



# Report to Committee of the Whole

May 17, 2021

## **Subject: Energy and Greenhouse Gas Emissions Update**

### **Recommendation**

*This report is for the information of the Board.*

### **Status**

#### **2019/2020 Energy Use Intensity**

Since 2008 the Waterloo Region District School Board (Board) has monitored energy consumption at our schools, outdoor centres and administration and supporting facilities, comparing Energy Use Intensity (EUI) as a means to identify facilities with optimum performance and those in greater need of attention.

EUI measured in Equivalent Kilowatt Hours per Square Metre (ekWh/m<sup>2</sup>) is used by the Board to compare energy consumption year to year, and is presented in Figure 1 and Figure 2. The unit ekWh allows electricity, normally measured in kWh, and natural gas and propane, normally measured in cubic meters and liters, respectively, to be added together. Natural gas and propane use are highly dependent on weather as it is mostly used for space heating, so heating degree days are used to normalize the figures, removing the impact of weather which allows for a fair comparison between years. Electricity is not weather normalized, as the majority of its use is not weather dependent. The total energy consumption is divided by the total floor area of the board's asset portfolio so that the effect of additional building area from new schools and school additions is removed from the comparison. These figures include portables and port-a-packs. Leased facilities such as 151 Weber are excluded.

The 2019/2020 fiscal year included the 3.5-month shutdown due to COVID-19, resulting in different usage of our buildings. Over the entire building portfolio, energy consumption was lower during and after the COVID-19 shutdown, even in the summer months. Given this shift in usage, comparing the actual energy usage of 2019/2020 directly to other years does not demonstrate the success of the energy conservation program accurately. An analysis was done to estimate how much energy the Board would have used if this shutdown had not occurred. The energy usage for March 2020 through June 2020 without the shutdown was estimated using a linear regression of energy consumption across all buildings against heating degree days, using September 2019 through February 2020 as the baseline. For July and August, the average between 2012 and 2019 was used to estimate natural gas consumption without the shutdown. For electricity usage in the summer, a linear regression against cooling degree days was used, with Summer 2019 as the baseline.

Figure 1 reports the change in total energy use intensity for all Board-owned sites. The Board has experienced a 23.6 percent reduction in our overall Energy Use Intensity when comparing 2019/2020 to 2008, after removing the impact of the COVID-19

shutdown. The reduction in electricity intensity during this period was 17.9 percent, with a greater reduction in natural gas intensity of 26.0 percent.

Figure 1: Total Energy Use Intensity Combined, 2008 to Fiscal Year 2019/2020

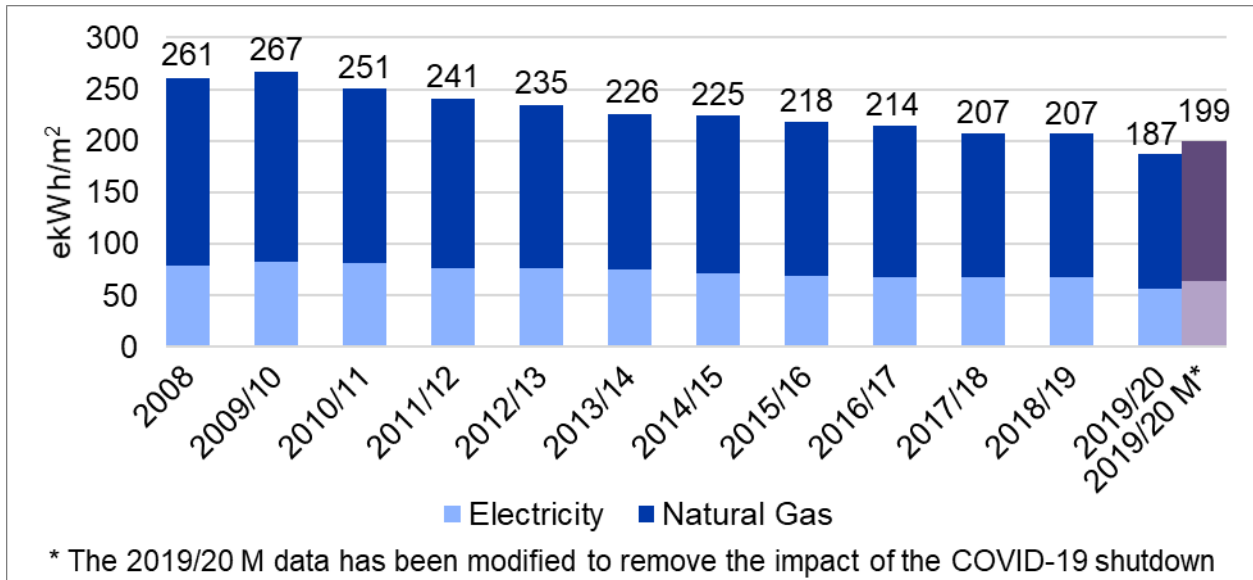
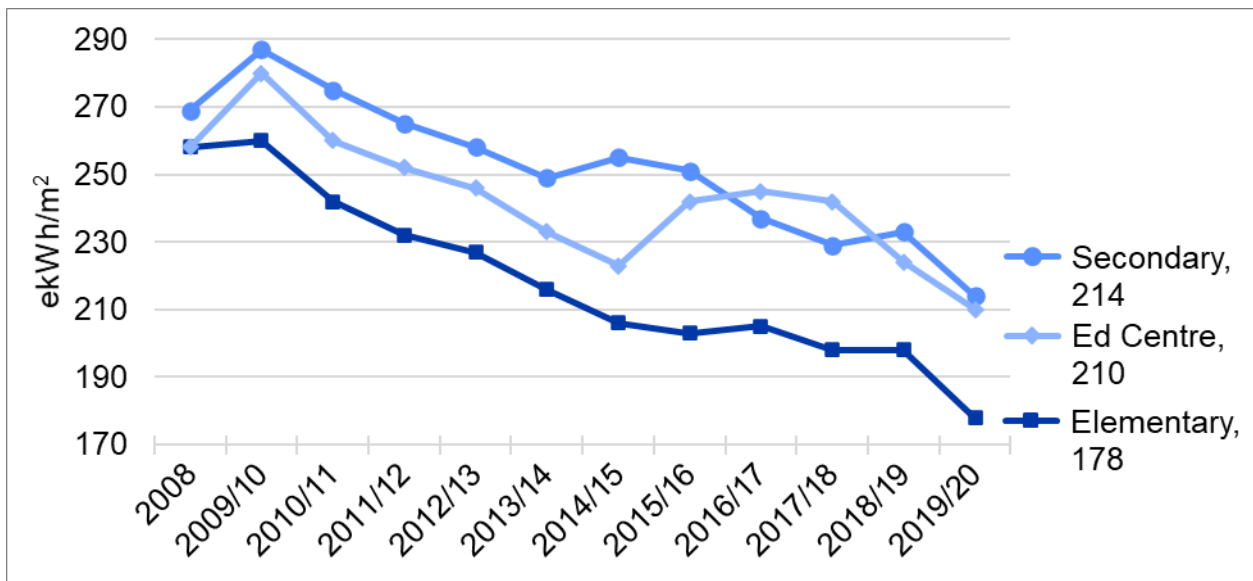


Figure 2 reports the average EUI by panel, using the actual consumption for 2019/2020. The EUI in all three panels continues to reduce year over year. The EUI for each school is presented in Appendices A and B.

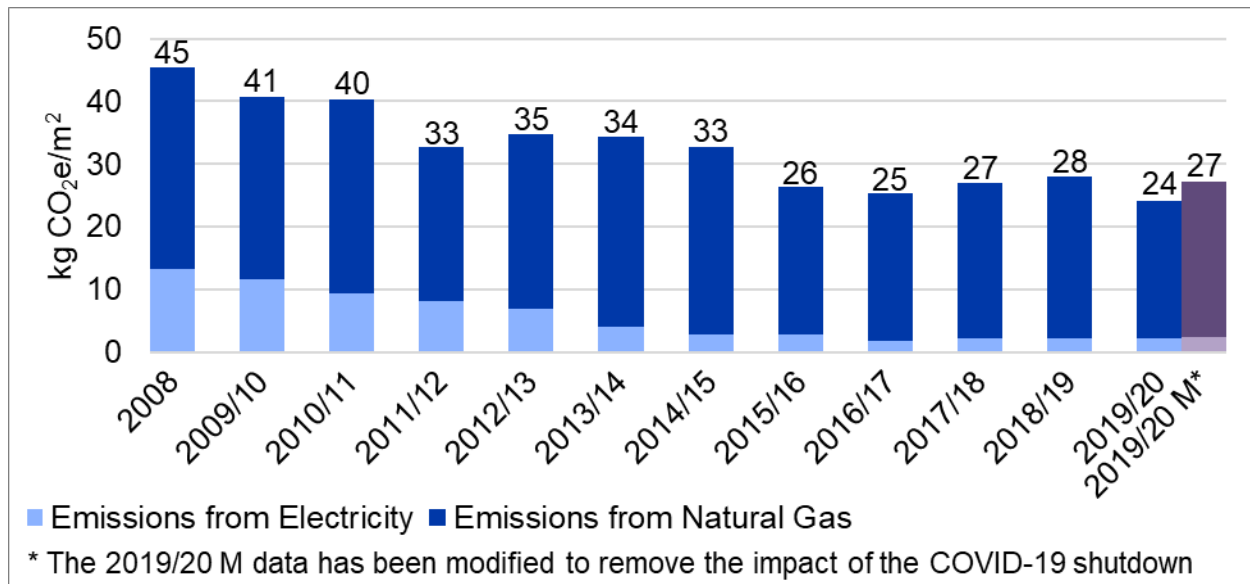
Figure 2: Average Energy Use Intensity by Panel, 2008 to Fiscal Year 2019/2020



## 2019/20 Greenhouse Gas Emissions

Greenhouse Gas (“GHG”) emissions are calculated using the emission factors reported in Environment Canada’s National Inventory Report to the UN Framework Convention on Climate Change. Emissions are reported in units of kilograms of carbon dioxide equivalent (kg CO<sub>2</sub>e). Total GHG emissions per square meter (GHG emission intensity) for all Board-owned sites is shown in Figure 3. Note that this data is not weather normalized.

Figure 3: Total GHG Emission Intensity Combined, 2008 to Fiscal Year 2019/2020

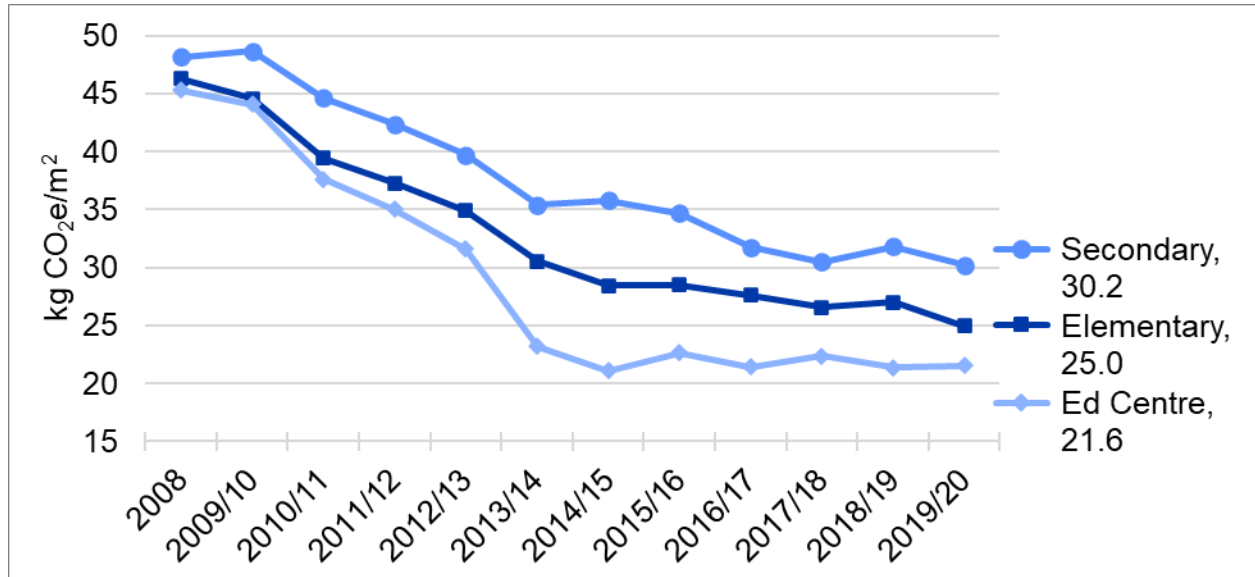


Total GHG Emission Intensity has reduced 40 percent since 2008, after removing the impact of the COVID-19 shutdown.

One significant influence on the Board’s GHG emissions is the emissions that occur during the generation of electricity in Ontario. The emissions required to produce a kWh of electricity have fallen by approximately 80 percent in Ontario in the last decade. Emissions from Ontario’s electricity generation were the lowest in 2017/2018, but they have since begun to increase slightly, which increases the Board’s emissions.

Figure 4 reports the average GHG emission intensity by panel, using the actual consumption for 2019/2020. The energy intensity in all three panels continues to reduce year over year. GHG emissions intensities for each school are presented in Appendix C for elementary and Appendix D for secondary schools and the Education Centre.

Figure 4: Average GHG Emission Intensity by Panel, 2008 to Fiscal Year 2019/2020



## Factors Influencing Energy Consumption and GHG Emissions

Energy intensity and resulting GHG emissions are driven by energy consumption. Consumption is an aspect over which the Board and its stakeholders have the ability to influence. Factors may include:

- Student and staff behavior (i.e. turning lights off when not in use)
- Waste minimization (i.e. proper temperature control and time of day use)
- Efficient technologies (i.e. high part load efficiency compressors, light emitting diode (LED) lighting)
- Occupancy sensors and building automation systems (i.e. motion controls for lighting, CO<sub>2</sub> based demand for ventilation air)
- Building envelope improvements (i.e. 40 percent max window to wall ratio, low E glass)
- Reduction of equipment power use and heat gain (i.e. LED lighting require less space cooling, Chromebooks and tablets charged at home)
- Designated periods of set-back and/or shut down for the heating, ventilation, and air conditioning (HVAC) system (i.e. synchronize cooling with instructional hours)

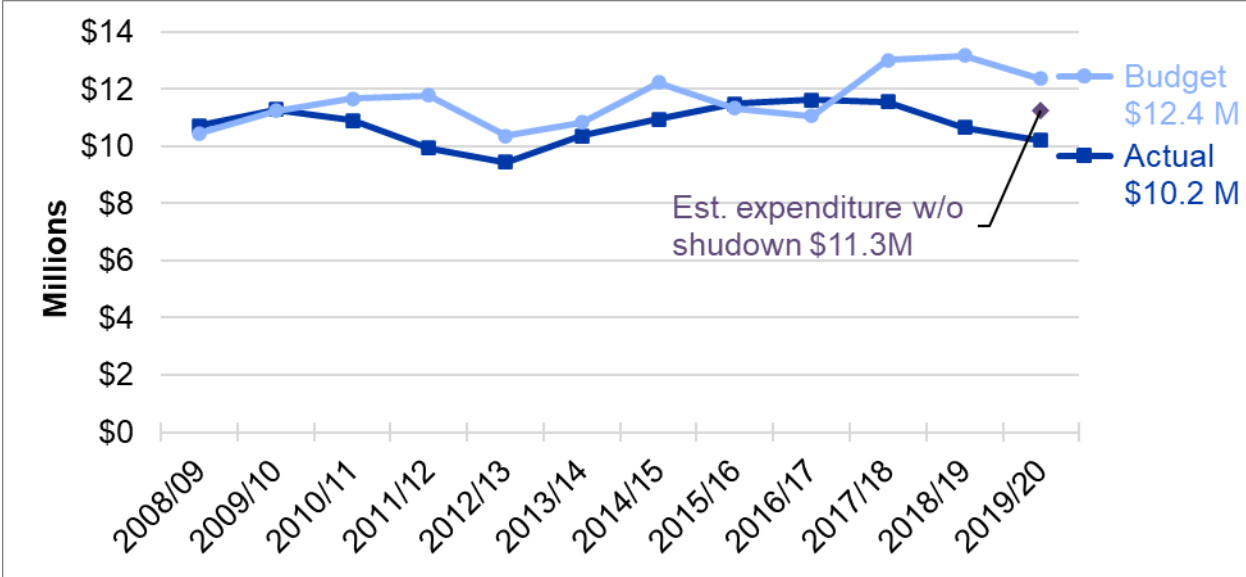
Consumption is also driven by factors beyond stakeholder control such as:

- Weather (i.e. warmer summer and shoulder season drives cooling demand)
- Hours of operation (i.e. extended use initiatives such as Community Use)
- School closures (i.e. disposal of surplus sites, port-a-packs, and portables)
- Expansion of facilities and square footage (i.e. new schools or school additions)

## Energy Budget and Expenditure

A twelve-year history of the Board budgets and expenditures for electricity and natural gas is presented in Figure 5 and Appendix E. The Board's natural gas and electricity budget for 2019/2020 was \$12.4M and expenditures were \$10.2M. It is estimated that without the COVID-19 shutdown, expenditures would have been \$11.3M.

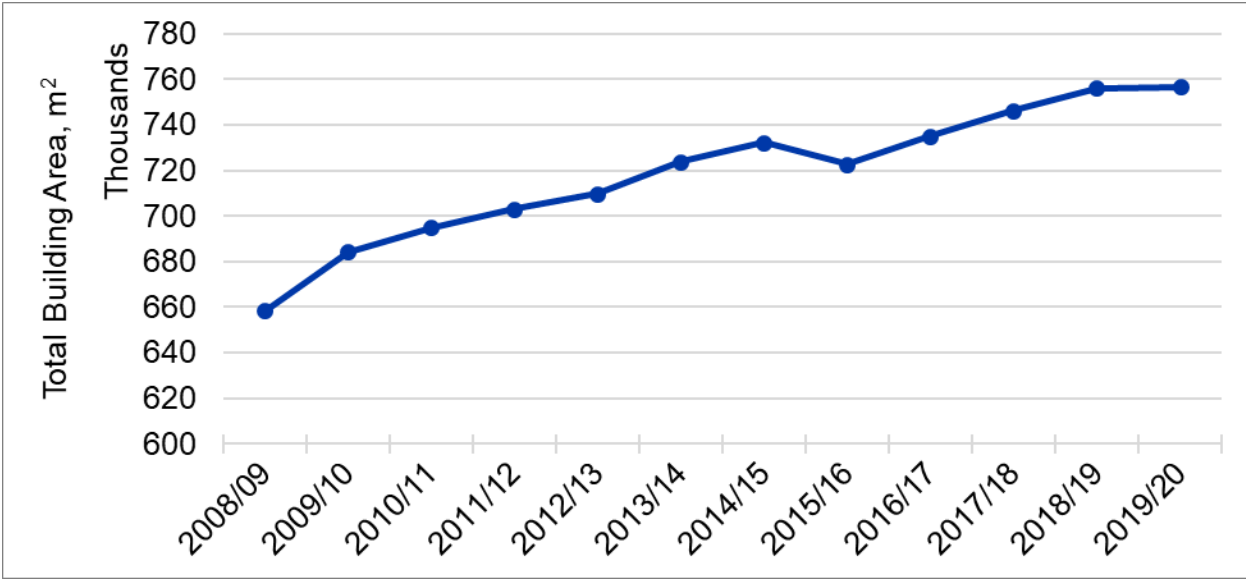
Figure 5: Budget and Actual Expenditures, Fiscal Years 2008/09 to 2019/2020



It is important to note when reviewing this information that budget and actual expenses cannot be compared directly year over year as a metric for operational efficiencies. Weather patterns and energy prices fluctuate year to year. The best prediction of all relevant variables is made when the budget is created, but this will not be particularly accurate, especially forecasting weather a year and more away.

Actual expenses are also driven by the size and number of buildings the Board operates. As shown in Figure 6, the total building area operated by the WRDSB has increased 15 percent since 2008/2009 due to new school construction and additions.

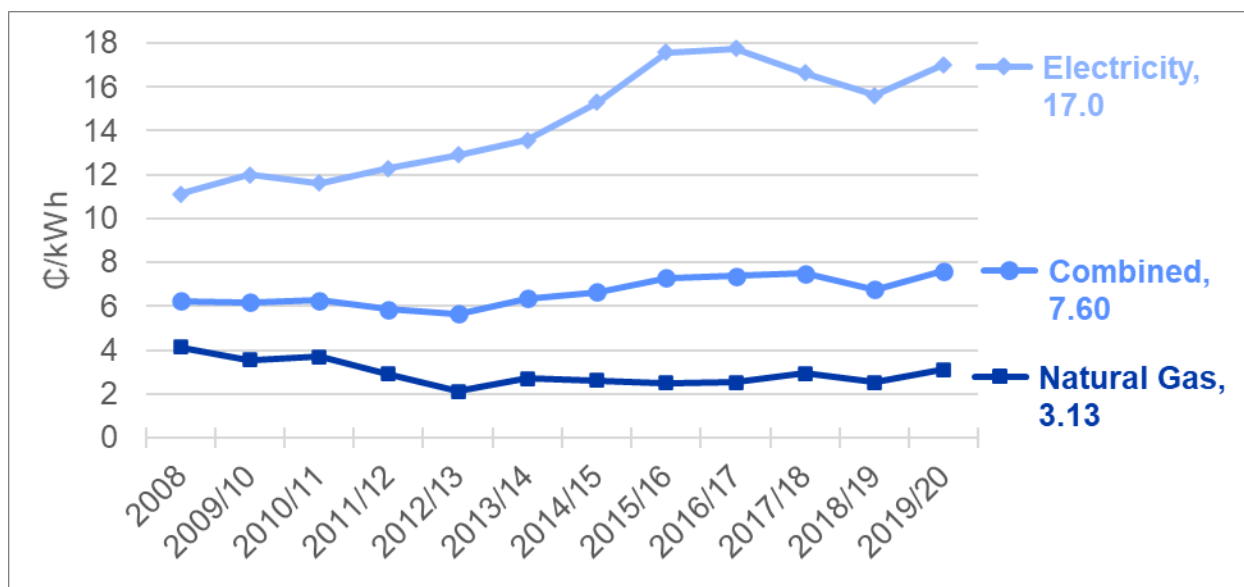
Figure 6: Total Building Area, Fiscal Years 2008/2009 to 2019/2020



As shown in Figure 7, the combined energy price the Board pays has increased 22 percent since 2008/2009. On average for 2019/2020, natural gas cost approximately 3.13 cents per ekWh and electricity cost approximately 17.0 cents per kWh with a

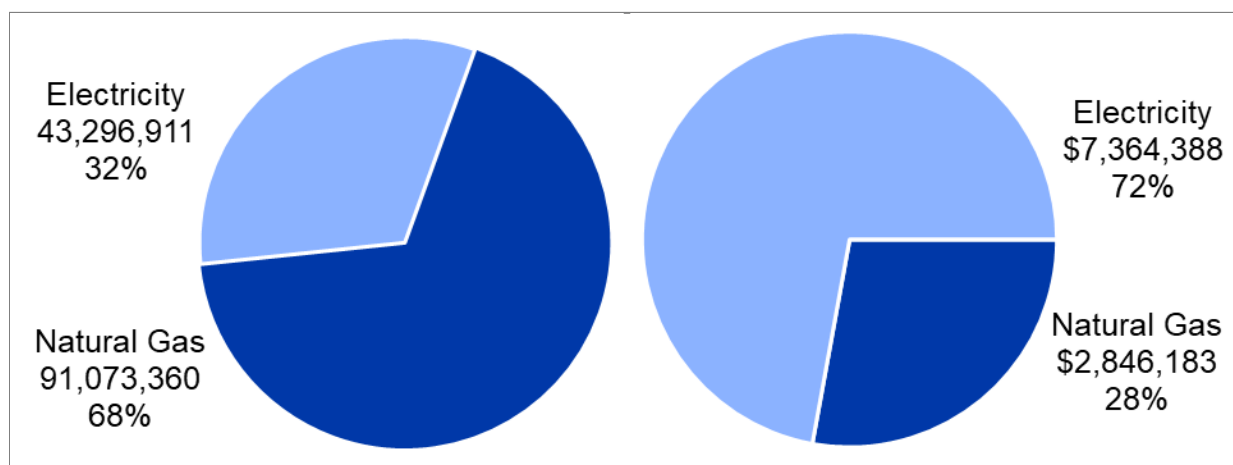
combined cost for both commodities at 7.6 cents per ekWh. The full history of energy costs per kWh is given in Figure 7. Natural gas costs have begun to increase as the commodity costs are no longer falling, and the carbon tax continues to increase each year. Even with government intervention in electricity prices during the COVID-19 shutdown, electricity prices increased in 2019/2020 due to high Global Adjustments earlier in the year. Beginning in January 2021, the Ontario Government has transferred a portion of the costs normally charged through the Global Adjustment to the tax base, which is expected to result in savings for the Board of approximately \$500,000 per year.

Figure 7: Natural Gas, Electricity and Combined costs per kWh, 2008 to 2019/2020



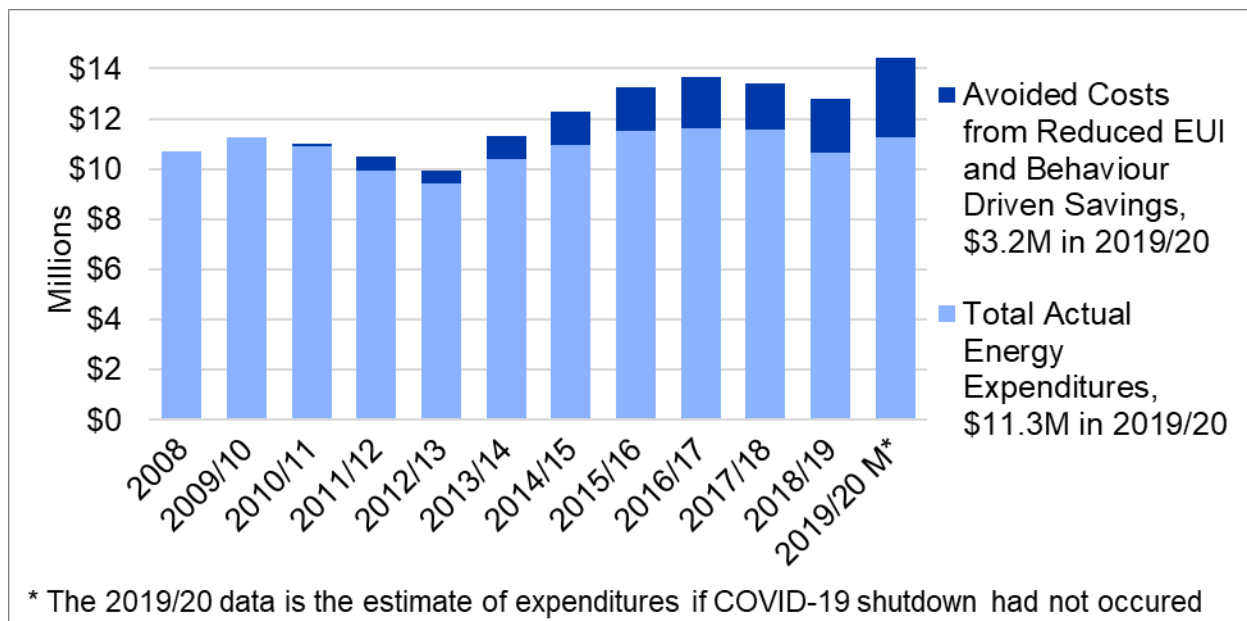
Consumption by commodity is an important factor that drives expenditures. Natural gas continues to be at a comparatively low cost to electricity, although the carbon tax is narrowing this gap. A greater reliance on natural gas as a resource for heating continues to be beneficial for our operational budget but generates greater GHG emissions than utilizing electricity as a source of heat. The composition of energy consumption and expenditures for 2019/2020 is presented in Figure 8.

Figure 8: Energy Consumption (ekWh) and Expenditures by Commodity, 2019/2020



The reduction in EUI since 2008 has resulted in significant financial savings resulting from measures including more energy efficient equipment and building components, HVAC and lighting building controls, and occupant behaviour changes, among others. These measures offset utility costs by \$3.2M in Fiscal Year 2019/2020, compared to the operational conditions in 2008. This estimate is formed by comparing the 2019/2020 expenditures to the scenario where the Board operated the 2019/2020 building portfolio with the EUI the Board operated at in 2008 and have considered the impact of COVID-19 shut down. This is an annual offset in utility costs that fluctuates based on actual consumption and market prices of energy. This value increased significantly in 2019/2020 due to an increase in electricity price. Cumulatively, over the last decade, the reduction in EUI has offset utility costs by \$15.5M.

Figure 9: Actual Energy Costs and Savings Relative to 2008 Baseline, 2008 to 2019/2020



Regardless of our best efforts to reduce consumption by driving down EUI, energy costs are likely to continue to rise in the future. Offsetting these increases in costs by reducing our EUI is critical to minimizing the increases in future budgets and expenditures.

### Operations Impact on Energy Conservation

Engaging students and staff in conservation efforts is our most promising, as well as our most challenging area in resource conservation. Presentations by Facility Services staff to students and educators at schools, as well as custodial and maintenance personnel, administrators and others were put on pause during 2019/2020 due to staff transitions and COVID-19 but will resume in Fall 2021.

Efforts to create change in some everyday habits included memorandums and notices to schools encouraging turning lights off when not in need, eliminating the habit of propping vestibule doors open during winter months, and limiting the use of personal heaters in schools. These efforts and messages continue throughout the year to raise awareness of the importance of saving energy.



In 2020, one student was hired through the Canada Summer Jobs program to assist with energy efficiency. This summer student helped collect data that informs energy efficiency projects and identifies projects with the largest return on investment. This also permitted the completion of a data analysis that helps target behaviour change efforts to sites with the highest need by studying the nighttime energy consumption.

The Sustainability Working Group has met four times this past year and has gained participation with educators, Learning Services, Facility Services, Planning Department and Financial Services, and will continue to support competency development among central services and schools. The Working Group continues to build knowledge of sustainability issues in Board staff and students and provides a space for collaboration on efforts that reduce the environmental impact of the Board.

The continued implementation of Preventative Maintenance (PM) programs and the reallocation of some staff to further support building maintenance and controls optimization both extend the working life of equipment and its efficient operation. However, this continues to be a challenge as the trade staff complement has remained unchanged since 2008, despite a 15 percent increase in square footage and increasing complexity in HVAC equipment and controls. Attracting highly skilled trades staff is also a challenge due to disparity between Board wages and benefits for skilled trades and those in the broader market. Trades staffing levels and skill sets have a direct impact on energy consumption as efficient equipment operation is dependent on regular inspection, maintenance, and timely detection and repair of issues that can result in increased energy usage.

### **Capital Projects Impact on Energy Conservation**

The ongoing installation of air conditioning in classrooms is one initiative that has a large impact on energy consumption. Air conditioning within schools continues to be endorsed by school administrators, parent councils and student senate, as a necessary improvement to the classroom environment to support student achievement and health. The addition of mechanical cooling increases the energy consumption of a building, making it more difficult to achieve energy conservation targets.

To mitigate these impacts, mechanical cooling is often implemented when other renovations take place, and as part of new schools and additions, as a more energy efficient system can be installed cost effectively when combined with a construction project that includes updated building controls and building envelope. This requires careful planning of the addition of mechanical cooling. These additional measures reduce the overall energy consumption of the building and often offset the increase due to mechanical cooling.

As we maintain and renew older schools, and construct new schools, Facility Services continues to implement suitable energy efficiency technologies. Those of greatest impact include:

- Energy modeling of new schools, requiring architects and engineers to design buildings to be at least 25 percent more energy efficient than required by code;
- Design Briefs for architects and designers to ensure roofs, windows, vestibules and other building envelope components are designed and constructed in an energy efficient manner;



- LED lighting throughout all board facilities to replace fluorescent and high-intensity discharge (HID) lamps, implemented each time renovations occur or when repairs or replacement of lamps or fixtures is required. Occupancy sensors and dimming controls are implemented when possible and where suitable;
- Conversion from pneumatic to Direct Digital Control (DDC) building controls implemented each time renovations occur;
- Retro-commissioning of boiler and HVAC equipment fresh air dampers and pneumatic building controls, in particular for older / poor performing schools;
- Provision of condensing boilers and water heaters whenever possible when replacing older heating plants.

In addition, Facility Services continues to operate several pilot programs designed to improve energy and resource conservation, including:

- Alternative ways of providing cooling in classroom spaces, including portable units and destratification fans;
- Cooling through high efficiency Variable Refrigerant Flow (VRF) electric or Gas Heat Pump (GHP) systems;
- Load shedding cooling controls for secondary schools with a summer program;
- Eyedro, AlertLabs and PowerTakeOff point of use remote power, water or gas monitoring meters;
- Installation of water sub-meters at all cooling towers and play field irrigation systems;
- Deciduous shade trees and glazing / overhang orientation in strategic areas to minimize solar heat gain;
- Envelope thermography to assist in determining breaches in the building;
- Replacement of urinal tanks with low flow flush valves or installation of timers;
- Media Induced Crystallization (MIC) in place of water softeners to reduce salt / water use and maintenance needs;
- Direct replacement LED lamps or light fixtures for non-renovated spaces as part of regular school maintenance.

As implementations of these technologies help reduce consumption, Facility Services staff intend to continue the expansion and use of such technologies in line with available funding, while targeting a reasonable three to seven-and-a-half-year return on investment (ROI). However, while technology is a great resource to reduce consumption, student and staff engagement is critical to change behaviours and reduce waste.

## **Renewables**

The Board received approximately \$1M for five renewable energy projects from the Ministry in 2010/2011. These projects were completed in late 2011 and have generated more than \$410,941 in revenue over 104 months of operation. Appendix F presents a summary of photovoltaic production and revenues.

It is important to recognize that despite generating significant revenue, the payback on the \$1M capital investment under the Micro Feed-In Tariff (MicroFIT) program at 80 cents per kWh provides a 20.8 year payback. This time frame would have been significantly longer if not subsidized at 80 cents per kWh.

## **Incentives and Reinvestment**

In addition to the ongoing projects and reducing costs through reduced consumption, the Board has actively sought out incentive programs that additional fund which can be reinvested into schools and further help with resource conservation board wide.

Since 2009, the Board has received more than \$700k in incentives from partners that include Cambridge and North Dumfries, Kitchener Wilmot Hydro, Waterloo North Hydro, Reliance Commercial Solutions, Region of Waterloo, and Union Gas.

These incentives, although greatly diminished in recent years, continue to be reinvested each year into upgrades directly related to energy conservation. Appendix F presents the recent energy and sustainability enhancements funded from these incentives.

## **Energy Related Regulations and Compliance**

The Green Energy Act (O.Reg. 397/11) came into effect in 2009, repealing the Energy Conservation Leadership Act and the Energy Efficiency Act. This Act included several initiatives that had a large impact on the electricity market in Ontario. These included the Feed-In Tariff (FIT) and MicroFIT programs aimed at stimulating the installation of renewable energy (which the Board has benefited from, see Renewables above), and the phase out of coal-fired electricity generation. This was done to reduce GHG emissions from electricity generation and to realize significant health benefits through improved air quality. Throughout this shift in electricity policy, Ontario has retained a large dependence on nuclear power, despite the significant cost of these projects and the long-term impacts not being fully considered. These factors combined with the shifting regulatory environment have produced turbulent electricity prices.

Required by this Act is the implementation of an Energy Conservation and Demand Management Plan (ECDMP) every five years, most recently in 2019. To support this, the Ministry of Education implemented the Utility Consumption Database (UCD). The UCD reports on annual utility consumption and GHG emissions for more than 5,000 schools and administrative buildings across 72 boards. The Green Energy Act was repealed in 2019, and these requirements were moved into the Electricity Act.

In its 2013/2014 ECDMP, the WRDSB targeted a reduction in energy intensity 23 ekWh per m<sup>2</sup> between the base year of 2013/2014 and 2017/2018. This target was set by following the Ministry guidelines of reviewing all capital plans that would result in energy savings and estimating the size of these savings, without estimating potential causes of increasing consumption. Between 2013/2014 and 2017/2018, the EUI reduced by 22 ekWh/m<sup>2</sup>, which represents a 6 percent reduction. The Board nearly met its target despite increasing building operating hours and an expansion of air conditioning.

## **Target Setting**

As discussed earlier, the Electricity Act requires the Board to prepare an Energy Conservation and Demand Management Plan every five years. The WRDSB submitted the required ECDMP for the five years following 2017/2018 in 2020. Plans for the use of capital and operational funding that impact energy consumption were assessed, and it was determined that the Board can anticipate and target a further 11.8 percent reduction in energy intensity by 2022/2023. The suite of measures discussed earlier that allowed the Board to achieve the last target will be used to meet this target.

In addition, the Board moved from being an observing member of Sustainable Waterloo Region to a pledging member in 2020 by making a commitment to reduce GHG emissions. The Board set a goal of reducing our total GHG intensity per square meter by 20 percent by 2029. This goal, while on a longer time frame, requires roughly the same reductions in energy consumption as the target set in the ECDMP.

Achieving these targets would allow the Board to keep operating costs in control in the face of increasing energy costs, and to demonstrate leadership in addressing climate change. The ability of the Board to meet these targets is dependent on funding from the Ontario Government. The large influx of capital funding in response to COVID-19 is helpful, however maintaining this increase with a greater emphasis on energy efficiency projects would increase chances of meeting these targets. Comfortable and safe learning and working environments remain the top priority, and investments in physical infrastructure often improves both comfort and energy efficiency.

### **Implications of COVID-19 for Fiscal Year 2020/2021**

This report is intended as an update on energy consumption in 2019/2020 but given the large impact COVID-19 has had on operations, a preliminary analysis of energy consumption in 2020/2021 was completed. It must be emphasized that the following numbers are estimates only, as a detailed analysis of the completeness and accuracy of utility data cannot be completed until data for the entire year is available.

There are two operational changes that impact Board utility consumption significantly. First, ventilation has been maximized in all buildings as directed by the Province and local Public Health in order to minimize the spread of COVID-19. This increases the energy required to keep buildings warm in the winter, with a larger impact on natural gas consumption. Second, with shorter days and fewer or smaller classes in the high schools, and no community use of schools, operating hours are shortened, which decreases energy use, with a larger impact on electricity consumption. A linear regression against heating degree days for the current year was compared to linear regressions in previous years to assess the impact of these operational changes.

It is projected that weather-normalized natural gas consumption will be up by one million cubic meters in 2020/2021, or an increase of nine and a half percent over previous recent years. It is projected that electricity consumption will be down two and a half million kilowatt-hours in 2020/2021, or a decrease of five percent. This would put the Board's total energy use intensity in line with what it was in both 2017/2018 and 2018/2019. The net impact of these changes is forecasted to be a savings of approximately \$200,000.

### **Impacts of Summer 2021 Capital Projects**

The large number of capital projects planned for summer 2021 will have an impact on energy consumption. These projects include upgrades to lighting, temperature control, and other associated equipment, along with the addition of mechanical ventilation and cooling in approximately 150 classroom spaces. Historically, the savings from these upgrades can offset the increased energy consumption from the addition of ventilation and cooling. The anticipated result for the 2021 capital projects is improved comfort in teaching spaces with minimal net impact on overall energy consumption.

## Background

The *Green Energy Act* (O.Reg. 397/11) came into effect in 2009, and repealed the *Energy Conservation Leadership Act* and the *Energy Efficiency Act*. These Acts included several initiatives that had a large impact on the electricity market in Ontario. Included in these initiatives were the Feed-In Tariff (FIT) and MicroFIT programs aimed at stimulating the installation of renewable energy (which the Board has benefited from, see Renewables above), and the phase out of coal-fired electricity generation. This was done to reduce GHG emissions from electricity generation and to realize significant health benefits through improved air quality. Throughout this shift in electricity policy, Ontario has retained a large dependence on nuclear power, despite the significant cost of these projects and the long-term impacts not being fully considered. These factors combined with the ongoing shifts in the regulatory environment have produced turbulent electricity prices. Under the *Green Energy Act*, the Ministry Education implemented the Utility Consumption Database (UCD). The UCD reports on annual utility consumption and GHG emissions for more than 5,000 schools and administrative buildings across 72 boards. The Act also required the implementation of a 5-year Energy Conservation and Demand Management Plan (ECDMP) every five years, beginning in 2013/2014 and due for reporting to the Ministry of Education in June 2019. It should be noted that the *Green Energy Act* was repealed in 2019, however these requirements were moved into the *Electricity Act*, O. Reg. 507/18: Broader Public Sector: Energy Reporting And Conservation And Demand Management Plans.

In its 2013/2014 ECDMP, the WRDSB targeted a reduction in energy intensity of 6.1 percent between the base year of 2013/2014 and 2017/2018. This corresponded to a reduction in energy use intensity of 23 ekWh per m<sup>2</sup>. This reduction was largely achieved, with a 22 ekWh/m<sup>2</sup> reduction, despite increasing building operating hours and air conditioning. The target was originally set by following the Ministry guidelines of reviewing all capital plans that would result in energy savings and estimating the size of these savings, without estimating potential causes of increasing consumption. The result has been reported to the Ministry through the Board's 2018/2019 ECDMP.

The Energy Conservation and Demand Management Plan for the current 5-year reporting period, FY2018-19 through FY2023-24, has been submitted to fulfill the requirements of O.Reg. 507/18.

## Financial Implications

While the utility budget may represent less than two percent of the overall Board budget, the active management of the utility portfolio is required to mitigate risk exposure as cost overruns or savings can have a significant impact on the operating budget.

The utility budget will continue to be monitored regularly and developed on an annual basis within Business Services in consultation with external agencies as required (consortium, Ministry, Operations, Maintenance and Construction (OMC) Energy Sub-Committee, School Energy Coalition), Coordinating Council, and brought forward through regular budget deliberations.

## Communications

The *Electricity Act* requires that this Energy Update be presented to the Board and available publicly on an annual basis. In addition, the Energy Conservation and Demand Management Plan and the Energy Consumption and Greenhouse Gas Emission annual reports, as issued through the UCD, are available in hard copy at the Education Centre or online for public access as required under the *Electricity Act*:

- [Energy Conservation and Demand Management Plan](#)
- [Energy Conservation at the Waterloo Region District School Board](#)

It is intended that this report be shared with the Sustainability Working Group, the Elementary Accommodation Committee (EAC), and Secondary Accommodation Committee (SAC) in an effort to enhance awareness and build a knowledge base and momentum for energy conservation in the schools.

Prepared by: Matthew Gerard, Coordinating Superintendent, Business Services  
& Treasurer of the Board  
John Veit, Controller, Facility Services  
Ron Dallan, Manager of Capital Projects  
Lou Lima, Manager of Mechanical, Electrical and Environmental Services  
Caleb Gingrich Regehr, Supervisor of Energy Conservation  
in consultation with Coordinating Council.

**BUSINESS SERVICES DIVISION  
FACILITY SERVICES DEPARTMENT**

**ENERGY UPDATE**

**ANNUAL ENERGY USE INTENSITY (ekWh/m<sup>2</sup>) - ELEMENTARY SCHOOLS**

School	08	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20
A R Kaufman P.S.	212	267	244	234	239	229	186	204	176	185	199	158
Abraham Erb P.S.	189	166	173	167	171	162	157	148	148	146	150	134
Alpine P.S.	287	330	318	334	307	284	285	293	296	286	252	255
Avenue Road P.S.	242	400	331	197	170	180	173	172	180	173	180	173
Ayr P.S.	238	292	277	268	257	246	220	213	209	212	217	202
Baden P.S.	232	176	168	156	161	163	166	153	155	160	160	147
Blair O.E.C.	Un.	297	267	292	271	266	250	280	205	220	229	200
Blair Road P.S.	422	249	224	246	212	214	208	214	191	190	196	182
Breslau P.S.	336	393	268	267	248	330	236	226	231	219	213	178
Bridgeport P.S.	246	241	245	269	262	186	160	161	108	172	176	159
Brigadoon P.S.	199	296	213	181	185	188	162	154	169	168	168	151
Cedar Creek P.S.	211	206	182	174	175	184	168	174	187	185	187	172
Cedarbrae P.S.	289	245	308	264	255	245	250	241	238	225	258	228
Centennial (Camb) P.S.	269	286	254	251	266	244	224	228	237	226	230	215
Centennial (Wloo) P.S.	389	264	244	246	247	253	233	226	232	238	232	235
Central P.S.	269	294	268	284	277	272	261	274	265	214	223	207
Chalmers Street P.S.	265	274	288	316	267	253	232	229	204	206	211	191
Chicopee Hills P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	151	125	115
Clemens Mill P.S.	223	219	206	209	213	203	221	248	225	219	212	174
Conestogo P.S.	261	271	252	273	244	235	221	249	236	212	220	189
Coronation P.S.	440	378	364	326	329	318	327	342	354	343	349	336
Country Hills P.S.	190	224	229	301	268	226	215	179	168	170	175	163
Courtland Senior P.S.	246	254	244	219	223	269	222	194	182	203	210	170
Crestview P.S.	242	322	299	279	311	291	313	288	292	288	266	210
Dickson P.S.	184	183	185	161	171	169	96	Dis.	Dis.	Dis.	Dis.	Dis.
Doon P.S.	279	304	281	219	211	200	164	151	167	196	189	165
Driftwood Park P.S.	232	199	183	185	180	179	190	151	121	159	163	127
Edna Staebler P.S.	N.O.	171	159	149	158	155	155	140	143	142	145	131
Elgin Street P.S.	196	226	204	187	196	187	179	194	202	220	225	204
Elizabeth Ziegler P.S.	272	278	268	251	226	234	236	234	215	180	187	171
Empire P.S.	238	246	239	227	239	158	203	209	208	207	210	198
Floradale P.S.	209	191	218	233	232	202	176	217	200	177	189	174
Forest Glen P.S.	281	260	240	221	202	228	210	195	201	205	210	197
Forest Hill P.S.	316	269	246	248	208	196	192	224	213	227	217	219
Franklin P.S.	236	258	233	234	227	215	206	215	260	241	216	200
Glencairn P.S.	156	177	182	173	187	210	181	168	181	185	162	176
GrandView (Camb) P.S.	230	251	239	143	168	171	159	150	169	156	163	137
Grandview (NH) P.S.	197	326	228	233	217	215	187	199	187	189	204	192
Groh P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	125	136	109
Hespeler P.S.	206	205	184	166	168	177	173	158	163	165	166	156
Highland P.S.	326	281	275	204	189	202	201	211	213	203	210	189
Hillcrest P.S.	232	221	209	191	205	181	179	157	152	158	169	161
Howard Robertson P.S.	407	343	335	280	287	257	264	281	185	285	282	267
J F Carmichael P.S.	217	198	192	183	161	169	164	174	169	163	176	168
J.W. Gerth P.S.	N.O.	125	137	120	141	146	147	133	159	144	139	118
Janet Metcalf P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	151	115
Jean Steckle P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	146	119	122	121	127	125	102
John Darling P.S.	179	215	170	171	177	180	192	181	180	178	180	156
John Mahood P.S.	323	258	228	221	213	189	181	178	173	178	192	164
Keatsway P.S.	250	197	172	154	132	149	144	143	147	147	147	130
King Edward P.S.	594	268	261	252	256	243	272	332	266	236	211	203
Lackner Woods P.S.	192	213	203	210	209	215	214	199	196	223	212	179
Laurelwood P.S.	223	235	216	220	205	204	199	186	178	177	181	169
Laurentian P.S.	293	321	303	264	258	299	356	255	285	242	224	192
Lester B. Pearson P.S.	217	173	171	173	175	161	163	150	155	142	146	129
Lexington P.S.	307	287	291	261	256	289	223	237	236	230	231	217
Lincoln Avenue P.S.	289	358	332	330	313	149	143	Dis.	Dis.	Dis.	Dis.	Dis.
Lincoln Heights P.S.	298	258	232	233	234	209	197	286	289	213	211	206
Linwood P.S.	356	268	252	273	247	248	234	244	229	210	206	193
MacGregor Sr P.S.	201	212	204	201	202	194	188	202	198	204	222	225
MacKenzie King P.S.	294	319	299	313	281	295	211	214	220	214	208	198
Manchester P.S.	281	316	304	286	258	246	189	176	157	138	163	151
Margaret Avenue P.S.	229	285	198	236	237	191	243	259	369	238	235	232
Mary Johnston P.S.	174	176	176	175	165	180	166	163	160	155	158	145

**WATERLOO REGION DISTRICT SCHOOL BOARD  
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**ENERGY UPDATE  
ANNUAL ENERGY USE INTENSITY (ekWh/m<sup>2</sup>) - ELEMENTARY SCHOOLS**

<b>School</b>	<b>08</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>14/15</b>	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
McQuarrie Centre	539	531	561	411	522	421	294	262	272	261	250	278
Meadowlane P.S.	225	271	270	255	247	246	228	211	257	251	226	196
Millen Woods P.S.	N.O.	N.O.	196	153	162	165	149	152	155	156	156	139
Moffat Creek P.S.	N.O.	N.O.	N.O.	N.O.	138	123	114	134	132	128	99	105
N A MacEachern P.S.	326	338	317	250	256	248	276	214	203	197	151	212
New Dawn	412	424	403	430	368	260	204	166	170	146	347	348
New Dundee P.S.	188	215	205	209	208	189	192	193	195	198	195	184
Northlake Woods P.S.	311	234	241	234	217	195	189	201	211	194	209	180
Park Manor P.S.	341	313	284	272	276	273	271	206	335	353	355	234
Parkway P.S.	289	260	256	280	337	260	234	224	215	233	223	217
Pioneer Park P.S.	236	274	248	255	260	219	215	208	235	225	198	194
Preston P.S.	180	188	194	191	191	175	157	158	166	168	168	155
Prueter P.S.	169	286	277	219	259	239	190	201	212	212	204	217
Queen Elizabeth P.S.	220	252	251	277	268	232	200	229	271	241	232	221
Queensmount Sr P.S.	400	309	342	324	258	282	321	252	257	304	255	150
Riverside P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	141	136	136	116
Riverside (old location)	171	217	175	175	186	151	128	126	87	91	94	91
Rockway P.S.	265	311	281	311	257	311	265	311	299	285	299	217
Rosemount P.S.	245	299	287	269	271	267	294	303	306	292	Dis.	Dis.
Ryerson P.S.	260	264	246	199	207	200	192	176	189	200	173	140
Saginaw P.S.	250	281	248	232	251	237	229	232	223	218	207	185
Sandhills P.S.	238	251	226	224	246	231	202	193	205	194	189	172
Sandowne P.S.	285	206	221	293	274	246	255	238	226	181	175	170
Sheppard P.S.	224	277	268	249	241	245	237	217	212	252	230	200
Silverheights P.S.	229	209	203	186	183	157	143	143	155	143	148	132
Sir Adam Beck P.S.	N.O.	N.O.	124	164	130	132	130	131	131	132	132	121
Smithson P.S.	216	259	249	255	250	191	235	228	222	234	222	221
Southridge P.S.	284	318	294	183	287	269	300	255	290	292	288	242
St Andrew's P.S.	247	191	196	173	174	169	170	175	156	164	158	154
St Jacobs P.S.	236	253	250	235	239	233	218	220	223	223	223	239
Stanley Park P.S.	299	331	314	299	280	309	256	246	270	251	282	243
Stewart Avenue P.S.	270	306	191	170	179	163	166	171	190	169	170	152
Suddaby P.S.	149	197	192	192	146	154	153	151	148	150	151	135
Sunnyside P.S.	226	243	218	198	205	204	204	188	185	186	202	174
Tait Street P.S.	227	243	241	229	230	236	173	173	180	177	180	169
Three Bridges P.S.	193	200	187	193	169	175	92	Dis.	Dis.	Dis.	Dis.	Dis.
Trillium P.S.	262	342	255	251	253	245	221	239	243	227	250	231
Vista Hills P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	144	131	129	128
W.T. Townshend P.S.	158	161	156	139	147	151	141	138	129	133	134	119
Wellesley P.S.	243	261	252	242	243	235	219	202	215	205	196	177
Westheights P.S.	309	339	255	232	235	228	232	229	210	233	210	181
Westmount P.S.	244	256	248	223	241	235	371	166	133	137	128	99
Westvale P.S.	151	145	141	128	140	132	131	125	129	132	151	127
William G. Davis P.S.	308	410	331	328	303	288	270	277	282	261	217	237
Williamsburg P.S.	159	149	145	149	150	154	153	139	157	145	149	133
Wilson Avenue P.S.	225	185	234	223	226	226	214	181	192	181	195	183
Winston Churchill P.S.	217	234	216	163	179	178	194	201	207	194	196	177
Woodland Park P.S.	177	191	179	167	162	152	152	142	139	127	139	130
Wrigley's Corners O.E.C.	Un.	251	225	282	236	230	244	249	223	228	255	201
<b>Average Energy Use Intensity (ekWh/m<sup>2</sup>)</b>	<b>258</b>	<b>260</b>	<b>242</b>	<b>231</b>	<b>227</b>	<b>216</b>	<b>206</b>	<b>203</b>	<b>205</b>	<b>198</b>	<b>197</b>	<b>179</b>

N.O. - Not Open

Un. - Unavailable

Dis. - Disposed



**WATERLOO REGION DISTRICT SCHOOL BOARD  
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**ENERGY UPDATE  
ANNUAL ENERGY USE INTENSITY (ekWh/m<sup>2</sup>) - SECONDARY SCHOOLS**

<b>School</b>	<b>08</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>14/15</b>	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
Bluevale C.I.	274	291	237	249	255	241	240	231	214	230	228	242
Cameron Heights C.I.	385	379	368	357	337	338	597	398	358	313	305	259
Eastwood C.I.	211	237	221	213	224	249	228	229	198	205	239	191
Elmira District S.S.	278	303	277	258	238	227	238	237	247	220	239	219
Forest Heights C.I.	325	328	321	341	287	273	263	247	257	296	295	239
Galt C.I.	254	248	258	296	287	273	262	265	262	241	254	241
Glenview Park S.S.	275	298	313	284	275	242	218	218	201	201	202	190
Grand River C.I.	244	283	264	246	260	250	254	260	228	220	227	225
Huron Heights S.S.	252	280	282	264	272	238	224	247	236	226	222	210
Jacob Hespeler S.S.	219	281	290	250	265	249	211	249	209	184	196	184
Kitchener-Waterloo C. & V.S.	291	269	266	251	253	261	232	229	226	223	229	196
Preston H.S.	260	306	267	259	257	260	245	259	257	254	239	235
Sir John A. Macdonald S.S.	246	257	242	240	218	205	199	210	210	206	192	182
Southwood S.S.	275	225	193	177	164	162	156	158	161	157	160	156
Waterloo C.I.	265	278	272	249	256	246	233	240	242	240	239	194
Waterloo-Oxford District S.S.	243	322	321	307	281	271	274	283	265	248	260	255
<b>Average Energy Use Intensity (ekWh/m<sup>2</sup>)</b>	<b>269</b>	<b>287</b>	<b>275</b>	<b>265</b>	<b>258</b>	<b>249</b>	<b>255</b>	<b>251</b>	<b>237</b>	<b>229</b>	<b>233</b>	<b>214</b>
<b>Education Centre (ekWh/m<sup>2</sup>)</b>	<b>258</b>	<b>280</b>	<b>260</b>	<b>252</b>	<b>246</b>	<b>233</b>	<b>223</b>	<b>242</b>	<b>245</b>	<b>242</b>	<b>224</b>	<b>210</b>

**WATERLOO REGION DISTRICT SCHOOL BOARD  
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**ENERGY UPDATE**

**ANNUAL GREENHOUSE GAS EMISSION INTENSITY (kg CO<sub>2</sub>e/m<sup>2</sup>) - ELEMENTARY SCHOOLS**

<b>School</b>	<b>08</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>14/15</b>	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
A R Kaufman P.S.	38	45	39	36	35	30	22	27	21	22	24	20
Abraham Erb P.S.	34	28	27	25	25	21	20	19	19	18	18	18
Alpine P.S.	51	56	52	54	47	41	41	43	43	40	34	38
Avenue Road P.S.	44	70	57	33	26	25	24	24	25	23	24	25
Ayr P.S.	43	52	48	46	42	39	32	31	30	29	29	29
Baden P.S.	41	28	25	23	22	19	19	17	17	17	18	19
Blair O.E.C.	Un.	53	47	50	45	42	39	45	30	31	33	30
Blair Road P.S.	75	41	35	38	30	28	26	26	22	20	20	20
Breslau P.S.	61	69	44	44	38	47	33	32	32	29	28	25
Bridgeport P.S.	44	42	41	45	42	26	21	22	11	22	23	22
Brigadoon P.S.	35	49	32	25	24	19	17	15	16	15	15	15
Cedar Creek P.S.	38	34	28	26	25	22	20	19	22	19	24	23
Cedarbrae P.S.	52	42	52	43	41	37	37	36	34	32	38	34
Centennial (Camb) P.S.	48	49	41	40	42	35	31	33	34	32	32	32
Centennial (Wloo) P.S.	70	46	41	41	40	39	36	35	35	31	31	34
Central P.S.	49	51	45	47	46	42	40	43	42	32	33	32
Chalmers Street P.S.	48	47	46	49	41	36	31	31	26	25	25	25
Chicopee Hills P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	20	15	14
Clemens Mill P.S.	40	36	31	30	30	26	26	31	26	24	23	20
Conestogo P.S.	47	46	42	45	38	33	31	36	33	28	31	27
Coronation P.S.	80	66	61	54	53	48	50	53	56	53	53	54
Country Hills P.S.	33	35	32	47	38	30	28	23	20	18	20	21
Courtland Senior P.S.	44	44	42	37	36	43	34	29	27	30	32	26
Crestview P.S.	44	57	51	47	52	46	49	45	45	45	41	33
Dickson P.S.	33	32	31	27	28	27	16	Dis.	Dis.	Dis.	Dis.	Dis.
Doon P.S.	50	53	47	35	33	28	24	22	24	27	26	23
Driftwood Park P.S.	41	32	27	27	24	19	21	15	9	15	16	13
Edna Staebler P.S.	N.O.	28	24	22	22	18	18	17	17	16	18	18
Elgin Street P.S.	35	37	31	28	28	23	22	23	23	28	28	27
Elizabeth Ziegler P.S.	49	49	47	43	37	36	36	36	31	26	27	26
Empire P.S.	43	42	39	36	37	21	28	29	28	26	27	27
Floradale P.S.	37	32	35	36	35	26	22	29	24	20	22	22
Forest Glen P.S.	50	45	40	36	32	33	30	28	26	25	26	27
Forest Hill P.S.	57	47	41	42	34	29	27	33	31	33	32	34
Franklin P.S.	42	44	38	38	36	31	29	31	38	34	29	30
Glencairn P.S.	28	29	28	26	28	30	25	23	24	25	21	25
GrandView (Camb) P.S.	41	44	41	24	23	19	18	17	20	16	18	16
Grandview (NH) P.S.	36	57	38	38	34	29	26	29	26	26	28	28
Groh P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	16	16	13
Hespeler P.S.	36	34	28	25	23	22	21	18	18	17	17	18
Highland P.S.	59	49	46	33	28	29	29	31	32	29	29	26
Hillcrest P.S.	41	37	33	29	30	25	25	22	21	21	23	23
Howard Robertson P.S.	74	60	58	47	47	40	40	44	43	43	42	41
J F Carmichael P.S.	39	34	32	30	25	25	24	25	24	22	25	25
J.W. Gerth P.S.	N.O.	20	21	18	19	16	18	16	19	17	16	15
Janet Metcalf P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	19	15
Jean Steckle P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	18	11	12	10	10	11	11
John Darling P.S.	32	37	27	27	27	25	27	26	25	25	25	22
John Mahood P.S.	58	43	35	34	31	24	23	23	21	20	22	21
Keatsway P.S.	45	33	26	23	17	16	17	17	16	16	16	16
King Edward P.S.	108	47	45	43	43	39	44	55	43	37	32	32
Lackner Woods P.S.	34	34	30	31	29	25	24	23	21	26	23	21
Laurelwood P.S.	39	38	32	31	27	23	21	20	19	19	20	21
Laurentian P.S.	53	56	51	44	42	47	56	39	44	37	34	30
Lester B. Pearson P.S.	38	27	25	25	24	19	19	17	16	15	16	16
Lexington P.S.	55	49	48	43	42	46	34	37	35	33	33	33
Lincoln Avenue P.S.	52	62	55	54	50	23	21	Dis.	Dis.	Dis.	Dis.	Dis.
Lincoln Heights P.S.	54	45	39	38	38	32	29	44	44	31	30	32
Linwood P.S.	64	46	42	45	39	37	33	36	32	29	29	29
MacGregor Sr P.S.	36	36	34	32	31	28	27	29	28	28	31	33

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<b>School</b>	<b>08</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>14/15</b>	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
MacKenzie King P.S.	53	55	50	52	45	44	30	31	31	30	29	30
Manchester P.S.	51	56	52	49	43	38	25	25	21	17	21	21
Margaret Avenue P.S.	41	50	32	39	39	28	36	39	57	35	34	35
Mary Johnston P.S.	31	29	28	28	25	25	21	21	22	20	20	21
McQuarrie Centre	98	95	99	73	92	73	50	45	46	44	42	47
Meadowlane P.S.	40	45	43	40	37	32	27	25	32	28	24	20
Millen Woods P.S.	N.O.	N.O.	31	22	23	20	17	18	17	17	17	17
Moffat Creek P.S.	N.O.	N.O.	N.O.	N.O.	20	17	13	16	15	14	9	12
N A MacEachern P.S.	58	56	49	38	37	30	35	27	25	23	9	25
New Dawn	75	76	69	73	61	43	32	29	30	22	57	56
New Dundee P.S.	34	37	34	34	33	29	29	30	29	29	30	29
Northlake Woods P.S.	56	40	39	37	34	27	25	26	24	23	27	24
Park Manor P.S.	61	54	47	44	43	38	37	27	51	53	53	34
Parkway P.S.	52	44	41	45	50	35	30	30	27	29	25	28
Pioneer Park P.S.	42	47	41	41	40	31	30	29	33	30	26	27
Preston P.S.	32	31	30	29	28	24	21	21	21	21	21	21
Prueter P.S.	30	49	45	37	44	39	30	31	32	31	30	34
Queen Elizabeth P.S.	40	44	42	47	44	35	30	36	42	37	36	34
Queensmount Sr P.S.	72	54	58	55	42	43	50	38	39	44	37	21
Riverside P.S.	30	35	27	26	27	20	17	17	19	17	14	15
Riverside (old location)	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	12	14	17	13
Rockway P.S.	48	55	48	53	43	51	42	51	49	45	48	35
Rosemount P.S.	44	53	50	47	46	44	49	51	51	48	Dis.	Dis.
Ryerson P.S.	47	44	39	30	29	24	22	20	21	22	21	19
Saginaw P.S.	44	47	38	35	36	31	28	29	28	26	25	24
Sandhills P.S.	42	41	34	33	35	30	26	25	27	24	22	22
Sandowne P.S.	51	34	35	47	43	34	34	32	30	22	21	23
Sheppard P.S.	40	48	45	41	39	38	37	32	31	37	34	30
Silverheights P.S.	41	34	32	28	26	20	17	17	18	14	14	15
Sir Adam Beck P.S.	N.O.	N.O.	20	26	18	17	16	15	15	14	15	15
Smithson P.S.	39	46	43	44	42	30	38	37	34	37	34	35
Southridge P.S.	51	56	50	48	48	42	47	39	45	43	45	39
St Andrew's P.S.	44	33	32	28	26	24	24	25	21	22	22	23
St Jacobs P.S.	43	44	42	39	39	34	30	32	31	32	32	36
Stanley Park P.S.	54	58	53	50	45	48	38	37	41	37	42	37
Stewart Avenue P.S.	48	52	30	26	25	20	20	22	25	21	21	21
Suddaby P.S.	27	35	33	33	24	25	25	24	23	23	23	22
Sunnyside P.S.	41	42	37	33	33	31	31	28	27	27	30	27
Tait Street P.S.	41	42	41	38	37	35	25	25	24	23	23	24
Three Bridges P.S.	35	34	29	30	23	21	15	Dis.	Dis.	Dis.	Dis.	Dis.
Trillium P.S.	47	57	41	40	37	33	29	31	31	26	30	30
Vista Hills P.S.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	N.O.	18	16	14	15
W.T. Townshend P.S.	28	25	22	19	19	18	17	15	14	15	16	16
Wellesley P.S.	44	45	42	40	39	35	32	30	31	29	28	27
Westheights P.S.	55	57	40	35	33	27	26	27	22	25	20	19
Westmount P.S.	43	42	38	34	34	28	49	22	16	15	14	11
Westvale P.S.	27	23	20	17	17	14	12	11	11	11	13	13
William G. Davis P.S.	56	72	57	56	50	46	42	44	45	40	33	38
Williamsburg P.S.	28	24	22	22	20	18	18	17	20	17	17	16
Wilson Avenue P.S.	40	31	38	35	34	30	28	23	23	22	25	25
Winston Churchill P.S.	39	40	36	25	26	24	26	28	28	23	24	23
Woodland Park P.S.	31	31	27	25	22	17	17	16	15	13	16	16
Wrigley's Corners O.E.C.	Un.	52	45	55	42	36	40	45	39	40	48	36
<b>Average GHG Emission Intensity (kg CO<sub>2</sub>e/m<sup>2</sup>)</b>	<b>46</b>	<b>45</b>	<b>39</b>	<b>37</b>	<b>35</b>	<b>31</b>	<b>28</b>	<b>28</b>	<b>28</b>	<b>26</b>	<b>26</b>	<b>25</b>

**WATERLOO REGION DISTRICT SCHOOL BOARD  
BUSINESS SERVICES DIVISION  
FACILITY SERVICES DEPARTMENT**

**ENERGY UPDATE  
ANNUAL GREENHOUSE GAS EMISSION INTENSITY (kg CO<sub>2</sub>e/m<sup>2</sup>) - SECONDARY SCHOOLS**

<b>School</b>	<b>08</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>14/15</b>	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>	<b>19/20</b>
Bluevale C.I.	49	49	38	39	38	34	33	31	27	30	30	34
Cameron Heights C.I.	69	64	59	56	51	45	92	57	49	39	38	35
Eastwood C.I.	38	40	35	33	33	34	30	31	24	24	30	26
Elmira District S.S.	50	52	45	42	37	33	34	34	35	30	33	32
Forest Heights C.I.	59	56	53	56	46	40	38	36	37	44	43	35
Galt C.I.	46	42	42	48	46	40	37	38	37	32	35	36
Glenview Park S.S.	50	52	52	47	45	37	32	32	28	28	28	28
Grand River C.I.	44	48	43	39	40	36	35	37	30	29	30	33
Huron Heights S.S.	45	46	44	40	39	30	27	31	28	24	24	26
Jacob Hespeler S.S.	39	47	46	39	40	35	27	34	26	21	22	23
Kitchener-Waterloo C. & V.S.	52	47	44	41	40	40	34	33	32	31	32	28
Preston H.S.	47	53	45	43	41	39	37	39	38	37	35	36
Sir John A. Macdonald S.S.	44	42	37	36	30	25	23	25	24	21	20	22
Southwood S.S.	49	38	30	27	24	21	19	20	20	20	21	22
Waterloo C.I.	48	48	45	40	40	36	34	35	35	34	33	28
Waterloo-Oxford District S.S.	44	56	54	51	45	41	41	42	39	36	37	38
<b>Average GHG Emission Intensity (kg CO<sub>2</sub>e/m<sup>2</sup>)</b>	<b>48</b>	<b>49</b>	<b>45</b>	<b>42</b>	<b>40</b>	<b>35</b>	<b>36</b>	<b>35</b>	<b>32</b>	<b>30</b>	<b>31</b>	<b>30</b>
<b>Education Centre (kg CO<sub>2</sub>e/m<sup>2</sup>)</b>	<b>45</b>	<b>44</b>	<b>38</b>	<b>35</b>	<b>32</b>	<b>23</b>	<b>21</b>	<b>23</b>	<b>21</b>	<b>21</b>	<b>20</b>	<b>22</b>

**WATERLOO REGION DISTRICT SCHOOL BOARD  
BUSINESS SERVICES DIVISION  
FACILITY SERVICES DEPARTMENT**

**ENERGY UPDATE  
ENERGY BUDGET AND EXPENDITURES**

Commodity	2008/09		2009/10	
	Budget	Actual	Budget	Actual
Electricity	\$ 4,616,900	\$ 5,755,988	\$ 5,733,000	\$ 6,797,223
Natural Gas	\$ 5,832,400	\$ 4,966,345	\$ 5,505,900	\$ 4,480,301
<b>Total</b>	<b>\$ 10,449,300</b>	<b>\$ 10,722,333</b>	<b>\$ 11,238,900</b>	<b>\$ 11,277,524</b>

Commodity	2010/11		2011/12	
	Budget	Actual	Budget	Actual
Electricity	\$ 6,759,525	\$ 6,549,661	\$ 6,809,909	\$ 6,572,072
Natural Gas	\$ 4,915,515	\$ 4,352,896	\$ 4,958,342	\$ 3,357,832
<b>Total</b>	<b>\$ 11,675,040</b>	<b>\$ 10,902,557</b>	<b>\$ 11,768,251</b>	<b>\$ 9,929,904</b>

Commodity	2012/13		2013/14	
	Budget	Actual	Budget	Actual
Electricity	\$ 7,204,740	\$ 7,062,058	\$ 7,315,200	\$ 7,432,158
Natural Gas	\$ 3,163,721	\$ 2,377,512	\$ 3,512,270	\$ 2,934,994
<b>Total</b>	<b>\$ 10,368,461</b>	<b>\$ 9,439,570</b>	<b>\$ 10,827,470</b>	<b>\$ 10,367,152</b>

Commodity	2014/15		2015/16	
	Budget	Actual	Budget	Actual
Electricity	\$ 9,213,000	\$ 8,018,535	\$ 8,263,900	\$ 8,803,203
Natural Gas	\$ 3,007,590	\$ 2,934,994	\$ 3,055,500	\$ 2,686,392
<b>Total</b>	<b>\$ 12,220,590</b>	<b>\$ 10,953,529</b>	<b>\$ 11,319,400</b>	<b>\$ 11,489,595</b>

Commodity	2016/17		2017/18	
	Budget	Actual	Budget	Actual
Electricity	\$ 8,164,700	\$ 8,892,776	\$ 10,303,000	\$ 8,510,009
Natural Gas	\$ 2,891,800	\$ 2,726,342	\$ 2,714,000	\$ 3,044,841
<b>Total</b>	<b>\$ 11,056,500</b>	<b>\$ 11,619,118</b>	<b>\$ 13,017,000</b>	<b>\$ 11,554,850</b>

Commodity	2018/19		2019/20	
	Budget	Actual	Budget	Actual
Electricity	\$ 10,182,000	\$ 7,956,894	\$ 9,380,000	\$ 7,364,388
Natural Gas	\$ 2,997,500	\$ 2,698,385	\$ 2,971,500	\$ 2,846,183
<b>Total</b>	<b>\$ 13,179,500</b>	<b>\$ 10,655,278</b>	<b>\$ 12,351,500</b>	<b>\$ 10,210,571</b>

**WATERLOO REGION DISTRICT SCHOOL BOARD  
BUSINESS SERVICES DIVISION  
FACILITY SERVICES DEPARTMENT**

**ENERGY UPDATE  
PHOTOVOLTAIC GENERATION AND REVENUES (LIFETIME)\***

	kWh Production	Revenue
Blair Road P.S.	95,921	\$ 76,928
Forest Glen P.S.	108,542	\$ 87,051
Forest Heights C.I.	92,187	\$ 73,934
Lincoln Heights P.S.	99,513	\$ 79,810
Waterloo C.I.	116,231	\$ 93,218
<b>Total</b>	<b>512,395</b>	<b>\$ 410,941</b>

\* Reports energy produced between November 2011 and August 2020.

Links to websites are as follows:

Blair Road P.S.	<a href="http://www.cachelan.com/green/solarVuLive.php?ac=blairrdps&amp;dr=dakon">http://www.cachelan.com/green/solarVuLive.php?ac=blairrdps&amp;dr=dakon</a>
Forest Glen P.S.	<a href="http://www.cachelan.com/green/solarVu.php?ac=forestglenps">http://www.cachelan.com/green/solarVu.php?ac=forestglenps</a>
Forest Heights C.I.	<a href="http://www.foresthtsc.solarvu.net/green/solarVu.php?ac=foresthtsc">http://www.foresthtsc.solarvu.net/green/solarVu.php?ac=foresthtsc</a>
Lincoln Heights P.S.	<a href="http://lincolnhgtsp.solarvu.net/green/solarVuLive.php?ac=lincolnhgtsp&amp;dr=dakon">http://lincolnhgtsp.solarvu.net/green/solarVuLive.php?ac=lincolnhgtsp&amp;dr=dakon</a>
Waterloo C.I.	<a href="http://www.waterlooci.solarvu.net/green/solarVu.php?ac=waterlooci">http://www.waterlooci.solarvu.net/green/solarVu.php?ac=waterlooci</a>

**2019/2020 Utility Rebates Reinvestments (\$124,000)**

Westheights P.S., Forest Glen P.S., 9 others	LED upgrade to exterior lights on portables
Highland P.S.	Energy Efficient Destratification Fans in lieu of mechanical cooling - 3 rooms
Trillium P.S., WT Townshend P.S., 8 others	Water conservation inspection and repairs for high water intensity schools
Brigadoon P.S., Stanley Park P.S., 4 others	LED corridor or gym lighting upgrades
Southwood SS, Highland P.S.	Upgrade to exterior lighting control
Margaret Ave P.S., Westheights P.S., 2 others	Upgrade HVAC controls to improve energy efficiency and comfort

**2019/2020 Capital Funded Energy Efficiency Upgrades (\$80,000)**

Southridge P.S., Laurentian P.S., 2 others	LED lighting upgrades to corridors and washrooms
Courtland P.S.	Energy Efficient Destratification Fans in lieu of mechanical cooling - 3 rooms
Vista Hills P.S., Breslau P.S., 6 others	LED lighting upgrades to portables, interior and exterior - 33 portables
Laurelwood P.S., Galt C.I.	LED Upgrade to Gym Lighting
Cedarbrae P.S., Conestogo P.S., 7 others	Upgrade to exterior lighting control
Lackner Woods P.S., Cameron Heights C.I.	Install energy monitoring equipment in portables