8,000 on annual energy costs for the arena as well as \$8,000 in energy costs for the pool.

Budget: \$100,000

Reporting: A key measure of success will be a reduction in affiliated municipal operating costs.

Estimated GHG Emission Reduction Potential: 70 tonnes

An assumed saving of 25% on the heating cost for the arena is equivalent to 14,501.75 CUM of natural gas. This correlates to 27 tonnes of eCO₂ reduced per year. (Total arena-only natural gas CUM is 58,007)

A saving of \$8,000 on the pool assumes an 80% energy saving (80% of 28,484 CUM of natural gas, pool only = 22,782.2 CUM.) This correlates to 43 eCO₂ tonnes reduced per year. (eCO₂ figures from building inventory calculations.)

These are conservative estimates and the project has the potential to significantly reduce GHG with energy-efficient inclusions in the lighting, water and heat systems. Additional information on the project and the relevant assumption figures can be found in Appendix A: *Virден Regional Multi-Purpose Facility, Energy Simulation*. Energy modeling charts are provided in Table 1 and Figure 2.

Table 1 : Energy Summary for LEED – Entire Facility

Energy Summary by End Use	Energy Type	Proposed Building		Reference Building		Energy Savings [%]
		Energy [MJ]	Intensity [kWh/m2]	Energy [MJ]	Intensity [kWh/m2]	
Regulated Energy						
Lighting	Electricity	1,518,251	52	1,505,802	51	-0.8%
Space Heating	Natural Gas-note 1	4,819,873	165	12,356,055	422	61.0%
Space Cooling	Electricity	225,348	8	204,143	7	-10.4%
Pumps	Electricity	254,572	9	223,449	8	-13.9%
Fans	Electricity	1,216,415	42	967,224	33	-25.8%
Service Water Heating	Natural Gas	1,563,721	53	1,600,541	55	2.3%
Subtotal Regulated Energy		9,598,179	328	16,857,212	576	43.1%
Non-Regulated Energy						
Plug Loads		94,739	3	94,739	3	0.0%
Ice Plant Refrigeration		3,255,097	111	3,255,097	111	0.0%
Subtotal Non-Regulated Energy		3,349,836	114	3,349,836	114	0.0%

Total Energy Summary	Proposed Building		Reference Building		Percent Savings	
	Energy [MJ]	Cost [\$]	Energy [MJ]	Cost [\$]	Energy	Cost
Electricity	6,564,421	\$95,540	6,250,453	\$92,250	-5.0%	-3.6%
Natural Gas	6,383,594	\$37,574	13,956,595	\$83,394	54.3%	54.9%
Total	12,948,015	\$133,114	20,207,048	\$175,644	35.9%	24.2%

LEED EAc1						
Subtotal Regulated Energy Costs	9,598,179	\$84,360	16,857,212	\$126,204	43.1%	33.2%
Industrial / Process Energy Credit (max 2 pts)*	-1,084,962	-\$15,791	0	\$0	33.3%	2 pts
Renewable Energy Credit	0	\$0	0	\$0	0.0%	0.0%
Net Total	8,513,217	\$68,569	16,857,212	\$126,204	43.1%	33.2%

Points	5
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Note 1: includes conservative estimation of heat recovery off ice plant

Note 2: refrigeration is a process energy; maximum of 2 LEED points can be granted for process energy savings.

Building Energy Use Breakdown

The building energy use is graphed by system in Figure 2.

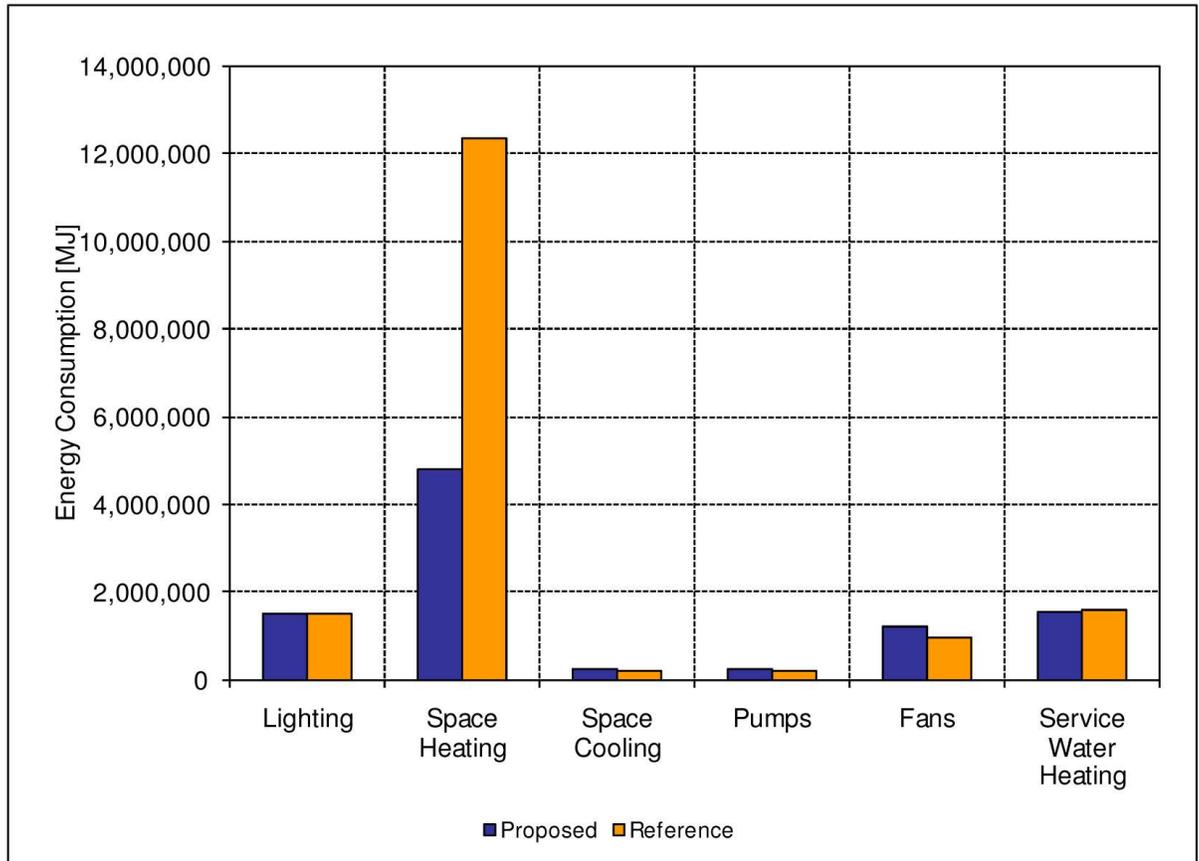


Figure 2: Energy Use by System – Entire Facility

Further information can be found in Appendix A:
Viriden Regional Multi-Purpose Facility, Energy Simulation

Corporate Initiative E

Corporate Building Retrofit

Nationally, municipal operations consume about 60 million gigajoules of energy, at a cost of about \$700 million per year. About 40 per cent is consumed in municipal buildings, at a cost of about \$280 million per year. The energy required to power municipal building operations, given an average national fuel mix, emits approximately four million tonnes of carbon dioxide (CO₂), the main greenhouse gas contributing to global warming and climate change¹.

With this in mind, the Town of Virden will complete a retrofit on all municipal buildings including low flush or dual flush toilets, programmable thermostats, appliance upgrade, and the conversion from T12 to T8 lighting in the water treatment plant.

Further to the proposed upgrades, the Town of Virden will adopt a "Lights Out, Power Off" Policy whereby all lights and machines in municipal buildings are mandated to be shut off or powered down during hours of inactivity.

Source:

http://www.sustainablecommunities.fcm.ca/files/Capacity_Building_MBRG/MBRG_thebusiness_case_En.pdf

Objective EA: Reduce emissions from corporate operations on municipality-owned property

Objective EB: Serve as a leader to the community

Leads and Partners:

Leads in the municipal building retrofit will be municipal management, a designated municipal staff member to coordinate the project, as well as Town of Virden staff.

Timeline:

Virden will work to complete the retrofit by September 2010.

Estimated GHG Emission Reduction Potential: 17.0476 tonnes

A single household toilet replacement to a low-flush, high-efficiency model saves, on average, 41,062.5 litres of water per year, therefore, a single high-use corporate retrofit should save double, or 82,125 litres per year. The replacement, or retrofit, of Virden's 29 toilets would result in saving 2,381,625 litres per year. If ever litre saves 0.0000002 tonnes eCO₂, then this initiative would reduce GHG emissions by 0.0476 tonnes per year.

A single household thermostat retrofit saves 0.85 eCO₂ tonnes. Conservatively, retrofitting Virden's estimated 20 thermostats would reduce the municipality's emissions by 17 tonnes.

Virden currently provides 3 outdated microwaves for staff use. From 1990, the appliances are severely inefficient and replacement will provide efficiencies.

On average, T8 lighting consumes approximately 40% less energy than T12 lighting (KWH). As Virden's water treatment plant consumed 631,505 KWH primarily for lighting purposes in 2003, the conversion would save approximately 252,602 KWH per year, which is equivalent to approximately 10 tonnes eCO₂. If we say that even 50% of energy is used for lighting, it would amount to a reduction of 5 tonnes eCO₂.

Leaders in Eco-Responsibility: Virden's CLER Action Plan

Additional Benefits Expected:

The policy will help lower municipal operating costs as well as help to ensure Virден's current energy systems are not over-burdened.

Budget: \$8,000 + \$5,880.45 (WTP Lighting Conversion from T12s to T8s)

Toilets: \$4,000 including install on 29 toilets

Programmable Thermostats: \$2,000

Appliances: \$600

Lighting Conversion: \$5,880.45

Additional costs include time of the municipal staff member to coordinate the retrofit, and installation costs for items municipal staff can manage

Reporting: A key measure of success will be a reduction in affiliated municipal operating costs.

Corporate Initiative G**Seasonal Lighting Retrofit**

The Town of Virден will complete the transformation from high energy consuming seasonal bulbs to energy efficient LEDs. The remaining phase is located at the CP Station.

Objective GA: Reduce energy consumption from seasonal lighting operation

Leads and Partners:

Municipal staff including Public Works, who will complete the installation.

Timeline:

Virден will work to complete the transformation for the 2010 seasonal lighting period.

Estimated GHG Emission Reduction Potential: 0.0972 tonnes

160 strings of lights (equivalent) on for 6 hours per day = .00000675 CO₂e x 160 = .000108 per day x 90 days = 0.0972 CO₂e tonnes or 97.2 kilograms.

Additional Benefits Expected:

The policy will help lower municipal operating costs as well as help to ensure Virден's current energy systems are not over-burdened.

Budget: \$1,200

Budget includes \$800 in product costs as well as installation costs by Public Works.

Reporting: A key measure of success will be a reduction in affiliated municipal operating costs.

Corporate Initiative H

Victoria Park Wells

In display of environmental stewardship, the Town of Virden will research the construction of two (2) wells for a portion of the municipal watering operations in Victoria Park. By utilizing well water for watering operations, the Town of Virden will reduce potable water consumption, as the Town currently uses treated potable water for such operations. The Town of Virden uses 1,908,947 litres per year of treated potable water for its watering operation in Victoria Park, all of which can be replaced with untreated well water.

Objective HA: Reduce the consumption of treated potable water from seasonal watering activities

Objective HB: Serve as an example to the community

Leads and Partners:

Municipal Parks and Recreation staff, Town of Virden Management.

Timeline: Virden will work to complete construction during the summer of 2010.

Estimated GHG Emission Reduction Potential: 0.03818 tonnes

With the construction of the wells in Victoria Park, Virden will realize the energy savings, and emission reduction, on 1,908,947 litres of water per year that will not be processed at the treatment plant. (Roughly 0.5% of total water treated.) If each litre saves 0.0000002 tonnes of eCO², then the wells will reduce emissions by 0.03818 tonnes annually.

Additional Benefits Expected:

The policy will help lower municipal operating costs as well as help to ensure Virden's current energy systems are not over-burdened.

Budget: \$25,000

Budget includes construction materials and services as well as administration costs.

Reporting: A key measure of success will be a reduction in affiliated municipal operating costs.

Corporate Initiative J

Adopt an Energy Conservation and Water Usage Policy

The Town of Virden will adopt an Energy Conservation and Water Usage Policy to reduce emissions from the treatment and consumption of water used for municipal watering operations. The Policy will address cost-effective, temporary adjustments to systems with activities such as inserting a filled 2L plastic pop bottle into toilet tanks.

Objective JA: Reduce emissions from the treatment of water used for municipal watering operations

Objective JB: Reduce energy usage for municipal watering operations

Leaders in Eco-Responsibility: Virden's CLER Action Plan

Leads and Partners:

Municipal staff member who will draft the policy for Council to endorse.

Timeline: Virden will seek Council endorsement in spring 2010.

Estimated GHG Emission Reduction Potential

The policy is expected to lower emissions through the creation of a conservation environment. Specific tabulation is difficult to calculate, however initiatives within the policy may have varying degrees of measurability.

Additional Benefits Expected:

The policy will help lower municipal operating costs as well as help to ensure Virden's current energy systems are not over-burdened.

Budget: \$250

The Energy Conservation and Water Usage Policy is a low-cost initiative to ensure environmental stewardship is at the forefront of daily municipal operations. Costs include time of the municipal staff member to write the policy for Council endorsement.

Reporting: A key measure of success will be a reduction in affiliated municipal operating costs.

Initiative K: *Town of Virden Water Quality Improvements and Use and Loss Reduction Project*

In 2007, the *Town of Virden Water Quality Improvements and Use and Loss Reduction Project* was spearheaded whereby the Town proposed to upgrade the existing water treatment process to improve water quality exceeding the Canadian Water Quality Guidelines. Acute water quality issues related to the water supply included high levels of arsenic that is extremely complicated to reduce to acceptable health limits. In addition, Virden's current water is high in total dissolved solids, colour, turbidity, organics and iron. The Town proposed to retrofit high efficiency multi-stage reverse osmosis membranes to provide high quality water to all the utility customers as well as for use to surrounding jurisdictions (enhanced regionalization). The project endeavoured to utilize limestone contactors (Manitoba-sourced crushed limestone), as an alternative to phosphate-related chemicals for water stabilization. The complete process is low in treatment chemical use reducing the overall carbon footprint of the facility related to chemical procurement, manufacturing and delivery.

In addition, project proposed to implement additional demand side management techniques including distribution piping leak detection and upgrading program, promoting and enacting bylaws related to low water use (low flush toilets, showerheads, clothes and dish washers), leading by example, promoting low water use landscaping practices as well as adopting this initiative for Town facilities and parks. The project also proposed to initiate public education programs to encourage local ownership of water stewardship initiatives by the utility. The proposed water treatment plant process upgrades will reduce water loss in the production of water by utilizing multi-stage, multi-pass membranes. These new membranes operate at a greater efficiency (90% water recovery) vs. older membrane technologies (70%). Best industry practices will be implemented to optimize operations and process residuals will be

directed to a local golf course seasonally for irrigation, to reduce the volume of reject water discharges to the existing receiving stream.

The proposed project will reduce water use in the production of potable water by up to 10% or over 300 cubic meters per day (~0.1 cubic meters per day per capita). Also, demand side management is expected to reduce demands by over 8% or over 240 cubic meters per day (~0.08 cubic meters per day per capita).

The *Town of Virden Water Quality Improvements and Use and Loss Reduction Project* is currently underway.

Objective KA: Reduce consumption of potable water from treatment operations

Objective KB: Improve water quality for the Town of Virden

Objective KC: Reduce energy usage and emissions from water treatment operations

Leads and Partners:

Waterworks department and municipal management

Timeline: The project is currently underway

Estimated GHG Emission Reduction Potential: 2.19 tonnes

300 M³ of water saved per day x 365 days = 109, 500 M³ of water saved.

109, 500 M³ of water = 109, 500, 000 litres of water saved per year.

If each litre saves 0.0000002 tonnes of eCO₂, than this project will reduce emissions by 2.19 tonnes.

Currently, the water treatment plant has 1,539 M³ coming into the plant per day, with operations wasting approximately 515 M³ or 33.46%. The new system will waste 300 M³ less than the current system, approximately 215 M³ or 13.97%, resulting in a saving of 19.49%.

Additional Benefits Expected:

The project will help lower municipal operating costs, ensure Virden’s current energy systems are not over-burdened, and offer a superior water product to local residents

Anticipated Water quality improvements:

Parameter	Raw Water	Existing Treatment	Canada Drinking Water Quality Guide	Proposed Treatment
Arsenic (mg/L)	0.40	0.026	0.01	<0.01
TDS (mg/L)	880	592	500	<100
Colour (TCU)	38	18	15	<5
Iron (mg/L)	0.48	.34	0.3	0.01
TOC (mg/L)	12	7.8	-	<5

Turbidity (NTU)	1.4	0.8	0.3	<0.1
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Budget:

Description	Amount
Water Treatment Plant Construction (Capital Cost)	\$2,600,000
Water Treatment Plant Engineering (Fees)	\$260,000
Total project costs:	2,860,000

Reporting: A key measure of success will be a reduction in affiliated municipal operating costs and a significant improvement in the quality of treated water

STRATEGY: Develop a community-based strategy to decrease energy consumption, educate the public, and increase preference for environmentally-friendly actions and alternatives.

Community Initiative A

Public Education and Awareness Campaign

Public education and awareness are critical to the success of the action plan. It is only through an educated public that the Town of Virden can realize a reduction in emissions because education precedes action.

- **Newsprint:**
The Town of Virden will place half-page articles and ads in the Empire Advance with tips on emissions reduction initiatives, green tips and local products, educational links, articles on emissions reduction excellence in the community, and information on local donors who supporting the program. Such articles will also be submitted to the Brandon Sun and other local news affiliations for consideration.

- **Web**
The Town of Virden will continue to utilize its website to promote Virden’s Environmental Strategy including eco tips, emission reduction activities, eco links, and the like.

- **Print – Brochures & Posters**

The Town of Virden will ensure the public is informed with supplementary eco brochures and event-specific posters

- **Eco Day: Saturday June 12, 2010**

The first event of its kind in Virden, Eco Day is designed to heighten awareness, education and public participation in environmental stewardship. In this regard, Virden's Eco Day will entail:

- Workshop Sponsorship: Building a Recycling Organizer or Planter Box
- Tree planting program – Schools
- Manitoba Hydro Energy Seminars
- Sheep Mowing – eco grass cutting near farmers market
- Compost Workshop – Resource Conservation Manitoba
- Manitoba Organic Producers – Seminar
- Local Mechanics – free tire pressure check
- Freecycle – The Town of Virden will sponsor tables in a designated area for 'Freecycling' – where people are encouraged to bring usable but unwanted items to be used by others and freecyclers are encouraged to take what they can use. Items remaining from the Freecycle will be donated to local area shelters and affiliated charitable organizations.
- Eco Date selected on availability considerations

Objective AA: Educate the public on the environment, energy consumption, and how they can become good environmental stewards

Objective AB: Encourage action and offer support

Objective AC: Promotion of existing programs to assist residents in reducing their footprint on the environment

Leads and Partners:

A designated municipal staff member will lead the awareness and education campaign.

Timeline: Virden will work to initiate the campaign in the spring of 2010.

Estimated GHG Emission Reduction Potential:

The policy is expected to lower emissions through public awareness, education, and action. Specific tabulation is difficult to calculate, however, activities in the campaign may have varying degrees of measurability.

Additional Benefits Expected:

The campaign will help to deliver a straight-forward message to the community, offer and garner support for emissions reduction, get local residents and businesses involved, and offer emissions reduction solutions to the community at large.

Budget: \$3,000

The budget includes print costs, Eco day initiatives, and all affiliated awareness, education and participation initiatives.

Reporting: A key measure of success will be a reduction in affiliated residential and/or commercial operating costs and increased local demand for eco products and services.

Community Initiative B**Town of Virden Rebate Program**

As part of Virden's Environmental Strategy, Virden proposes a rebate program with local businesses for local residents with the goals of eco responsibility and greater objectives of green house gas emission reduction. As such, Virden proposes the program as follows:

\$50 Low or Dual Flush Toilet Rebate

Virden sees the initiative in the form of an in-store coupon, immediately redeemable at the time of sale. In this instance, the rebate would only be applicable to toilets previously identified as eco-friendly, or low-flow. With an estimate from previous similar programs resulting in the purchase of 80 toilets, Virden would provide funding to a maximum of \$4,000. In addition to the in-store coupon, Virden would like to see businesses entertain the possibility of hosting a "how to", in-store workshop or brochure on the topic of toilet installation. Approximate implementation: April-June 2010.

\$20 Programmable Thermostat Rebate

Virden sees the initiative in the form of an in-store coupon, immediately redeemable at the time of sale. With an estimate from previous comparative programs, Virden would provide funding to a maximum amount of \$1,800. In addition to the in-store coupon, Virden would like to see businesses entertain the possibility of hosting a "how to", in-store workshop or brochure on the topic of changing a thermostat. Approximate implementation: April-June 2010.

\$30 Rain Barrel Rebate

Virden sees the initiative in the form of an in-store coupon, immediately redeemable at the time of sale. Without an estimate from comparative programs, Virden would provide funding to a maximum amount of \$1,200. Approximate implementation: May-July 2010.

\$50 Lawn Mower Rebate

Virden sees the initiative in the form of an in-store coupon, immediately redeemable at the time of sale, on the purchase of new electric or push mowers.

Without an estimate from comparative programs, Virden would provide funding to a maximum amount of \$1,800. Approximate implementation: May-July 2010. As lawnmowers are some of the heaviest polluters, Virden proposes that businesses seek a manufacturer-sponsored electric or push-mower prize to be drawn from names of customers purchasing eco-products during a specified time frame.

\$3 Seasonal Lighting Rebate

Virden sees the initiative in the form of an in-store coupon, immediately redeemable at the time of sale, on the purchase of energy-efficient LEDs. With an estimate from previous comparative programs, Virden would provide funding to a maximum amount of \$1,200. Approximate implementation: October-December 2010

\$20 Compost Box Rebates

Virden sees the initiative in the form of an in-store coupon, immediately redeemable at the time of sale. Without an estimate from comparative programs, Virden would provide funding to a maximum amount of \$1,200. Approximate implementation: May-July 2010

Combined Rebate Maximum: \$11,200

(*Note: Should one rebate incentive be more successful than another, Virden's commitment allows for funds allocated for one incentive to be used for another, not to exceed \$11,200 total.)

As part of a public education and awareness campaign, Virden believes local businesses will benefit from participation in the program. In this regard, coupled with Virden's commitment to the proposed rebate investment, Virden proposes a commitment from businesses in the form of

promoting environmentally friendly products and services, allow Virden to place program literature in-store, as well as an in-kind sponsorship of the first ever Eco Day, to be held in June. In addition, Virden proposes that businesses seek manufacturer discounts on environmentally friendly products, to be passed along to consumers, with such purchase incentives occurring during the promotion of Eco Day as well as during the roll-out of respective rebate programs.

Objective BA: Reduce GHG emissions from residential operations

Objective BB: Encourage residents to take action sooner rather than later

Objective BC: Show residents that there are environmentally-friendly alternatives for many household activities

Leads and Partners:

A designated municipal staff member to implement and monitor the program. The Town of Virden will partner with True Value and Home Hardware for the project, in effect splitting the financial allotment to \$5,600 each.

Timeline: Virden will work to initiate the rebate program in the spring of 2010.

Estimated GHG Emission Reduction Potential: 90.9553 tonnes

- 80 toilets x 41.062.5 L = 3,285,000 litres of water per year, = 0.0657 tonnes eCO₂
- 90 thermostats x 0.85 tonnes eCO₂ = 76.5 tonnes eCO₂
- 40 rain barrels x 200 L = 8,000 litres each fill, at several fills per year. Estimation is 1 kg.
- 36 lawn mowers x 0.0096 tonnes CO₂e/year/lawnmower = 0.3456 tonnes eCO₂, or 345.6 kilograms
- 400 strings of lights x (equivalent) on for 6 hours per day = .00000675 CO₂e x 400 = .0027 per day x 90 days = 0.243 CO₂e tonnes or 243 kilograms.
- 60 compost boxes = 60 homes.
 - Average household of 4 has 22.5g of waste per week. (greenregistry.org waste calculator) x 52 weeks = 1.7 tonnes of waste per year per home.
 - Average Manitoba household has 2.5 people, therefore the average Manitoban household waste is 0.731325 tonnes per year.
 - If 23% of waste stream is compostable (*EPA), then household compostable waste is 0.1681875 tonnes per year.
 - X methane coefficient results in 0.23 tonnes of eCO₂ per year per household.
 - IF 60 households in Virden compost all their organic, compostable material, then emissions may be reduced by 13.8 tonnes eCO₂.

Additional Benefits Expected: The community will see a reduction in residential operating costs. Virden believes local residents will be happy with cost savings on local products and local partners will see an increase in the demand and sale of products designated in the rebate program.

Budget: \$13,500

The budget includes rebate allocations, administrative and promotional costs.

Reporting: A key measure of success will be a reduction in affiliated residential and/or commercial operating costs and increased local demand for eco products and services.

Community Initiative E

Corporate Environmental Responsibility

Viriden will work to encourage corporate environmental responsibility with local businesses. Actions in this regard will be working with the corporate community to encourage environmentally friendly practices and operations as well as corporate commitment to promoting eco products and services.

Objective EA: Work with corporate community to encourage environmentally friendly practices and operations

Objective EB: Encouraging corporate commitment to eco products and services

Objective EC: Increased attainability of eco products and services

Leads and Partners:

A designated municipal staff member work to encourage environmental responsibility from local businesses.

Timeline: Viriden will strive to work with local businesses from the spring of 2010, onward.

Estimated GHG Emission Reduction Potential:

The initiative is expected to lower emissions through corporate awareness, education, and action. Specific tabulation is difficult to calculate, however, activities in the campaign may have varying degrees of measurability.

Additional Benefits Expected: Local residents will be satisfied to see local businesses offering eco products and services, ensuring they can choose to spend their money at businesses practicing environmental stewardship, and local businesses may find previously unidentified niche markets for their products and services

Budget: \$500

This is a low-cost initiative to target the reduction of local emissions and encourage environmental stewardship. Costs include the time of municipal staff to work with local businesses.

Reporting: A key measure of success will be a reduction in affiliated residential and/or commercial operating costs and increased local demand for eco products and services.

Community Initiative D

Recycling Bin Purchase

Viriden has purchased 500 14-gallon new recycling bins to encourage recycling in the community.

Objective DA: Encourage waste reduction in the community

Leads and Partners:

Municipal staff member work to distribute the bins throughout the community. Sunrise Credit Union will cover half of the \$5,500 product cost.

Leaders in Eco-Responsibility: Viriden's CLER Action Plan

Timeline: Virden will receive the bins in the spring of 2010.

Estimated GHG Emission Reduction Potential:

Though specific reductions are difficult to calculate, the initiative will decrease emissions through the creation of a conservation environment.

Additional Benefits Expected: The purchase will allow local residents to contribute more to recycling and less to waste.

Budget: \$3,000

The purchase will target the reduction of local emissions and encourage environmental stewardship. Costs include product and administrative costs.

Reporting: A key measure of success will be a reduction in affiliated residential and/or commercial waste and an increase in recycling tonnage.

Implementation

In aligning with the goals with the CLER program, Virden will work to implement immediate and short-term projects first. Low or no cost initiatives will be implemented shortly after Council endorsement. These activities include the public awareness and education campaign, bylaw and policy adoptions, as well as working with local businesses on environmental stewardship. On the municipal side, Virden will work to complete its building retrofit during the summer. The rebate program applicable to the community sector will be implemented within two months of Council approval. Virden has already purchased recycling bins for the community and the Town of Virden Water Quality Improvements and Use and Loss Reduction Project is currently underway.

Implementation on costly items, such as the Victoria Park Well project and the Multi-Purpose Facility Energy Capture System are dependent upon eligibility for CLER funding.

Measures of Success

Measures of success include quantifiable GHG reductions and cost savings, as well as a heightened public awareness of eco responsibility.

In March, 2012, Virden will complete another inventory on municipal and residential activity. This inventory will be compared to Virden's 2010 inventory, to measure reductions and progress. Additional environmental, social, economic, and health impacts will also be monitored during this time.

Conclusion/Summary

Through the implementation of initiatives outlined, Virden has the potential to significantly reduce GHG emissions both as a municipality and as a community. Virden sees potential in the program, and believes the Action Plan will serve as an important component in its sustainability. Through action, Virden will serve as a leader to residents and surrounding communities.

APPENDIX A:



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 www.i-designs.ca

Virден Regional Multi-Purpose Facility, Energy Simulation

Virден, Manitoba

Preliminary Model Results, Entire Facility – February 4, 2010

Report Author: Cindy Perrot, P.Eng., CEM

Integrated Designs (IDI) has created a preliminary model of the Virден Regional Multi-Purpose Facility based on architectural Issued for Review drawings dated November 2009, mechanical and electrical drawings printed in January 2010. Preliminary results are shown below, a visual breakdown of use per system on next page, estimations of heat recovery savings, and finally important accompanying **issues and assumptions** listed on last page.

As shown in Table 1 below, the model yielded an energy performance of 43.1% better than the Model National Energy Code for Buildings with respect to energy units, achieving EAp2 Minimum Energy Performance (better than 25%). With respect to cost, it is 33.2% better than MNECB and achieves potentially 3 LEED points under EAc1 Optimize Energy Performance, with little margin for error with the 33% threshold. Added to these three points are two points due to a **Process Energy Credit**; maximum of 2 points can be attained with refrigeration savings, and the refrigeration design obtains this. These are **preliminary results that incur a degree of error**; see issues and assumptions for understanding of result volatility. It is recommended that 3 points be “yes”, and 2 points be “maybe” on the LEED scorecard.

Table 1 : Energy Summary for LEED – Entire Facility

Energy Summary by End Use	Energy Type	Proposed Building		Reference Building		Energy Savings [%]
		Energy [MJ]	Intensity [kWh/m ²]	Energy [MJ]	Intensity [kWh/m ²]	
Regulated Energy						
Lighting	Electricity	1,518,251	52	1,505,802	51	-0.8%
Space Heating	Natural Gas-note 1	4,819,873	165	12,356,055	422	61.0%
Space Cooling	Electricity	225,348	8	204,143	7	-10.4%
Pumps	Electricity	254,572	9	223,449	8	-13.9%
Fans	Electricity	1,216,415	42	967,224	33	-25.8%
Service Water Heating	Natural Gas	1,563,721	53	1,600,541	55	2.3%
Subtotal Regulated Energy		9,598,179	328	16,857,212	576	43.1%
Non-Regulated Energy						
Plug Loads		94,739	3	94,739	3	0.0%
Ice Plant Refrigeration		3,255,097	111	3,255,097	111	0.0%
Subtotal Non-Regulated Energy		3,349,836	114	3,349,836	114	0.0%

Total Energy Summary	Proposed Building		Reference Building		Percent Savings	
	Energy [MJ]	Cost [\$]	Energy [MJ]	Cost [\$]	Energy	Cost
Electricity	6,564,421	\$95,540	6,250,453	\$92,250	-5.0%	-3.6%
Natural Gas	6,383,594	\$37,574	13,956,595	\$83,394	54.3%	54.9%
Total	12,948,015	\$133,114	20,207,048	\$175,644	35.9%	24.2%
LEED EAc1						
Subtotal Regulated Energy Costs	9,598,179	\$84,360	16,857,212	\$126,204	43.1%	33.2%
Industrial / Process Energy Credit (max 2 pts)*	-1,084,962	-\$15,791	0	\$0	33.3%	2 pts
Renewable Energy Credit	0	\$0	0	\$0	0.0%	0.0%
Net Total	8,513,217	\$68,569	16,857,212	\$126,204	43.1%	33.2%

Note 1: includes conservative estimation of heat recovery off ice plant

Note 2: refrigeration is a process energy; maximum of 2 LEED points can be granted for process energy savings.

Points	5
---------------	----------

Building Energy Use Breakdown

The building energy use is graphed by system in Figure 2.

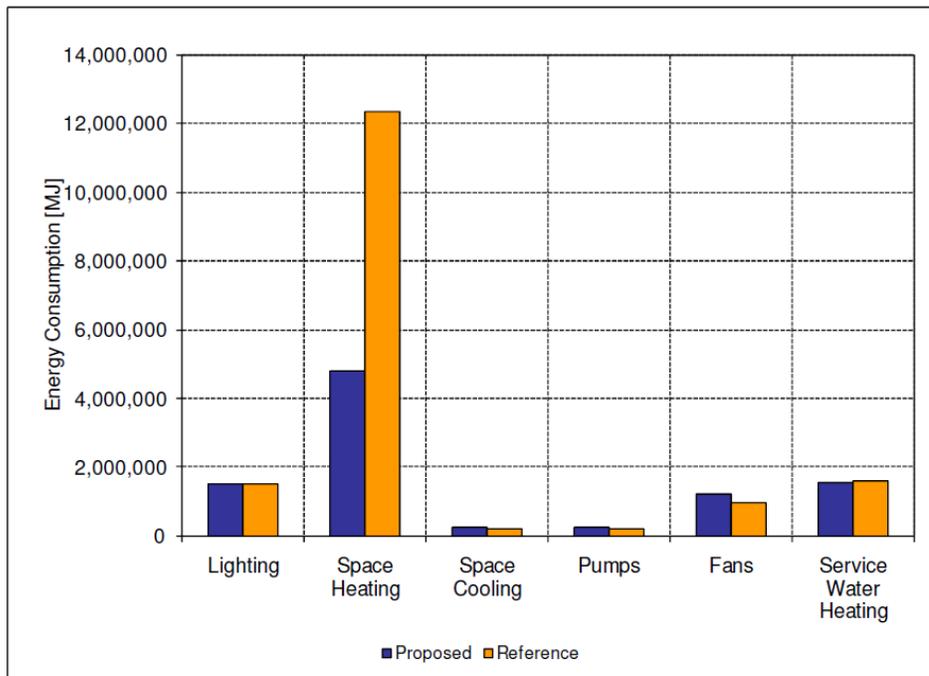


Figure 2: Energy Use by System – Entire Facility

Lighting is performing approximately equal in the Proposed Design and Reference; as described in the Jan. 25 report, there is relatively inefficient design in the multipurpose area, and an improved lighting design in the arena area. Typically, lighting can achieve at least 30% better than Reference; as such, it is suggested that the lighting design be investigated for energy saving measures (i.e. fewer fixtures). Occupancy sensors are currently incorporated into the model.

Space heating performance is exemplary in the Proposed Design. Note that this does include a conservative estimation of refrigeration recovery.

Space cooling is worse in the Proposed Design than in the Reference. This is a relatively low load, and requires more investigation for modeling technique given that this is integrated into the refrigeration plant. The assumptions made in modeling a cooling tower may be creating the result, and will be watched once design parameters are given.

Pumps are worse in the Proposed Design than in the Reference. This system was completely assumed by the modeler, and assumed conservatively. Please forward the pump system design (pump capacities, efficiencies) once they are known.

Fans are worse in the Proposed Design than in the Reference. The fan-coil units have large fanpowers; if there are savings to be had here, they should be investigated.

Service Water Heating, for lack of design information and in sake of conservativeness, was modeled identically in both the Proposed and Reference. Please forward domestic hot water design details once they are available; however, in the meantime, it is worth asking if the domestic hot water load is expected

to be this high. It is modeled this high due to the nearly **2700 person occupancy** given in the Ventilation Calculations table for the multi-purpose area and arena area; at default ~ 75 W/occupant, this is a very large component of the overall energy use.

Ice Plant Heat Recovery Savings

EEWizard was used extensively to approximate energy savings with the ice plant heat recovery system. **The results given below are rough estimations.** In order to better the error in these results, the assumptions and results of multiple iterations would have to be reviewed by the mechanical designer and modeler more closely.

Multiple iterations resulted in an approximate annual savings of **\$4,000 - \$8,000** with ice plant heat recovery used for space heating of the new facility. Note that the boilers were required to run throughout the winter (i.e. they did not satisfy entire heating load, as shown by natural gas use in Table 1).

Although not part of this LEED submission, the availability of **recovered heat to heat the nearby pool was investigated, and estimated to save an additional \$8,000.** Note that the pool loads could not be modeled (thus, it is not known if the heat rejection of plant was coincident with pool heating load). Savings were calculated by the model result of 1,100,000 MJ of heat rejected off the ice plant in May through Sep, multiplied by an 82.5% recovery efficiency and assumption that this is replacing the use of a 90% efficient boiler. Overall, \$8,000 is on the conservative end of the savings result, but also highly approximated.

Issues and Assumptions

Please review the list of issues and assumptions below to expedite resolution, and understand the volatility in the modeled results.

#	Issue or Assumption	Impact	Attention
1	Confirm ASHRAE-62 calculations for the Community Centre area. In particular, the People CFM appears higher than needed.	Large, cannot over-ventilate in MNECB	Mechanical
2	Confirm modeling techniques with Natural Resources Canada and CaGBC, including incorporation of outdoor air with SF-A1 and EF-A1 limited runtimes.	Large, but conservative result modeled.	IDI
3	Discuss lighting needs and current design in effort to achieve energy savings.	Medium	Electrical
4	Discuss fanpower requirements and current design in effort to achieve energy savings.	Medium	Mechanical
5	Define fuel source, heating capacity and efficiency for domestic hot water system.	Medium	Mechanical
6	Confirm or correct high domestic hot water usage, which results from the modeled 2700 person occupancy in multi-purpose area @ ~ 75W/occ default assumption.	Medium	Mechanical
7	Forward pump system design (pump sizes, efficiency) once it is available.	Medium	Mechanical

APPENDIX B:

Virден CLER Communication Plan

Presented By: Shauna Lupaschuk, CLER Coordinator

December 21, 2009

ENDORSED: January 5, 2010

Introduction

Municipalities play a key role in helping Canada meet commitments for both significant and long term greenhouse gas (GHG) emission reductions. Actions taken by municipalities contribute to substantial and cost-effective GHG emission reductions. In January 2009, the Town of Virden passed a resolution to participate in the Province of Manitoba's Community Led Emissions Reduction (CLER) four-year pilot program to develop a local solution to the global issue of climate change.

Mission

The Town of Virden, in order to achieve emissions reductions targets as part of the CLER program and larger Kyoto Protocol objectives, will promote our CLER program and activities, with public consultation, through education, involvement, support and encouragement initiatives.

Objectives

- To gather an Advisory Committee to advise the CLER Coordinator and provide input on the project.
- To develop a Public Consultation Plan, with a list of activities , to gather public input and feedback on the project.
- To develop a strategy to educate the stakeholders on the project and emissions reduction activities.
- To develop a strategy to encourage stakeholder action and participation and garner support on the project.

Stakeholders

Stakeholders in the project include, but are not limited to:

- The Mayor
- Town Councillors
- Municipal Staff
- Local Businesses
- Sponsors
- Residents, which can be further broken into additional groups
 - Students
 - Seniors
 - Parents
 - Neighbours

- Interest Groups and clubs
- Community Leaders
- Volunteers

Governing Bodies

For the purpose of the project, there are three governing bodies with various roles:

1. **Town Council:** Advises, directs and has final approval on actions taken during the course of the project. Town Council consists of:
 - a. Mayor Bruce Dunning
 - b. Councillors Tony Schneider, Herb Warkentin, Jeff McConnell, Maxine Chacun, Roy Potter, Terry Johnson as well as Chief Administrative Officer Rhonda Stewart
2. **CLER Emissions Reduction Advisory (ERAC) Committee:** Works directly with and advises the CLER coordinator on the project.
 - a. Councillor, Councillor, Ray Cochrane, Councillor Appointee, Public Member, Public Member, Public Member, Public Member
3. **The Public:** Provides input and feedback on the project.

Initiatives

1. Coordinate an Advisory Committee

Viriden's participation in the CLER program requires an advisory committee to provide input and feedback and advise upon the actions we take during the course of the program. The committee will consist of approximately 8 members consisting of councillors Jeff McConnell and Tony Schneider, resident and teacher Ray Cochrane, resident Heather Reimer, Upper Assiniboine River Conservation District Manager Ryan Canart, and up to four members selected from an ad in the Empire Advance. The Emissions Reduction Advisory Committee (ERAC) plan is as follows:

Mission

Viriden's voluntary Emission Reduction Advisory Committee (ERAC), in order to achieve emissions reductions targets as part of the CLER program and larger Kyoto Protocol objectives, will guide the program via the CLER Coordinator, by providing input and feedback on program initiatives, using the public interest and emissions reductions as measuring tools.

Objective

To provide input, feedback, and advise the CLER Coordinator during the consulting, planning, implementation, and monitoring stages of the program. Estimated time of the initial three phases, and current objectives, is the first week in January 2010 to March 31, 2010.

Strategy

Members of the Advisory Committee will meet monthly in the Green Room at the Town Office at an agreed upon, regularly scheduled, time for no more than two hours. In addition to meetings, members will be emailed weekly updates from the CLER Coordinator, for member review. Members may communicate via email or phone throughout the course of the program to provide input, feedback, advise the CLER Coordinator, or request information.

Estimated time required for current objectives is 3 meetings at 2 hours in length for a total of 6 hours, in addition to email review and/or communication, and/or other correspondence or material review.

2. Public Education and Awareness Campaign

Public education and awareness are pivotal to the success of the program, from the very introduction of the project through the consultation, action, implementation and monitoring phases. Thus, Viriden will conduct the following initiatives:

- a. **Website:** The Coordinator will develop a page specifically dedicated to the CLER program, where users will find information such as public consultation dates, emissions reduction initiatives, green tips and local products, educational links, articles on emissions reduction excellence in the community, and information on local donors who supporting the program.
- b. **Access TV:** The CLER program and related initiatives and events will be advertised on Access TV. In addition to looped messaging, Access TV will interview the CLER Coordinator on the program.

- c. **Media Releases:** News releases will be sent to all local media including the Westman Journal and Empire Advance, local radio stations including KX 96.1, Star 94.7, 101.1 The Farm, and 880 CKLQ Country) and Access TV. Releases will also be posted at the Town Office as well as distributed throughout town.
 - d. **Newsprint:** The CLER Coordinator will write weekly articles for placement in the Empire Advance, with information such as public consultation dates, emissions reduction initiatives, green tips and local products, educational links, articles emissions reduction excellence in the community, and information on local donors who supporting the program.
 - e. **Water Bills:** Energy saving tips and links will be included in quarterly water bills.
-

3. Public Consultation

Public Consultation is critical to the success and approval of the project. Consultation will commence at the onset of the project, and continue throughout the planning and implementation stages, as the project cannot proceed without public input or feedback, nor will it garner the support required for success.

In this regard, two public consultations will take place in an open-house form with anticipated attendance appropriate for a charette. The agendas are as follows:

CLER Introduction Charette :

Wednesday January 20, 6:00pm – 8:00pm

Council Chambers

Objective: Educate public about Virden’s participation in the CLER program and gain public input, support, and ideas for emissions reduction

Agenda: Session I

1. Ice breaker
2. Handout: Information Sheet on the CLER Project
3. Presentation – Climate Matters
4. Presentation – Think Different (Apple Commercial)
5. Group Activity: Ideas for Emissions Reduction (Pair in twos)
6. Wrap-Up / Evaluation

Idea Report & Selection Suggestion Charette

Thursday February 18, 6:00pm – 8:00pm Council Chambers

Objective: Report back on ideas from the first charette and vote on suggestions of emissions reductions activities to undertake

Agenda: Session II

1. Ice breaker
 2. Presentation: Report on ideas
 - a. Inputs required for success
 - b. Amount of GHG reduced
 3. Group Activity: Prioritizing ideas
 4. Group Activity: Choosing Ideas
 5. Wrap-Up / Evaluation
-

4. Sponsorship Activities

Public support and participation are vital to the success of the program. In this regard, the CLER Coordinator will distribute a letter soliciting donations such as services or items to encourage participation in the project and action in implementing emissions reductions activities.

Donations will be used as door prizes at events and public consultations, participation awards during workshops, as well as draw prizes for survey or questionnaire completion. Support will be noted at on the Town of Virden's website, and at events or on literature when the donation is used.

5. Partnerships

Partnerships with local businesses and surrounding municipalities can lever strength, support and funding for emissions reduction activities and public education and awareness initiatives. The CLER coordinator will contact local businesses to partner in offering discounts, rebates, new eco-friendly products, and seminars to local consumers. In addition, the CLER coordinator will seek avenues where partnering with surrounding municipalities can lever additional funding and emissions reduction.

CLER PROJECT MEDIA SCHEDULE

		January					February					March	
		Week 1	Week 2	Week 3	Week 4	Week 5	Week 1	Week 2	Week 3	Week 4	Week 5	Week 1	Week 2
PRINT	Empire Advance	Project Information Ad		Public Info Session I Ad				Public Info Session II Ad					
	Brandon Sun			CLER info & Public Info Session Info Article									
	Westman Journal												
	Manitoba Cooperator			Mayor Dunning Interview Article									
RADIO	880 CKLQ			CLER Program & Public Info Session Interview				CLER Program & Public Info Session II Interview					
	KX96.1	PSA Announcements	PSA	PSA			PSA	PSA					
	101.1 The Farm	PSA					PSA	PSA					

	Star 94.7	PSA	PSA	PSA				PSA	PSA				
TV	Access TV	Project Information	Public Info Session Scroll	Public Info Session Scroll				Public Info Session II Scroll	Public Info Session II Scroll				
WEB	Town of Virden Web	Project Information	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info	CLER PAGE - All info

APPENDIX D:

CLER PUBLIC INFORMATION SESSION

6:00 PM January 20, Council Chambers

232 Wellington Street West

Municipalities play a key role in helping Canada meet commitments for both significant and long term greenhouse gas (GHG) emission reductions. Actions taken by municipalities contribute to substantial and cost-effective GHG emission reductions. In January 2009, the Town of Virden passed a resolution to participate in the Province of Manitoba's Community Led Emissions Reduction (CLER) four-year pilot program to develop a local solution to the global issue of climate change.

The Town of Virden, in order to achieve emissions reductions targets as part of the CLER program and larger Kyoto Protocol objectives, requires public consultation to ensure our success in the program.

At **6:00 p.m. on January 20**, Virden will be hosting a public information session on the CLER program. The public is encouraged to attend and voice their opinions and ideas on emissions reduction activities. Should you be unable to attend but wish to provide input or feedback on the program, contact Shauna Lupaschuk, CLER Coordinator, at (204) 748-2440 or by email at virden_cler@mts.net.

For more information visit
www.virden.ca/CLER Program



APPENDIX E:

CLER PUBLIC INFORMATION SESSION II

6:00 PM February 18, Council Chambers

232 Wellington Street West

Municipalities play a key role in helping Canada meet commitments for both significant and long term greenhouse gas (GHG) emission reductions. Actions taken by municipalities contribute to substantial and cost-effective GHG emission reductions. In January 2009, the Town of Virden passed a resolution to participate in the Province of Manitoba's Community Led Emissions Reduction (CLER) four-year pilot program to develop a local solution to the global issue of climate change.

The Town of Virden, in order to achieve emissions reductions targets as part of the CLER program and larger Kyoto Protocol objectives, requires public consultation to ensure our success in the program.

At **6:00 p.m. on February 18**, Virden will be hosting a second public information session on the CLER program. The public is encouraged to attend and voice their opinions and ideas on emissions reduction activities. Should you be unable to attend but wish to provide input or feedback on the program, contact Shauna Lupaschuk, CLER Coordinator, at (204) 748-2440 or by email at virden_cler@mts.net.

For more information visit
www.virden.ca/CLER Program



CountryCrossroads

CONNECTING
RURAL
FAMILIES

Fourteen municipal jurisdictions in Manitoba are looking for ways to implement GHG reductions

GHG emissions reduction needs local government action

BY LORRAINE STEVENSON
Co-operator staff

World leaders returning from Copenhagen last month will submit plans by January's end on how their countries will commit to lowering greenhouse gas emissions by 2020.

But national and provincial governments won't achieve their emissions targets alone.

Manitoba, which has already set a goal of 20 per cent reduction over the next four years, is looking to local municipal leaders for help.

Last spring, it rolled out the Community Led Emissions Reduction pilot program, with 14 towns and rural municipalities agreeing to participate. The program provides resources to local government to do an inventory of GHG emissions and prepare action plans.

Communities are now doing those inventories and looking at strategies that range from recovering landfill gases to water-use reduction strategies and building more walking and biking paths through communities.

Trouble spots

Virten, which is included in the project has its own goal of a 20 per cent lowering of GHGs in its community, said Mayor Bruce Dunning. They are preparing an action plan to roll out in March.

What they know right now is that there's many trouble spots — from their energy-gobbling older street lights to poorly heated older buildings in town. They also know they need to build more non-motorized corridors through their community. Their new development plan will incorporate more green space, Dunning said.

"Some of the areas that we're looking at targeting are converting to alternative fuels and geothermal at our facilities," he said. "We also want to enhance our non-motorized walking corridors."



NEED FOR GREEN: More cities and towns will pursue greenhouse gas emissions reductions strategies if they have resources to implement, and therefore demonstrate the cost effectiveness of doing so.

TOWN OF VIRDEN

"If we can prove this works in fact rather than theory, it will benefit all municipalities."

— TOWN OF VIRDEN MAYOR BRUCE DUNNING

Their town is also looking at water-use reduction incentives and strategies including providing incentives for residents to switch to dual-flush toilets and low-flow shower heads and working on public education strategies to reduce habits like vehicle idling.

Finding the resources to do all these things is the biggest challenge ahead, Dunning said. If they can, and then demonstrate the lowered costs on municipal operating budgets

through GHG reduction strategies, other municipalities will follow suit, he said.

"If we can prove this works in fact rather than theory, it will benefit all municipalities," Dunning said.

Reductions

On the eve of the Copenhagen summit last month, the Federation of Canadian Municipalities (FCM) released a report showing GHG emissions reductions will be most effec-

tively achieved through federal help extended to municipalities for cost-effective, community-based projects.

Entitled *Act Locally — The Municipal Role in Fighting Climate Change*, the report says municipalities will play a fundamental role in reaching GHG targets, given their indirect or direction control over transportation, land use and waste management activities which presently account for 44 per cent of all GHG emissions in Canada.

The report says municipal-level actions could collectively result in emissions reductions of anywhere from 15 to 40 per cent of Canada's emissions tar-

gets and says local government is best positioned to engage households and businesses in achieving that goal.

Without any municipal action taken, the report says emissions under municipal jurisdiction are projected to actually rise by an additional 23 per cent to 2020.

The FCM report says resources extended to municipalities for help implementing GHG reduction targets would achieve two-thirds of GHG reductions for less than \$25 per tonne, or less than the average cost of regulating industry or developing renewable energy.

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New land use policies expected by spring

BY LORRAINE STEVENSON
Co-operator staff

Revising Manitoba's land use policies (PLUPs) proved to be a bigger job than anticipated, pushing back what was expected to be a release last fall of new poli-

ergy use. The policies came up for review in light of emerging issues such as climate change.

Bob Grodzik, a senior policy planner with Intergovernmental Affairs, said no one expected the complexity and diversity of views that were expressed during consultations. They fre-

strong view either for or against, Grodzik said.

"We knew this wasn't going to be simple... but we ended up getting a lot of comments and feedback that gave us a lot more to think about," he said.

"The complexity also relates to the fact that we have one set

Grodzik said they also realized the language of the draft policies needed scrutiny, after so many municipal leaders interpreted them as impeding future rural development.

"Our policy language was seen as promoting depopulation," Grodzik said. "So we have

"We really wanted to hear from those folks," Grodzik added.

KAP has indicated it is generally supportive of the draft policy, seeing it as giving positive consideration for agriculture, while supporting expansion and diversification of agricul-

SEEKING PARTICIPANTS

Virden: Planning for a wealthier, healthier, sustainable community

We've all heard the words 'climate change' and many of us cringe as government and scientists load us with such technical information we feel they're speaking a foreign language. Simply put, for my fellow non-scientists out there, climate change is very real and affects each and every one of us. As individuals, and together as a community, reducing the amount of greenhouse gases (GHG's) we emit into the atmosphere is the best way to minimize our contribution to climate change. These changes can help us save money, improve our health, further develop the local economy, and protect natural resources and habitat.

Virden is participating in a **Community Led Emissions Reduction (CLER) pilot program**, a provincial initiative supporting local governments and communities to reduce GHG emissions. The CLER program entails five key steps:

1. Creation of a baseline inventory and forecast of GHG emissions
2. Setting targets for GHG reductions
3. Creation of a local action plan with public input
4. Implementation of projects and activities in the local action plan
5. Monitoring, measuring and reporting on progress

You can be leaders within the community by becoming involved in Virden's **Emissions Reduction Advisory Committee (ERAC)** which will connect community ideas with individual and municipal action.

Interested participants may contact Shauna Lupaschuk by December 30, CLER Coordinator, at (204) 748-2440 or by email at virden_cler@mts.net. Only individuals selected for participation will be contacted.

Please contact Shauna Lupaschuk for inquiries or additional information on the program.



APPENDIX H:

Corporate & Community Actions								
Strategy	Project Activity	Objectives	Lead	Partner	Term (Immediate, Short, Medium, or Long)	Estimated GHG Emission Reductions	Total Project Cost	Other Benefits
Develop a stronger active and alternative transportation strategy to increase fuel efficiencies, reduce reliance on alternative transportation for short commute trips, and gain awareness into municipal fleet operations.	Corporate Initiative A: Anti-Idling Bylaw	Objective AA: Reduce emissions discharged from Town operations and vehicles Objective AB: Reduce the amount of GHG generated in the community as a result of vehicle use Objective AC: Serve as a leader to the residents of Virden	Municipal Staff & Town Council		Immediate: 0-6 Months	404.17 tonnes eCO2	\$500	Improved local air quality and health
	Corporate Initiative C: Snow Removal and Sidewalk Clearing Policy	Objective CA: Encourage active winter transportation as a method of reducing emissions Objective CB: Encourage mobility as part of a healthy lifestyle to residents of Virden	Municipal Staff & Town Council		Immediate: 0-6 Months	162.5 tonnes eCO2	\$500	Improved local air quality and health
	Corporate Initiative I: Fleet Fuel and Mileage Tracking Policy	Objective IA: Gain awareness into daily fleet operations and energy consumption Objective IB: Ensure accuracy and availability of information for 2012 inventory	Municipal Staff		Immediate: 0-6 Months	3.2 tonnes eCO2	\$250	Preparation for 2012 inventory and insight into fleet operations
	Community Initiative C: Walking Trail Design	Objective CA: Encourage active transportation throughout the Town of Virden Objective CB: Encourage green interaction and learning with the natural environment Objective CC: Encourage active lifestyles through increased mobility	Municipal Management, Department of Parks and Recreation, landscape architects	UARCD	Design: Medium 2-5 years Construction: Long 5-10 years	162.5 tonnes eCO2	\$6,000 for design + disbursements	Improved local air quality and health

		Objective CD: Serve as a cornerstone for the broader vision of a longer-term green space master plan						
	Community Initiative F: Bike Racks	Objective FA: Encourage active transportation throughout the Town of Virden Objective FB: Encourage physical activity	Municipal Staff	Local Businesses	Immediate: 0-6 Months	40.625 tonnes eCO2	\$2,500	Improved local air quality and health, cost savings on fuel

Develop a municipal development strategy to reduce waste and increase energy efficiencies.	Corporate Initiative B: Green Procurement Policy	Objective BA: Reduce impact on environment from corporate operations Objective BB: Serve as a leader to the residents of the Town of Virden	Municipal Staff		Immediate: 0-6 Months	TBD	\$250	Reduce carbon footprint & lead by example
	Corporate Initiative D: New Construction Energy Efficiency Bylaw	Objective DA: Reduce emissions from the onset of construction Objective DB: Encourage eco-friendly building practices Objective DC: Show that Virden takes the environment seriously	Municipal Staff		Immediate: 0-6 Months	8.508 tonnes eCO2	\$500	Lower private operating costs & lower the burden on municipal and provincial energy systems
	Corporate Initiative F: Multi-Purpose Recreational Facility Energy Capture System	Objective FA: Reduce energy consumption from facility operation Objective FB: Show that Virden strives to be environmentally responsible, and encourage the public to do the same	Tower Engineering, Public Works Department, Municipal Management		Short Term: 6 Months-1 year	70 tonnes eCO2	\$100,000	Lower municipal operating cost and ensure Virden's current energy systems are not over-burdened
	Corporate Initiative E: Corporate Building Retrofit	Objective EA: Reduce emissions from corporate operations on municipality-owned property Objective EB: Serve as a leader to the community	Municipal management and staff		Immediate: 0-6 Months	17.0476 tonnes eCO2	\$8,000 + lighting	Lower municipal operating cost and ensure Virden's current energy systems are not over-burdened

	Corporate Initiative G: Seasonal Lighting Retrofit	Objective GA: Reduce energy consumption from seasonal lighting operation	Municipal Staff & Public Works	Short Term: 8-9 Months	0.0972 tonnes eCO2	\$1,200	Lower municipal operating cost and ensure Virden's current energy systems are not over-burdened
	Corporate Initiative H: Victoria Park Wells	Objective HA: Reduce the consumption of treated potable water from seasonal watering activities Objective HB: Serve as an example to the community	Parks and Recreation Staff & Municipal Management	Short Term: 4 - 7 Months	0.03818 tonnes eCO2	\$25,000	Lower municipal operating cost and ensure Virden's current energy systems are not over-burdened
	Corporate Initiative J: Adopt an Energy Conservation and Water Usage Policy	Objective JA: Reduce emissions from the treatment of water used for municipal watering operations Objective JB: Reduce energy usage for municipal watering operations	Municipal Staff	Immediate: 0-6 Months	TBD	\$250	Lower municipal operating cost and ensure Virden's current energy systems are not over-burdened
	Initiative K: Town of Virden Water Quality Improvements and Use and Loss Reduction Project	Objective KA: Reduce consumption of potable water from treatment operations Objective KB: Improve water quality for the Town of Virden Objective KC: Reduce energy usage and emissions from water treatment operations	Municipal Management & Waterworks Department	Short Term: 6 Months - 1 Year for completion	2.19 tonnes eCO2	\$2,860,000	Lower municipal operating cost and ensure Virden's current energy systems are not over-burdened & offer superior water product to residents
Develop a community-based strategy to decrease energy consumption, educate the public, and increase preference for environmentally-friendly actions and alternatives.	Community Initiative A: Public Education and Awareness Campaign	Objective AA: Educate the public on the environment, energy consumption, and how they can become good environmental stewards Objective AB: Encourage action and offer support Objective AC: Promotion of existing programs to assist residents in reducing their footprint on the environment	Municipal staff	Immediate: 0-6 Months	TBD	\$3,000	Offer and garner support for emissions reduction, get businesses and residents involved, and offer solutions for emissions reduction

Community Initiative B: Town of Virden Rebate Program	Objective BA: Reduce GHG emissions from residential operations Objective BB: Encourage residents to take action sooner rather than later Objective BC: Show residents that there are environmentally-friendly alternatives for many household activities	Municipal staff	True Value & Home Hardware	Immediate: 0-6 Months	90.9553 tonnes eCO2	\$13,500	Reduction in residential and municipal operating costs, low prices to happy residents, increased sales to local businesses
Community Initiative E: Corporate Environmental Responsibility	Objective EA: Work with corporate community to encourage environmentally friendly practices and operations Objective EB: Encouraging corporate commitment to eco products and services Objective EC: Increased attainability of eco products and services	Municipal staff		Immediate:0-6 Months and on-going	TBD	\$500	Increase in local eco products and services
Community Initiative D: Recycling Bin Purchase	Objective DA: Encourage waste reduction in the community	Municipal staff	Sunrise Credit Union	Immediate: 0-6 Months	TBD	\$3,000	Increase in local recycling, less waste

