CONSERVATION AND DEMAND MANAGEMENT PLAN REPORT CARD 2016

MAY 31ST, 2016

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Executive Summary

The information disclosed in this Conservation and Demand Management Plan Report Card clarifies and expands upon the requirements of O. Reg. 397/11 under the Government of Ontario's Green Energy Act, 2009. The objective of this report is to assist its readers in making more informed energy conservation decisions.

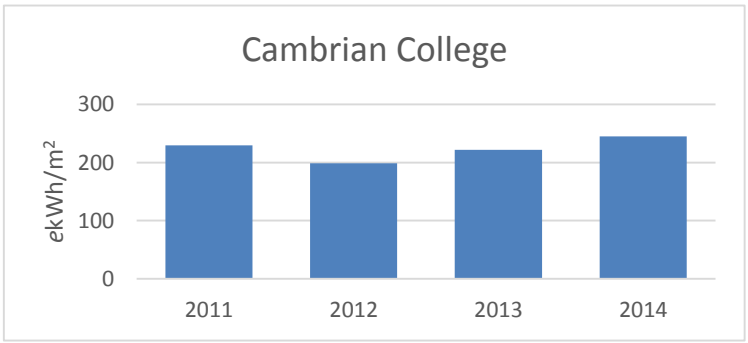
Post-Secondary Institutes can lower their costs and reduce harmful Greenhouse Gas (GHG) emissions through improved management of their energy consumption and expenditures. This report card identifies specific facility trends in energy consumption and performance, for the period of 2011 to 2014. It also provides strategic direction through a brief discussion and overview of the current energy landscape in Ontario. All Cambrian College facilities are included in this report.

Highlights:

Highlight #1 – Overall Energy Performance

1. Cambrian College has stated that it intends to improve the energy performance of their facilities by reducing energy intensity by two (2) percent by 2018.

Energy Intensity – All Facilities

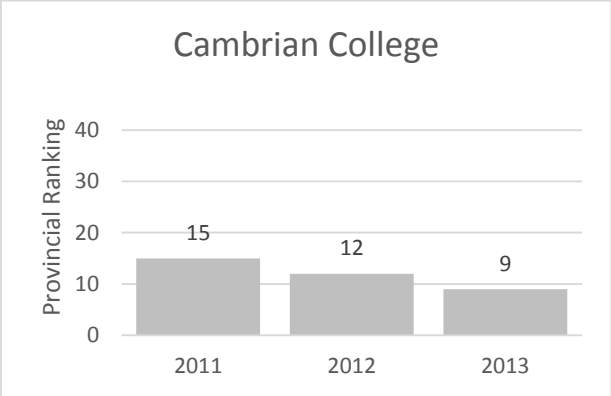


   a. **Cambrian College experienced a 6.3% increase in energy intensity since 2011.**
   b. **VIP Energy recommends that Cambrian College re-evaluate their current approach to energy management. A re-prioritization of planned conservation projects in light of current results is required. Switching from project based energy improvements to strategic implementations with confirmed and measured savings will be a key step in achieving conservation goals.**

Highlight #2 – Ranking Compared to Other Post-Secondary Institutes

2. Market Sector Energy Performance Comparison[1]: The energy performance of Cambrian College has been compared and ranked against other Post-Secondary Institutes.

Provincial Benchmarking – Energy Intensity Ranking



- Provincial Ranking* based on Average Energy Intensity with Weather Normalization (*e*kWh/HDD/m²).
- Better energy performance is indicated by lower ranking numbers.
- Data is based on Ministry of Energy reported data

*Out of 45 ranked Post-Secondary Institutes in 2011, 44 in 2012, and 46 in 2013.

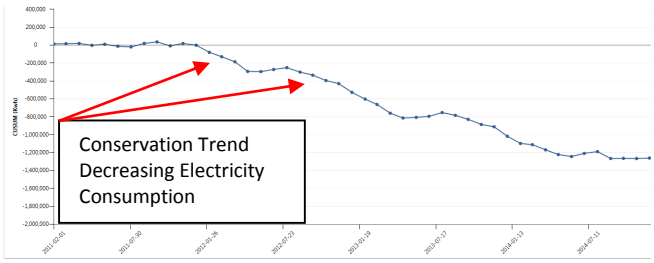
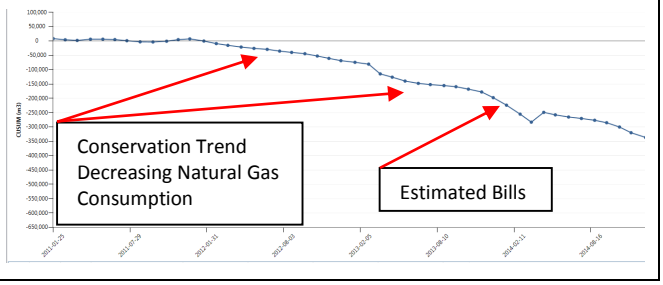
a. Cambrian College's ranking has risen from #15 in 2011 to #9 in 2013.

b. This indicates that Cambrian College has outperformed its peers over the reporting period.

[1] NOTE: This data represents numbers presented by the Ministry of Energy and reflect the information filed by the Post-Secondary Institute. Some filings contain very material errors, due to many causes, including incomplete utility data, utility billing corrections, template data entry errors, etc. The above numbers, however, do show what the Ministry of Energy 'sees' and what other parties 'see' when they access the Ministry data.

Highlight #3- Analytical Overview

3. VIP has conducted an analytical study of Cambrian College's monthly electricity and natural gas billing consumption data. The statistical tools used in this study paint a clear picture of consumption patterns. Further, these techniques can be used to understand both predicted and unforeseen consumption events.

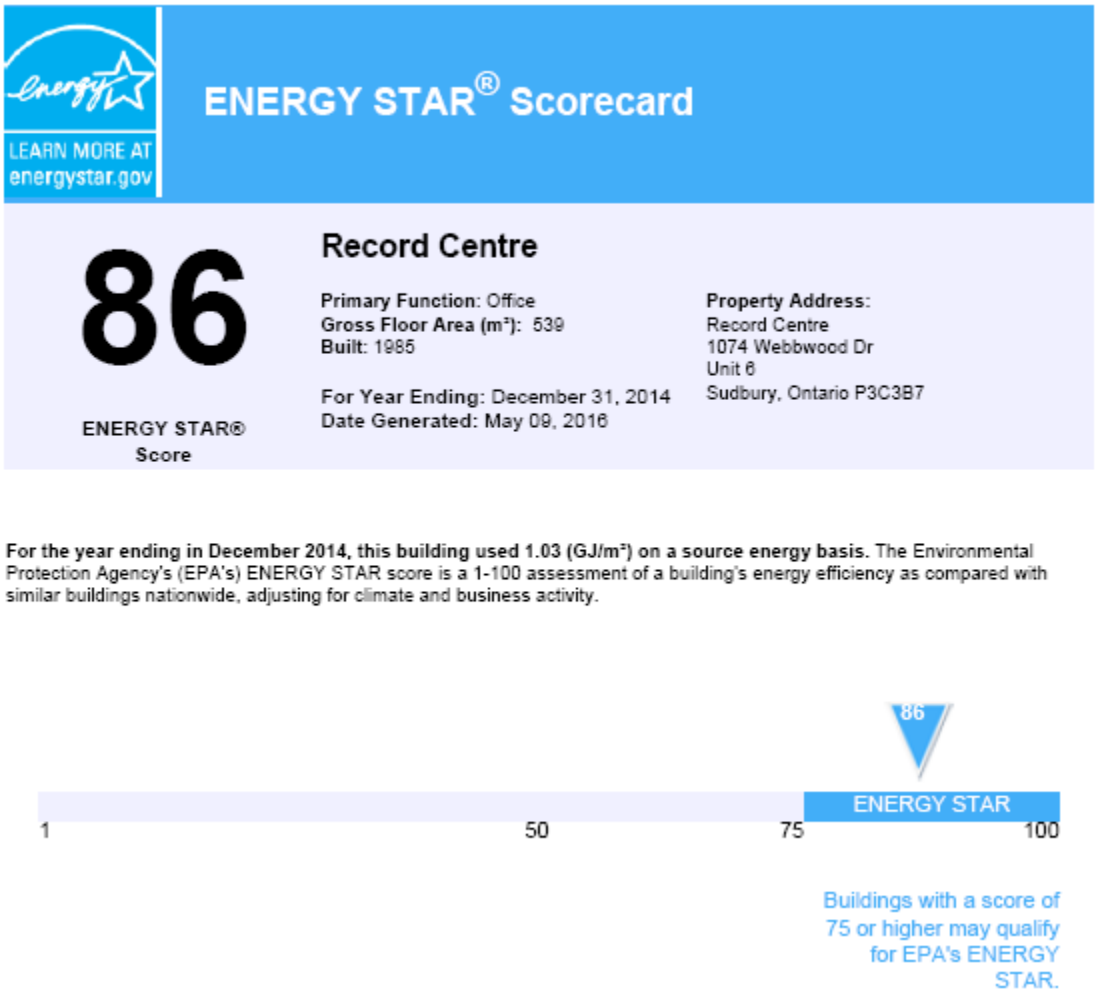
Electricty CUSUM Analysis	Natural Gas CUSUM Analysis
	

a. **Conservation trends beginning in February of 2012 for both electricity and natural gas were noted, representing total savings of approximately 1.26 Million kWh and 336,000 m^3.**
b. **Increased slope of natural gas CUSUM from November 2013 to March 2014 is due to estimated bills, not increased conservation.**
c. **Measurement and Verification analysis of the main electricity account showed zero consumption for several months in 2014. Further investigation revealed that the college has a backup meter which was triggered over these periods.**
d. **Cambrian College should investigate whether their ESCO performance contract includes the consumption from this backup meter. If not, savings for these periods may be overstated. Total consumption amounts for the backup meter was approximately 5.35 million kWh.**
e. **This analysis should be expanded to include current energy consumption data so that all energy conservation activities can be monitored and measured monthly as well as action taken on any unforeseen increases in consumption.**

Highlight # 4 – Energy Star® Ratings

4. Energy Star® Scores are a new and nationally recognized benchmark for the energy performance of buildings in Canada.

   VIP Energy has analyzed the building details for Cambrian College's Record Centre and produced an Energy Star® Score for the facility. Scores range from 1 to 100 with a score of 50 being exactly the average. Additional detail regarding the Energy Star benchmarking system is presented in **Section 3 Energy Star® Benchmarking**.



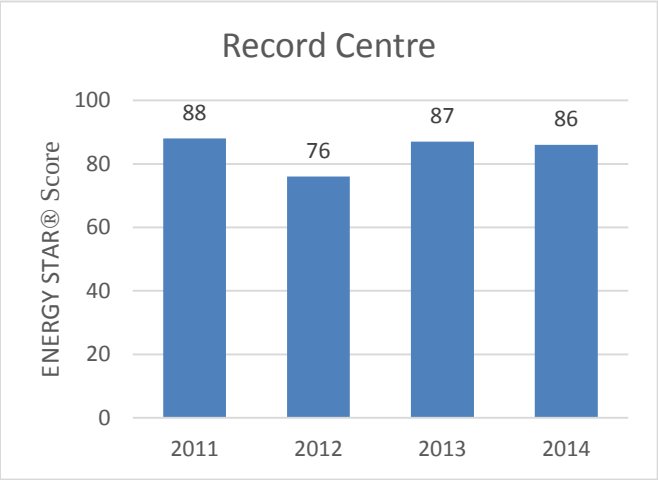
   a. **Cambrian College Campus and their Val Caron property do not qualify for an Energy Star Score at this time due to their facility profiles.**

Highlight #5 – Energy Star® Score trends

5. VIP has calcualted the Energy Star® Scores for the 4 years covered by this study to gain an alternate insight into changes in Cambrian College's energy performance

   It should be noted that these scores allow a statistically significant comparison to be made with similar facilities anywhere in North America who have posted an Energy Star® Score.

National Benchmarking – Energy Star® Score

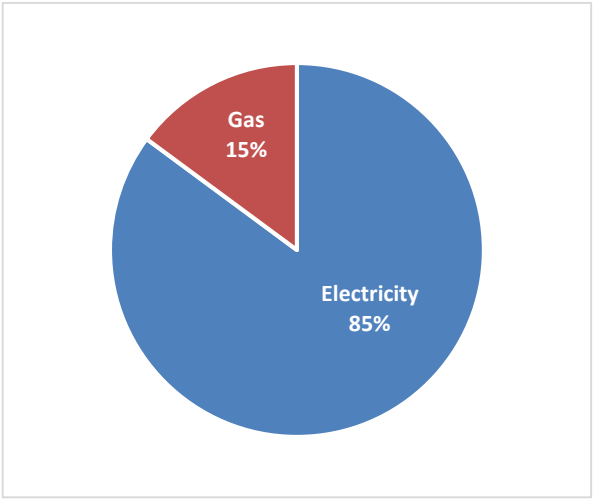
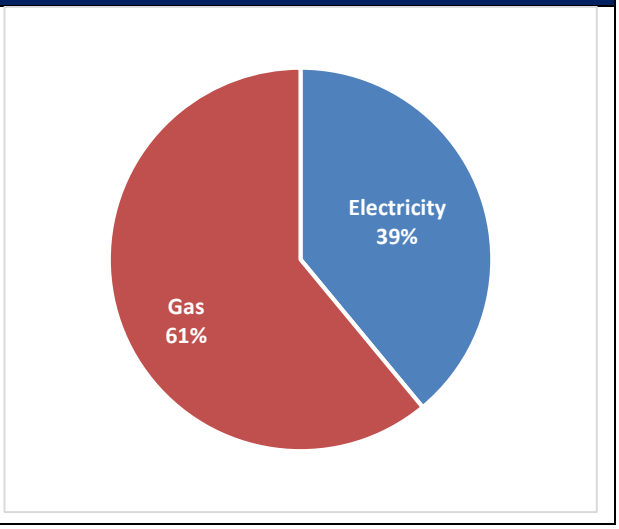


- These Energy Star® Scores place Cambrian College's Record Centre in the 80th percentile compared to similar facilities across Canada (when normalized for climate and hours of operation).

   a. **Energy Star® Scores have been relatively consistent since 2011 after recovering from a drop in 2012.**

Highlight #6 – Greenhouse Gas / Cap and Trade

6. VIP has incorporated the measurement and tracking of Greenhouse Gas Emissions into this report card to prepare organizations for the Provincial Cap & Trade System proposed for implementation in 2017.

Energy Cost By Commodity – All Facilities	Emissions By Commodity – All Facilities
	

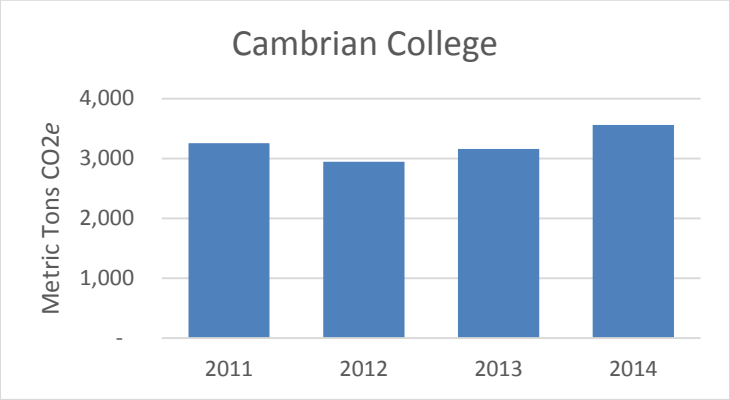
a. **Natural gas usage accounts for the majority of the emissions from Cambrian College facilities but represents only a fraction of the operating energy costs.**
b. **Cambrian College must carefully consider the improvement in the ROI of any natural gas conservations projects in light of the cost increase imposed by Cap and Trade legislation.**

Highlight #7 – GHG Emmisions

7. On a Provincial comparision, the Ontario Ministry of Energy Public Sector Energy Consumption legislation provides a means to compare energy performance and Greenhouse Gas Emisions.

   By calculating and tracking GHG emmisions, Cambrian College is well positioned for future changes to the Cap and Trade thresholds as well as the possible benefits of any future GHG reduction credits that may be applicable

Provincial Metric – Greenhouse Gas (GHG) Emissions



- Data is based on utility billing data to calculate the Greenhouse Gas Emissions.

a. GHG emissions have shown <u>little aggregate change</u> from 2011 to 2014.

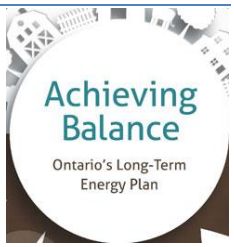
b. Carbon footprint reduction strategies will rise in importance in upcoming years.

Energy Market Trends

A proactive approach to energy management strategies includes a scanning of trends that are emerging in the Energy Sector, both from a National and a Provincial perspective. Rising energy costs will negatively affect all energy consumers. There are, however some trends developing which organizations need to be aware of and understand how they will affect the operation of their facilities.

Energy Market – Emerging Trends	
Issue	**Impact on** Cambrian College
Energy Star® Scores are becoming a nationally recognized benchmark practice for the energy performance of buildings in Canada.	• Although energy consumption and intensity at Cambrian College facilities has risen, Energy Star® Scores for its highest consumption facility have consistently improved year to year. • So while sector ranking was worsened, (likely due to sector averages improving), Cambrian College's largest facility is trending slightly positively towards conservation. • This issue is discussed in greater detail in **Energy Star® Benchmarking**
Province of Ontario is proposing the introduction of a Cap & Trade System to encourage Greenhouse Gas Emission reduction.	• Cambrian College can expect to see an increase in their natural gas cost of approximately 3¢/m^3. • Using 2015 consumption of 851,138 m^3, that equates to an increase cost to Cambrian College of approximately $25,500 annually. • Companies will be rewarded for reducing their carbon footprint. If you pollute less, you pay less. • This issue is discussed in greater detail in **Cap and Trade System**
The Independent Electricity System Operator organization has suspended funding for MicroFIT Projects.	• Carefully review any plans for installing photovoltaic renewable generation in light of long potential delays in MicroFIT project approval.

1 Introduction



The Province of Ontario engaged thousands of Ontarians, who worked together to create Ontario's Long-Term Energy Plan – Achieving Balance. This plan, released in December 2013, contains Ontario's long-term vision for the province's electricity system. Quoting the Province:

"The plan balances five principles to guide decision-making:

- *cost effectiveness*
- *reliability*
- *clean energy*
- *community engagement*
- *an emphasis on conservation and demand management before building new generation"*

Ontario's Ministry of Energy required Ontario public agencies to file Conservation and Demand Management Plans – CDM Plans – on or before July 1st, 2014. Cambrian College complied and filed its five (5)-year plan in 2014.

Throughout the last year, Cambrian College has been working to achieve the goals embedded in their CDM Plan.

The purpose of this CDM Report Card is to provide objective, third-party feedback on how Cambrian College has performed and to help us plan future actions so Cambrian College outperform the minimum requirements of Ontario's long-term energy plans.

Cambrian College CDM Report Card is a hands-on tool, designed to help:

- keep long-term energy & environment strategies and goals in mind,
- focus attention on the near-term actions required to achieve those long-term goals, and
- provide comparative analysis between both internal facilities and similar facilities within our market sector.

In addition, this tool will help Cambrian College keep track of the energy and environmental actions taken since July 2014 and the results those actions have delivered. Some actions will deliver impressive conservation results and cost savings. Those actions will provide direction for Cambrian College's 'best next steps'. Some initiatives undertaken will not deliver expected results. This will help Cambrian College identify areas for improvement. Either way, simple presentation of actions, results, and recommendations for next steps will ensure that Cambrian College makes steady progress and achieve their long-term goals.

This CDM Report Card breaks the five (5)-year CDM Plan into manageable one (1)-year pieces with each year building on the performance of prior years. The format allows quick and easy review by key stakeholders:

- board members,
- senior management,
- energy committees, and
- the public.

In addition, the CDM Report Card can be attached to other larger reports such as the annual budget or the strategic plan. Each year, the CDM Report Card will be revised capture initiatives performed and provide external updates on topics of importance to Ontario energy users, including but not limited to:

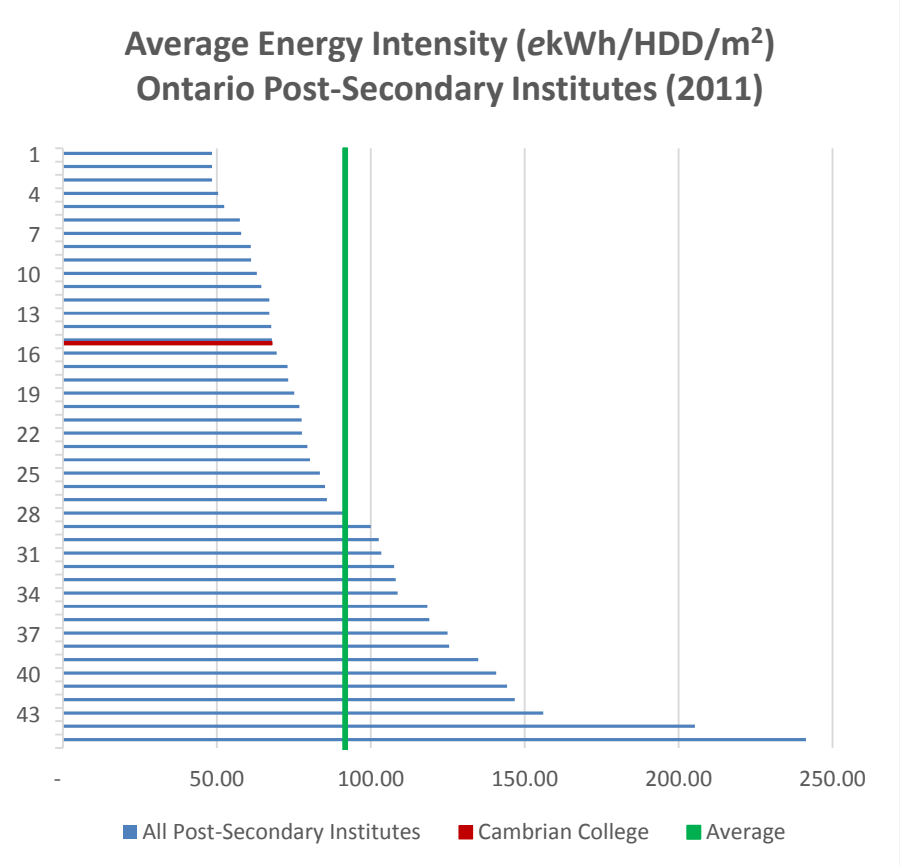
- government policy changes,
- incentive and funding programs,
- commodity pricing,
- transportation/transmission and distribution/delivery utility updates, and
- new energy & environment opportunities.

2 RESULTS ACHIEVED – As Reported to The Ministry of Energy [397/11 templates]

2.1 Analysis of Energy Intensity as Filed with the Ministry of Energy

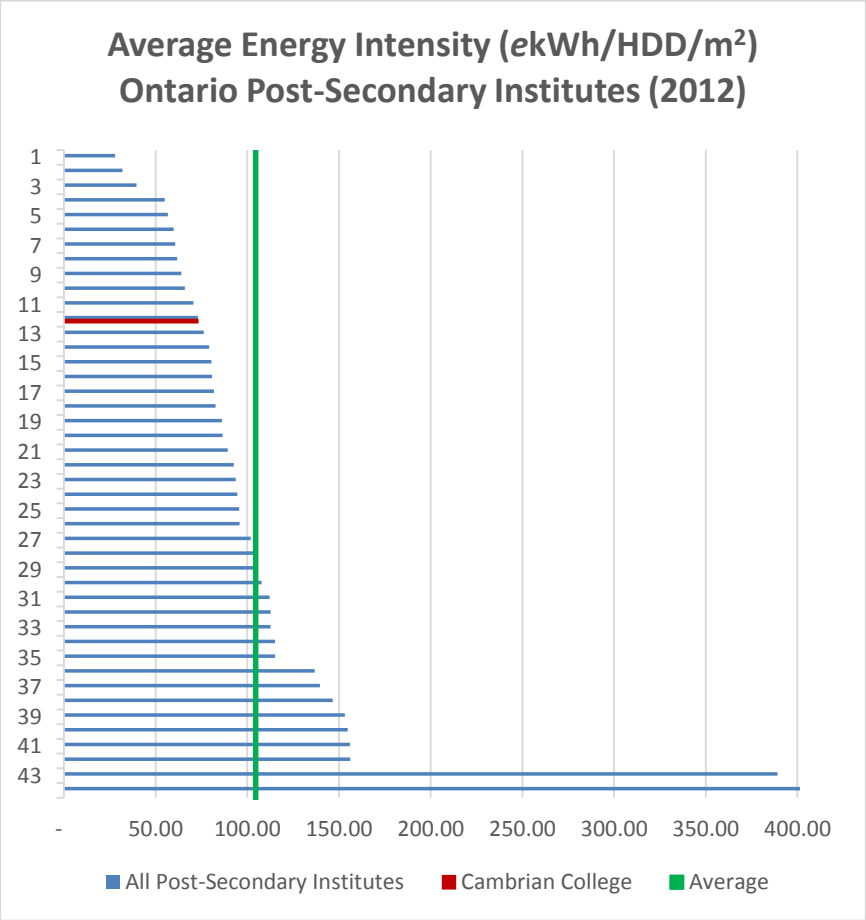
The following tables and graphs contain the normalized energy-intensity numbers the Ministry of Energy presents pursuant to the data it has received from Ontario's Post-Secondary Institutes under their 397/11 reporting of energy use per facility. The Ministry of Energy has normalized the intensity data against heating degree-days (HDD) to better compare the performance of facilities across differing climate zones[2]. This report covers the years 2011, 2012 and 2013. While Post-Secondary Institutes have filed data under their templates this summer, the Ministry has yet to present the energy-intensity numbers for the 2014 year. This data is released to the Public in the spring of the following year. In **Appendix A – Post-Secondary Institute Sector Ranking 2011, 2012, and 2013** a listing of Ontario Post-Secondary Institutes is presented detailing the individual annual rankings. Comparing Public Sector Ministry of Energy Consumption Data from other Ontario Post-Secondary Institutes:

- Cambrian College ranked # 15 of 45 during 2011, with energy intensity of 67.9 *e*kWh/HDD/m^2 (27% lower than the average)

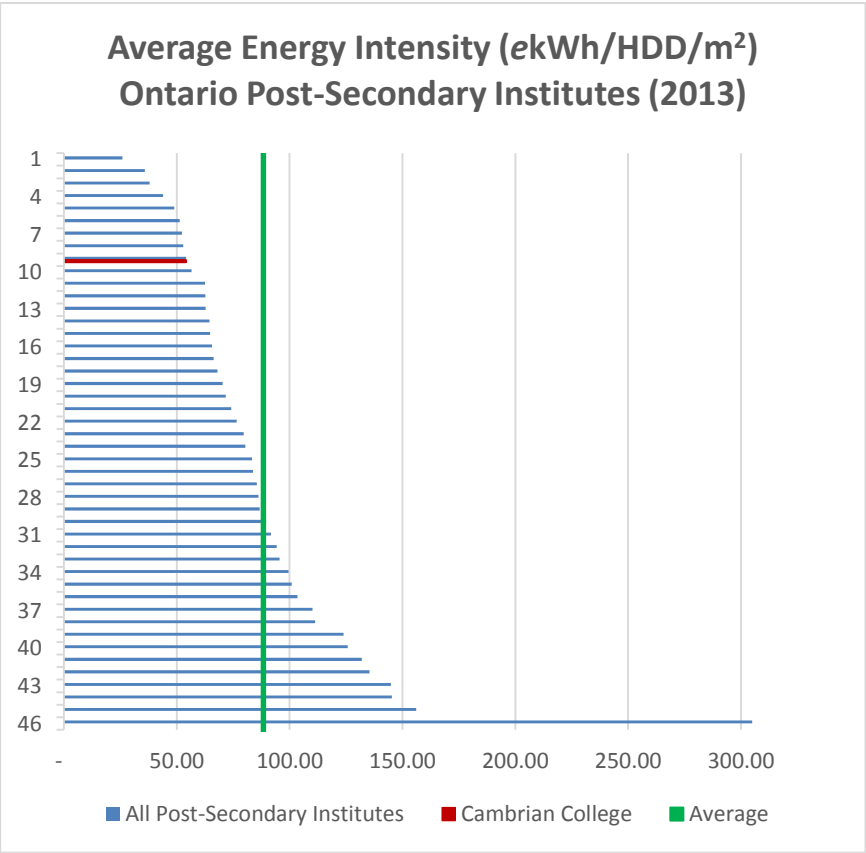


[2] NOTE: This data represents numbers presented by the Ministry of Energy and reflect the information filed by the Post-Secondary Institute. Some filings contain very material errors, due to many causes, including incomplete utility data, utility billing corrections, template data entry errors, etc. The above numbers, however, do show what the Ministry of Energy 'sees' and what other parties 'see' when they access the Ministry data.

- Ranked # 12 of 44 during 2012, with energy intensity of 73.1 *e*kWh/HDD/m^2 (32% lower than the average)



- Ranked # 9 of 46 during 2013, with energy intensity of 54.1 *e*kWh/HDD/m^2 (38% lower than the average)

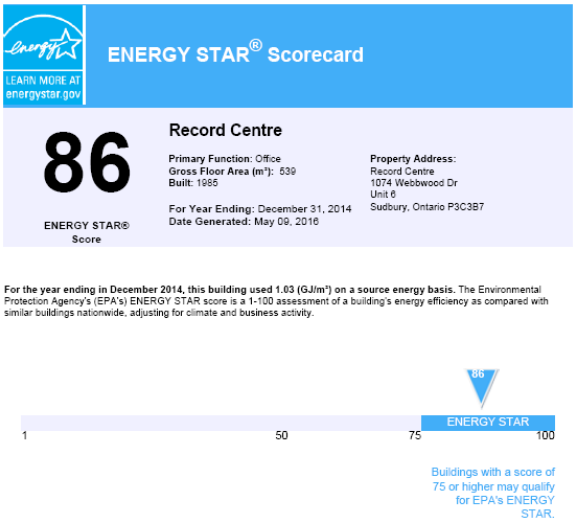


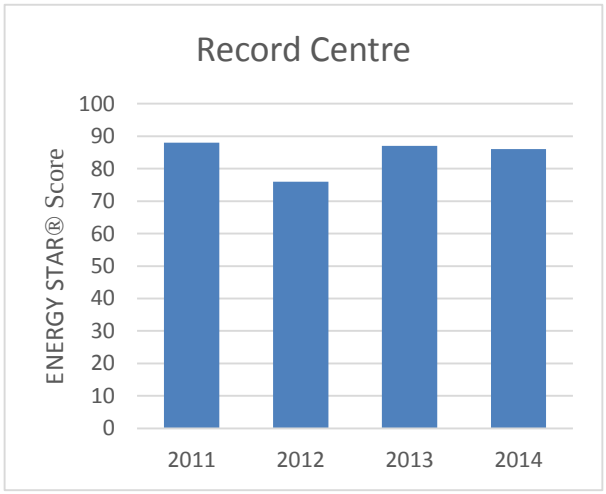
The above data has been normalized for HDD and takes into account changes in the weather. Overall, sector averages have been falling since 2011, with 2012 averages being skewed upwards due to the poor performance of several high consumption Post-Secondary Institutes. Compared to its peers, Cambrian College has performed very well, improving its rank in each reporting year and continually improving the gap between itself and the sector averages.

While sector ranking has improved year-over-year, an increase in energy intensity in 2012 should be noted. Comparing to other reporting years, the higher 2012 normalized energy intensity indicates that Cambrian College facilities were actually underperforming in 2012. In contrast, 2012 displayed a decrease in both energy consumption and GHG emissions, which would indicate an improvement in energy performance. This conflicting data leads to the conclusion that the energy reductions in this period were likely less substantial than what would have been achieved if Cambrian College had kept pace with their average reported energy intensity.

3 Energy Star® Benchmarking

The Energy Star® (trademarked ENERGY STAR®) is an international standard for energy efficient originating in the United States. Created in 1992 by the Environmental Protection Agency and the Department of Energy, Australia, Canada, Japan, New Zealand, Taiwan, and the European Union have adopted the program. The objective of the ENERGY STAR® score is to provide a fair assessment of the energy performance of a property, relative to its peers, taking into account the climate and business activities at the property. A statistical analysis of the peer building population is performed to identify the aspects of building activity that are significant drivers of energy use and then to normalize for those factors. The result of this analysis is an equation that predicts the energy use of a property, based on its experienced business activities. The energy use prediction for a building is compared to its actual energy use to yield a 1 to 100 percentile ranking of performance, relative to the national population.





Location	2011 ENERGY STAR® Score	2012 ENERGY STAR® Score	2013 ENERGY STAR® Score	2014 ENERGY STAR® Score
Record Centre	88	76	87	86

For the 2014 year, Cambrian College's Record Centre had an Energy Star® Score of 86. Cambrian College campus and Val Caron do not qualify for Energy Star® Scores due to their size and building categorizations. Energy Star® Canada does not currently provide scores for these building types. Historically, Record Centre's overall Energy Star® Score has been consistent. Record Centre's Score fell to 76 in 2012 but quickly returned to it's higher average.

Although energy intensity at the Record Centre has remained relatively constant since 2011, the facility is ranked in the upper tiers of energy performance when compared to its peers and normalized for weather. Cambrian College campus and Val Caron have not been included in this section of the report due to the facilities not currently being covered by the Canadian Energy Star® program. VIP will review these facilities eligibility for the Energy Star® program when completing next year's report card.

4 Ontario's Energy Landscape Review

4.1 Current trends and practices in Ontario's Energy Landscape

In recent years, Ontario's energy landscape has been increasingly shaped by climate change concerns and by efforts to reduce the environmental impacts of the energy we use. From the elimination of coal-fired power generation to conservation and demand management (CDM) plans, Ontario's government has taken on the task of being a world leader in climate change mitigation. While this effort is not without its costs, which have been reflected in the increasing price of electricity, Ontario has met and is on track to meet its emissions goals for 2014, 2020 and beyond.

Looking forward, we see several issues of consequence in Ontario's energy sector. These include; the implementation of a Cap and Trade System (CTS), the further diversification of Ontario's electrical grid, increased conservation efforts, and transportation emissions reductions. Later in 2016, Ontario will be releasing a five-year action plan outlining the implementation of their strategies to meet upcoming emissions targets.

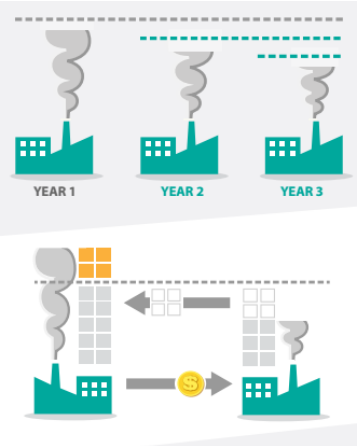
4.2 Conservation and Energy Diversification

Ontario has already heavily invested in conservation and demand management strategies to reduce peak loads and reduce strain on the electrical infrastructure. With the proposed CTS set to bring in over $1 billon in proceeds in the first year, which the government has pledged to reinvest in Green projects, the amount and availability of conservation incentives is likely to grow. New retrofit incentives, hybrid and electric vehicle incentives, the extension of existing programs and the addition of new incentives for researchers and start-ups are among the key projects the Ontario government says it will target with these new funds.

Conservation efforts in recent years have allowed for the shutdown of coal-generation without the need to heavily invest in new generation. While refurbishments at the Bruce Nuclear Power Plant will likely cover the bulk of any new generation, and replace the supply from the ageing Pickering reactors, the role of renewables in our electrical supply will continue to grow. Private companies taking advantage of the attractive FIT and Green Energy Act offerings have increased the amount of intermittent solar and wind supply, raising the share of renewables in the system to approximately 10% in 2016. Replacing cheap, clean hydropower with wind or solar causes the hourly price of electricity to rise and is a source of some of the increase seen in our electricity pricing. As the grid adapts to the new loads, it would be expected

that the continued rise in expensive renewable contracts would result in increased electrical prices in the coming years.

4.3 Cap and Trade System



In 2008, Quebec formally joined the Western Climate Initiative (WCI) and merged their CTS with California's to form a single carbon market. Cap and trade allows the market to decide where emissions can be reduced with the least cost, while cutting down on the pollution that is causing climate change. Ontario has proposed legislation to join the WCI and create a CTS for Ontario. The proposed system may begin its first phase in January of 2017, and is rumored to closely follow the guidelines used by both California and Quebec. The following information is based on the practices set in place by the WCI, California, Quebec, and the proposed Ontario CTS, and may not reflect actual Ontario legislation.

The "**cap**" puts a limit on how many tonnes of greenhouse gas pollution that businesses, institutions and households can emit. This cap is set at a specific amount, which drops each year to encourage lower emissions. Ontario is setting the economy-wide cap at 142 mega tonnes per year in the first year of the program and will decline to 125 mega tonnes per year by 2020. Companies must have enough allowances (also known as permits or credits) to cover their emissions if they exceed the cap.

To comply, companies can generally:

- Invest in clean technologies to become more efficient
- Burn less fossil fuels
- Purchase additional credits

CAP AND TRADE SYSTEMS

Sets a limit on the amount of emissions an individual entity within the CTS can produce in a given year. If this limit is exceeded the individual must pay a fine or can purchase credits from other participants in the CTS who emitted less than their allotted amounts.

Emission credits and caps will be lowered each year to motivate individuals to reduce their emissions.

Additional credits and those provided by other participants can be purchased through an auction in which the government will set the minimum value of a credit.

First year threshold for participation is expected to be 25,000 metric tonnes per year of GHG emissions.

Emissions caps can apply to electricity (including imports) and industry; plus, distribution and importation of fuels used for consumption in the transportation and building sectors.

Ontario CTS could include institutions, natural gas distribution and large commercial facilities. Phasing in of these additional sectors at a later date is also a possibility.

Agriculture and similar industry will likely be allowed to contribute as suppliers of emissions credits.

The "**trade**" refers to a market where companies can buy or sell carbon credits, also known as allowances. These credits are linked to every tonne of greenhouse gas they emit (or do not emit). For example, if a company emits more GHGs than permitted by the cap, it could purchase credits to come into compliance. These credits would be available for purchase from a company that reduced its GHG emissions levels to below the cap.

The Importance of Accurate Reporting for Cap & Trade

- Companies will be rewarded for reducing their carbon footprint. If you pollute less, you pay less.
- Companies reporting incorrect *e*kWh/ft^2 could be penalized

What You Can Do to Prepare for Cap & Trade

- Make sure your energy reporting is accurate
- Verify accuracy of bills

Have The LDC's Made Mistakes?

- Add real time metering and sub metering
- Collect data on your own, Don't rely on the LDC
- Have an Energy Conservation Plan
- Identify wasted energy
- Identify areas for improved energy use

4.4 MicroFIT Projects Suspended by the IESO

The Independent Electricity System Operator (IESO) has temporarily suspended applications to the MicroFIT program that awards fixed price contracts to independent generators of renewable electricity. The program was designed to entice small business and individuals to install small scale renewable generation of 10 kW or less by providing attractive pricing on the sale of generated electricity. This program has come under heavy scrutiny since its inception with critics claiming that pricing levels were too high and would lead to higher electricity prices. The program has also suffered from large backlogs as applicant have rushed to take advantage of these rates. While no fixed date has been set for the resumption of the program, the IESO expects the program to resume by sometime this summer. The new version of the program will contain revision s to the pricing model, stricter obligations for metering and verification, and increased provisions for enforcing contractual requirements. Any planned renewable investments should be reviewed in light of these upcoming changes and potential delays in attaining MicroFIT contracts.

5 Energy Usage & Intensity – Based On Utility Data

5.1 Energy Intensity – Analysis – Post-Secondary Institute

The following tables and graphs –pages 11 to 13 – are based on utility billing data for each Post-Secondary Institute gathered by VIP Energy and entered into the VIP 'portal'. The consumption data was aggregated and energy intensity was calculated based on current 'footprint' data.

This information covers the years 2011, 2012, 2013 and 2014

Compared to Ministry of Energy reporting for the 2013 year:

- Ministry of Energy calculates Cambrian College's energy intensity at 224.1 *e*kWh/m^2
- VIP Energy's portal calculates Cambrian College's energy intensity at 222.2 *e*kWh/m^2

This difference in energy intensity is well within reasonable bounds.

Comparing VIP portal calculations for the 2011, 2012, 2013 and 2014 years:

- 2011 was 229.7 *e*kWh/m^2
- 2012 was 198.9 *e*kWh/m^2
- 2013 was 222.2 *e*kWh/m^2
- 2014 was 245.2 *e*kWh/m^2

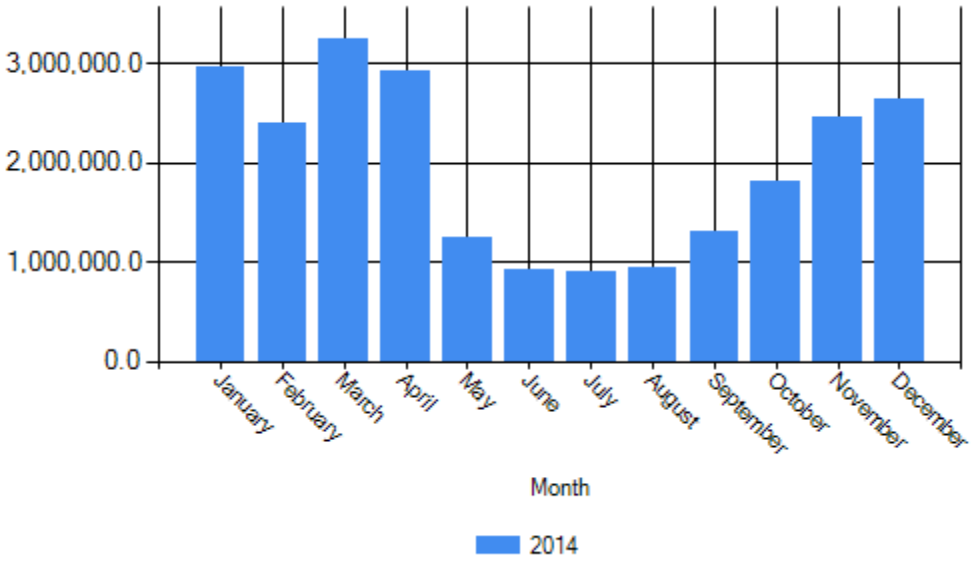
This increase of approximately 9%, 2014over 2013, is consistent with the increases VIP has seen in other large Post-Secondary Institutes and is likely due to weather trends. When the Ministry reports its 2014 energy-intensity numbers, VIP will update and expand this section of the report card.

5.2 Energy Use – All Facilities - 2014

Cambrian College – All Facilities

Energy Consumption Report - *e*kWh

January 2014 - December 2014



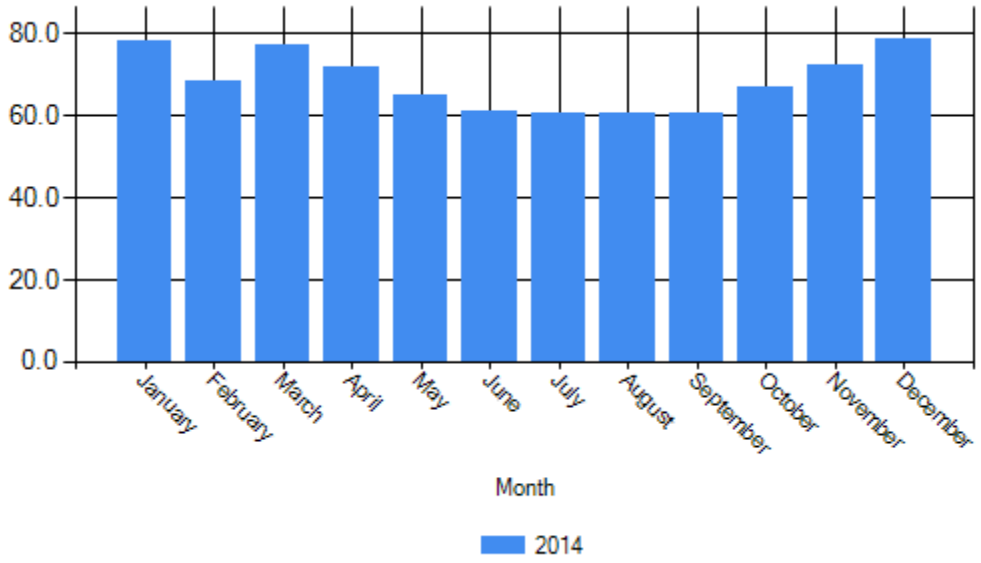
Month	2014 ekWh	2014 HDD
January	2,967,515.6	976
February	2,405,041.0	831
March	3,243,920.5	823
April	2,925,107.4	439
May	1,254,587.2	154
June	916,869.0	20
July	914,399.8	20
August	945,552.8	28
September	1,302,332.1	123
October	1,807,138.2	305
November	2,456,607.0	616
December	2,637,586.9	717
Annual Totals	**23,776,657.4**	**5,051**

5.3 Energy Intensity – All Facilities – 2014

Cambrian College – All Facilities

Energy Consumption Report - *ekWh/m*^{2}

January 2014 - December 2014



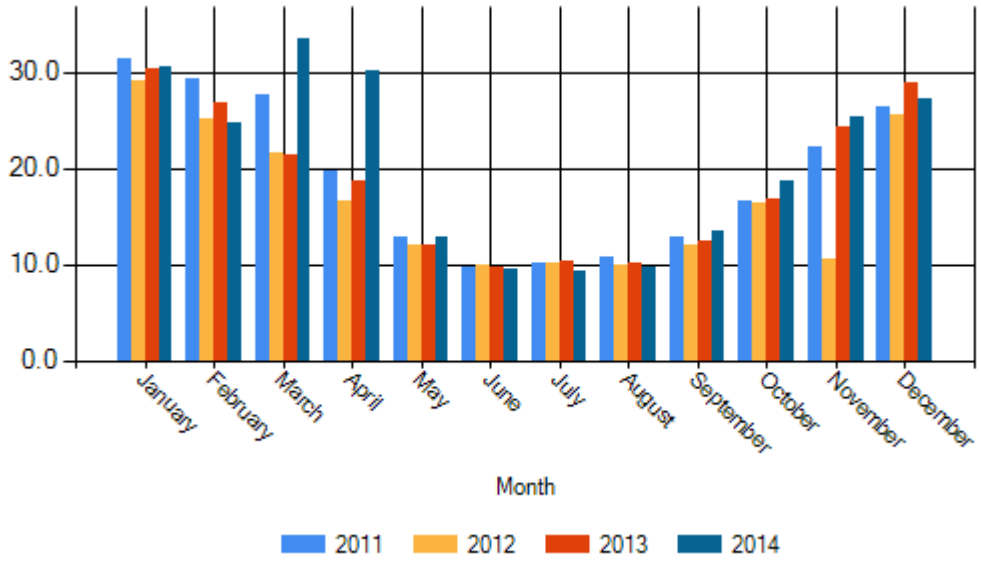
Month	2014 ekWh/m^2	2014 HDD
January	30.6	816
February	24.8	762
March	33.5	730
April	30.2	342
May	12.9	102
June	9.5	12
July	9.4	6
August	9.8	12
September	13.4	72
October	18.6	213
November	25.3	413
December	27.2	562
Annual Totals	**245.2**	**4,042**

5.4 Energy Intensity – All Facilities – 2011 to 2014

Cambrian College – All Facilities

Energy Consumption Report - *ekWh/m²*

January 2011 - December 2014



Month	2011 ekWh/m²	Variance		2012 ekWh/m²	Variance		2013 ekWh/m²	Variance		2014 ekWh/m²
		#	%		#	%		#	%	
January	31.4	-2.3	-7 %	29.1	1.2	4 %	30.3	0.3	1 %	30.6
February	29.3	-4.3	-15 %	25.1	1.8	7 %	26.8	-2.0	-8 %	24.8
March	27.7	-6.1	-22 %	21.6	-0.1	0 %	21.5	12.0	56 %	33.5
April	19.8	-3.3	-17 %	16.5	2.2	13 %	18.7	11.5	62 %	30.2
May	12.9	-0.9	-7 %	12.0	0.0	0 %	12.0	0.9	8 %	12.9
June	9.7	0.3	3 %	9.9	-0.1	-1 %	9.8	-0.4	-4 %	9.5
July	10.1	0.0	0 %	10.1	0.2	2 %	10.3	-0.9	-9 %	9.4
August	10.8	-0.9	-9 %	9.9	0.4	4 %	10.3	-0.5	-5 %	9.8
September	12.9	-0.8	-6 %	12.1	0.4	3 %	12.4	1.0	8 %	13.4
October	16.6	-0.2	-1 %	16.4	0.5	3 %	16.9	1.7	10 %	18.6
November	22.1	-11.5	-52 %	10.6	13.6	128 %	24.2	1.1	5 %	25.3
December	26.3	-0.8	-3 %	25.5	3.4	13 %	29.0	-1.8	-6 %	27.2
Annual Totals	**229.7**	**-30.9**	**-13 %**	**198.9**	**23.3**	**12 %**	**222.2**	**23.0**	**10 %**	**245.2**

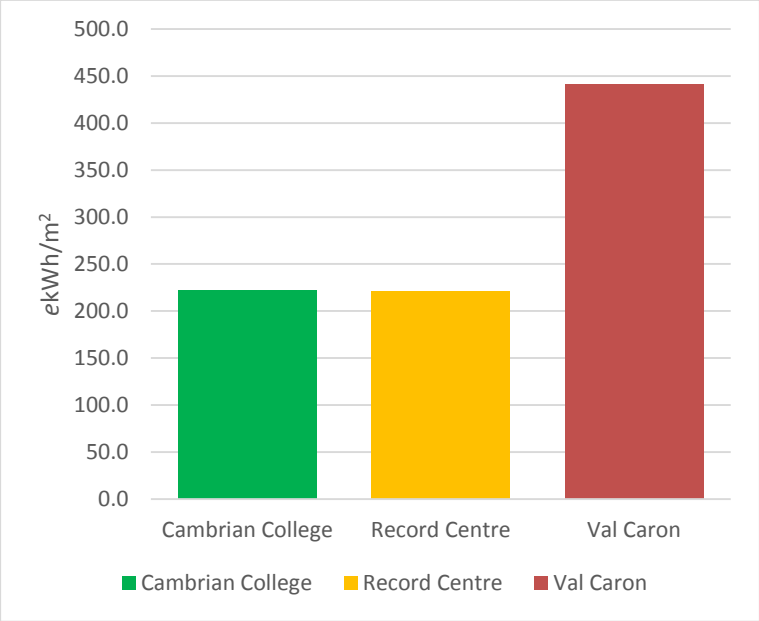
5.5 Energy Intensity – Analysis – Location-by-Location

The following tables and graphs were built using utility billing data for each facility. VIP Energy gathered the utility data from a number of sources and entered it into the VIP 'portal'. Energy intensity was calculated by totalling energy-use data for all fuel sources and dividing the resulting '*e*kWh' by current 'footprint' data.

Test #1 Annual Energy Consumption - ranking:

A comparison of the Energy Consumption for the individual locations gives us the ability to identify and rank each facility's annual energy consumption. Logically, the highest energy consuming facility was Cambrian College Campus, which occupies 99% of the footprint and accounts for the vast majority of energy consumption.

Test #2 Energy Intensity – 3-Year Average – Ranking:



Location	2012 *e*kWh/m²	2013 *e*kWh/m²	2014 *e*kWh/m²	Average *e*kWh/m²
Cambrian College Campus	198.1	221.6	244.7	221.5
Record Centre	224.5	216.0	223.5	221.3
Val Caron	427.1	447.0	450.7	441.6

The following graphs provide 'clear pictures', showing how energy intensity at each facility ranks relative to the energy intensity at all other facilities. Cambrian College can expect to obtain the most-effective energy savings by concentrating on the facilities that have the highest energy intensity. Further analysis will be required to determine the best places to make energy-improvement investments and to estimate the extent of savings that can be achieved at each facility.

Considering the 3-year average 'picture' and the facility-by-facility details, the facility that ranked the least the efficient in terms of energy intensity is Val Caron.

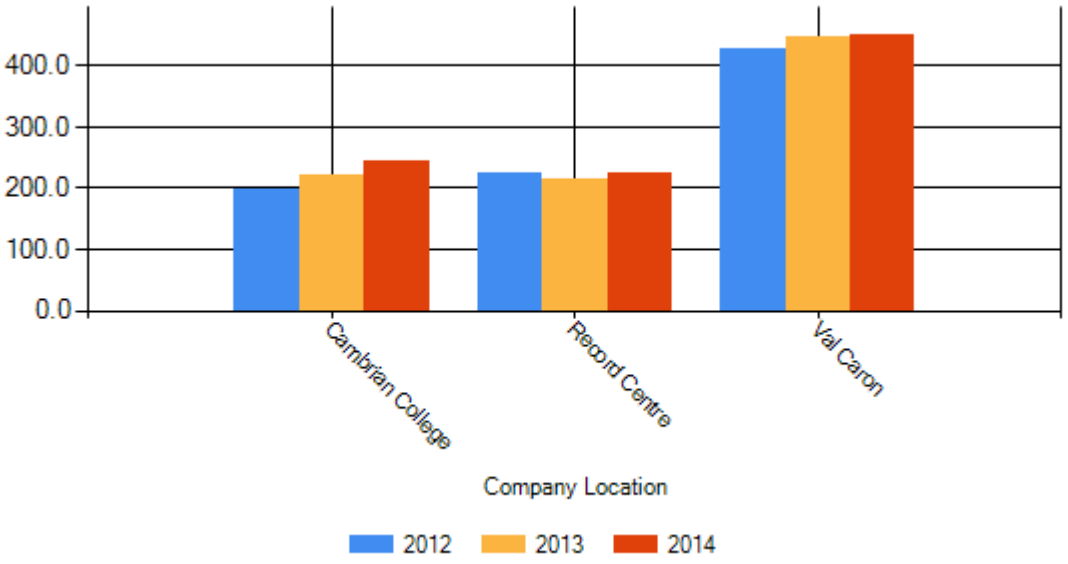
Test #3 Energy Intensity – year-over-year - ranking:

The figure below shows energy intensity for each of the past three years, with the years presented 'side by side'. This red flags facilities where large increases in energy intensity happened year over year. The facility with the largest increase is Cambrian College Campus, whose intensity has risen by a cumulative 19% since 2012.

Cambrian College Campus, Record Centre and Val Caron

Energy Consumption Report - *e*kWh/m^2

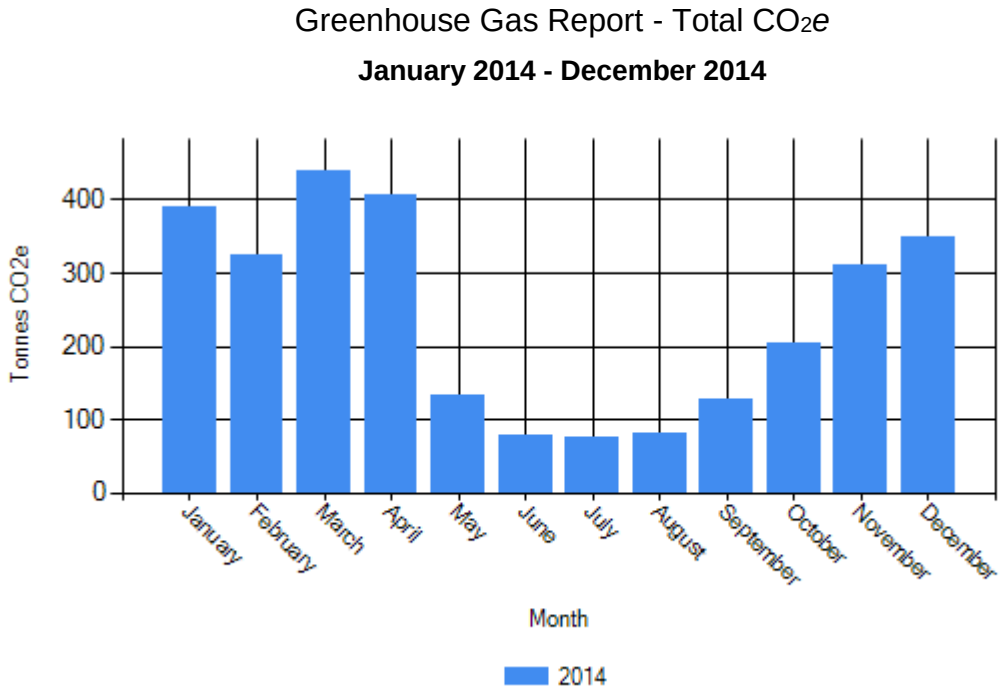
January 2012 - December 2014



Location	2012 *e*kWh/m^2	Variance #	Variance %	2013 *e*kWh/m^2	Variance #	Variance %	2014 *e*kWh/m^2
Cambrian College	198.1	23.5	12 %	221.6	23.1	10 %	244.7
Record Centre	224.5	-8.5	-4 %	216.0	7.5	3 %	223.5
Val Caron	427.1	19.8	5 %	447.0	3.7	1 %	450.7
Weighted Average	**198.9**	**23.3**	**12 %**	**222.2**	**23.0**	**10 %**	**245.2**

5.6 Greenhouse Gas Emissions – All Facilities – 2014 Monthly Details

Cambrian College – All Facilities



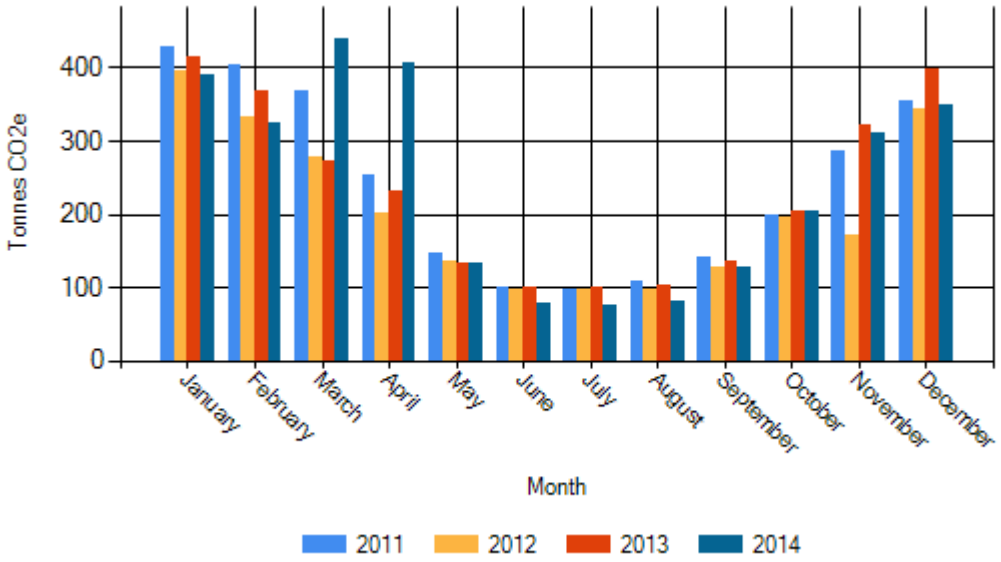
Month	2014 CO_2e
January	389.6
February	323.3
March	439.0
April	406.7
May	132.3
June	77.8
July	76.2
August	82.2
September	126.9
October	204.6
November	310.4
December	349.8
Annual Total	**2,918.8**

5.7 Greenhouse Gas Emissions – All Facilities – 2011, 2012, 2013 and 2014 – Monthly Details

Cambrian College – All Facilities

Greenhouse Gas Report - Total CO_2e

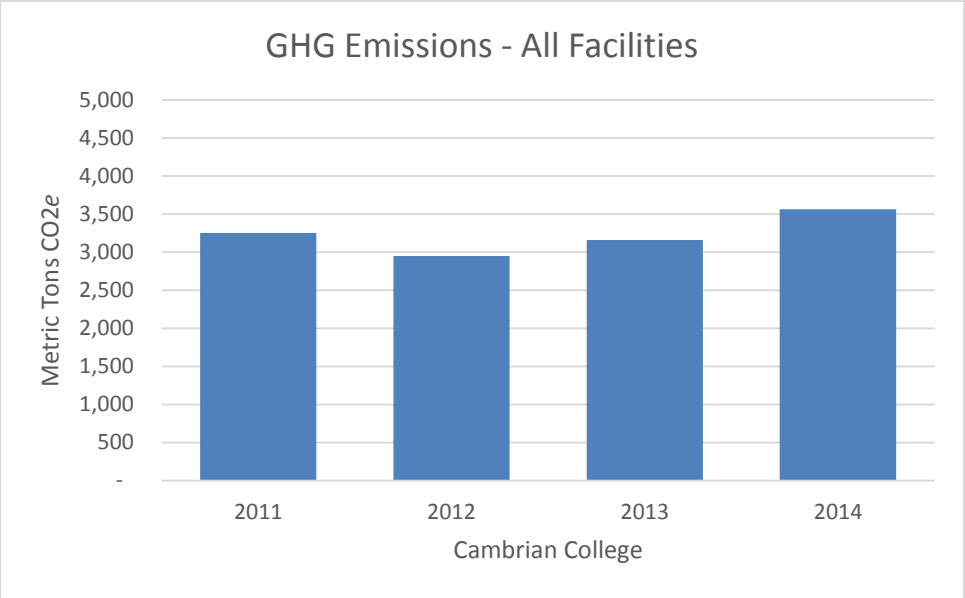
January 2011 - December 2014



Month	2011 CO_2e	Variance		2012 CO_2e	Variance		2013 CO_2e	Variance		2014 CO_2e
		#	%		#	%		#	%	
January	428.4	-33.4	-8 %	395.0	20.2	5 %	415.2	-25.5	-6 %	389.6
February	403.0	-69.8	-17 %	333.2	33.7	10 %	366.9	-43.6	-12 %	323.3
March	369.2	-90.9	-25 %	278.3	-7.1	-3 %	271.2	167.8	62 %	439.0
April	254.2	-51.9	-20 %	202.2	29.6	15 %	231.9	174.8	75 %	406.7
May	148.1	-11.5	-8 %	136.6	-3.6	-3 %	132.9	-0.6	0 %	132.3
June	99.4	-0.2	0 %	99.1	2.5	2 %	101.6	-23.8	-23 %	77.8
July	98.3	-0.6	-1 %	97.7	3.9	4 %	101.6	-25.4	-25 %	76.2
August	107.8	-9.4	-9 %	98.4	6.2	6 %	104.6	-22.3	-21 %	82.2
September	140.5	-11.6	-8 %	129.0	7.0	5 %	136.0	-9.1	-7 %	126.9
October	199.6	-3.6	-2 %	196.0	8.2	4 %	204.2	0.4	0 %	204.6
November	285.2	-113.4	-40 %	171.8	149.3	87 %	321.1	-10.7	-3 %	310.4
December	353.3	-8.5	-2 %	344.8	52.8	15 %	397.6	-47.8	-12 %	349.8
Annual Total	**2,886.9**	**-404.8**	**-14 %**	**2,482.1**	**302.6**	**12 %**	**2,784.7**	**134.1**	**5 %**	**2,918.8**

6 GREENHOUSE GAS EMISSIONS – BASED ON ENERGY STAR® DATA

In the past, information regarding greenhouse gases in this report have been soley derived from utility bills collected by VIP Energy and conversion factors used by the Ministry of Energy in their 397/11 reporting templates (as presented in the previous section). Due to strong industry indicators, we have elected to additionally present data derived from Energy Star® Portfolio Manager, an industry recognized energy management tool. Due to differing conversion factors used by the Ministry of Energy and Energy Star® Portfolio Manager, the amounts shown below may differ from those previously presented. This section is included because it is highly likely that this is the data that will be used in any upcoming cap and trade systems within Ontario. The information in this section most accurately represents the emissions quantities that will be attributed to your facilities in the event of a cap and trade system.



Location	2011	2012	2013	2014
All Facilities	3,253	2,947	3,158	3,562

The data reflects trends seen in facility energy intensity in the previous section with a small drop in 2012 and a return to higher emissions in 2013 and 2014. When comparing to the tables and graphs in the previous section, we observe a significant difference in quantity of GHG emissions. This is largely due to higher emissions factors used for both electricity and natural gas.

7 Projects under CDM Plan – Summary

7.1 Previous Energy Conservation Projects

Historical Energy Reduction Projects Summary		
Year	**Facility**	**Action Taken**
2011	College Campus	Replace roof Complete closure of college over Christmas Break Closed 56,000 sq. feet of unused space Isolate scaled down summer activity to central portion of college
	Sustainable Energy Centre	Canceled Hospitality/Baking programs Built new section to college using LEED Gold standard
2012	College Campus	Complete closure of college over Christmas Break Isolate scaled down summer activity to central portion of college Replace half of roof
	Grounds Garage Roof	Removed asphalt roof and replaced with vinyl
2013	College Campus	Replaced 2 Roof Top Air Handling Units Window Caulking Rebuilt Elevator #2 Replaced boiler with condensing boiler Install 3M Brand window film

7.2 Supervisory Analytics

Energy consumption tends to create a pattern that often to repeats itself. Combining advanced statistical tools with a working understanding of the various factors that influence energy consumption, a baseline model of energy consumption can be created for each fuel type a facility consumes. This predicted model of consumption can then be used as a reference to identify when energy consumption varies. Significant variance signifies some kind of energy consumption event (increase or decrease).

VIP has taken the liberty of performing this exercise on Cambrian College's largest facility, Cambrian College Campus, to gain further insight into the energy consumption and conservation activities over the reporting period. A summary of the results of this study are presented below.

Please note that this model is only correlated against weather and the effect of other consumption variables are not included. That said, weather is a primary driver of consumption and the models presented here track energy consumption with a high degree of confidence.

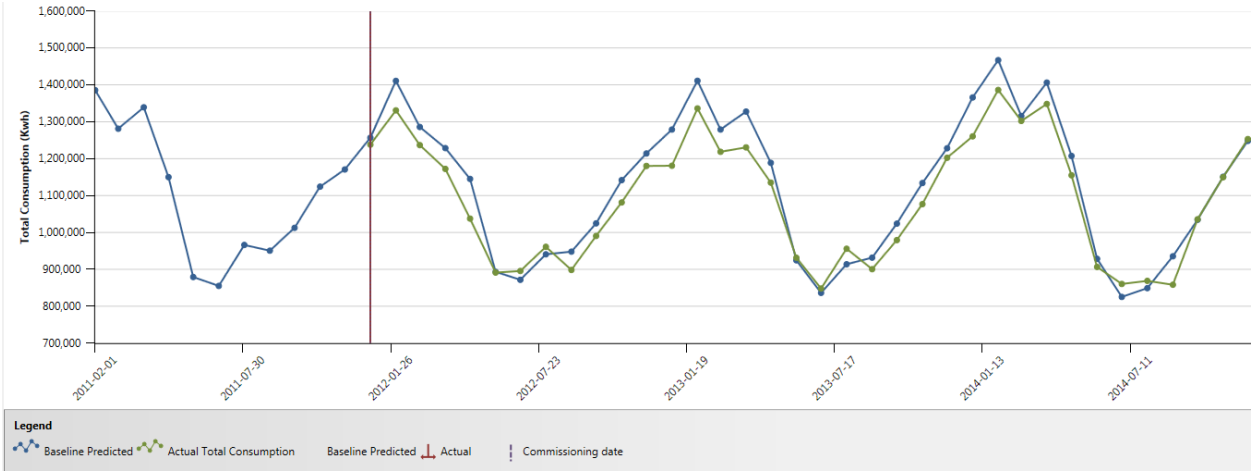
Cambrian College Campus

Electricity - Baseline

a. Electricity baseline model (actual versus predicted consumption) has an R^2 of 0.9847 (98.4% fit).

b. There is a strong relationship between weather, estimated occupied days, and electrical consumption.

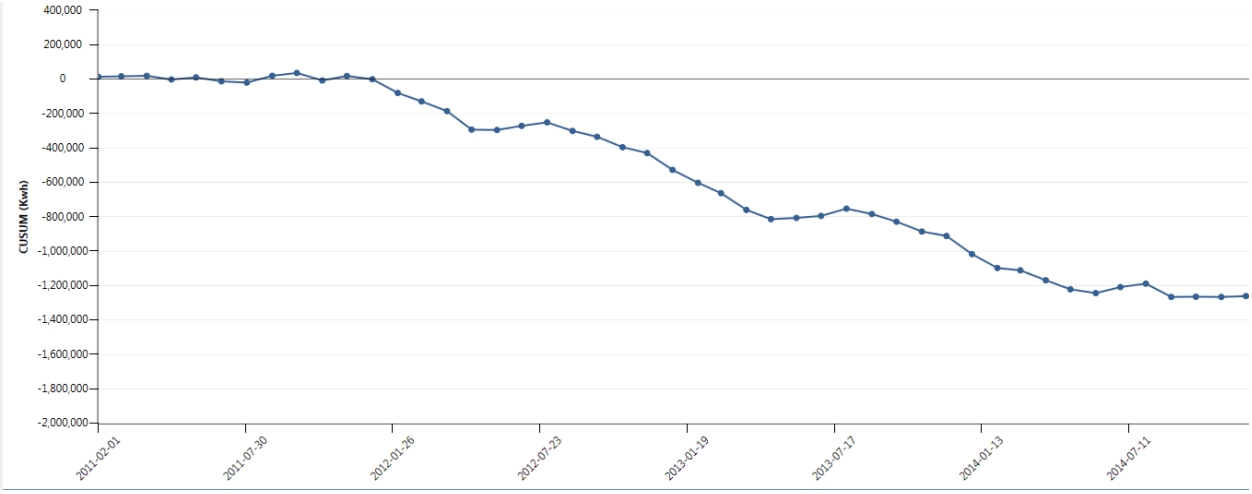
Electricity – M&V Chart



Observations:

c. The Measurement and Verification chart shows significant savings over the analyzed period.

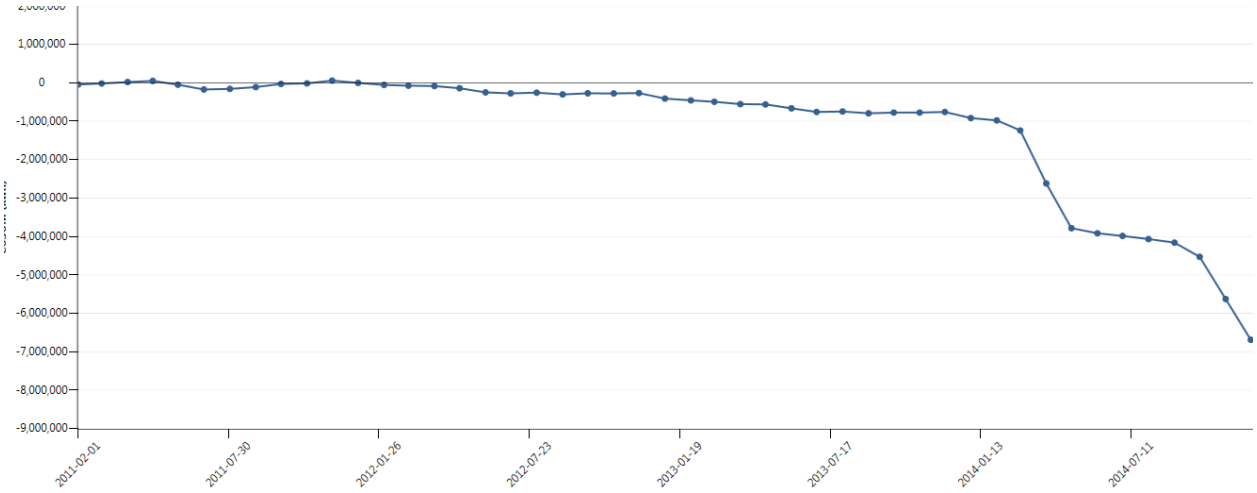
Electricity – CUSUM Chart



Observations:

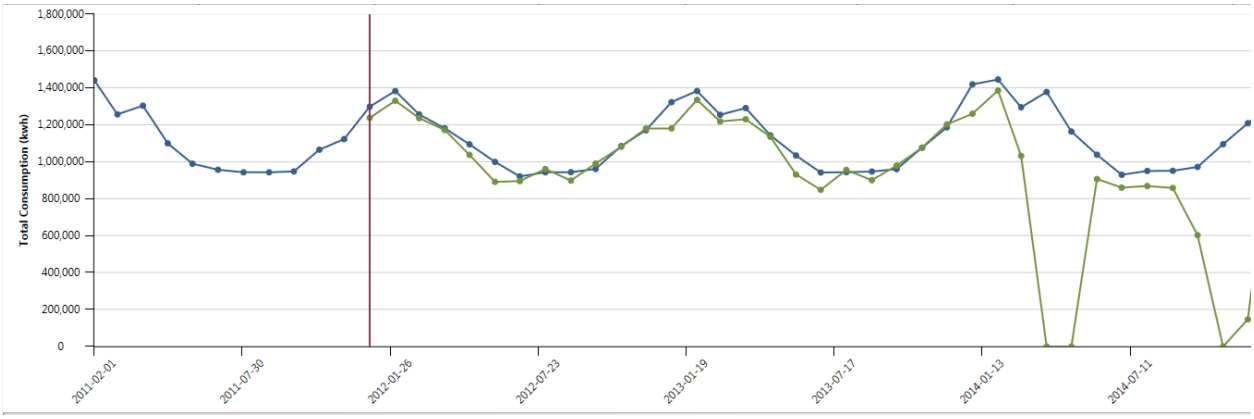
- **d.** The CUSUM Chart shows consumption increases and reductions (slope rises or slope falls).
- **e.** There is a recurring consumption decrease from February 2012 to the end of the analyzed data.
    - The magnitude of this consumption decrease was approximately 1.26 million kWh or approximately $189,000 (assuming electricity at 15¢/kWh).

Electricity – CUSUM Chart – Main Electricity Account



- **f.** CUSUM on the main electricity account shows an unusual drop in consumption both in February and October 2014

Electricity – M&V Chart – Main Electricity Account



g. The Measurement and Verification chart shows that consumption drops to zero for February, March and October of 2014.

h. Upon further investigation it was discovered that the college has a backup meter which was triggered and recorded consumption over these periods. Recorded consumption was approximately 5.35 million kWh for this period.

Natural Gas - Baseline

Observations:

a. Natural Gas baseline model (actual versus predicted consumption) has an R^2 of 0.9755 (97.5% fit).

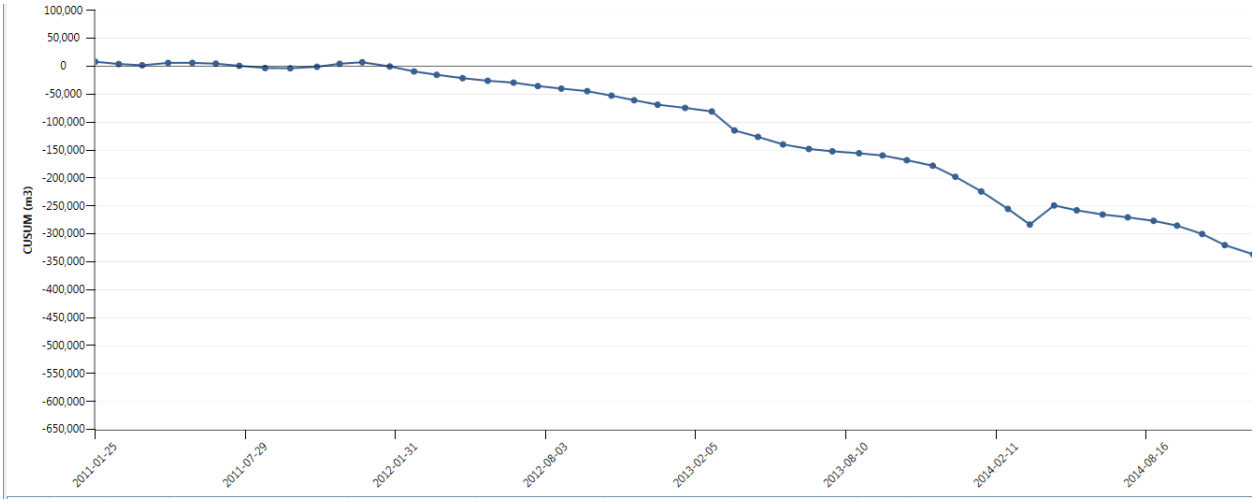
b. There is a strong relationship between weather and natural gas consumption.

Natural Gas – M&V Chart

Observations:

c. The Measurement and Verification chart shows significant savings in actual consumption compared to the predicted values.

Natural Gas – CUSUM Chart



Observations:

d. The CUSUM Chart shows consumption increases and reductions (slope rises or slope falls).

e. There is a recurring consumption decrease from February 2012 to the end of the analyzed data.

- The magnitude of this consumption decrease was approximately 336,000 m^3 or approximately $84,000 (assuming natural gas at 25¢/m^3).

f. A second significant change of slope can be observed from January to March 2014.

- Further investigation revealed this to be the result of estimated bills, and is reflected in the consumption increase seen in April 2014.

General Supervisory Analytics Observations

1. There appears to be a sustained decrease in energy consumption over the period studied.
2. Energy consumption at Cambrian College Campus is predictable and stable for the period studied.
3. Analysis has revealed electrical consumption measurement practices that put Cambrian College in a high risk scenario concerning ESCO performance contracts. If the consumption amounts recorded on the “Back-up” meter are not in the performance contracts, consumption amounts may be being overstated.
4. Use of these tools allow Cambrian College to monitor and measure the cause-and-effect between energy conservations measures and the actual impact on consumption.
5. The study period should be updated to include 2015 and 2016 information to evaluate any further conservation measures.
    - Other driver variables should be explored to see if the model could be improved.

7.3 Future Projects Filed in CDM Plan[3]

Future Energy Reduction Projects Summary	
Year	**Planned Activity**
2014	Lighting Controls
	Install Lead Condensing Boiler in Section 4
	Install Condensing Boilers in Section 4
	Install Lead Condensing Boiler in Section 6
	Install Condensing DHW Boiler in Section 4
	Install Condensing DHW Boilers in Section 4 Cafeteria
	Convert Section 1 Electric AHU's to Gas
	Convert Section 1 Electric DHW to Gas
	Install VSDs & DCV on Section 3/Stage 9 RTUs
	Install VSDs on Section 5 RTUs
	Install Occupancy Sensors on Section RTUs
	Install DCV Controls on Section 5 RTU's
	Re-Commission Building Automation System
	Water Conservation
	Install Vending Misers
	Building Envelope
	Install 10kW Rooftop Solar PV Section 1
2015	Lighting Upgrade
	Lighting Controls
	Gymnasium Lighting Upgrade
	Install Condensing Boilers in Section 4
	Convert Section 1 Electric AHU's to Gas
	Convert Section 1 Electric DHW to Gas
	Water Conservation
2016	Replacing All Exterior Lights with LED Fixture and Lights (Street Lights, Parking Lot and Walkways)
2017	T.B.D.
2018	T.B.D.

[3] These project plans are listed on page 29 of the CDM Report

7.4 Additional Recommendations

To be compliant with O. Reg. 397/11 and to take full advantage of government programs and incentives:

Monitoring & Tracking Vital Components

The task of convincing today's skeptics that your actions have created energy use and cost savings can be a daunting one. The challenge is – there are so many variables, many of which are controlled by other parties. The key to success is breaking the complexity of energy use down into its most-vital components, then measuring and analysing each of those components. This report card covers a number of vital components. In addition, the following list shows samples of monitoring and tracking initiatives that allow energy users to gain advantage:

- Metering, including self-metering & sub-metering of selected equipment
- Utility bill verification
- Utility rate schedule options
- Energy cost component tracking – for example, tracking the Global Adjustment for electricity
- Detailed engineering studies – monitoring and testing equipment operation
- Energy project tracking – with or without incentive funding [incentive summary - see Appendix [F]
- Real-time monitoring of facility air – temperature, humidity, "hot spots" & "cold spots"
- Weather [temperature, wind, etc.] and the extent of its correlation with energy consumption

In addition, from an environmental perspective, monitoring and verification enables the creation of greenhouse gas emission reduction credits – a valuable asset once cap and trade systems are implemented.

Energy Audits and Existing Building Commissioning

Energy audits in combination with existing building commissioning comprise a systematic process for investigating, analysing and optimizing the performance of building systems. Identifying unique energy savings measures and specific areas of opportunity through energy auditing is the first step towards optimizing buildings energy systems. Commissioning of existing systems then goes further in-depth to the controls, performance and synchronicity of the system, allowing for greater efficiency and longer system life.

Energy Awareness Programs

When people use energy resources wisely, through simple, good habits like turning off lights when lights are not needed, their communities move toward sustainability. Sustainability is more about culture than major projects and leading-edge technologies. To promote a more sustainable future, it is essential to present a positive picture of a better future and capture people's interest. Then, people must receive the knowledge they will require to grow the good habits that bring about energy conservation and sustainability.

Energy awareness programs pave the path for sustainability. Properly prepared and delivered, energy awareness programs educate, energize, and support people who are inspired to conserve energy and build sustainable communities.

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Appendix A – Post-Secondary Institute Sector Ranking 2011, 2012, and 2013

Normalized Energy Intensity – Summary of 397/11 reporting – Post-Secondary Institute Sector – (2011)

Ranking	Post-Secondary Institutes	Average Energy Intensity (ekWh/HDD/ft²)	Average Energy Intensity (ekWh/HDD/m²)
1	University of Toronto	48.4	4.5
2	Ontario College of Art and Design University	48.4	4.5
3	Queen's University	48.4	4.5
4	Confederation College	50.4	4.7
5	Northern College	52.4	4.9
6	La Cite Collegiale	57.5	5.3
7	Algoma University	57.9	5.4
8	Hearst University	61.0	5.7
9	Canadore College	61.2	5.7
10	Wilfrid Laurier University	63.0	5.9
11	Boreal College	64.4	6.0
12	Ryerson University	67.0	6.2
13	St. Lawrence College	67.1	6.2
14	Niagara College	67.7	6.3
15	Cambrian College	67.9	6.3
16	Fanshawe College	69.5	6.5
17	Humber College	73.0	6.8
18	Sault College	73.2	6.8
19	Algonquin College	75.1	7.0
20	Lakehead University	76.8	7.1
21	Brock University	77.6	7.2
22	Georgian College	77.6	7.2
23	Conestoga College	79.4	7.4
24	Seneca College	80.3	7.5
25	Lambton College	83.5	7.8
26	Loyalist College	85.2	7.9
27	University of Ottawa	85.8	8.0
28	Carleton University	91.0	8.5
29	Centennial College	100.1	9.3
30	St. Clair College	102.6	9.5
31	University of Waterloo	103.5	9.6
32	Sheridan College	107.6	10.0
33	Laurentian University	108.1	10.0
34	Sir Sandford Fleming	108.7	10.1
35	University of Ontario Institute of Technology	118.5	11.0
36	University of Western Ontario	119.0	11.1
37	University of Toronto at Mississauga	125.0	11.6
38	York University	125.5	11.7
39	Trent University	134.9	12.5
40	Durham College & University of Ontario Institute of Technology	140.8	13.1
41	George Brown College	144.3	13.4
42	Guelph University	146.8	13.6
43	University of Toronto at Scarborough	156.0	14.5
44	McMaster University	205.4	19.1
45	University of Windsor	241.4	22.4
Average		**93.3**	**8.7**

Source: Ministry of Energy

Normalized Energy Intensity – Summary of 397/11 reporting – Post-Secondary Institute Sector – (2012)

Ranking	Post-Secondary Institutes	Average Energy Intensity (ekWh/HDD/ft²)	Average Energy Intensity (ekWh/HDD/m²)
1	Laurentian University	27.8	2.6
2	Nipissing University	31.8	3.0
3	Queen's University	39.5	3.7
4	Niagara College	54.9	5.1
5	Hearst University	56.7	5.3
6	Wilfrid Laurier University	59.8	5.6
7	Northern College	60.6	5.6
8	La Cite Collegiale	61.7	5.7
9	Confederation College	63.9	5.9
10	Loyalist College	66.0	6.1
11	Canadore College	70.6	6.6
12	Cambrian College	73.1	6.8
13	Boreal College	76.1	7.1
14	Seneca College	79.2	7.4
15	Humber College	80.4	7.5
16	Trent University	80.8	7.5
17	Fanshawe College	81.8	7.6
18	Brock University	82.6	7.7
19	Sault College	86.1	8.0
20	Sir Sandford Fleming	86.5	8.0
21	St. Clair College	89.2	8.3
22	University of Ottawa	92.6	8.6
23	Carleton University	93.7	8.7
24	George Brown College	94.6	8.8
25	Mohawk College	95.6	8.9
26	Algonquin College	95.7	8.9
27	Lambton College	101.9	9.5
28	Conestoga College	103.3	9.6
29	Centennial College	105.4	9.8
30	University of Waterloo	107.8	10.0
31	York University	112.2	10.4
32	Sheridan College	112.7	10.5
33	University of Western Ontario	112.8	10.5
34	Georgian College	115.1	10.7
35	Lakehead University	115.1	10.7
36	University of Toronto at Mississauga	136.7	12.7
37	University of Ontario Institute of Technology	139.5	13.0
38	Durham College & University of Ontario Institute of Technology	146.5	13.6
39	McMaster University	153.2	14.2
40	University of Toronto	154.7	14.4
41	University of Toronto at Scarborough	155.9	14.5
42	Guelph University	156.0	14.5
43	University of Windsor	389.1	36.2
44	Ryerson University	403.1	37.5
Average		**106.9**	**9.9**

Source: Ministry of Energy

Normalized Energy Intensity – Summary of 397/11 reporting – Post-Secondary Institute Sector – (2013)

Ranking	Post-Secondary Institutes	Average Energy Intensity (*e*kWh/HDD/ft²)	Average Energy Intensity (*e*kWh/HDD/m²)
1	Laurentian University	25.9	2.4
2	Queen's University	35.8	3.3
3	Nipissing University	38.0	3.5
4	Hearst University	43.9	4.1
5	La Cite Collegiale	48.8	4.5
6	Canadore College	51.3	4.8
7	Confederation College	52.3	4.9
8	Wilfrid Laurier University	52.9	4.9
9	Cambrian College	54.1	5.0
10	Loyalist College	56.5	5.3
11	Boreal College	62.4	5.8
12	Conestoga College	62.7	5.8
13	Northern College	62.8	5.8
14	St. Lawrence College	64.5	6.0
15	Sault College	64.7	6.0
16	Niagara College	65.6	6.1
17	Lakehead University	66.3	6.2
18	Algoma University	68.0	6.3
19	University of Ottawa	70.2	6.5
20	Sir Sandford Fleming	71.7	6.7
21	Fanshawe College	74.1	6.9
22	Trent University	76.6	7.1
23	Humber College	79.6	7.4
24	Seneca College	80.4	7.5
25	University of Waterloo	83.3	7.7
26	Mohawk College	83.8	7.8
27	Lambton College	85.5	7.9
28	Brock University	86.2	8.0
29	St. Clair College	86.8	8.1
30	Carleton University	89.6	8.3
31	York University	91.7	8.5
32	Centennial College	94.3	8.8
33	McMaster University	95.5	8.9
34	Sheridan College	99.5	9.2
35	University of Western Ontario	100.9	9.4
36	George Brown College	103.5	9.6
37	Ryerson University	110.1	10.2
38	University of Ontario Institute of Technology	111.2	10.3
39	Georgian College	123.9	11.5
40	University of Toronto at Mississauga	125.7	11.7
41	Durham College & University of Ontario Institute of Technology	131.9	12.3
42	Guelph University	135.4	12.6
43	University of Toronto	144.8	13.5
44	Ontario College of Art and Design University	145.4	13.5
45	University of Toronto at Scarborough	156.1	14.5
46	University of Windsor	305.0	28.3
Average		**87.4**	**8.1**

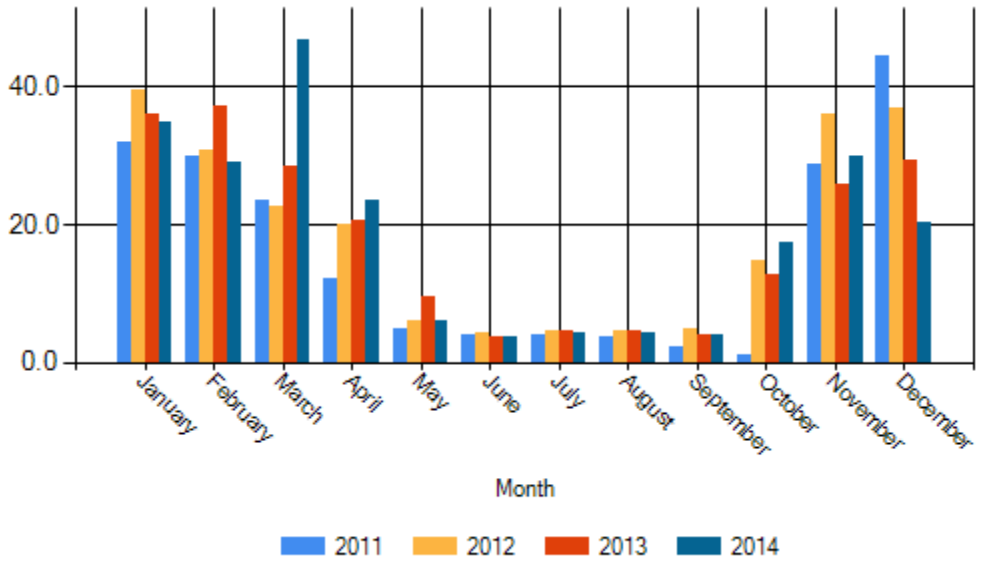
Source: Ministry of Energy

Appendix B – Energy Intensity – Each Facility – 2011, 2012, 2013, and 2014

Record Centre - 1074 Webbwood Dr. Unit 6

Energy Consumption Report - *e*kWh/m^2

January 2011 - December 2014

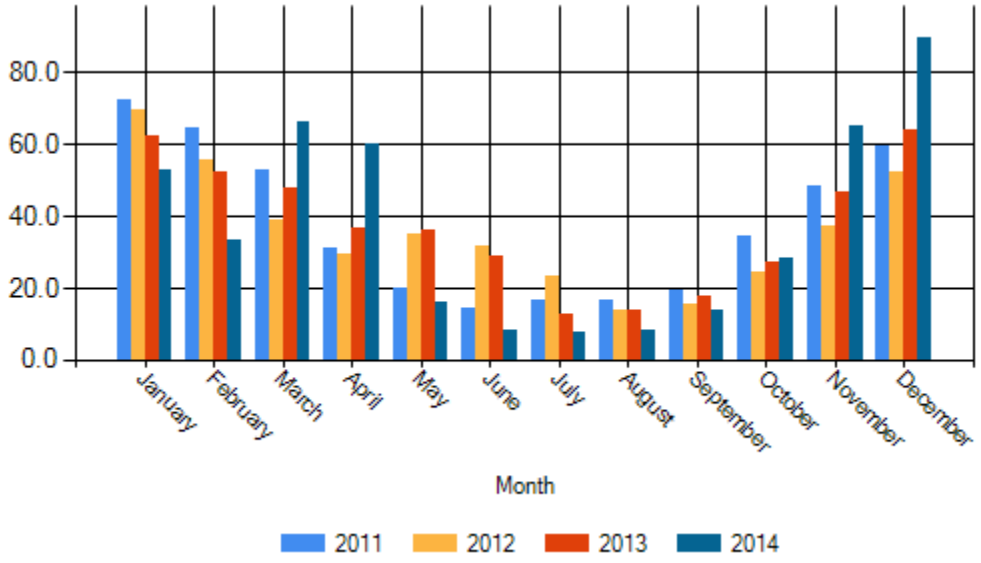


Month	2011 ekWh/m^2	Variance #	Variance %	2012 ekWh/m^2	Variance #	Variance %	2013 ekWh/m^2	Variance #	Variance %	2014 ekWh/m^2
January	31.9	7.4	23 %	39.3	-3.4	-9 %	35.9	-1.0	-3 %	34.9
February	29.9	0.8	3 %	30.7	6.5	21 %	37.2	-8.1	-22 %	29.1
March	23.3	-0.7	-3 %	22.6	5.9	26 %	28.5	18.1	64 %	46.6
April	12.1	7.8	65 %	19.9	0.6	3 %	20.5	2.9	14 %	23.4
May	4.9	1.2	24 %	6.1	3.4	56 %	9.6	-3.6	-38 %	5.9
June	3.9	0.5	11 %	4.4	-0.8	-17 %	3.6	0.0	0 %	3.6
July	3.9	0.7	18 %	4.6	0.1	1 %	4.6	-0.4	-9 %	4.2
August	3.8	0.8	20 %	4.6	0.0	-1 %	4.5	-0.2	-5 %	4.3
September	2.3	2.6	112 %	4.9	-1.0	-20 %	3.9	0.0	0 %	3.9
October	1.1	13.6	1,250 %	14.7	-2.0	-13 %	12.8	4.5	36 %	17.3
November	28.7	7.2	25 %	35.9	-10.3	-29 %	25.6	4.3	17 %	29.9
December	44.2	-7.4	-17 %	36.8	-7.5	-20 %	29.3	-9.0	-31 %	20.3
Annual Totals	**190.1**	**34.4**	**18 %**	**224.5**	**-8.5**	**-4 %**	**216.0**	**7.5**	**3 %**	**223.5**

Val Caron - 3140 HWY 69 N.

Energy Consumption Report - ekWh/m^2

January 2011 - December 2014

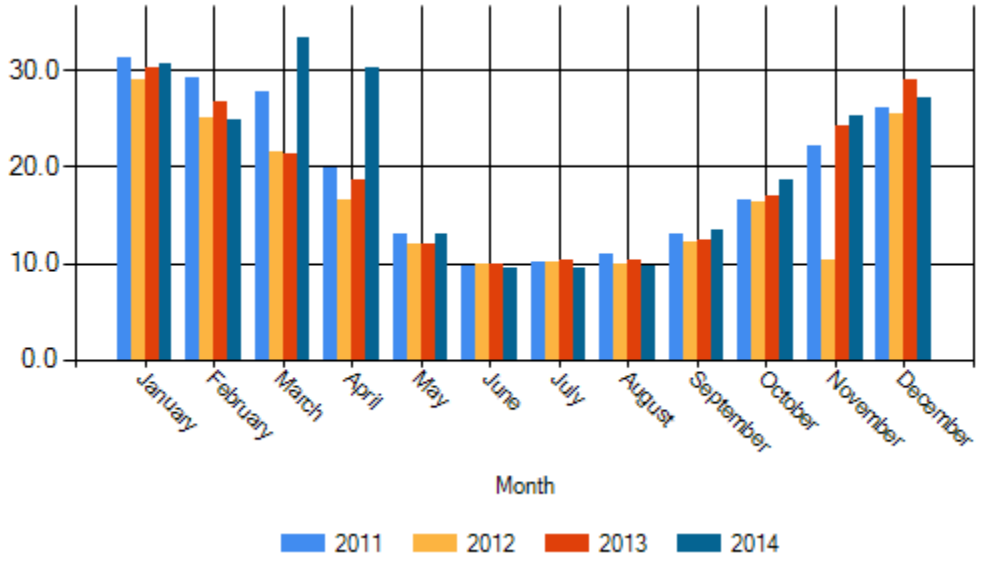


Month	2011 ekWh/m^2	Variance		2012 ekWh/m^2	Variance		2013 ekWh/m^2	Variance		2014 ekWh/m^2
		#	%		#	%		#	%	
January	72.5	-2.9	-4 %	69.6	-7.1	-10 %	62.5	-9.3	-15 %	53.2
February	64.6	-8.7	-14 %	55.8	-3.7	-7 %	52.1	-18.6	-36 %	33.5
March	52.8	-13.7	-26 %	39.1	8.8	22 %	47.9	18.2	38 %	66.1
April	31.3	-1.8	-6 %	29.4	7.1	24 %	36.5	23.7	65 %	60.2
May	20.3	14.6	72 %	34.8	1.4	4 %	36.3	-20.2	-56 %	16.0
June	14.5	17.0	117 %	31.5	-2.6	-8 %	28.9	-20.5	-71 %	8.5
July	16.8	6.4	38 %	23.2	-10.4	-45 %	12.8	-4.9	-38 %	8.0
August	16.4	-2.4	-15 %	14.0	0.1	1 %	14.1	-5.7	-40 %	8.4
September	19.6	-4.2	-22 %	15.4	2.1	14 %	17.5	-3.9	-22 %	13.6
October	34.5	-10.0	-29 %	24.5	2.9	12 %	27.4	1.2	4 %	28.6
November	48.7	-11.2	-23 %	37.5	9.5	25 %	47.0	18.1	39 %	65.1
December	59.6	-7.4	-12 %	52.2	11.8	23 %	64.0	25.7	40 %	89.7
Annual Totals	**451.4**	**-24.3**	**-5 %**	**427.1**	**19.8**	**5 %**	**447.0**	**3.7**	**1 %**	**450.7**

Cambrian College- 1400 Barrydowne Road

Energy Consumption Report - ekWh/m^2

January 2011 - December 2014



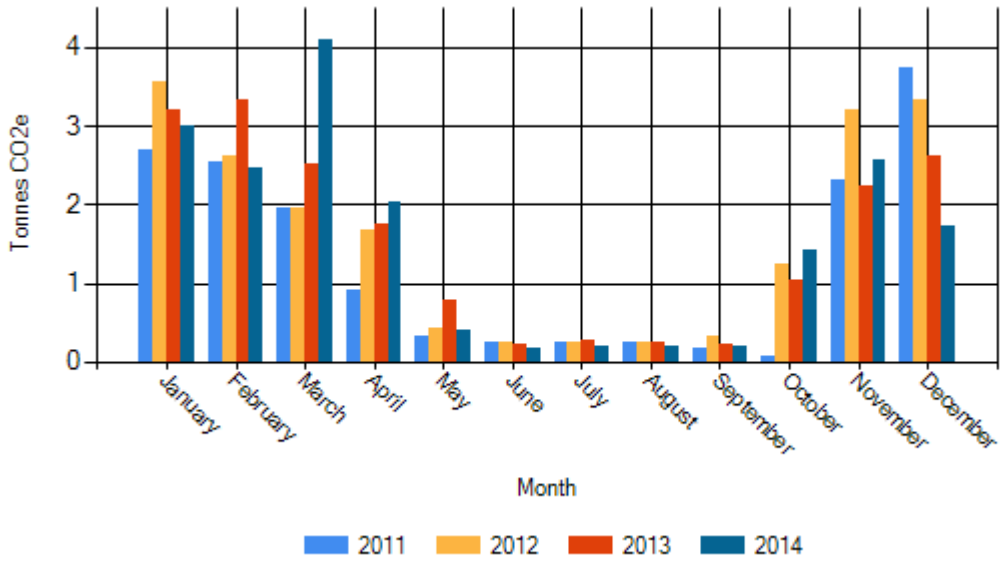
Month	2011 ekWh/m^2	Variance		2012 ekWh/m^2	Variance		2013 ekWh/m^2	Variance		2014 ekWh/m^2
		#	%		#	%		#	%	
January	31.3	-2.4	-8 %	28.9	1.3	4 %	30.2	0.3	1 %	30.5
February	29.2	-4.3	-15 %	24.9	1.8	7 %	26.7	-2.0	-7 %	24.8
March	27.6	-6.1	-22 %	21.5	-0.2	-1 %	21.4	11.9	56 %	33.3
April	19.8	-3.3	-17 %	16.5	2.2	13 %	18.6	11.5	62 %	30.1
May	12.9	-0.9	-7 %	12.0	-0.1	-1 %	11.9	1.0	9 %	13.0
June	9.7	0.2	2 %	9.9	-0.1	-1 %	9.8	-0.3	-3 %	9.5
July	10.2	0.0	0 %	10.1	0.2	2 %	10.3	-0.9	-9 %	9.5
August	10.9	-0.9	-9 %	9.9	0.4	4 %	10.3	-0.5	-5 %	9.8
September	13.0	-0.8	-6 %	12.1	0.4	3 %	12.5	1.0	8 %	13.5
October	16.6	-0.2	-1 %	16.4	0.5	3 %	16.9	1.7	10 %	18.6
November	22.0	-11.7	-53 %	10.4	13.8	132 %	24.1	1.0	4 %	25.2
December	26.1	-0.7	-3 %	25.4	3.4	14 %	28.9	-1.8	-6 %	27.1
Annual Totals	**229.3**	**-31.3**	**-14 %**	**198.1**	**23.5**	**12 %**	**221.6**	**23.1**	**10 %**	**244.7**

Appendix C - Greenhouse Gas Emissions Each Facility 2011, 2012, 2013, & 2014

Record Centre - 1074 Webbwood Dr. Unit 6

Greenhouse Gas Report - Total CO_2e

January 2011 - December 2014

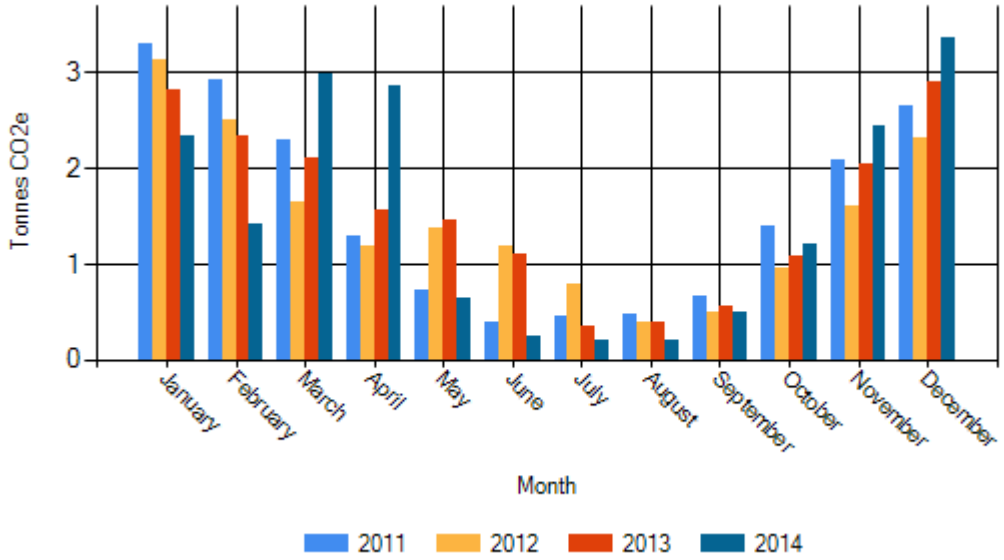


Month	2011 CO_2e	Variance		2012 CO_2e	Variance		2013 CO_2e	Variance		2014 CO_2e
		#	%		#	%		#	%	
January	2.7	0.9	33 %	3.6	-0.4	-10 %	3.2	-0.2	-6 %	3.0
February	2.5	0.1	3 %	2.6	0.7	27 %	3.3	-0.8	-25 %	2.5
March	2.0	0.0	0 %	2.0	0.6	29 %	2.5	1.6	63 %	4.1
April	0.9	0.8	83 %	1.7	0.1	4 %	1.7	0.3	16 %	2.0
May	0.3	0.1	33 %	0.4	0.3	80 %	0.8	-0.4	-48 %	0.4
June	0.2	0.0	3 %	0.3	0.0	-9 %	0.2	0.0	-22 %	0.2
July	0.2	0.0	6 %	0.3	0.0	6 %	0.3	-0.1	-27 %	0.2
August	0.2	0.0	7 %	0.3	0.0	0 %	0.3	-0.1	-21 %	0.2
September	0.2	0.2	99 %	0.3	-0.1	-30 %	0.2	0.0	-16 %	0.2
October	0.1	1.2	1,866 %	1.2	-0.2	-16 %	1.0	0.4	37 %	1.4
November	2.3	0.9	39 %	3.2	-1.0	-30 %	2.2	0.3	15 %	2.6
December	3.7	-0.4	-10 %	3.3	-0.7	-22 %	2.6	-0.9	-34 %	1.7
Annual Total	**15.4**	**3.7**	**24 %**	**19.1**	**-0.7**	**-4 %**	**18.4**	**0.1**	**0 %**	**18.5**

Val Caron - 3140 HWY 69 N.

Greenhouse Gas Report - Total CO_2e

January 2011 - December 2014

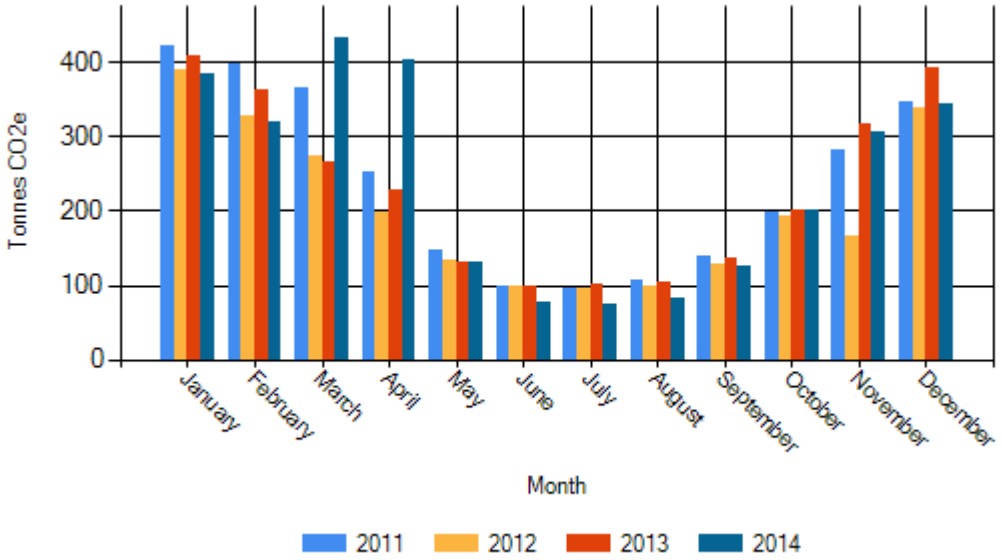


Month	2011 CO_2e	Variance		2012 CO_2e	Variance		2013 CO_2e	Variance		2014 CO_2e
		#	%		#	%		#	%	
January	3.3	-0.2	-5 %	3.1	-0.3	-10 %	2.8	-0.5	-17 %	2.3
February	2.9	-0.4	-14 %	2.5	-0.2	-7 %	2.3	-0.9	-40 %	1.4
March	2.3	-0.6	-28 %	1.7	0.5	28 %	2.1	0.9	41 %	3.0
April	1.3	-0.1	-8 %	1.2	0.4	31 %	1.6	1.3	84 %	2.9
May	0.7	0.6	89 %	1.4	0.1	6 %	1.5	-0.8	-56 %	0.6
June	0.4	0.8	197 %	1.2	-0.1	-8 %	1.1	-0.8	-77 %	0.3
July	0.4	0.3	77 %	0.8	-0.4	-57 %	0.3	-0.1	-42 %	0.2
August	0.5	-0.1	-16 %	0.4	0.0	-1 %	0.4	-0.2	-45 %	0.2
September	0.7	-0.2	-27 %	0.5	0.1	12 %	0.6	-0.1	-10 %	0.5
October	1.4	-0.4	-31 %	1.0	0.1	15 %	1.1	0.1	11 %	1.2
November	2.1	-0.5	-23 %	1.6	0.5	29 %	2.1	0.4	19 %	2.4
December	2.6	-0.3	-12 %	2.3	0.6	25 %	2.9	0.4	15 %	3.4
Annual Total	**18.6**	**-1.0**	**-6 %**	**17.6**	**1.1**	**6 %**	**18.7**	**-0.3**	**-2 %**	**18.4**

Cambrian College- 1400 Barrydowne Road

Greenhouse Gas Report - Total CO_2e

January 2011 - December 2014



Month	2011 CO_2e	Variance		2012 CO_2e	Variance		2013 CO_2e	Variance		2014 CO_2e
		#	%		#	%		#	%	
January	422.4	-34.1	-8 %	388.3	20.8	5 %	409.2	-24.9	-6 %	384.3
February	397.5	-69.4	-17 %	328.1	33.1	10 %	361.2	-41.8	-12 %	319.4
March	364.9	-90.3	-25 %	274.7	-8.1	-3 %	266.6	165.3	62 %	431.9
April	252.0	-52.6	-21 %	199.4	29.2	15 %	228.6	173.2	76 %	401.8
May	147.1	-12.3	-8 %	134.8	-4.1	-3 %	130.7	0.6	0 %	131.3
June	98.7	-1.0	-1 %	97.7	2.6	3 %	100.3	-22.9	-23 %	77.3
July	97.6	-0.9	-1 %	96.6	4.3	4 %	100.9	-25.2	-25 %	75.8
August	107.1	-9.4	-9 %	97.7	6.2	6 %	103.9	-22.1	-21 %	81.8
September	139.7	-11.6	-8 %	128.1	7.1	6 %	135.2	-9.0	-7 %	126.2
October	198.2	-4.3	-2 %	193.8	8.2	4 %	202.1	-0.1	0 %	202.0
November	280.8	-113.8	-41 %	167.0	149.8	90 %	316.8	-11.4	-4 %	305.4
December	346.9	-7.8	-2 %	339.1	52.9	16 %	392.1	-47.3	-12 %	344.7
Annual Total	**2,852.9**	**-407.5**	**-14 %**	**2,445.3**	**302.2**	**12 %**	**2,747.5**	**134.4**	**5 %**	**2,881.9**

Appendix D – Utility Account Information

Location	Account Number	Commodity	Utility	Account Opened	Account Closed
Cambrian College	00000220-00	Electricity	Greater Sudbury Hydro Inc.	Jan-01-2011	Active Account
	00000788-00	Electricity	Greater Sudbury Hydro Inc.	Dec-01-2010	Active Account
	00001418-00	Electricity	Greater Sudbury Hydro Inc.	Dec-14-2010	Active Account
	00155891-00	Electricity	Greater Sudbury Hydro Inc.	Dec-03-2010	Active Account
	03102938-00	Electricity	Greater Sudbury Hydro Inc.	Dec-01-2010	Active Account
	11801368-00	Electricity	Greater Sudbury Hydro Inc.	Feb-04-2011	Active Account
	11801581-00	Electricity	Greater Sudbury Hydro Inc.	May-19-2011	Active Account
	115-8386 123-9301	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8386 124-3868	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8386 260-4309	Natural Gas	Union Gas Ltd.	Nov-23-2010	Active Account
	115-8386 262-5757	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8387 123-9302	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8388 123-9303	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8388 272-3930	Natural Gas	Union Gas Ltd.	Aug-10-2011	Active Account
	115-8389 123-9304	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8390 123-9305	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8391 123-9306	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8392 123-9307	Natural Gas	Union Gas Ltd.	Nov-22-2010	Active Account
	115-8394 123-9309	Natural Gas	Union Gas Ltd.	Not Specified	Active Account
	Comsatec -Cambrian College	Natural Gas	Comsatec	Nov-01-2010	Oct-31-2011
Record Centre	00023860-00	Electricity	Greater Sudbury Hydro Inc.	Nov-05-2010	Jun-09-2015
	140-8968 124-0677	Natural Gas	Union Gas Ltd.	Nov-02-2010	Active Account
Val Caron	200035363642	Electricity	Hydro One Networks Inc.	Nov-30-2010	Active Account
	200060450064	Electricity	Hydro One Networks Inc.	Feb-02-2012	Active Account
	363-4669 119-2911	Natural Gas	Union Gas Ltd.	Nov-15-2010	Active Account

Appendix E – Energy Star® Property Information

Property Name	Record Centre
Street Address	1074 Webbwood Dr.
City/Municipality	Sudbury
State/Province	Ontario
Postal Code	P3C 3B7
Country	Canada
Year Built	1985
Property Type - Self-Selected	Office
Construction Status	Existing
Gross Floor Area	539 m²
Occupancy (%)	100%
Number of Buildings	None (Part of Building)
Use Type	Office
Weekly Operating Hours	60
Number of Workers on Main Shift	10
Number of Computers	10
Percent That Can Be Heated	All of it - 100%
Percent That Can Be Cooled	All of it - 100%

Property Name	Val Caron
Street Address	3140 Highway 69 North
City/Municipality	Val Caron
State/Province	Ontario
Postal Code	P3N 1G3
Country	Canada
Year Built	1985
Property Type - Self-Selected	Office
Construction Status	Existing
Gross Floor Area	276 m²
Occupancy (%)	100%
Number of Buildings	None (Part of Building)
Use Type	Office
Weekly Operating Hours	60
Number of Workers on Main Shift	10
Number of Computers	10
Percent That Can Be Heated	All of it - 100%
Percent That Can Be Cooled	All of it - 100%

Property Name	Cambrian College
Street Address	1400 Barrydowne Road
City/Municipality	Sudbury
State/Province	Ontario
Postal Code	P3A 3V8
Country	Canada
Year Built	1967
Property Type - Self-Selected	College/University
Construction Status	Existing
Gross Floor Area	96,160 m^2
Occupancy (%)	100%
Number of Buildings	1
Use Type	College/University
Gross Floor Area for Use	96,160 m^2
Weekly Operating Hours	98
Enrollment	4,100
Number of Full Time Equivalent (FTE) Workers	80
Number of Computers	250
Grant Dollars	3,100,000
Open Parking lot Size	74,322.5 m^2

Appendix F – Energy Conservation Incentives

Energy Conservation Incentives for Municipalities, University & Colleges, School Boards, and Hospitals [the "MUSH" sector]

Available Incentives

Eligible Measures		MUSH
Energy Audits		IESO Union Gas
Functional Performance Testing		IESO Union Gas
Existing Building Commissioning		IESO Union Gas
Measurement and Verification Program		IESO
Detailed Engineering Studies		IESO
Custom Projects		IESO Union Gas
Equipment Retrofits*	Lighting	IESO
	HVAC	IESO Union Gas Enbridge Gas
	Boilers	IESO Union Gas Enbridge Gas
	Domestic Hot Water	IESO Union Gas Enbridge Gas
Utility Bill Analysis+		IESO
In-House Metering Program+		IESO
Demand Response		IESO

***Retrofit equipment must meet minimum efficiency levels and/or be listed under specific energy efficiency standards (Energy Star®, DLC, etc.)**

+ These measures can be used to increase incentives from other measures, or as part of larger projects associated with Custom incentives, EBCx, or DES.

Appendix G – Regulatory Charges

Regulatory Charges - Electricity

1. The **Wholesale Market Service Charge** covers services provided by the Independent Electricity System Operator (IESO) to operate the wholesale electricity market and maintain the reliability of the high voltage power grid. It also covers certain costs incurred by local utilities to connect renewable generation (such as wind and solar power). Although the Wholesale Market Service Charge is set by the OEB to allow these costs to be passed on to consumers, we do not set all of the costs that are recovered through that charge. Below are the charges we approve.

Included within this charge:

- **Physical Limitations and Losses:** When electricity is delivered over a transmission line, it is normal for a small amount of power to be consumed, or lost, as heat. Also covered are other costs incurred by the IESO to operate the high voltage power grid.
- **Energy Reliability:** Sometimes the balance between generation and demand is affected by an unexpected event, such as equipment failure or a surge in consumption. The IESO buys reserve electricity that is available on short notice to restore the balance.
- **IESO Administration Fee:** The IESO charges an administrative fee to manage the high voltage power system and operate the wholesale electricity market in Ontario. Every year the OEB sets the fee that the IESO can charge.
- **OPA Administration Fee:** This fee pays the administration costs of the Ontario Power Authority (OPA)*, who's mandate includes planning for electricity generation, demand management, conservation and transmission in the province. Every year, the OEB sets this fee. It does not include the costs payable under contract for electricity generation supply or for OPA conservation and demand management programs. (**Note: The Ontario Power Authority merged with the Independent Electricity System Operator on January 1, 2015.*)
- **Rural and Remote Electricity Rate Protection:** It helps offset the higher cost of providing service to consumers in those areas. The OEB calculates this charge every year according to rules set by the government.
- **Renewable Connections:** Utilities can recover some costs for connecting renewable generation facilities, subject to OEB approval

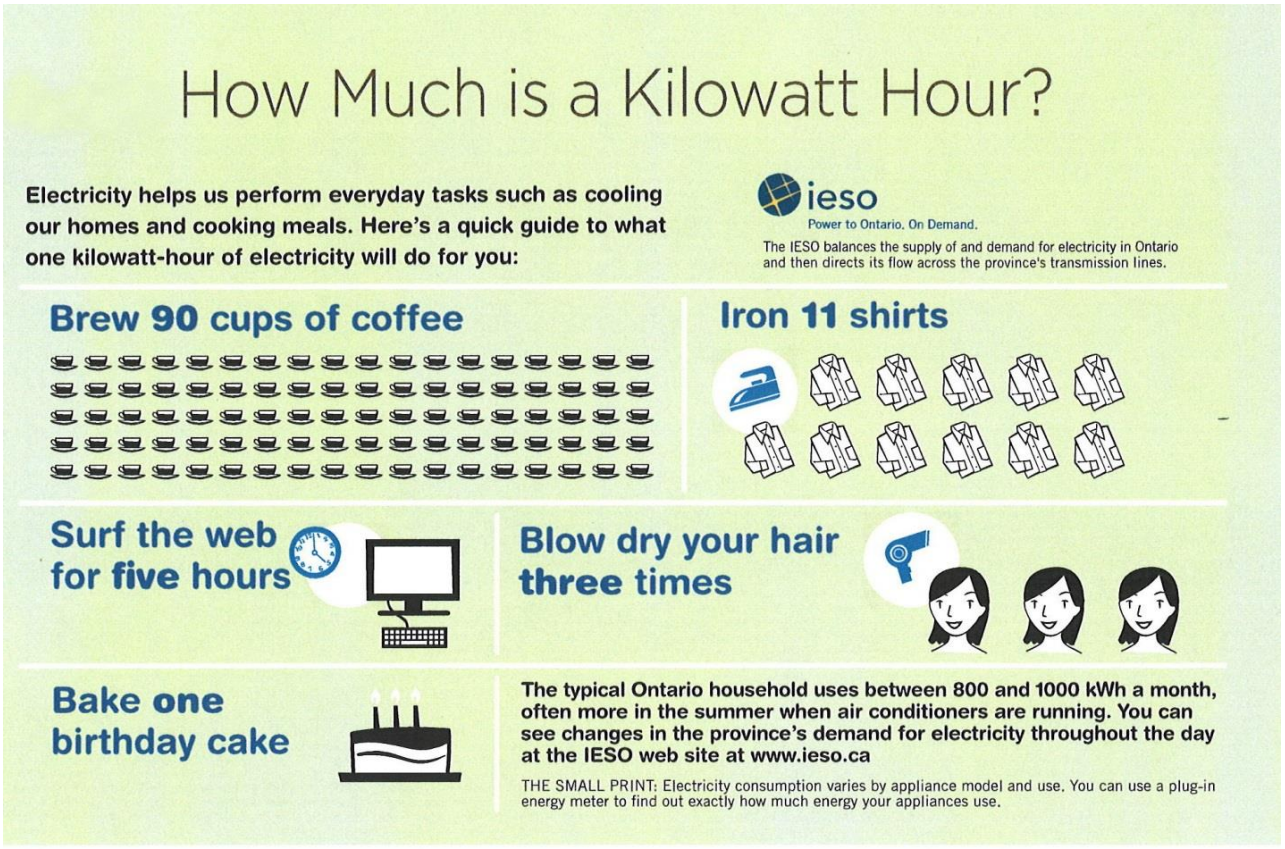
2. The **Standard Supply Service Charge** covers part of a utility's administrative costs to provide electricity to customers that buy their power from the utility (i.e. customers that are not served by a retailer). This charge, set by the OEB, is the same for all utilities across the province.

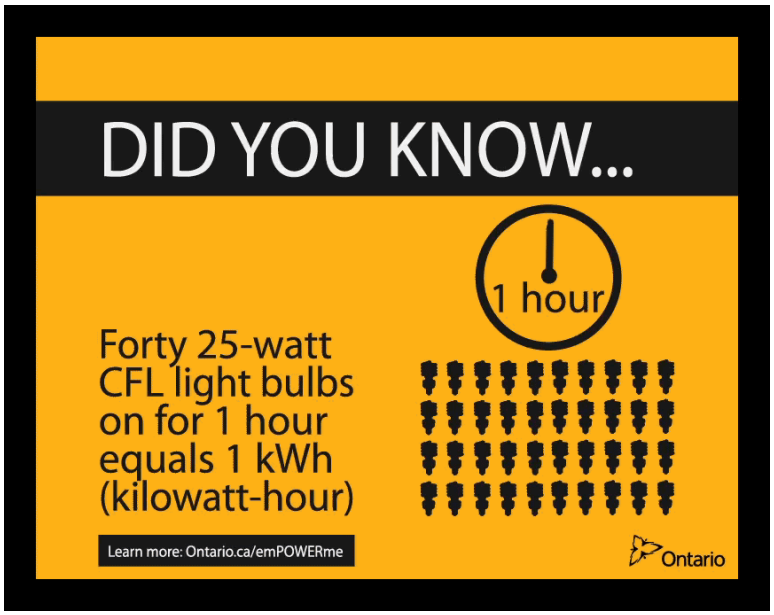
3. **Debt Retirement Charge (DRC)** This 0.7¢/kWh charge is set by the Ontario Ministry of Finance to pay down the remaining debt of the former Ontario Hydro. The government announced its plans to remove the DRC cost from *residential* electricity bills after December 31, 2015.

4. **Ontario Clean Energy Benefit (OCEB)** The Ontario Clean Energy Benefit takes 10% off your electricity cost - up to 3,000 kWh/month of electricity use. Some exceptions apply. For more information, visit Ontario.ca/OCEB or call 1-888-668-4636. To learn more about how Ontario is building a strong, clean electricity system, visit Ontario.ca/energyplan. The OCEB will be ending on December 31, 2015.

Appendix H – Energy Units

How Much is a Kilowatt Hour of Electricity?





Appendix I – Glossary of Energy Terms

Glossary

Baseload Power: Generation sources designed to operate more or less continuously through the day and night and across the seasons of the year. Nuclear and many hydro generating stations are examples of baseload generation.

Bioenergy: Energy produced from living or recently living plants or animal sources. Sources for bioenergy generation can include agricultural residues, food-process by-products, animal manure, waste wood and kitchen waste.

Degree Days: A unit used to determine the heating or cooling requirements of buildings, representing a fall of one degree below (Heating Degree Day) or above (Cooling Degree Day) a specified average outdoor temperature (usually 18°C or 65°F) for one day.

Demand Response (DR): Programs designed to reduce the amount of electricity drawn from the grid during peak demand periods. Customers could be responding to changes in the price of electricity during the day, incentive payments and/or other mechanisms.

Distribution: A distribution system carries electricity from the transmission system and delivers it to consumers. Typically, the network would include medium-voltage power lines, substations and pole-mounted transformers, low-voltage distribution wiring and electricity meters.

Energy Star®: A U.S. Environmental Protection Agency (EPA) voluntary program that helps businesses and individuals save money and protect our climate through superior energy efficiency.

Feed-in Tariff (FIT): A guaranteed rate that provides stable prices through long-term contracts for energy generated using renewable resources.

Global Adjustment (GA): The GA is the difference between the total payments made to certain contracted or regulated generators and demand management projects, and market revenues. The GA serves a number of functions in Ontario's electricity system; it provides more stable electricity prices for Ontario's consumers and generators; it maintains a reliable energy supply; and, it recovers costs associated with conservation initiatives that benefit all Ontarians. The GA is calculated each month by taking into account the following components: Generation contracts administered by the Ontario Electricity Financial Corporation; OPG's nuclear and baseload hydroelectric generation; and OPA contracts with generators and suppliers of conservation services. Consumers on the regulated price-plan (RPP) pay a fixed price set every six months by the Ontario Energy Board which includes the GA, while customers who have a retail contract pay the contract price for their electricity plus the Global Adjustment.

Greenhouse Gas (GHG): Gas that contributes to the capture of heat in the Earth's atmosphere. Carbon dioxide is the most prominent GHG. It is released into the Earth's atmosphere as a result of the burning of fossil fuels such as coal, oil or natural gas. GHGs are widely acknowledged as contributing to climate change.

Grid Parity: The point at which new generation technologies become cost competitive with conventional technologies.

Integration: The way an electricity system combines and delivers various generation sources, conservation and demand management to ensure consumers have dependable and reliable electricity.

Intermittent Power Generation: Generation sources that produce power at varying times, such as wind and solar generators whose output depends on wind speed and solar intensity.

Kilowatt (kW): A standard unit of power that is equal to 1,000 watts (W). Ten 100-watt light bulbs operated together require one kW of power.

Kilowatt-hour (kWh): A measure of energy production or consumption over time. Ten 100-watt light bulbs, operated together for one hour, consume one kWh of energy.

Load or Demand Management: Measures undertaken to control the level of energy use at a given time, by increasing or decreasing consumption or shifting consumption to some other time period.

Local Distribution Company (LDC): A utility that owns and/or operates a distribution system for the local delivery of energy (gas or electricity) to consumers.

Megawatt (MW): A unit of power equal to 1,000 kilowatts (kW) or 1 million watts (W).

Megawatt-hour (MWh): A measure of energy production or consumption over time: a one MW generator, operating for 24 hours, generates 24 MWh of energy.

MicroFIT: A program that allows Ontario residents to develop a very small or micro renewable electricity generation project (10 kilowatts or less in size) on their properties. Under the MicroFIT Program, they are paid a guaranteed price for all the electricity they produce for at least 20 years.

Net Metering: A program made available to customers with renewable energy installations which allow them to generate electricity for their own use before it is made available to the electricity grid. When renewable energy is made available to the electricity grid from the renewable installation, the customer receives a credit on their electricity bill.

North of Dryden: The North of Dryden area refers to the part of the Ontario transmission system bounded by Dryden to the southwest, Red Lake to the northwest, and Pickle Lake to the northeast, as well as a group of remote First Nation communities, an operating mine and the mine development area known as the Ring of Fire north of the existing transmission system.

Ontario Clean Energy Benefit (OCEB): A five-year program that provides a benefit equal to 10% of the total cost of electricity on eligible consumers' bills, including tax, limited to the first 3,000 kWh of electricity consumed each month. The program is scheduled to end December 31, 2015.

Peaking Capacity: Generating sources typically used only to meet the peak demand (highest demand) for electricity during the day; typically provided by hydro or natural gas generators.

Peak Demand: Peak demand, peak load or on peak are terms describing a period in which demand for electricity is highest.

Photovoltaic: A technology for converting solar energy into electrical energy (typically by way of photovoltaic cells or panels comprising a number of cells).

Program Administrator Cost (PAC) Test: The PAC Test measures conservation program benefits and costs, from the perspective of a program administrator. For the PAC test, avoided energy costs only include avoided costs associated with the electricity system.

Smart Grid: A Smart Grid delivers electricity from suppliers to consumers using modern information and communications technologies to improve the reliability and efficiency of the electricity system. It empowers consumers with the ability to manage their energy consumption — saving energy, reducing costs and providing choices.

Supply Mix: The different types of resources that are used to meet electricity demand requirements in a particular jurisdiction. Normally the mix is expressed in terms of the proportion of each type within the overall amount of energy produced.

Terawatt-hour (TWh): A unit of power equal to 1 billion kilowatt-hours. Ontario's electricity consumption in 2012 was around 141.3 TWh.

Total Resource Cost (TRC) Test: The TRC Test measures benefits and costs from a societal perspective. For the TRC Test only, avoided supply costs include avoided energy costs associated with electricity, natural gas, water, fuel oil and propane savings, where applicable. Incentive costs are a transfer from a program-sponsoring organization to participating customers, and consequently do not impact the net benefit from a societal perspective.

Transmission: The movement of electricity, usually over long distance, from generation sites to consumers and local distribution systems. Transmission of electricity is done at high voltages. Transmission also applies to the long distance transportation of natural gas and oil.

Appendix J – Energy & Environment Acronyms

Acronyms & Abbreviations

CDD	Cooling Degree Day
CDM	Conservation and Demand Management
DSM	Demand-Side Management
EA	Environmental Assessment
ECO	Environmental Commissioner of Ontario
EV	Electric Vehicle
FIT	Feed-in Tariff
GHG	Greenhouse Gas
GWh	Gigawatt-hour (one billion or 109 watt-hours)
HDD	Heating Degree Day
HOEP	Hourly Ontario Energy Price
ICI	Industrial Conservation Initiative
IESO	Independent Electricity System Operator
IPSP	Integrated Power System Plan
IRRP	Integrated Regional Resource Plan
Km	Kilometre
kW	Kilowatt
kWh	Kilowatt-hour
LDC	Local Distribution Company
LED	Light-Emitting Diode
LTEP	Long-Term Energy Plan
m^3	Cubic Metre
MOECC	Ministry of the Environment and Climate Change
MTO	Ministry of Transportation
MW	Megawatt (one million or 106 watts)
MWh	Megawatt-hour (one million or 106 watt-hours)
OEB	Ontario Energy Board
OPA	Ontario Power Authority
PJ	Petajoule (one quadrillion or 1015 joules)
RIP	Regional Infrastructure Plan
RPP	Regulated Price Plan
TOU	Time-of-Use
TWh	Terawatt-hour (one trillion or 1012 watt-hours)
TWh/yr	Terawatt-hour Per Year