

Bradford
west
Gwillimbury



A Growing Tradition

CORPORATE ENERGY MANAGEMENT PLAN



JULY 1, 2019

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INTRODUCTION

In 2009, the Energy Conservation and Leadership Act was repealed by the Province of Ontario and replaced with the Green Energy Act (GEA). Ontario's Green Energy Act was created to expand renewable energy generation, encourage conservation and promote the creation of clean energy jobs.

Regulation 397/11 under the Green Energy Act required public agencies to report annually on energy use and greenhouse gas emissions beginning July 1, 2013; as well as to prepare a Five Year Management Plan for designated municipal facilities starting July 1, 2014 and post that information online. The Plan expires June 30, 2019.

On January 1, 2019 a new regulation was introduced under the Electricity Act, 1998 titled O. Reg. 507/18: Broader Public Sector: Reporting and Conservation and Demand Management Plans.

This regulation replaces Ontario Regulation 397/11 titled Energy Conservation and Demand Management Plans and was enacted under the repealed Green Energy Act, 2009. The requirement for broader public sector planning and reporting by Ontario agencies are identical to those under the former Regulation 397/11.

The Energy Management Plan identifies actions to support and improve energy efficiency and energy management within the Town and to incorporate best practices of energy management moving forward. The plan offers an effective approach to reducing energy consumption and maintaining achieved improvements.

The current Energy Plan Working Group as of 2018 is composed of the following representatives:

Department	Staff Representative
Community Services	Terry Foran, <i>Director of Community Services</i> Mike O'Hare, <i>Manager of Parks & Property</i> Kevin Gale, <i>Manager of Leisure Facilities</i> Tony Desroches, <i>Manager of Wastewater</i> Joe Gratrix, <i>Manager of Water</i> Frank Jonkman, <i>Drainage Superintendent</i> Joe Coleman, <i>Manager of Transportation</i> Claudia Brown, <i>Administrative Coordinator</i>

The Energy Management Plan is a guiding document that will be reviewed and updated on an annual basis or as required.

VISION

The Town of Bradford West Gwillimbury will strive to reduce energy consumption through the wise use of energy and implementation of efficiency improvements. A collaborative effort to increase the awareness and understanding of energy management to reduce energy consumption without affecting the level of service to our customers and the general public.

POLICY FRAMEWORK

Energy costs for electricity, natural gas, water and fuels continue to rise and the Town needs to create and follow an effective energy management plan to reduce energy consumption and greenhouse emissions and mitigate the impact of future cost escalation in delivering services to the community.

GOALS & OBJECTIVES

1. To reduce energy operating costs through implementation of identified efficiency improvements and adherence to energy conservation best practices.
2. To ensure energy management is a consideration in all operations and facility based decisions.
3. To promote sustainable use of resources through energy conservation and energy efficiency.
4. To increase equipment reliability and reduce maintenance costs.
5. To demonstrate leadership within the Corporation and community to energy management and investigation of new and emerging technology.

Declaration of Commitment:

“The Town will allocate the necessary resources to develop and implement an Energy Management Plan that will reduce our energy consumption and its related environmental impact”.

GREEN ENERGY ACT

In 2009, the Energy Conservation and Leadership Act was repealed and replaced with the Green Energy Act (GEA). Ontario's Green Energy Act was created to expand renewable energy generation, encourage conservation and promote the creation of clean energy jobs.

Regulation 397/11 under the Green Energy Act is entitled Energy Conservation and Demand Management Plans and requires public agencies to:

- Report annually on energy use and green house gas emissions beginning July 1, 2013 and post that information online.
- Develop a Five-Year Energy Conservation Plan starting July 1, 2014 and post the plan online.

This regulation impacts municipalities in that the following municipal facilities must report their data:

Type of Public Agency	Operation
Municipality	<ol style="list-style-type: none"> 1. Administrative offices and related facilities, including municipal council chambers. 2. Public libraries. 3. Cultural facilities, indoor recreational facilities and community centres, including art galleries, performing arts facilities, auditoriums, indoor sports arenas, indoor ice rinks, indoor swimming pools, gyms and indoor courts for playing tennis, basketball or other sports. 4. Ambulance stations and associated offices and facilities. 5. Fire stations and associated offices and facilities. 6. Police stations and associated offices and facilities. 7. Storage facilities where equipment or vehicles are maintained, repaired or stored. 8. Buildings or facilities related to the treatment of water or sewage. 9. Parking Garages.
Municipal Service Board	<ol style="list-style-type: none"> 1. Buildings or facilities related to the treatment of water or sewage.

Energy management software (Energy Management Tool and Energy Planning Tool) has been purchased by the Town through LAS to assist with the compiling and monitoring of utility data.

The July 1, 2013 deadline for reporting 2011 energy consumption has been met by the Town.

The July 1, 2014 deadline for reporting 2012 energy consumption has been met by the Town.

The July 1, 2015 deadline for reporting 2013 energy consumption has been met by the Town.

The July 1, 2016 deadline for reporting 2014 energy consumption has been met by the Town.

The July 1, 2017 deadline for reporting 2015 energy consumption has been met by the Town.

The July 1, 2018 deadline for reporting 2016 energy consumption has been met by the Town and energy consumption data for 2017 will reported by July 1, 2019.

CURRENT STATE OF MUNICIPAL ENERGY USE (2012-2017)

In 2012, the County of Simcoe awarded a contract for Energy Management Services to Honeywell/360 Energy and made presentations to member municipalities regarding County initiatives and the services provided by Honeywell and 360 Energy Inc. Through this process, the Town agreed to have Honeywell conduct an Opportunity Assessment of Town facilities to benchmark current energy use; review facility infrastructure and operating parameters and identify proposed measures and financing for energy reduction.

The Opportunity Assessment report identified the following:

- The Town's 2012 energy costs were approximately \$1.6 million.
- The Town's 2013 energy costs were approximately \$1.9 million.
- The Town's 2014 energy costs were approximately \$1.9 million.
- The Town's 2015 energy costs were approximately \$2.1 million.
- The Town's 2016 energy costs were approximately \$2.3 million.
- The Town's 2017 energy costs were approximately \$2.3 million.
- Average cost per square foot for energy use was lower than average for municipalities of similar size and location.
- The Waste Water Treatment Plant and Municipal Street Lighting were the prime opportunities for capital investment in energy reduction measures which are outlined in detail Section 8 of the plan.
- Streetlight energy savings between 2016 and 2017 was \$ 191,815.00.
- The Bob Fallis Sport Centre was the only other municipal facility that was identified for continued capital investment in energy reduction measures that were started in 2013 and are outlined in Section 8 of the plan. These Initiatives have now been completed.
- Other municipal facilities range from older buildings that could be repurposed or declared surplus (based upon future municipal space needs) to the brand new LEED Certified Library/Cultural Centre and BWG Leisure Centre which contain state of the art energy efficient systems and controls.
- Energy retrofit opportunities should not be pursued on certain buildings until long range facility planning is in place.
- Energy conservation best practices be followed in renovations of existing buildings and construction of new facilities.

It was determined that Honeywell was not going to advance the Municipality through any further measures as the operational groups were in a practice of energy upgrades at the time and no further benefits would be achieved at this time. Honeywell did provide services and financing for street light upgrades.

Table 1 below summarizes the Energy Consumption from 2012 - 2016 by Municipal Facility.

ENERGY CONSUMPTION SUMMARY - Annual			2012 - Annual				
Building	Address	Area ft ²	Electrical KWH (\$/Yr)	Natural Gas (m ³) (\$/Yr)	Oil Litres (\$/Yr)	Total 2012	
Bob Fallis Sports Centre	2961 SDRD 10	33,294	\$87,547	\$9,475		\$ 97,022.00	
Bond Head Community Centre	2892 County Rd. 27	2,939	\$5,905	\$2,354		\$ 8,259.00	
B & D. M. Community Centre	125 Simcoe Rd.	35,900	\$32,925	\$12,880		\$ 45,805.00	
Family Health Centre	100 Holland Court	11,459	\$10,687	\$5,115		\$ 15,802.00	
Court House	57 Holland St. E.	7,210	\$7,890	\$4,212		\$ 12,102.00	
Danube Seniors Centre	715 Simcoe Rd.	6,051	\$7,370	\$5,095		\$ 12,465.00	
Treasury Office Building	61 Holland St. E.	4,000	\$9,783	\$2,845		\$ 12,628.00	
Lion's Park Building	226 Colbourne St.	3,240	\$5,807	\$4,834		\$ 10,641.00	
St. Mary's Hall	31 Fredrick St.	8,168	\$3,794	\$3,376		\$ 7,170.00	
Community Services Office	3541 Line 11	6,000	\$21,439		\$7,719	\$ 29,158.00	
Fire Hall	75 Melbourne	6,316	\$13,402	\$8,209		\$ 21,611.00	
PW Urban Yard/ Water yard	75 Melbourne - Yard	6,750	\$10,712	\$4,783		\$ 15,495.00	
South Simcoe Police Station	Melbourne	27,000	\$52,125	\$3,308		\$ 55,433.00	
Library & Cultural Centre	425 Holland St. W.	40,000	\$64,643	\$12,502		\$ 77,145.00	
BWG Leisure Centre	471 West Park Ave.	158,273	\$480,960	\$82,872		\$ 563,832.00	
Food Bank	123 Moore St.			\$0		\$ -	
Henderson Shop	3171 9th Line					\$ -	
Clerks Office	100 Dissette St, Unit 7, 8, 9*					\$ -	
Council & CAO offices	100 Dissette St, Unit 4					\$ -	
Waste Water Treatment Plant	225 Dissette St.	3,922	\$399,502	\$30,303		\$ 429,805.00	
Wells & Pump Houses:	Various	n/a	\$222,677			\$ 222,677.00	
						\$ -	
TOTAL:			\$1,437,168	\$192,163	\$7,719	\$ 1,637,050.00	

ENERGY CONSUMPTION SUMMARY - Annual			2013 - Annual						
Building	Address	Area ft ²	Electrical		Natural			Oil (\$/Yr)	Total 2013
			KWH	(\$/Yr)	m ³	Gas (\$/Yr)	Litres		
Bob Fallis Sports Centre	2961 SDRD 10	33,294	967,320	\$ 98,592.45	32,506	\$ 10,643.17			\$ 109,235.62
Bond Head Community Centre	2892 County Rd. 27	2,939	35,000	\$ 5,948.01	5,065	\$ 2,634.73			\$ 8,582.74
B & D. M. Community Centre	125 Simcoe Rd.	35,900	116,597	\$ 22,483.22	45,865	\$ 12,256.04			\$ 34,739.26
Family Health Centre	100 Holland Court	11,459	71,760	\$ 10,413.48	17,161	\$ 6,244.92			\$ 16,658.40
Court House	57 Holland St. E.	7,210	57,706	\$ 9,946.85	9,288	\$ 4,204.96			\$ 14,151.81
Danube Seniors Centre	715 Simcoe Rd.	6,051	42,543	\$ 7,470.00	16,307	\$ 6,363.31			\$ 13,833.31
Treasury Office Building	61 Holland St. E.	4,000	67,623	\$ 12,396.95	11,427	\$ 4,584.70			\$ 16,981.65
Lion's Park Building	226 Colbourne St.	3,240	39,680	\$ 6,620.49	16,488	\$ 5,312.29			\$ 11,932.78
St. Mary's Hall	31 Fredrick St.	8,168	28,663	\$ 4,803.99	25,512	\$ 9,864.18			\$ 14,668.17
Community Services Office	3541 Line 11	6,000	119,602	\$ 21,625.67			6,601	\$ 7,978.34	\$ 29,604.01
Fire Hall	75 Melbourne	6,316	103,266	\$ 17,324.04	30,335	\$ 10,257.76			\$ 27,581.80
PW Urban Yard/ Water yard	75 Melbourne - Yard	6,750	86,528	\$ 15,930.51	16,527	\$ 6,135.11			\$ 22,065.62
South Simcoe Police Station	Melbourne	27,000	398,760	\$ 59,968.82	17,302	\$ 7,058.87			\$ 67,027.69
Library & Cultural Centre	425 Holland St. W.	40,000	434,053	\$ 59,249.99	51,319	\$ 14,854.11			\$ 74,104.10
BWG Leisure Centre	471 West Park Ave.	158,273	4,566,640	\$ 682,047.29	361,387	\$ 97,054.08			\$ 779,101.37
Food Bank	123 Moore St.		10,840	\$ 1,464.69			2,141	\$ 2,633.24	\$ 4,097.93
Henderson Shop	3171 9th Line		20,106	\$ 3,607.22			9,675	\$ 4,869.51	\$ 8,476.73
Clerks Office	100 Dissette St, Unit 7, 8, 9*		64,611	\$ 9,484.90	2,486	\$ 1,697.59			\$ 11,182.49
Council & CAO offices	100 Dissette St, Unit 4		19,895	\$ 2,790.92	1,583	\$ 1,370.06			\$ 4,160.98
Waste Water Treatment Plant	225 Dissette St.	3,922	3,441,071	\$ 455,293.61	153,176	\$ 42,359.51			\$ 497,653.12
Wells & Pump Houses:	Various	n/a							\$ -
Churchwell Pumping Stn.	550 Toll Rd. (2 OS Conc. Lot 19,)		610,118	\$ 94,660.74					\$ 94,660.74
Artesian Pumping Stn.	8 Conc. Lot 17/18		14,150	\$ 1,412.45					\$ 1,412.45
John Fennell Reservoir	4022 10th SDRD		132,178	\$ 24,566.23					\$ 24,566.23
Ritchie Strong Pumping Stn.	458 Holland St. W.		269,235	\$ 40,623.53					\$ 40,623.53
Dissette Pumping Stn.	21 Dissette St.		86,160	\$ 13,030.37					\$ 13,030.37
Industrial SW Pumping Stn.	Industrial Court		17,760	\$ 2,565.63					\$ 2,565.63
Simcoe Pumping Stn.	Simcoe Rd. & 6th Line		5,473	\$ 1,018.50					\$ 1,018.50
Townsend Pumping Stn.	Townsend Ave.		14,425	\$ 1,982.96					\$ 1,982.96
Walker SW Pumping Stn.	Walker Ave.		12	\$ 86.33					\$ 86.33
Stand Pipe #1	159 Queen Street		45,577	\$ 5,332.66					\$ 5,332.66
Stand Pipe #2	33 Noble Drive		43,983	\$ 6,049.98					\$ 6,049.98
									\$ -
TOTAL:			11,931,335	\$ 1,698,792.48	813,734	\$ 242,895.39	18,418	\$ 15,481.09	\$ 1,957,168.96

ENERGY CONSUMPTION SUMMARY - Annual			2014-Annual						
Building	Address	Area ft ²	Electrical		Natural		Oil		Total 2014
			KWH	(\$/Yr)	m ³	Gas (\$/Yr)	Litres	(\$/Yr)	
Bob Fallis Sports Centre	2961 SDRD 10	33,294	1,142,640	\$ 75,904.90	33,106	\$ 10,834.91	0	\$ -	\$ 86,739.81
Bond Head Community Centre	2892 County Rd. 27	2,939	37,653	\$ 6,100.13	4,863	\$ 2,549.74	0	\$ -	\$ 8,649.87
B & D. M. Community Centre	125 Simcoe Rd.	35,900	88,884	\$ 12,816.96	37,016	\$ 7,008.58	0	\$ -	\$ 19,825.54
Family Health Centre	100 Holland Court	11,459	196,200	\$ 31,055.78	21,685	\$ 7,892.80	0	\$ -	\$ 38,948.58
Court House	57 Holland St. E.	7,210	51,970	\$ 7,756.80	14,618	\$ 5,566.40	0	\$ -	\$ 13,323.20
Danube Seniors Centre	715 Simcoe Rd.	6,051	43,369	\$ 7,997.50	17,222	\$ 6,757.41	0	\$ -	\$ 14,754.91
Treasury Office Building	61 Holland St. E.	4,000	60,373	\$ 9,168.69	9,002	\$ 3,888.20	0	\$ -	\$ 13,056.89
Lion's Park Building	226 Colbourne St.	3,240	43,760	\$ 6,619.86	11,936	\$ 4,775.74	0	\$ -	\$ 11,395.60
St. Mary's Hall	31 Fredrick St.	8,168	24,629	\$ 3,628.64	26,306	\$ 10,365.36	0	\$ -	\$ 13,994.00
Community Services Office	3541 Line 11	6,000	111,506	\$ 21,513.29	0	\$ -	6,163	\$ 7,541.96	\$ 29,055.25
Fire Hall	75 Melbourne	6,316	110,239	\$ 16,244.08	35,550	\$ 12,065.98	0	\$ -	\$ 28,310.06
PW Urban Yard/ Water yard	75 Melbourne - Yard	6,750	77,816	\$ 12,857.82	19,295	\$ 6,726.34	0	\$ -	\$ 19,584.16
South Simcoe Police Station	Melbourne	27,000	392,160	\$ 56,444.20	20,525	\$ 6,970.45	0	\$ -	\$ 63,414.65
Library & Cultural Centre	425 Holland St. W.	40,000	412,075	\$ 62,916.31	51,156	\$ 17,074.90	0	\$ -	\$ 79,991.21
BWG Leisure Centre	471 West Park Ave.	158,273	4,334,400	\$ 603,266.12	480,264	\$ 147,779.44	0	\$ -	\$ 751,045.56
Food Bank	123 Moore St.		10,466	\$ 1,585.48	0	\$ -	2,517	\$ 3,166.48	\$ 4,751.96
Henderson Shop	3171 9th Line		20,651	\$ 3,883.87	0	\$ -	13,212	\$ 10,921.82	\$ 14,805.69
Clerks Office	100 Dissette St, Unit 7, 8, 9*		63,655	\$ 9,964.94	4,484	\$ 2,280.53	0	\$ -	\$ 12,245.47
Council & CAO offices	100 Dissette St, Unit 4		19,996	\$ 3,140.28	1,695	\$ 1,525.70	0	\$ -	\$ 4,665.98
Waste Water Treatment Plant	225 Dissette St.	3,922	3,415,130	\$ 466,217.59	136,649	\$ 42,699.57	0	\$ -	\$ 508,917.16
Wells & Pump Houses:	Various	n/a							\$ -
Churchwell Pumping Stn.	550 Toll Rd. (2 OS Conc. Lot 19,)		841,968	\$ 132,659.05					\$ 132,659.05
Artesian Pumping Stn.	8 Conc. Lot 17/18		41,890	\$ 8,031.91					\$ 8,031.91
John Fennell Reservoir	4022 10th SDRD		107,341	\$ 19,582.80					\$ 19,582.80
Ritchie Strong Pumping Stn.	458 Holland St. W.		282,999	\$ 42,408.24					\$ 42,408.24
Dissette Pumping Stn.	21 Dissette St.		90,000	\$ 13,902.85					\$ 13,902.85
Industrial SW Pumping Stn.	Industrial Court		17,723	\$ 2,711.46					\$ 2,711.46
Simcoe Pumping Stn.	Simcoe Rd. & 6th Line		5,575	\$ 1,099.53					\$ 1,099.53
Townsend Pumping Stn.	Townsend Ave.		15,792	\$ 2,447.61					\$ 2,447.61
Walker SW Pumping Stn.	Walker Ave.		12	\$ 91.93					\$ 91.93
Stand Pipe #1	159 Queen Street		43,867	\$ 6,384.80					\$ 6,384.80
Stand Pipe #2	33 Noble Drive		46,682	\$ 6,772.17					\$ 6,772.17
									\$ -
TOTAL:			12,151,421	\$ 1,655,175.59	925,372	\$ 296,762.05	21,892	\$ 21,630.26	\$ 1,973,567.90

ENERGY CONSUMPTION SUMMARY - Annual			2015-Annual						
Building	Address	Area ft ²	Electrical		Natural		Oil		Total 2015
			KWH	(\$/Yr)	m ³	Gas (\$/Yr)	Litres	(\$/Yr)	
Bob Fallis Sports Centre	2961 SDRD 10	33,294	686,627	\$ 97,331.32	28,828	\$ 11,391.96	0	\$ -	\$ 108,723.28
Bond Head Community Centre	2892 County Rd. 27	2,939	38,836	\$ 7,799.96	4,462	\$ 2,419.29	0	\$ -	\$ 10,219.25
B & D. M. Community Centre	125 Simcoe Rd.	35,900	86,876	\$ 14,831.88	34,628	\$ 13,229.35	0	\$ -	\$ 28,061.23
Family Health Centre	100 Holland Court	11,459	267,240	\$ 44,631.38	20,096	\$ 7,857.72	0	\$ -	\$ 52,489.10
Court House	57 Holland St. E.	7,210	53,640	\$ 8,652.06	11,360	\$ 5,115.78	0	\$ -	\$ 13,767.84
Danube Seniors Centre	715 Simcoe Rd.	6,051	42,096	\$ 8,421.23	13,641	\$ 5,574.08	0	\$ -	\$ 13,995.31
Treasury Office Building	61 Holland St. E.	4,000	64,468	\$ 10,564.63	9,250	\$ 4,349.23	0	\$ -	\$ 14,913.86
Lion's Park Building	226 Colbourne St.	3,240	42,425	\$ 6,923.02	11,503	\$ 4,455.96	0	\$ -	\$ 11,378.98
St. Mary's Hall	31 Fredrick St.	8,168	23,369	\$ 3,730.41	25,022	\$ 10,789.63	0	\$ -	\$ 14,520.04
Community Services Office	3541 Line 11	6,000	102,233	\$ 21,465.93	0	-	5,587	\$ 5,559.02	\$ 27,024.95
Fire Hall	75 Melbourne	6,316	106,909	\$ 16,499.66	29,212	\$ 10,513.53	0	\$ -	\$ 27,013.19
PW Urban Yard/ Water yard	75 Melbourne - Yard	6,750	75,742	\$ 12,019.29	14,113	\$ 6,136.74	0	\$ -	\$ 18,156.03
South Simcoe Police Station	Melbourne	27,000	372,060	\$ 68,115.55	18,735	\$ 9,104.54	0	\$ -	\$ 77,220.09
Library & Cultural Centre	425 Holland St. W.	40,000	404,231	\$ 66,335.79	50,773	\$ 18,389.25			\$ 84,725.04
BWG Leisure Centre	471 West Park Ave.	158,273	4,644,081	\$ 684,597.77	448,368	\$ 155,147.43			\$ 839,745.20
Food Bank	123 Moore St.		10,488	\$ 1,713.50			2,286	\$ 2,273.58	\$ 3,987.08
Henderson Shop	3171 9th Line		19,823	\$ 3,608.65			11,520	\$ 7,132.89	\$ 10,741.54
Clerks Office	100 Dissette St, Unit 7, 8, 9*		59,149	\$ 10,069.75	3,744	\$ 2,352.30			\$ 12,422.05
Council & CAO offices	100 Dissette St, Unit 4		25,120	\$ 4,144.97	1,468	\$ 1,314.87			\$ 5,459.84
Waste Water Treatment Plant	225 Dissette St.	3,922	3,617,249	\$ 523,820.30	153,033	\$ 46,553.94			\$ 570,374.24
Wells & Pump Houses:	Various	n/a							\$ -
Churchwell Pumping Stn.	550 Toll Rd. (2 OS Conc. Lot 19,)		719,231	\$ 124,784.10					\$ 124,784.10
Artesian Pumping Stn.	8 Conc. Lot 17/18		8,900	\$ 1,770.24					\$ 1,770.24
John Fennell Reservoir	4022 10th SDRD		73,360	\$ 17,475.54					\$ 17,475.54
Ritchie Strong Pumping Stn.	458 Holland St. W.		231,049	\$ 37,367.24					\$ 37,367.24
Dissette Pumping Stn.	21 Dissette St.		78,480	\$ 13,588.55					\$ 13,588.55
Industrial SW Pumping Stn.	Industrial Court		13,340	\$ 2,215.64					\$ 2,215.64
Simcoe Pumping Stn.	Simcoe Rd. & 6th Line		5,673	\$ 1,153.59					\$ 1,153.59
Townsend Pumping Stn.	Townsend Ave.		17,321	\$ 2,757.73					\$ 2,757.73
Walker SW Pumping Stn.	Walker Ave.		11	\$ 92.77					\$ 92.77
Stand Pipe #1	159 Queen Street		40,662	\$ 6,319.57					\$ 6,319.57
Stand Pipe #2	33 Noble Drive		41,585	\$ 6,434.15					\$ 6,434.15
									\$ -
TOTAL:			11,972,274	\$ 1,829,236.17	878,236	\$ 314,695.60	19,393	\$ 14,965.49	\$ 2,158,897.26

ENERGY CONSUMPTION SUMMARY - Annual			2016-Annual						
Building	Address	Area ft ²	Electrical		Natural			Oil (\$/Yr)	Total 2016
			KWH	(\$/Yr)	m ³	Gas (\$/Yr)	Litres		
Bob Fallis Sports Centre	2961 SDRD 10	33,294	633,486	\$ 150,933.93	31,056	\$ 9,549.17	0	\$ -	\$ 160,483.10
Bond Head Community Centre	2892 County Rd. 27	2,939	35,037	\$ 8,157.03	3,790	\$ 2,271.18	0	\$ -	\$ 10,428.21
B & D. M. Community Centre	125 Simcoe Rd.	35,900	93,790	\$ 16,514.45	33,398	\$ 13,911.30	0	\$ -	\$ 30,425.75
Family Health Centre	100 Holland Court	11,459	258,688	\$ 46,326.29	18,699	\$ 7,366.54	0	\$ -	\$ 53,692.83
Court House	57 Holland St. E.	7,210	62,374	\$ 11,179.25	9,779	\$ 4,400.67	0	\$ -	\$ 15,579.92
Danube Seniors Centre	715 Simcoe Rd.	6,051	34,974	\$ 10,329.88	13,576	\$ 6,189.86	0	\$ -	\$ 16,519.74
Treasury Office Building	61 Holland St. E.	4,000	65,522	\$ 11,852.86	9,362	\$ 4,276.34	0	\$ -	\$ 16,129.20
Lion's Park Building	226 Colbourne St.	3,240	46,345	\$ 8,390.64	8,539	\$ 3,858.00	0	\$ -	\$ 12,248.64
St. Mary's Hall	31 Fredrick St.	8,168	23,890	\$ 4,422.24	25,760	\$ 10,306.76	0	\$ -	\$ 14,729.00
Community Services Office	3541 Line 11	6,000	98,747	\$ 23,921.99	0	-	3,054	\$ 2,635.57	\$ 26,557.56
Fire Hall	75 Melbourne	6,316	115,479	\$ 19,977.02	24,011	\$ 8,994.79	0	\$ -	\$ 28,971.81
PW Urban Yard/ Water yard	75 Melbourne - Yard	6,750	76,662	\$ 13,982.39	12,125	\$ 5,237.90	0	\$ -	\$ 19,220.29
South Simcoe Police Station	Melbourne	27,000	401,003	\$ 67,298.11	15,638	\$ 6,990.40	0	\$ -	\$ 74,288.51
Library & Cultural Centre	425 Holland St. W.	40,000	424,374	\$ 76,064.56	41,656	\$ 14,751.02	0	\$ -	\$ 90,815.58
BWG Leisure Centre	471 West Park Ave.	158,273	4,545,759	\$ 746,256.91	342,654	\$ 108,246.21	0	\$ -	\$ 854,503.12
Food Bank	123 Moore St.		11,087	\$ 1,936.22			2,123	\$ 1,854.48	\$ 3,790.70
Henderson Shop	3171 9th Line		32,357	\$ 5,527.72			8,602	\$ 6,597.83	\$ 12,125.55
Clerks Office	100 Dissette St, Unit 7, 8, 9*		66,323	\$ 12,215.45	2,514	\$ 1,904.12	0	\$ -	\$ 14,119.57
Council & CAO offices	100 Dissette St, Unit 4		28,597	\$ 5,397.74	1,144	\$ 1,435.13	0	\$ -	\$ 6,832.87
Waste Water Treatment Plant	225 Dissette St.	3,922	3,783,642	\$ 591,488.46	107,073	\$ 34,582.32			\$ 626,070.78
Wells & Pump Houses:	Various	n/a							\$ -
Churchwell Pumping Stn.	550 Toll Rd. (2 OS Conc. Lot 19.)		849,224	\$ 159,519.68					\$ 159,519.68
Artesian Pumping Stn.	8 Conc. Lot 17/18		7,536	\$ 180.39					\$ 180.39
John Fennell Reservoir	4022 10th SDRD		80,288	\$ 18,251.57					\$ 18,251.57
Ritchie Strong Pumping Stn.	458 Holland St. W.		231,794	\$ 40,621.45					\$ 40,621.45
Dissette Pumping Stn.	21 Dissette St.		78,218	\$ 13,909.91					\$ 13,909.91
Industrial SW Pumping Stn.	Industrial Court		14,141	\$ 2,782.68					\$ 2,782.68
Simcoe Pumping Stn.	Simcoe Rd. & 6th Line		553	\$ 231.42					\$ 231.42
Townsend Pumping Stn.	Townsend Ave.		1,550	\$ 513.08					\$ 513.08
Walker SW Pumping Stn.	Walker Ave.		11	\$ 103.29					\$ 103.29
NEW Green Valley PS (2017)	2531 6th Line		194,741	\$ 34,879.75					\$ 34,879.75
Stand Pipe #1	159 Queen Street		42,617	\$ 7,366.79					\$ 7,366.79
Stand Pipe #2	33 Noble Drive		42,604	\$ 7,325.85					\$ 7,325.85
									\$ -
TOTAL:			12,381,413	\$ 2,117,859.00	700,774	\$ 244,271.71	13,779	\$ 11,087.88	\$ 2,373,218.59

ENERGY CONSUMPTION SUMMARY - Annual			2017-Annual						
Building	Address	Area ft ²	KWH	Electrical (\$/Yr)	m ³	Natural Gas (\$/Yr)	Litres	Oil (\$/Yr)	Total 2017
Bob Fallis Sports Centre	2961 SDRD 10	33,294	515,132	\$ 108,869.42	32,330	\$ 11,607.95			\$ 120,477.37
Bond Head Community Centre	2892 County Rd. 27	2,939	37,415	\$ 8,017.65	3,418	\$ 2,131.82			\$ 10,149.47
B & D. M. Community Centre	125 Simcoe Rd.	35,900	81,736	\$ 12,168.85	33,671	\$ 12,054.25			\$ 24,223.10
Family Health Centre	100 Holland Court	11,459	249,293	\$ 38,277.72	19,835	\$ 7,787.26			\$ 46,064.98
Court House	57 Holland St. E.	7,210	75,376	\$ 11,485.36	12,407	\$ 5,268.30			\$ 16,753.66
Danube Seniors Centre	715 Simcoe Rd.	6,051	38,720	\$ 8,271.46	14,581	\$ 6,170.48			\$ 14,441.94
Treasury Office Building	61 Holland St. E.	4,000	54,705	\$ 8,667.98	9,444	\$ 4,235.91			\$ 12,903.89
Lion's Park Building	226 Colbourne St.	3,240	38,070	\$ 5,913.91	9,242	\$ 4,199.08			\$ 10,112.99
St. Mary's Hall	31 Fredrick St.	8,168	26,504	\$ 4,238.77	27,645	\$ 11,255.61			\$ 15,494.38
Community Services Office	3541 Line 11	6,000	87,224	\$ 18,818.38			3,702	\$ 3,802.77	\$ 22,621.15
Fire Hall	75 Melbourne	6,316	116,697	\$ 17,545.47	28,622	\$ 10,506.04			\$ 28,051.51
PW Urban Yard/ Water yard	75 Melbourne - Yard	6,750	88,150	\$ 14,278.08	13,501	\$ 5,610.08			\$ 19,888.16
South Simcoe Police Station	Melbourne	27,000	387,757	\$ 78,066.25	12,673	\$ 6,534.93			\$ 84,601.18
Library & Cultural Centre	425 Holland St. W.	40,000	404,434	\$ 74,971.10	47,096	\$ 16,270.16			\$ 91,241.26
BWG Leisure Centre	471 West Park Ave.	158,273	4,542,063	\$ 765,965.47	358,309	\$ 114,918.88			\$ 880,884.35
Food Bank	123 Moore St.		11,516	\$ 1,852.22			1,773	\$ 1,814.89	\$ 3,667.11
Henderson Shop	3171 9th Line		43,639	\$ 11,558.65			10,870	\$ 12,561.15	\$ 24,119.80
Clerks Office	100 Dissette St. Unit 7, 8, 9*		63,338	\$ 10,266.32	3,420	\$ 2,157.06			\$ 12,423.38
Council & CAO offices	100 Dissette St. Unit 4		29,830	\$ 4,979.55	1,006	\$ 1,303.26			\$ 6,282.81
Waste Water Treatment Plant	225 Dissette St.	3,922	3,539,555	\$ 565,075.81	118,760	\$ 39,128.57			\$ 604,204.38
Wells & Pump Houses:	Various	n/a							\$ -
Churchwell Pumping Stn.	550 Toll Rd. (2 OS Conc. Lot 19.)		745,075	\$ 151,307.32					\$ 151,307.32
Artesian Pumping Stn.	8 Conc. Lot 17/18		7,187	\$ 1,837.32					\$ 1,837.32
John Fennell Reservoir	4022 10th SDRD		69,131	\$ 14,743.26					\$ 14,743.26
Ritchie Strong Pumping Stn.	458 Holland St. W.		320,388	\$ 56,748.32					\$ 56,748.32
Dissette Pumping Stn.	21 Dissette St.		77,960	\$ 12,561.39					\$ 12,561.39
Industrial SW Pumping Stn.	Industrial Court		13,935	\$ 2,553.13					\$ 2,553.13
Simcoe Pumping Stn.	Simcoe Rd. & 6th Line - Decommissioned								\$ -
Townsend Pumping Stn.	Townsend Ave. - Decommissioned								\$ -
Walker SW Pumping Stn.	Walker Ave. - Decommissioned								\$ -
NEW Green Valley PS (2017)	2531 6th Line		180,998	\$ 33,522.94	27,912	\$ 6,185.68			\$ 39,708.62
NEW Middletown PS (2017)	212 Rutherford Rd.		1,001	\$ 2,282.82	655	\$ 1,135.69			\$ 3,418.51
Stand Pipe #1	159 Queen Street		36,033	\$ 5,940.67					\$ 5,940.67
Stand Pipe #2	33 Noble Drive		58,784	\$ 8,975.75					\$ 8,975.75
									\$ -
TOTAL:			11,941,646	\$ 2,059,761.34	774,527	\$ 268,461.01	16,345	\$ 18,178.81	\$ 2,346,401.16

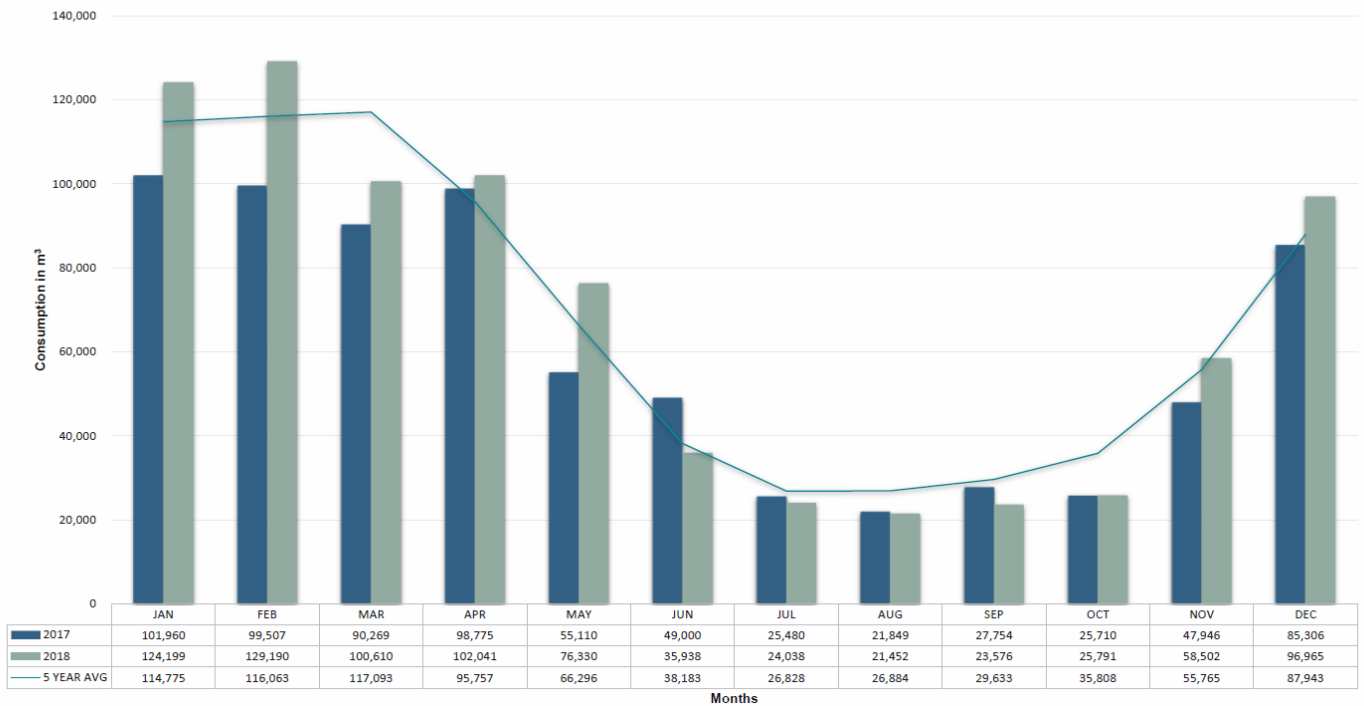
Procurement Planning

The Town of Bradford West Gwillimbury currently procures natural gas through the LAS Natural Gas Program and is investigating options for cooperative purchasing of hydro and fuels. This investigation will include the analysis of cost considerations, available energy services, energy quality and other performance factors. The procurement goal will continue to be the pursuit of optimal rates while achieving an appropriate level of supply and cost certainty.

Energy Management Initiatives are integrated into the Town’s Asset Management Plans and Policy.



LAS Natural Gas Procurement Program
Town of Bradford West Gwillimbury





LAS NATURAL GAS PROCUREMENT PROGRAM

T07 - TOWN OF BRADFORD WEST GWILLIMBURY

							ALL CONSUMPTION IS REPORTED IN m ³												
UTILITY ACCOUNT NAME	UTILITY SERVICE ADDRESS	ACCOUNT NUMBER	UTILITY	RATE CLASS	ACCOUNT STATUS	DATE OF CHANGE	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	2018 TOTAL
TOWN OF BRADFORD WEST GWILLIMBURY	225 DISSETTE ST, LVB, BRADFORD, ON, L3Z3G9	735245829990	ENBRIDGE - CDA	6	ACTIVE		19,226	23,104	17,187	18,062	13,303	2,824	1,244	456	280	2,031	9,838	15,504	122,850
BRADFORD WEST GWILLIMBURY	81 MELBOURNE DR, BRADFORD, ON, L3Z1M2	835101559995	ENBRIDGE - CDA	6	ACTIVE		4,408	3,147	1,569	1,884	731	119	147	164	99	328	1,897	2,337	16,628
CORP OF TOWN BRADFORD	81 HOLLAND ST E, BRADFORD, ON, L3Z2A3	910024221973	ENBRIDGE - CDA	6	ACTIVE		2,239	2,108	1,539	1,437	826	331	20	19	99	33	525	1,328	10,504
TOWN OF BRADFORD	115 B MOORE ST, BRADFORD, ON, L3Z2A3	910024222075	ENBRIDGE - CDA	6	ACTIVE		5,997	4,397	4,126	4,378	3,038	529	107	97	138	116	1,844	4,182	28,949
TOWN OF BRADFORD	228 COLBORNE ST, BRADFORD, ON, L3Z2R5	910024222406	ENBRIDGE - CDA	6	ACTIVE		2,191	2,177	1,647	1,676	974	14	23	6	-	-	467	1,171	10,346
TOWN OF BRADFORD	115 A MOORE ST, BRADFORD, ON, L3Z2A3	910024222614	ENBRIDGE - CDA	6	ACTIVE		-	-	-	-	-	-	-	-	-	-	-	-	-
TOWN OF BRADFORD	2981 SIDEROAD 10, LOT P11, BRADFORD, ON, L3Z2A4	910024222690	ENBRIDGE - CDA	6	ACTIVE		5,258	4,788	4,845	4,805	1,044	3,277	118	119	719	868	1,857	6,903	34,601
TOWN OF BRADFORD-W GWILL	57 HOLLAND ST E, BRADFORD, ON, L3Z2A3	910024222660	ENBRIDGE - CDA	6	ACTIVE		2,650	3,486	1,855	2,909	989	805	38	37	43	37	837	1,752	15,438
TOWN OF BRADFORDS	75 MELBOURNE DR, 75-81 MELBOURNE DR, BRADFORD, ON, L3Z1M2	910024223262	ENBRIDGE - CDA	6	ACTIVE		3,488	4,037	2,491	2,515	903	377	137	59	108	68	541	1,798	16,522
TOWN OF BRADFORD W GWILL	2892 COUNTY RD 27, BRADFORD, ON, L3Z2A4	910024223755	ENBRIDGE - CDA	6	ACTIVE		854	454	1,139	445	795	56	23	21	480	84	751	612	5,894
BRADFORD FIRE HEADQUARTER	75 A MELBOURNE DR, BRADFORD, ON, L3Z1M2	910024223812	ENBRIDGE - CDA	6	ACTIVE		6,581	5,736	4,973	4,092	2,706	764	23	22	41	59	1,863	4,936	31,596
TOWN OF BRADFORD	100 DISSETTE ST, UNIT 7 & 8, BRADFORD, ON, L3Z3G8	910024224423	ENBRIDGE - CDA	6	ACTIVE		895	635	538	384	310	80	-	1	5	8	107	474	3,417
BRADFORD ARENA 1	121 SIMCOE RD, BRADFORD, ON, L3Z1Y3	910024224625	ENBRIDGE - CDA	6	ACTIVE		6,580	4,494	4,517	3,970	2,623	707	12	14	77	56	1,728	4,486	29,264
BRADFORD ARENA 2	121 SIMCOE RD, BRADFORD, ON, L3Z1Y3	910024224631	ENBRIDGE - CDA	6	ACTIVE		764	1,565	1,173	3,129	1,531	149	9	10	-	-	100	532	8,962
TOWN OF BRADFORD W GWILL	100 DISSETTE ST, UNIT 4, BRADFORD, ON, L3Z3G8	910024224722	ENBRIDGE - CDA	6	ACTIVE		200	581	209	436	138	24	-	-	-	-	64	194	1,846
FAMILY HEALTH CENTRE	100 HOLLAND CRT, BRADFORD, ON, L3Z2A7	910024225002	ENBRIDGE - CDA	6	ACTIVE		4,046	4,228	2,823	3,393	1,988	641	265	627	180	994	2,242	1,603	23,030
DANUBE	715 SIMCOE RD, BRADFORD, ON, L3Z4B4	910024225301	ENBRIDGE - CDA	6	ACTIVE		3,049	1,835	2,035	2,210	1,412	456	147	60	71	58	807	2,160	14,300
LIBRARY	425 HOLLAND ST W, BRADFORD, ON, L3Z0J2	910024225320	ENBRIDGE - CDA	6	ACTIVE		9,414	8,034	8,265	5,671	5,615	310	555	146	358	918	2,357	7,195	48,838
TOWN OF BRADFORD WEST GWILLIMBURY	471 WEST PARK AVE, BRADFORD, ON, L3Z0J3	930610031413	ENBRIDGE - CDA	6	ACTIVE		46,359	54,384	39,679	40,845	37,404	24,495	21,170	19,594	20,898	20,135	31,277	39,798	395,838

ACTIVE LOCATIONS	19	TOTAL	124,199	129,190	100,610	102,041	78,330	35,938	24,038	21,452	23,576	25,791	58,502	96,965	818,632
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YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	ACTIVE ACCOUNTS
2014	141,967	116,851	145,195	106,866	64,115	32,004	24,066	40,747	41,153	58,542	69,200	117,294	855,600	19
2015	106,689	129,279	145,048	91,573	71,813	40,896	35,060	30,278	36,499	39,910	59,299	70,184	856,528	19
2016	99,059	106,690	104,345	79,731	64,111	33,078	25,494	20,093	19,185	31,087	43,877	69,964	695,714	19
2017	101,980	99,507	90,289	98,775	55,110	49,000	25,480	21,849	27,754	25,710	47,948	85,308	728,866	19
2018	124,199	129,190	100,610	102,041	78,330	35,938	24,038	21,452	23,576	25,791	58,502	96,965	818,632	19

5 YEAR AVG	114,775	116,063	117,093	95,757	66,296	38,183	26,828	26,884	29,633	35,808	55,765	87,943	811,028
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ENERGY CONSERVATION BEST PRACTICES – GUIDING PRINCIPLES

This section of the plan outlines a summary of guiding principles for best practices in energy conservation. These principles will be reviewed and incorporated into Town operations and future initiatives of facility renovation or new construction.

Activity	Objective	Measurement of Success
Municipal Building Standard of Construction	All Municipal facilities will be built utilizing Leed's principles where practical.	Mandatory building standard that will be followed for all new buildings meeting agreed upon specifications.
Municipal Building Standard for Renovations / Retrofits	When existing lighting, HVAC systems fail or need replacement, most energy efficient products will be sourced.	Elimination of all energy inefficient lighting and HVAC systems at all Town facilities.
Maintenance and Tracking Procedures	Determine where current maintenance practices can be improved to allow for reduced energy consumption.	Extended equipment life cycles.
Shutdown Procedures	Determine all equipment loads that can be turned off at the end of each shift thereby reducing overnight consumption.	Reduction of off peak electricity consumption.
Equipment Inventory	List major motors / devices / equipment and track hours of operation, equipment age.	This will help to develop load profiles and determine best practices within facilities.
Incorporate Life Cycle Costing	Develop a plan that considers costs that are incurred over life cycle of equipment rather than just considering the initial capital cost.	Operational costs will remain within budget.
Interior Lighting Designs	Reduce excessive lighting while maintaining safe and secure light levels.	Lighting design is re-evaluated.
Energy Awareness Campaign	Increase staff awareness and understanding of the energy they consume.	Incorporation of energy awareness into job training.
Load Management	Shift and reduce energy demand and consumption during peak periods.	Shift energy consumption to off peak periods.
Commissioning and Recommissioning Procedures	Verify systems and equipment are operating efficiently.	Establish performance specifications.
Energy Management Training	Ensure staff are making informed decisions thereby reducing costs.	Staff from all departments attending energy related training sessions.
Energy Reserve Account Procedure	Determine revenue stream for corporate energy reserve fund.	Accumulation of funds from successful energy conservation initiatives.

PROPOSED ENERGY REDUCTION MEASURES

2019 – 2023

Wastewater Treatment Plant Efficiency Improvements

The Bradford West Gwillimbury Wastewater Treatment Plant (WWTP) has been in operation at its present site for over fifty years. The original WWTP consisted of a Pumping Station and a 3.8 hectare waste stabilization lagoon. This serviced 1500 residents with a received flow of 686m³/day. As Bradford's urban population continued a steady and consistent growth pattern, the need for sewage treatment was also recognized. Each decade, since its inception in 1962, experienced a wastewater plant expansion.

In 1970 a high rate activated sludge processing plant was built to service 5,500 residents with a received flow of 3408m³/day. In 1982, a high rate extended aeration plant was built to service a population of 12,000 residents with a received flow of 6816m³/day. In 1997, a new treatment process was adopted in that would allow the process plant to achieve Ministry stipulated phosphorous reduction levels previously not realized. A Sequential Batch Reactor (SBR) Plant was built to satisfy that need plus a population reaching 18,000 residents. The new plant rated capacity could achieve a maximum flow of 11,146m³/day.

In 2009, the most recent expansion took place with the addition of an extended aeration plant. The new overall capacity of 17,400m³/day plant would then service the 22,000 present day residents and meet the future growth needs up to a residential population of 38,800. In 2012, the WWTP was re-rated from 17,400 m³/day to 19,400m³/day due to technological and robustness of the 2009 expansion.

Throughout the years, the older style technology did meet and surpass performance and discharge requirements stipulated and legislated by Ministry of the Environment (MOE). The focus was on the technology required to effectively treat sewage to the increasing stringent discharge limits imposed by the Government of Ontario.

The Wastewater division has proposed multiple energy efficiency measures which will ensure cost savings and energy reduction as highlighted in Appendix "A".

In 2014, the WPCP will take advantage of cost savings associated with energy management strategies for Peak hydro demands under the control of the Ontario Power Authority (OPA). The energy program is called Demand Response 3 (DR3) that is designed to curtail hydro demand from the Ontario power grid. This program involves the use of the plant 1000kw diesel generator to remove energy demand from the Ontario power grid. During peak demand requirements, the WWTP will be called to switch to Diesel generator power, hence removing 600kw (.6MW) from the grid. The participants in this program will be paid for being on "stand by" and also paid when they are actually called upon. The DR3 program was initiated to reduce the need to build power plants when the actual critical demand times are sporadic. Modification work on the WWTP diesel generator will be required to satisfy the emission limits imposed on its use for this program. Presently, the emissions from the diesel generator meet the requirements stipulated for generators used for "Emergency Power Only". The cost savings for this program are also listed in Appendix "A".

The second initiative in 2014 is at the Ritchie Stong Pumping Station. This energy reduction measure is designed to allow four (4) raw sewage pumps to operate in the most efficient performance range and at the most cost effective scheduled time intervals. The pumps presently operate in three (3) operational modes, Hand operation 100% speed, adjustable hand operation speed, set between 50-

100% and variable speed through variable frequency drive (VFD) units that will ramp up and down depending on flow demand. The energy reduction measure that will be implemented is the installation of an electronic component to allow monitoring and control of the VFD's. This electronic component is called DeviceNet.

In 2015, the WPCP, particularly Plant "D" will concentrate on the largest energy consuming equipment used at the WWTP. The most important process at a WPCP is the secondary treatment process consisting of live micro-organisms that essentially consume and eat incoming raw sewage. This is the heart of a WPCP and needs to be controlled and operated effectively or the process fails and untreated sewage is discharged in to the receiving stream, rendering the WPCP out of compliance. To ensure that a healthy culture of micro-organisms thrive and "do their job", a vast amount of oxygen is required to be injected, blown or compressed into the aeration cells to provide the oxygen to the micro-organisms. A minimum of 2PPM dissolved oxygen is required to sustain adequate live for the micro-organisms. As stated earlier, the mind set in the past was on the technology to achieve this feat of introducing the required quantity of air into the liquid filled basins/tanks. The problem with this technology is the enormous hydro cost associated with this application. A new proven product, a "High Efficiency Turbo Blower, with Air Bearings", that requires significantly lower amperage to operate, has now become the industry norm to provide the air requirements at a much lower operating cost. Even though the initial purchase cost is much greater, the pay back/ return on Investment (ROI) is 2-4 years. The energy reduction savings are shown in Appendix "A".

In 2016, at Dissette Street Pumping Station, the Wastewater division will be replacing our three (3) existing thirty (30) year old raw sewage pumps with new high efficiency dry pit submersible pumps with variable frequency drive (VFD) control. A second energy reduction measure that will be implemented is the installation of DeviceNet, an electronic component to allow monitoring and control of the VFD's. The Capital cost is high on this program but having said that, the existing pumps are at the end of their life cycle and need to be replaced.

In 2017, Plant "C" will be upgraded with new, High Efficiency Turbo Blowers with Air bearings, that will replace the existing twenty (20) year old rotary lobe blowers. Plant "C" has three (3) blowers that will be replaced. This will involve the installation of VFD control for each blower. Plant "C" presently has Dissolved Oxygen (DO) monitoring but presently can't be used for blower control until such time VFD's are installed to operate the blowers. The overall payback / ROI is in the 4 year time frame. The cost and savings are listed in Appendix "A".

In 2018, the WWTP will begin to upgrade and replace, on Plant "B", the existing thirty (30) year old rotary lobe air blowers in the older more seasoned secondary treatment process at the WPCP. This will involve the installation of properly sized High Efficiency Turbo blowers with air bearings controlled by VFD units.

The installation of Dissolved Oxygen (DO) meters and probes will allow the variable frequency drive units to regulate the oxygen demand based on automatic DO feedback from the secondary treatment process, similar to the 2015 and 2017 upgrades. The present blowers are constant 100% speed and do not function efficiently in any way. The only way to regulate the oversized blowers is to physically disperse/ bleed off air to the environment prior to the secondary treatment process. This proves to be a poor and inefficient means of operation, therefore at this time Plant "B" is not being used but is available for back-up or excessively high flow conditions. In 2018, the sewage flow to the plant will be much greater than present and Plant "B" will no longer be required to act as back-up but rather full operation.

The Town is also presently in discussions with Honeywell Limited, a wholly owned subsidiary of Honeywell International Inc., a publically owned corporation with over 42 locations across the country. Honeywell has prepared for the Town of Bradford West Gwillimbury a Comprehensive Municipal Solutions (CMS) program to fund infrastructure improvements and promote environmental responsibility within communities. An Opportunity Assessment Report was submitted to the Town in April 2014 for consideration and evaluation. The Wastewater component highlighted multiple infrastructure projects similar to what the Town was planning to implement in the future. Engineering Services will evaluate all options available to implement the energy reduction program. Once a plan of action is determined, an update of Appendix "A" will be required to effectively reflect changes to the proposed energy reduction measures and their subsequent timeframes.

Street Lighting

The Street lighting retrofit program was sectioned into two phases:

Phase 1 – LED Street lighting retrofit project for the Town of Bradford West Gwillimbury as per the Energy and Infrastructure Improvement (EII) Report dated September 18, 2015.

Consisted of 2673 lights in the scope of work including change order 006 for newly assumed subdivisions. Approximately 54% of the Town's streetlight fixtures are standard cobra head. The remaining portfolio of streetlights are decorative including post top and scroll arm mounted lanterns. The standard cobra head fixtures were replaced with LED fixtures. The existing decorative High Intensity Discharge (HID) bulbs in new subdivisions were replaced with new LED retrofit bulbs. The older decorative fixtures in older subdivisions were replaced with new decorative fixtures. Phase 1 is summarized in Appendix B Honeywell Energy Operational as-built Cost Savings Report.

Phase 2 (Proposed) – Larger post top fixtures at intersections and along the Holland Street corridor including fixtures in the downtown core were not included in the scope of work for Phase 1.

In phase 1, Honeywell's installation and upgrades have maintained and improved lighting conditions within the Town while permanently reducing the Town's utility costs. Currently three increased cost factors facing the Town with Streetlight infrastructure.

An upgrade to LED lighting of the larger post top fixtures at intersections and along the Holland Street corridor including fixtures in the downtown core will help the Town proactively address the rising cost of electricity and move new Developments to a greener built standard, while at the same time lowering the costs of maintenance. This phase includes 437 HPS fixtures.

Bob Fallis Sports Centre

The Bob Fallis Sports Centre is a 33,000 square foot, single pad arena, built in 1996. The facility consists of one (1), 85'x185' Ice Surface, five (5) Change Rooms, Lobby, Overhead Spectator Seating, Boardroom, Tournament Office, Zamboni Service Room and Refrigeration Room.

Original Mechanical/Electrical Systems include:

- Five (5) forced air gas furnaces – serving the change rooms and lobby space.
- 100hp refrigeration system, utilizing two (2) reciprocating compressors, tube and shell heat exchanger and an external cooling tower.
- Two (2) mechanical (compressor) driven arena dehumidification units.
- Three (3) hot water tanks, serving various areas of the facility.
- Arena lighting consisting of fifty (50) 400 watt metal halide fixtures.
- Common space lighting consisting of T8 florescent fixtures.

The Bob Fallis Sports Centre has been in operation since 1996 and operated with limited facility upgrades, prior to 2013. In the summer of 2013, capital investment in renovation and life cycle mechanical upgrades began with the replacement of one (1) Mechanical Dehumidification unit with an energy efficient Electric Desiccant Dehumidification unit.

As detailed in Appendix “C” of the plan, recent facility upgrades and future energy reduction measures will include the following:

2014-2015

1. Arena Lighting Retro Fit; replaced Metal Halide Fixtures with LED fixtures.
2. Second Mechanical Dehumidification unit replaced with an energy efficient Electric Desiccant Dehumidification unit.
3. Replaced Arena Score Board.

2016-2018

1. Installed New Cooling Tower with VFD control.
2. Installed Automated Refrigeration Control System.
3. HVAC upgrades; replaced existing gas furnaces with a new high-efficiency boiler system that contains a glycol loop and five (5) air-handling units.
4. Lighting upgrades in common areas from T8 fluorescent tubes to T8 LED light fixtures.

2019-2023

1. Ice Plant Upgrade; replacing tube & shell chiller and brine pumps.
2. Additional energy reducing initiatives at the BWG Leisure Centre, as identified in Appendix C.

**APPENDIX “A” WASTEWATER
PROPOSED ENERGY REDUCTION MEASURES**

Location	Proposed Measure	Year	Capital Cost	Anticipated Savings (Based upon current energy costing)
WPCP	The Ontario Power Authority’s (OPA) Demand Response 3 (DR3) program for load curtailment. Work involves retrofitting existing Diesel Generator <i>Did not pursue. Generator retrofit – over 300k Request with MOECC Approvals branch to modify use of Emergency power to Demand Response – not accepted</i>	2014	N/A Financed through pay back from hydro reduction cost.	Potential ongoing yearly savings of \$55,000.00
Ritchie Stong PS	Install DeviceNet hardware to the VFD Controls to operate the pumps in the most energy efficient performance mode. <i>1st Phase: Energy Study - completed in 2014 2nd Phase: Pump Efficiency & Automation Upgrade – Completed in 2015</i>	2014 2014 2015	\$6354.00 <u>Actual Cost</u> \$1,250.00 \$9,530.00	Potential yearly savings of \$4,400.00
WPCP	Replace Plant D Aeration cell air blowers with High Efficiency Turbo blowers with air bearings. <i>Completed in 2017</i>	2015 2017	\$138,940.00 <u>Actual Cost</u> \$220,000.00	30-50% Savings or \$50,000.00 to \$75,000.00/year. <i>Savings of 30%</i>
Dissette Street PS	Replace existing Centrifugal Sewage pumps with high efficiency dry pit submersible pumps with VFD control with DeviceNet technology. Pumps are 30 years old and need replacing. <i>Design for upgrade for this Pumping Station has held back this proposed measure.</i>	2019	\$35,000.00	15-20% annual savings(\$2,000.00 to \$3,000.00)

**APPENDIX “A” WASTEWATER
PROPOSED ENERGY REDUCTION MEASURES**

Location	Proposed Measure	Year	Capital Cost	Anticipated Savings (Based upon current energy costing)
WPCP	Replace Plant C rotary lobe blowers with High Efficiency Turbo blowers with air bearings. Install VFD units for blowers with Dissolved oxygen (DO) control. <i>Design for WPCP expansion has held back this proposed measure.</i>	2017	\$115,000.00	\$30,000.00 annual savings
WPCP	Replace Plant B rotary lobe blowers with properly sized High Efficiency Turbo blowers with air bearings. Install VFD units for blowers with Dissolved oxygen (DO) control. Existing blower is oversized and air must be wasted off. <i>Design for WPCP expansion has held back this proposed measure.</i>	2018	\$140,000.00	30-50% Savings or \$50,000.00 to \$75,000.00/year
WPCP	Replace Plant C rotary lobe blowers with High Efficiency Turbo blowers with air bearings. Install VFD units for blowers with Dissolved Oxygen (DO) control. *Will occur during upcoming Plant Expansion.	2019*	\$250,000.00	\$30,000.00 annual savings
WPCP	Replace Plant B rotary lobe blowers with properly sized High Efficiency Turbo blowers with air bearings. Install VFD units for blowers with Dissolved Oxygen (DO) control. Existing blower is oversized and air must be wasted off. *Will occur during upcoming Plant Expansion.	2019*	\$250,000.00	20-30% Savings or \$20,000.00
WPCP & PS's	Motion sensor light switches for buildings.	2019-2023	\$ 10,000.00	20% savings
WPCP	Yard lighting switch to LED.	2019-2023	\$ 30,000.00	50% savings
WPCP	Turbo blower. <i>Not required at this time, based on capacity.</i>	2019-2023	\$250,000.00	30% savings

APPENDIX “A” WASTEWATER PROPOSED ENERGY REDUCTION MEASURES

Additional Energy Initiatives Completed / Started (not listed in Plan):

1. **Digester blower VFD Ethernet Controls Upgrade** – installed controls on VFD’s to interface with SCADA which allows us to track specific equipment that demand greater kw usage. **Completed in 2016.**
2. **Raw Sewage VFD’s Ethernet Controls Upgrade** – installed controls on VFD’s to interface with SCADA which allows us to track all four (4) Raw Sewage Dry Pit Submersible pumps which are a large kw users. **Completed in 2016.**
3. **Motion Sensor/Timer** – light switches installed in five (5) locations to turn on and shut down when no movement detected. **Completed in 2015.**
4. **Staff Awareness/Training** – on being proactive shutting lights off. **Completed in 2017.**
5. **Installed Soft Start Controllers** – on Disette St. pumping Station Wet Well Pumps. **Completed in 2018.**
6. **Digestive Blower / Mixing Pump SCADA Control** – Installed control onto interface with SCADA, which allows the running of mixing pumps on a timed basis versus continuous. **Completed in 2018.**

**APPENDIX “B” STREET LIGHTING AND TOWN WIDE
PROPOSED ENERGY REDUCTION MEASURES**

Location	Proposed Measure	Year	Capital Cost	Anticipated Savings (Based upon current energy costing)
Town Wide	Streetlight replacement upgrades, converting existing Metal Halide and High Pressure Sodium to LED	2015	\$1,770,000	45% reduction in energy costs 90% reduction in maintenance costs realized immediately upon upgrade and carried through the life of the light (expectant life beyond 25years)
Town Wide	Anti-idling Zoning – enforce policy	2019-2023		
Town Wide	Charge Stations – specifically at the BWG LC and Library	2019-2023		
Town Wide	Continue to research and monitor development of Hydro purchases through third party re-sellers to maximize savings.	2019-2023		

**APPENDIX “C” BOB FALLIS SPORTS CENTRE AND BWG LEISURE CENTRE
PROPOSED ENERGY REDUCTION MEASURES**

Location	Proposed Measure	Year	Capital Cost	Anticipated Savings (Based upon current energy costing)
Bob Fallis	Lighting retrofit upgrades converting existing Metal Halide to LED over Arena Ice Surface. Completed 2014 (a)	2014	\$35,000.00 (Rebates of \$5,300 may apply)	57% reduction in annual ice surface lighting costs
Bob Fallis	Install Electric Desiccant Dehumidifier to replace existing mechanical unit Completed 2015 (b)	2014	\$34,000.00	60% reduction in annual energy costs for mechanical unit
Bob Fallis	Scoreboard replacement at BFSC Completed 2015 (c)	2014		
Bob Fallis	<u>Refrigeration Plant Upgrades</u> <ul style="list-style-type: none"> • New Cooling Tower with VFD control • Automated refrigeration control system Completed 2016 (d), (e)	2016	\$50,000.00 \$35,000.00	20% reduction in annual energy costs of the refrigeration plant
Bob Fallis	Lighting upgrades in common areas from T8 fluorescent to T8 LED Complete 2018 (g)	2018	\$15,000.00	20% reduction in costs.
Bob Fallis	HVAC upgrades, replace existing furnaces with boiler system, glycol loop and air-handling units. Completed 2018(f)	2018	\$81,375.00	

Additional Energy Initiatives Completed (not listed in Plan):

1. Arena lighting retrofit at the Leisure Centre. Replace T8 fluorescent light fixtures with T8 LED fixtures over both ice surfaces.
Completed in 2017.
2. Lighting upgrades in Multi-Purpose Rooms at the Leisure Centre. Replaced MR-16 light fixtures with 2’x2’LED flat panels and replaced compact fluorescent lights with LED lamps. **Completed in 2017.**
3. Lighting upgrades in common areas at the Leisure Centre. Replaced all T8 fluorescent tubes with T8 LED in arena dressing rooms, hallways, stairwells, etc. 370 lamps in total. **Completed in 2018.**

**APPENDIX “C” BOB FALLIS SPORTS CENTRE AND BWG LEISURE CENTRE
PROPOSED ENERGY REDUCTION MEASURES**

Location	Proposed Measure	Year	Capital Cost	Anticipated Savings (Based upon current energy costing)
Bob Fallis	Chiller and Brine Pump Replacement at the BFSC.	2019		
BWG LC	Continued lighting upgrades at the LC. Replace additional MR-16 and compact fluorescent lights with LED throughout facility, where applicable.	2019-2023		
BWG LC	Lighting retrofit in the LC pool. Replace metal halide fixtures with LED.	2019-2023		
BWG LC	Lighting controls at the LC. Install manual switches or motion sensors in rooms that are currently only controlled by the scheduled lighting control system.	2019-2023		
BWG LC	Investigate possibility of upgrading the parking lot lights at the Leisure Centre and the BWG Library to LED.	2019-2023		
BWG LC	Investigate the feasibility and effectiveness of replacing the UV lamps in the pool mechanical room with LED (further research required).	2019-2023		