

Town of Ingersoll

*Environment, Conservation and Demand
Management Plan*



Effective: July 1st, 2014

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Intro and Intent of Plan

About the Town

The Corporation of the Town of Ingersoll (the Town) has, over the last number of years, investigated and undertaken a number of initiatives that fall under the umbrella of environmental planning, sustainability and conservation management. With the intention of further improving upon the Town's environmental record, and enhancing accountability to residents, the Town of Ingersoll has decided to develop an Environment, Conservation and Demand Management Plan (ECDMP).

This plan fulfills the Town's monitoring and reporting requirements for the Green Energy Act. In addition, this plan includes a series of progressive and attainable actions to help improve the environmental performance of the Town over a five year planning horizon.

The Town of Ingersoll is committed to following the direction of the Plan, and will take the necessary steps to ensure the Plan's success through continued review and development.

The Green Energy Act

The Province of Ontario has developed the Green Energy Act (GEA) as "a mechanism to expand renewable energy generation, encourage energy conservation and promote the creation of clean energy jobs" (Ministry of Energy, 2012). Regulation 397/11 under the GEA will require public agencies, including municipalities, to:

- Report annually on energy use and GHG emissions beginning July 1, 2013 and post that information online; and,
- Develop five-year energy conservation plans starting July 1, 2014, and post those plans online.

The Town of Ingersoll has posted its 2011 energy usage and GHG emissions. This data as well as the 2012 data included in this plan will be used as a baseline for the Town in creating and implementing this plan.

Preferred State of Affairs

The preferred state of affairs is the identification of Ingersoll's vision for energy sustainability. Through consultation with key Town staff, the following goals have been chosen to guide the development of the plan.

Goals

Corporate Awareness:

- The Town develops a culture of energy awareness and innovation
- Energy use and expenditures are visible to Town staff and Council
- Town employees and departments are recognized for their commitment to energy sustainability
- Energy use and its effects on the budget are a priority for Council

Optimize Current Energy Usage:

- The Town specifies GHG reduction targets
- Existing buildings to become more energy efficient through retrofits
- Demonstrate sound operating and maintenance practices to complement energy efficiency
- Optimize energy usage through the implementation of self-sustaining/revenue generating methods
- Strengthen partnerships with utilities and other outside partners

Reduce Future Consumption through Energy Projects:

- Energy efficient practices such as energy performance factors or LEED certification will be considered for future buildings
- Demonstrate leadership within the Town and Community with regards to our commitment to energy management
- Take advantage of all available funding options and resources for energy projects

With the development of the ECDMP, all Town Departments will have a roadmap and a forum to continue to ensure energy management is a consideration in all operations and facility based decisions. The integration of operational processes, facility based infrastructure improvements and staff awareness is critical to move the Town towards the goal of reducing GHG emissions and transition to a carbon neutral future.

Current State of Affairs

Town Portfolio

The Town has a diverse inventory of buildings, the following portfolio description provides context for the energy opportunity assessment and is consistent with the Green Energy Act reporting requirements:

Carr's Walkway

Carr's Walkway is a commercial building located at 132 Thames Street South. It contains both commercial and residential units which the Town rents to tenants. It offers a walkway from the public parking lot in the rear of the building to Ingersoll's downtown at the front. Originally built in 1910 and renovated last by the Town in 1994, it is heated with a combination of electric baseboards and two gas-fired RTU's. It is cooled by the same RTU's via two 5 ton condenser units.

Operation: Commercial/Walkway: 7:00 am - 7:00 pm Monday to Sunday

Cheese and Agricultural Museum

The site consists of seven different buildings including a replica 19th century Cheese Factory, the Sherbrooke Barn, a blacksmith shop and the Ingersoll Community Museum. The Cheese Factory building was the first structure to be erected in 1977 to commemorate the importance of the dairy and cheese industry in and around Ingersoll. The main site at 290 Harris Street is also the new home for the Oxford County Museum School. It is heated by a gas-fired forced air furnace and unit heaters, and cooled by a 4 ton condenser unit.

Operation: Winter: 10:00 am - 4:00 pm Monday to Friday,
Summer: 10:00 am - 4:00 pm Monday to Sunday

Fire Hall

The Ingersoll Fire Hall constructed in 1992 is located at 20 Wilson Street and is the only fire hall for the Town. It is a 707m² two story facility with three bays. There is a training facility next door containing portable buildings and a training tower. The building contains a diesel backup generator and is heated/cooled by a gas-fired RTU.

Operation: Administration: 8:30 am - 4:30 pm

Fusion Youth Centre

Originally a school built in 1954; the Town of Ingersoll renovated and opened the Ingersoll Thames Centre (now named the Fusion Centre) in 2005. Located at 121 Thames Street North in Ingersoll, the Centre offers both drop-in and organized recreation opportunities, which include a wide variety of technology programs, a creative art room, basketball courts in and outside the centre, a skate park and other fun youth activities for teens, ages 12 to 18 years old. The building is a 1,756m² single story facility heated by five gas-fired boilers.

Operation: 9:00 am - 9:00 pm Monday to Thursday, 9:00 am - 11:00 pm Friday, 1:00 pm - 11:00 pm Saturday

Ingersoll District Memorial Arena

Located at 97 Mutual Street, the Ingersoll Memorial Arena is part of the Town of Ingersoll Parks and Recreations Department. The 2,900m² Arena features one ice surface of regulation size, 200' x 80', and plenty of large change rooms. Originally constructed in 1957 the Ingersoll District Memorial Centre was completely renovated in 2002. It is heated by gas-fired boilers, gas-fired forced air furnaces and unit heaters. It is cooled by a 17.5 ton condenser unit.

Operation: Office: 8:30 am - 4:30 pm Monday to Friday Rink Rental: 6:00 am - 11:00 pm Monday to Sunday

Parks Shop

The Parks Shop located at 269 Ingersoll Street South is a 930m² single story facility. It is used as an office, shop and storage area for the Parks and Recreation Department. It is heated by a gas-fired forced air furnace.

Operation: 7:00 am - 3:00 pm Monday to Friday

Police Station

The Police Station in Ingersoll, located at 110 Mutual Street is owned by the Town and rented to the OPP. It is a single story building with a floor area of 743m² and was constructed in 1992. The Town is responsible for the maintenance of the building as well as the utility costs. The building is heated/cooled by two gas-fired RTU's.

Operation: Administrative 8:30 am - 4:30 pm

Public Works Facility

Built in 1999, the Town of Ingersoll's Public Works Facility located at 80 Pemberton Street is a 1,325m² office/service building. The service portion which includes a wash bay, welding shop, repair bays, and unheated storage bays is 1,270m² while the office portion which includes offices, washrooms, and a break room is 55m². The building is heated with a combination of gas-fired heaters for the service side and electrical heater/condenser for the office side.

Operation: 7:00 am - 3:30 pm Monday to Friday

Suzuki House – Seniors Centre

Located at 250 Ingersoll Street, the Suzuki House for seniors provides an accessible resource centre for seniors in Ingersoll with high quality programs that promote health, welfare, continuous learning, social pursuits and happiness. The Suzuki House is a two storey, 2,830m² wood framed facility which was built by CAMI Automotive in 1988 and donated to the Town in 2001. It is heated by two gas-fired boilers.

Town Centre

Located at 130 Oxford Street, the Ingersoll Town Centre hosts the Town's municipal offices/council chambers, as well as a County of Oxford run library. The Town owns the land and 50% of the building, while the County of Oxford owns the other 50%. Built in 1996, the 36,300 sq. ft. building is heated with a gas-fired boiler and cooled with two electrical rooftop units (one for the 1st floor and one for the 2nd floor). HVAC is controlled via a computerized control/management software. It is noteworthy that due to the software's age, the program has extremely limited input data-tracking and reporting capabilities.

Operation: Town Hall: 8:30 am – 4:30 pm Monday to Friday
Library: 10:00 am – 8:30 pm Monday to Friday, 10:00 am – 5:30 pm Saturday

Victoria Park Community Centre

Constructed in 1991 the VPCC is a two storey, 2,390m² facility featuring an indoor pool and whirlpool, squash courts, fitness centre, meeting rooms and offices. It is heated/cooled by three gas-fired RTU's

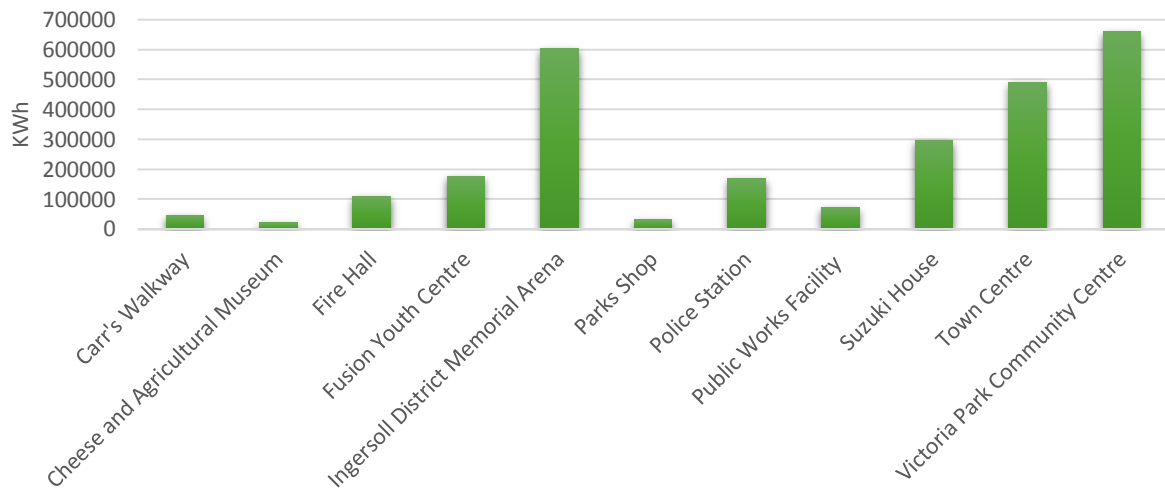
Operation: 5:45 am - 9:00 pm Monday to Thursday, 5:45 am - 8:30 pm Friday, 8:00 am - 4:00 pm Saturday, 9:00 am - 3:00 pm Sunday

Summary of 2012 Energy Consumption

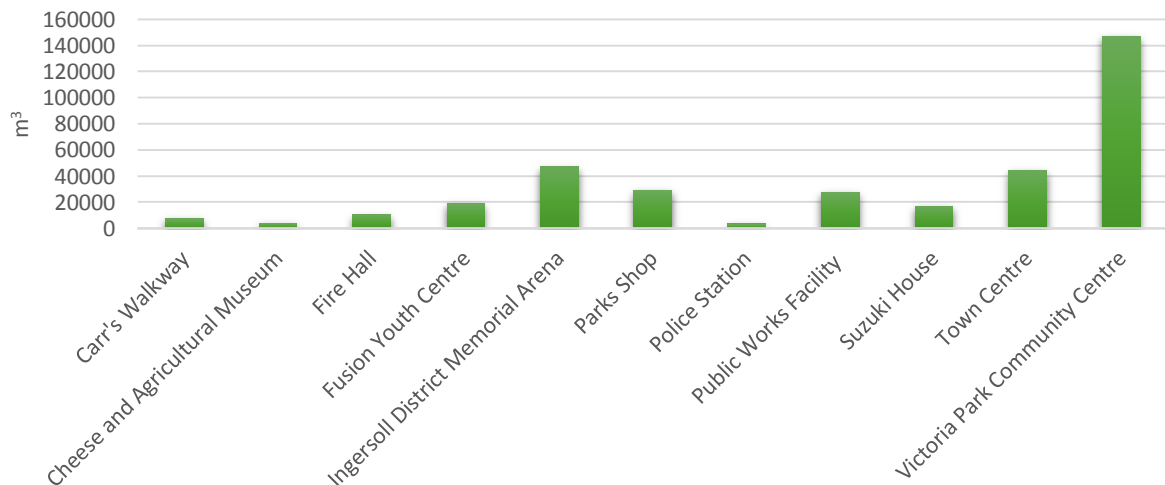
The following chart and graphs display the electricity and natural gas usage by facility for the 2012 year

Facility	Total Floor Area (m ²)	Electricity Usage (KWh)	Natural Gas (m ³)
Carr's Walkway	275	47,194.60	7,076.10
Cheese and Agricultural Museum	333.9	19,944.20	3,940.70
Fire Hall	707.3	111,478.10	9,934
Fusion Youth Centre	1,756.10	175,838	19,125.60
Ingersoll District Memorial Arena	2,896.20	603,202	46,904.60
Parks Shop	929	30,765.70	28,652.70
Police Station	743.2	167,625.60	3,246.30
Public Works Facility	1,325.20	71,388	27,323.80
Suzuki House	2,832.10	297,555.80	16,770.90
Town Centre	3,372.40	490,815	43,747.70
Victoria Park Community Centre	2,389.70	660,415	147,179.60
Total	11,137	2,676,222	353,902

2012 Electricity Usage



2012 Natural Gas Usage



Green House Gas Emissions (GHG's) and Energy Intensity

Greenhouse Gas (GHG)

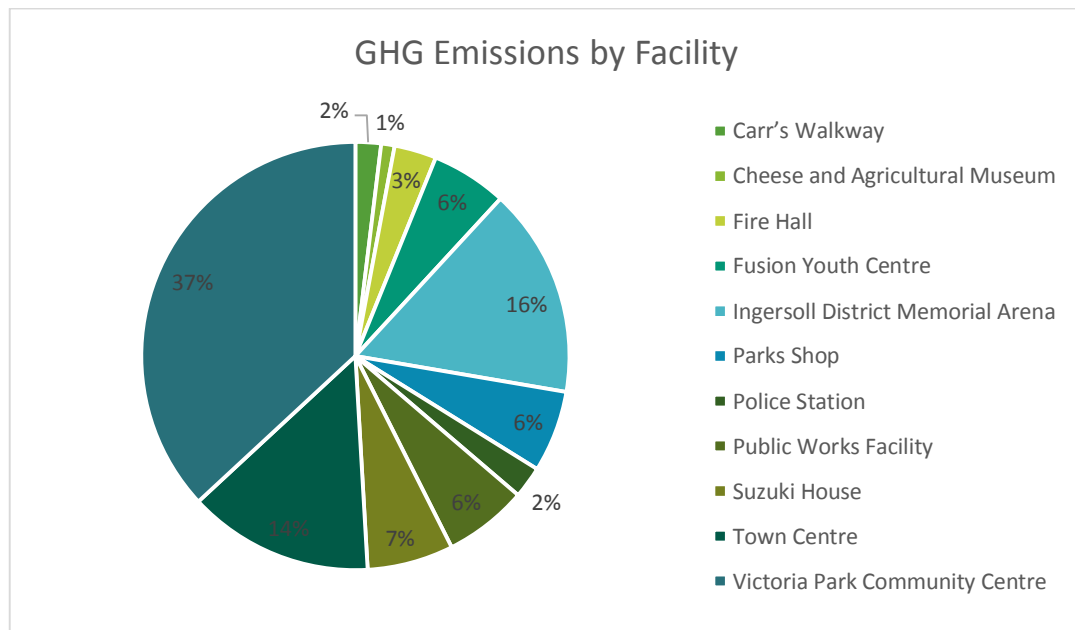
The greenhouse effect occurs when certain gases in the atmosphere (the air around the Earth) entrap infrared radiation from the sun and its reflections. This effect makes the planet warmer, in the same way the inside of a greenhouse stays warmer. The greenhouse effect is caused by greenhouse gases, the three most abundant GHG's in Earth's atmosphere are: water vapor, carbon dioxide, and methane. The more greenhouse gases in the air, the more heat the air holds. This is why more greenhouse gases cause global warming. The greenhouse effect is natural and is important for life on Earth. Without the greenhouse effect, the Earth's average temperature would be around -18 or -19 degrees Celsius, because of the greenhouse effect, the Earth's actual average temperature is 14 degrees Celsius. The problem is that recently, the greenhouse effect has become stronger. Scientists believe this is because humans have been using large amounts of fossil fuels, which release carbon dioxide when they are burned. Since carbon dioxide is a GHG, it has caused the planet to warm over the past 150 years. GHG emissions are calculated in kilograms (kg) through the Ministry of Energy's Broader Public Sector Reporting Portal based on the provided electricity and natural gas usage of the Towns facilities.

Energy Intensity

Intensity measures the 'equivalent kilowatt hour per square meter' (ekWh/m²) of a building or facility. This value is useful for comparing similar facility types of various sizes as it gives a unit of usage (ekWh) per area (m²). The Ministry of Energy's Broader Public Sector Reporting Portal converts all types of energy usage into kWh to determine an equivalent kWh for standardized, simple comparisons.

The following chart and graph display GHG Emissions and Intensity by Facility for the 2012 year and satisfies the Town's reporting requirements under Regulation 397/11 of the GEA

Facility	Total Floor Area (m ²)	GHG (kg)	Energy Intensity (ekWh/m ²)
Carr's Walkway	275	17,910.80	445.01
Cheese and Agricultural Museum	333.9	9,365.80	185.16
Fire Hall	707.3	29,487.80	306.88
Fusion Youth Centre	1,756.10	53,046.86	215.87
Ingersoll District Memorial Arena	2,896.20	146,610.60	380.39
Parks Shop	929	57,126.30	360.90
Police Station	743.2	22,236.30	271.97
Public Works Facility	1,325.20	58,515.22	273.00
Suzuki House	2,832.10	60,284.70	168.00
Town Centre	3,372.40	129,848.50	283.40
Victoria Park Community Centre	2,389.70	341,688.00	930.91
Total	11,137	926,120.88	N/A



Trends in Energy Consumption

The following chart displays year over year electricity and natural gas usage (2011-2012)

Facility	Electricity (KWh) 2011	Electricity (KWh) 2012	Percent Change (%)	Natural Gas (m ³) 2011	Natural Gas (m ³) 2012	Percent Change (%)
Carr's Walkway	N/A	47,194.6	N/A	N/A	7,076.1	N/A
Cheese and Agricultural Museum	17,236	19,944.2	15.7	5,959	3,940.7	-33.9
Fire Hall	109,060	111,478.1	2.2	11,802	9,934	-15.8
Fusion Youth Centre	171,587	175,838	2.5	23,957	19,125.6	-20.2
Ingersoll District Memorial Arena	610,400	603,202	-1.2	53,488	46,904.6	-12.3
Parks Shop	33,992	30,765.7	-9.5	30,804	28,652.7	-7.0
Police Station	158,500	167,625.6	5.8	8,130	3,167.9	-61.0
Public Works Facility	82,055	71,388	-13.0	24,700	27,323.8	10.6
Suzuki House	303,721	297,555.8	-2.0	20,123	16,770.9	-16.7
Town Centre	476,240	490,815	3.1	42,894	43,747.7	2.0
Victoria Park Community Centre	684,166	660,415	-3.5	163,832	147,179.6	-10.2
Total	2,646,957	2,676,222	-0.7	385,689	353,823.6	-10.1

Note: Carr's Walkway was mistakenly excluded from the 2011 report; therefore the Percent Change excludes it as well for comparison purposes

The following chart displays year over year GHG Emissions (2011-2012)

Facility	GHG (kg) 2011	GHG (kg) 2012	Percent Change (%)
Carr's Walkway	N/A	17,910.8	N/A
Cheese and Agricultural Museum	12,956.1	9,365.8	-27.7
Fire Hall	33,005.4	29,487.8	-10.7
Fusion Youth Centre	62,116.1	53,046.9	-14.6
Ingersoll District Memorial Arena	160,969.5	146,610.6	-8.9
Parks Shop	61,571.4	57,126.3	-7.2
Police Station	30,910.1	22,236.3	-28.1
Public Works Facility	54,743.2	58,515.2	6.9
Suzuki House	67,821.9	60,284.7	-11.1
Town Centre	127,787.1	129,848.5	1.6
Victoria Park Community Centre	376,820.8	341,688.0	-9.3
Total	988,701.6	926,120.9	N/A

Reduction in GHG from 2011 to 2012 is largely due to a warm 2012 winter and cold 2012 summer, therefore reducing energy consumption on heating and cooling. Reduction targets based on 2012 data will take this into consideration.

Current Practices

Town of Ingersoll Community Strategic Plan – The Town has identified ‘Health and Environment’ as a core area in the community strategic plan.

Retrofits – The Town over the past few years has been performing lighting retrofits on many Town owned facilities. These facilities include; Carr’s Walkway, the Police Station, the Fire Hall, the Parks Shop, and the Public Works Facility.

Street Lighting – In 2012 the Town of Ingersoll undertook a LED Street Light Upgrade Program which aimed to convert all of the Towns street lights to energy efficient LED bulbs. The project was estimated to have an annual savings of 203 kW or 56% and a greenhouse gas emission reduction of 2000 tonnes over 20 years. By mid-2013 the project was completed. The first year energy savings were between 375 kW and 135 kW or 950,000 kWh. All current and future developments require LED street lighting as per agreements with the Town.



Ingersoll Street South



North Town Line West

Transition from Current to Preferred State of Affairs

The focus for the ECDMP is on short term, feasible actions that are achievable with minimal budgetary impact. Timelines and responsibilities will be addressed during the implementation phase. Actions that require funding will be considered as part of the budget process for their corresponding department.

Key Initiatives

Retrofits: The Town will pursue SaveONEnergy grants through our local utility for the remaining buildings which have not yet been retrofit. Although previous retrofits have not been reported on, any future retrofits will be analyzed after completion to determine actual cost/energy savings to the facility

Energy Awareness amongst Town employees: Monthly newsletters will be emailed to staff outlining the facilities energy usage based on utility bills. Tips and recommendations on reducing energy usage will also be included.

Life Cycle Cost Analysis: A life cycle cost analysis will be incorporated into the design and procurement procedures for capital projects. This will allow the Town to see the full cost of a capital project including the initial contract price, as well as ongoing maintenance and operating costs.

Integrate best practices into daily operations to minimize resources on an ongoing basis.

Work with our local utility companies on energy reducing green initiatives and government grants.

Reduction Targets

Targets will be set by GHG emissions which are a simple metric which combines both our electricity and natural gas use; therefore reducing either one or both will reduce GHG emissions. This will benefit the environment from a reduction in emissions and the Towns operating budget through a reduction in utility costs. Five year targets will be set for each facility, and yearly summary reports will be created to display our progress.

Carr's Walkway

Reduction Target: Maintain 2012 GHG emissions within 5%

- Difficult to enforce energy usage as a majority of the facility is rented. Must increase energy awareness of tenants.

Cheese and Agricultural Museum

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff and patrons.

Fire Hall

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff.

Fusion Youth Centre

Reduction Target: Keep GHG emission increases on par with enrollment increases

- It is difficult to reduce emissions as the more students who attend the facility, the more electricity they use

Ingersoll District Memorial Arena

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff and patrons.

Parks Shop

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff.

Police Station

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff.

Public Works Facility

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff.

Suzuki House – Seniors Centre

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff and patrons.

Town Centre

Reduction Target: Reduce 2012 GHG emissions by 15%

- Planning capital upgrades to heating and cooling units at Town Centre

Victoria Park Community Centre

Reduction Target: Reduce 2012 GHG emissions within 5%

- Reduction target to be met through energy conservation by staff and patrons.

Renewal Cycle and Reporting

This is the first version of the ECDMP. It is recommended that the GEA portion of the Plan be updated annually to comply with reporting requirements. The complete energy portion of the Plan will be updated on or before July 1st, every fifth anniversary. The updated plan will report on results achieved, current and proposed measures with a revised forecast of expected results, and other proposed goals for the following 5 years.

Monitoring and Measurement

As the five year ECDMP is implemented, accurate accounting of energy demand and consumption will be required to sustainably satisfy the annual GEA reporting regimen. In addition to satisfying reporting requirements, monitoring and measuring consumption will allow the town to communicate successes to staff and residents.

Monitoring and measurement can be satisfied in a number of ways. By far the simplest means would be monthly recording of utility billing data. Billing data can be managed using a simple spreadsheet database by a designated Town employee.