



Appendix A to Report 19-025

## Multi-Year Energy Management Plan 2018-2021

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## Introduction

1. The Ottawa-Carleton District School Board's (OCDSB) strategic plan supports the development of Departmental work plans to address the five key priority areas of Well-being, Engagement, Equity, Learning and Stewardship. Part of the Facilities Department Work Plan is to develop an awareness of our energy usage and environmental issues and to develop strategies leading to the reduction of the OCDSB's energy consumption and Greenhouse Gas (GHG) emissions by:
  - a Reduction or elimination of activities with negative environmental impacts
  - b Recognition of positive measures provided by OCDSB staff and students
  - c Development of short and long term strategies to improve OCDSB practices

## Department Objective

2. The Facilities department is dedicated to providing leadership in the areas of energy management and conservation, waste management and environmental stewardship through its Energy Management and Conservation division (EMC).
3. In our daily activities we strive to promote energy management, environmental stewardship, sustainability principles and ecological literacy amongst all staff and students. We are committed to viewing all actions through an environmental lens and to heighten awareness about the impact of human actions on the environment by introducing and implementing innovative programs.
4. We work as a collaborative energy and environmental advisor to support other departments and individual schools throughout the District with informed practices and to safeguard and enhance the Board's physical plant and infrastructure.
5. EMC acts under the direction of the Supervisor of Maintenance and Energy Management. Our specific core functions include;
  - a. Budgeting and tracking of utilities
  - b. Gas and electricity procurement
  - c. Energy performance tracking and conservation targets
  - d. Building Automation System (BAS) integration and scheduling
  - e. Commissioning and re-commissioning
  - f. Waste and recycling management
  - g. Solar power generation
  - h. Development and implementation of an energy management initiatives plan
  - i. Energy incentives and rebates
  - j. Support environmental stewardship through EcoSchools and in collaboration with Curriculum Services.
  - k. Ensuring the Board's compliance with the Green Energy Act/Electrical Act and OReg 102/94 & 103/94
  - l. Sustainability initiatives

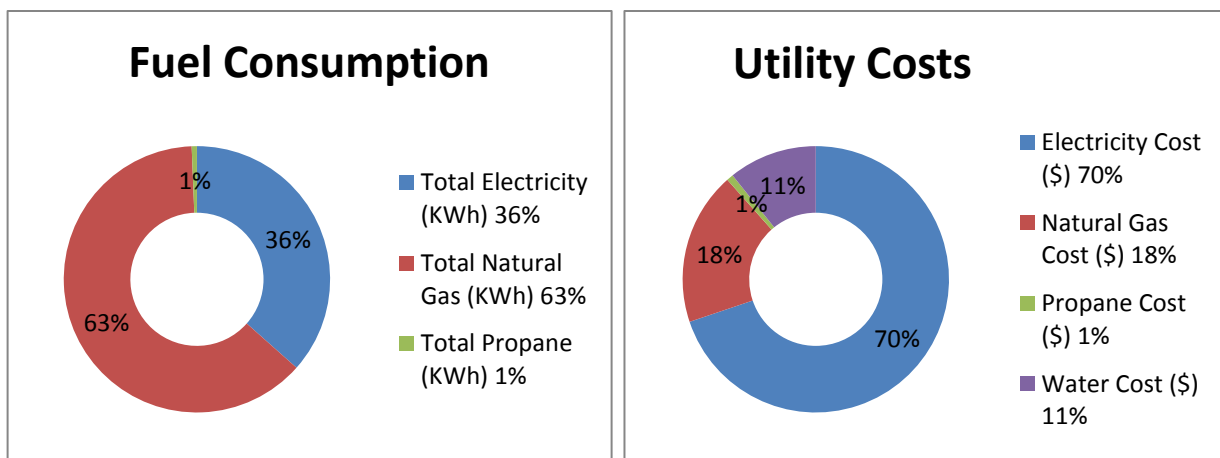
## Planning Process

6. Energy management and conservation planning process is a continuous evolving process, which will require a yearly cycle to ensure that the overall strategic goals for the District and departmental objectives are met. The figure below outlines the process.



## Energy Usage Overview

7. The charts below show a breakdown of the District's fuel consumption (by commodity) and costs (by utility). Natural gas represents the largest portion of our fuel consumption and as a result is the biggest contributor to our GHG emissions. Electricity represents the largest cost of any utility. GHG reduction measures will continue to target our systems consuming natural gas. Cost saving measures will continue to target our systems consuming electricity with a secondary focus on natural gas and water.



## **Budgeting and Tracking of Utilities**

8. Details from all energy bills (electricity, natural gas, propane and water) from local distributing companies and suppliers are presently entered into the Utility Bill Consumption Software – RETScreen. The software is used to tabulate cost and monitor energy consumption. A bill verification process was non-existent until the formation of the EMC division. Since the bill verification process started in 2010, EMC has been able to identify various billing errors and has been successful in recouping payments of approximately \$410,000 for the District. Billing errors are discovered during the verification process and follow up is done with the utility companies to ensure corrections are made on subsequent billings.
9. Forecasting of utilities costs for each facility are performed annually and submitted for budgeting purposes. Projected annual rate increases from the utilities companies are factored in when forecasting the next fiscal year's energy costs. Other factors that affect costs (usually a cost increase) but are not taken into account during budgeting because of their unpredictability include: heating/cooling degree days (a measure of the severity of outdoor temperatures throughout the year), increases in floor areas (new schools, additions and portables), increased hours of operation through community use of schools, and increased consumption due to construction activity. In addition, where older basic buildings have been eliminated, most new buildings, additions and retrofitted buildings are equipped with extensive mechanical systems and air conditioning which has a further negative effect on electricity usage.
10. Energy prices have fluctuated substantially in response to world and national events. For the fiscal year (FY) 2019, the electricity unit cost is projected to increase by 8% and water is projected to increase by 6%. The unit cost of natural gas is expected to remain relatively stable over the next couple of years. However, the implementation of the new Federal Carbon Tax will substantially increase the gas budget as it is fully implemented.

## **Gas Procurement**

11. The District has been able to tailor its purchasing to maximize savings in recent years. While the gas pricing was very favourable in the spring/summer 2017, the District was successful in locking in all of its current commodity volume from November 1, 2017 to August 31, 2020 at prices lower than we have not seen in decades. The commodity savings will more than offset the increase in delivery charges by Enbridge. However, moving forward we can expect a substantial increase as a result of the proposed Federal Carbon Tax. As a result of this tax, increases of 35% for 2019-2021 and a further 25% in future years can be expected.

## **Electricity Procurement**

12. The sum of the electricity pricing remains fairly stable. Whenever the cost of electricity is lower, global adjustment is increased and vice versa. This relatively stable rate includes an increase of approximately 8% per year. Offsetting reduction in the electricity budget can only be achieved through substantial conservation efforts and/or energy generation.

## Energy Performance Tracking & Conservation Target

13. Energy cost and consumption data is currently being tracked in several ways, such as live monitoring through the building automation systems and via a database of on-site meter readings. As well, details from all energy bills (including electricity, natural gas, propane and water) from local distributing companies and suppliers are entered into the Utility Bill Consumption Software (RETScreen). The software allows us to audit and analyze the data, produce summary reports and 'benchmark' the individual facilities. Benchmarking is a tool used to evaluate a facilities performance and identify areas and facilities with the greatest opportunities for energy conservation and cost savings.
14. In addition, through the Energy Management and Conservation Initiative from the Ministry of Education (MOE), Aegent Energy Advisors, the consulting firm working on behalf of the MOE, populates gas and electricity data from all Ontario Local Distribution Companies (LDC) into a Utilities Consumption Database (UCD). All data is accessible through a central website (province wide) which the Ministry of Education is funding. This program is used to help generate the annual consumption reports mandated by the Green Energy Act (transitioning to the Electrical Act) and the MOE. This legislation also requires each Board to submit a 5 year Conservation and Demand Management Plan. These reports are posted on our OCDSB website, in compliance with the legislation.
15. Energy Use Intensity (EUI) is an indication of overall energy efficiency. It is expressed as the energy consumption per area or equivalent kWh per square meter and takes into account both heating energy and electricity. When comparing FY 2018 to the baseline year, we show a reduction in EUI of 9.9%, a clear indication of the positive impact of the energy saving initiatives. We continue to meet and exceed our annual reduction targets.
16. Through the ongoing energy performance tracking we are able to identify the benefit of work done since FY 2009 baseline year. From the consumption numbers we calculate a cost avoidance of \$2,544,328 for FY 2018 year and a cumulative value of \$8,738,631 since the baseline year (see Appendix B). The baseline year consumption is adjusted for the increase in facility total area and weather normalized to the comparison year. The adjusted baseline is the estimated consumption and cost that would have been experienced by the District had no energy initiatives been implemented.
17. Besides the cost savings and GHG reductions, there are many other benefits from our energy saving initiatives. These 'Non-Energy Benefits' are realized by the Board in many ways. A few examples are: installing new Building Automation Systems saves on energy costs and also improves the indoor comfort for students; LED lighting retrofits greatly reduce the frequency of lamp changes required by the custodial staff; upgrading heating and air conditioning systems to more energy efficient systems reduces the service time required by our maintenance staff and addresses a retrofit project at an earlier time than equipment failure. When selecting projects for implementation, the non-energy benefits are an important factor.
18. The success in achieving our targets can be largely attributed to the ongoing implementation of the Multi-Year Energy Plan, led by the EMC division in Facilities. Essential to the continued success of the program is buy-in from the various groups within Facilities, buy-in from the District's senior staff and buy-in from the staff and students at each school. Notwithstanding the ongoing implementation of energy

conservation projects by Facilities, the success of this program is contingent on all building occupants following the District's best practices for energy conservation, such as:

- Lights are turned OFF when not required
- Computers and other electronic equipment are turned OFF when not in use and at the end of each day
- The networked photocopiers are used instead of individual printers
- Space around heating vents on walls, window sills and radiators are kept free of obstructions
- Personal appliances (heaters, refrigerators, air conditioners, fans, etc.) are not placed in classrooms
- Doors and windows to the outside of the building are not left open longer than necessary
- The school adheres to Board standard room temperature settings
- Building systems equipment is checked regularly for proper operation. Any problems are reported promptly by using the Facilities work order system.

19. The province of Ontario has announced a target for reduction in greenhouse gas emissions by 80% from 1990 levels, by 2050. The OCDSB calculates emissions annually and this is reported on the Utilities Consumption Database submitted to the Ministry as part of our legislated reporting requirements. Like other school Districts, we had set a reduction target of 10% by the year 2023 or approx. 1% annually using a starting baseline year of 2013. This is reflected in our five-year Conservation and Demand Management Plan and is consistent with the original targets set by the City of Ottawa. Based on our early success we have further increased our 10 year (2023) GHG reduction target to 15% to help maintain our focus.

20. As a leader in the community and recognizing the national priority of GHG reduction initiatives, we continue to identify ways to significantly accelerate the existing 10 year target. We recognize however, that this can only be achieved with increased funding from the province to assist with further building retrofits and ongoing maintenance.

	FY2013 (base year)	FY2014	FY2015	FY2016	FY2017	FY2018
GHG Emissions (raw data)	28,679	30,347	27,660	24,356	24,191	25,101
% Change (vs base year)	-	+5.8%	-3.6%	-15.1%	-15.7%	-12.5%
FY2013 GHG Emissions (adjusted) (1)	-	31,439	32,054	27,907	29,162	31,036
% Change (vs base year)	-	-3.5%	-13.7%	-12.7%	-17.1%	-19.1%

(1) Base year raw data (28,679 tons) has been adjusted to reflect the change in total buildings area and the winter weather (heating degree days) for each year

## **Building Automation System (BAS) - Integration and Scheduling**

21. Over a period of seven years EMC has integrated the various existing BAS's onto a common communication platform. In addition, new BAS's were installed where none existed. All facilities are now centrally controlled via a master BAS and communicating on a common software platform. Investment in the BAS will continue, to upgrade older components and ensure compatibility with current industry standards. Primary responsibility for managing the Board's BAS is assigned to the EMC division.
22. The building systems should always be operated in the most economical and efficient way possible and only for the amount of time required to provide the comfort conditions for a specific occupancy. Through continuous monitoring of all heating, ventilation and air conditioning equipment, lighting controls, scheduling of events and optimizing building setbacks, further efficiencies can be achieved. Operating schedules are closely monitored and coordinated with the school's classroom hours, community use of schools, extended day programs and daycares. These programs have all contributed to an increase in operating hours of the building systems. However, schedules are being optimized wherever possible.
23. One function of the BAS is to maintain standardized temperature set points. The current standard in all schools (when fully occupied) is as follows: 21°C in winter in each designated school space with the exception of the gymnasium, which when used for physical education purposes will be set at 18 °C. The temperature setting for the summer, in schools where mechanical cooling is available, is 25 °C in all spaces during occupied periods. These set points are consistent with the industry standards and procedures being followed by other Districts in the province.

## **Commissioning and Re-Commissioning**

24. Building commissioning (new construction) is defined as a systematic process of assuring, by verification and documentation, all building systems perform in accordance with the design intent and the owner's operational needs. During this process, testing and adjusting are performed to ensure systems are operating for optimal energy performance. Through verification of systems operation and coordination of OCDSB staff training, we are able to ensure a smooth transition and hand over of the facility from the constructor to the OCDSB at project completion.
25. On new capital projects, EMC staff assist with the commissioning process and set out the criteria for the commissioning of HVAC equipment and systems. In doing so we are able to ensure quality of work and provide cost savings for the project.
26. Re-commissioning (existing buildings) is a process that looks at how and why a building's systems are operated and maintained as they are and then identifies ways to improve overall building performance. Since occupant comfort complaints and high energy use can often go hand-in-hand, re-commissioning can help to correct both. During the re-commissioning process a complete building inspection is performed including systems testing and monitoring. From that, a list of recommended improvement projects is

produced. Implementation of these projects may occur during the current year or be planned for future years based on budget constraints.

27. Re-commissioning work is performed by the Commissioning Coordinator in EMC. Sites are evaluated based on current energy performance and occupant feedback in order to select the best candidates that will provide maximum benefit to the District.

## Waste Management and Recycling

28. The budget for solid waste management and collection continues to be decreased. We have gone from \$1,045,000 budget in FY 2010 to \$650,000 budget for FY 2019. This decreasing trend is attributed to the implementation of the two stream recycling and composting (green bin) programs, improved participation in the recycling and green bin programs within schools and a more aggressive tracking & scheduling of pick-ups administered through our EMC division. This budget line includes the collection and disposal of solid waste from all District facilities and the collection and recycling of mixed paper, cardboard and plastic containers. Through the sale of our recycled materials we were able to generate revenues for the District in the amount of \$51,685 for FY2018 which was used to offset some of the waste collection costs.

29. Collection of organic materials (composting) is currently being offered by the City of Ottawa under the 'Green Bins in Schools' program at no cost to the District. We continue to support schools interested in participating in this program.

30. Detailed information on waste, recycling, and composting is gathered for each facility and provided to the facility administrator to assist them in preparing their reports for compliance with the Ministry of the Environment O.Reg 102/94 Waste Audits and Waste Reduction Plans and 103/94 ICI Source Separation Programs. The chart below summarizes the District's waste collection by weight. While we had a significant increase in our Diversion rate in the previous year, the chart below indicates that our overall diversion rate last year has decreased slightly compared with the previous year. Through ongoing promotion we hope to continue to reduce our total refuse generated and increase school participation in our recycling and composting programs.

	<b>2016-2017</b>		<b>2017-2018</b>	
	Weight (kg)	Diversion %	Weight (kg)	Diversion %
Refuse (landfill)	1,886,860		2,056,760	
Fibre Stream (black box)	469,440	18.1	469,380	17.3
Container Stream (blue box)	106,560	4.2	95,740	3.5
Composting (green bin)	126,000	4.9	95,740	3.5
<b>Total</b>	<b>2,588,860</b>	<b>27.2</b>	<b>2,717,620</b>	<b>24.3</b>



## Solar Power Generation

31. The success that the District is having with Ontario Power Authority's (OPA) Feed In Tariff (FIT) program is a result of the early adoption back in 2009. The District currently owns and is receiving revenue on 13 MicroFIT systems having a capacity of 10 kW each. Revenue is also being received for the lease of roof space at 28 schools for FIT systems currently in operation, giving a total of 41 sites with solar generation through the FIT program.
32. The original solar revenue targets were set at \$250,000 per year annually at the start of the Solar FIT program. The following table indicates last year's annual revenue and estimates for the next 3 years for systems currently in operation. (See Appendix C).

### Solar FIT Summary

Year	Micro-FIT Revenues	FIT Revenues	Total FIT Revenues	Revenue Commitment	Amount above Commitment
2017-2018	\$119,115	\$249,984	\$369,099	\$250,000	\$119,099
2018-2019	\$119,115	\$250,000	\$369,115	\$250,000	\$119,115
2019-2020	\$119,115	\$250,000	\$369,115	\$250,000	\$119,115
2019-2020	\$119,115	\$250,000	\$369,115	\$250,000	\$119,115

*2018-2021 Estimated values*

33. With the expiration of the FIT program, net-metering solar power generation systems are a viable opportunity for new solar initiatives in the District. Net-metering systems provide the District with the ability to consume the electricity generated on site. The electrical generation may offset as much as 50% of the annual electricity usage at a school, depending on the installed system's size and the school's actual usage.
34. Five sites were selected for net-metering system installations last fiscal year which were completed in the spring of 2018. Four sites were selected for new installations this year which will start generation in the spring of 2019. We will continue to add more net-metering systems in the upcoming years, as budgets permit. Following is a summary of the performance of our solar net-metering sites.

### Solar Net-Metering Summary

Solar Generation FY2018	Cost Avoidance FY2018	Solar Generation FY2019	Cost Avoidance FY2019
367,963 kWh	\$61,045	887,885 kWh	\$154,847

## Energy Incentives and Rebates

35. There have been many incentives offered by Federal and Provincial authorities and utility providers over the years. Facilities has been very successful in obtaining the incentives for new construction such as the Commercial Building Incentive Program (CBIP) and High Performance New Construction (HPNC) offered by Natural Resources Canada. Previously, the Facilities department did not have the staffing resources to apply for the smaller incentive grants offered by other agencies until the formation of the EMC division. From its start in FY 2010 to the end of FY 2018 the EMC division has been successful in obtaining a total of \$821,753 in incentives from Hydro Ottawa, Hydro One, and Enbridge Gas for efficiency upgrades.

## Development and Implementation of an Energy Management Initiative Plan

36. In an effort to continue to improve our facilities energy performance year to year, we are constantly evaluating new technologies and engineering concepts to determine their suitability for use at our facilities. Many initiatives are proposed and the ones offering maximum benefit are selected and form the Energy Management Initiatives Plan. This plan is updated annually and is to coincide with the 5 year plan developed and posted on the District web site to satisfy the requirement of the Green Energy Act OReg 397/11. Five major initiatives for the current year are:

### **i) Building Automation System Integration and Upgrades**

Facilities throughout the Board have been built with various levels of building automation systems and from various vendors. By integrating all systems onto a common platform, we are able to properly manage and operate the building systems from one central location. Investment in the BAS will continue, to upgrade older components and ensure compatibility with current industry standards. The BAS allow us to operate HVAC and electrical systems for optimal performance and adjust operating schedules to match the user requirements.

### **ii) Lighting Retrofits**

As technology improves, more energy efficient lighting systems are becoming available. We are taking advantage of this by retrofitting older systems with new high efficiency lighting such as LED fixtures. Automatic lighting control systems are being incorporated to turn off lights when not needed and reduce lighting levels when natural light (daylight harvesting) is available.

We will continue with the “black-out” of sites from last year’s pilot program where all outside lights are to be turned on at 6:00 am until sunrise, turned off during daylight hours, turned on at dusk and turned off automatically 15 minutes after the last custodian activates the security system upon leaving the premises.

### **iii) HVAC Controls Upgrades**

In many cases HVAC equipment can be found to be in good working order. However, the overall systems may not be operating efficiently due to the way they are being run. By upgrading to automated controls and utilizing technology such as variable frequency drives and heat recovery systems, we are able to maximize the systems efficiencies.

#### **iv) Projects from Re-Commissioning**

Re-commissioning, as previously described, can help to correct both occupant comfort complaints and building high energy use. Project lists produced by the re-commissioning process will vary from school to school but may include replacement of old inefficient equipment, upgrades to lighting and HVAC control systems, and modifications to the building's automated control systems.

#### **v) Awareness / Occupant Behaviour**

We will continue to increase awareness of energy usage at the school level through various methods, such as live monitor displays of energy usage at each school and direct feedback to the Chief Custodians.

Each facility is now equipped with an energy monitor displaying energy usage, energy saving tips and short video clips to promote energy conservation and environmental initiatives.

EMC has developed an electronic database to record data from the utility meters at each site. This enables EMC to provide direct feedback to the custodial staff on the energy usage at their facility.

EMC will continue to support schools involvement in the Ontario EcoSchools program, which in turn offers a variety of conservation activities.

### **Energy Management Initiatives Plan Implementation**

37. The following table summarizes the costs to implement the current program for the next 3 years and coincides with the values identified in the Green Energy Act reporting.

Year	Budget
2018-2019	\$1,859,000
2019-2020	\$1,909,000
2020-2021	\$1,959,000
Total	\$5,727,000

Refer to Appendix D for a more detailed summary of the energy management initiatives plan which dates back to the baseline year of 2009-2010.

### **Support of Environmental Stewardship**

38. The Ontario EcoSchools Program is an initiative that focuses on staff and students. It promotes energy conservation and waste minimization through occupant behaviour and is supported by staff from both leading and learning services. This program will be promoted through the Environmental Education Steering Committee. The implementation plan will be as follows:

- a. An Eco Team is created in each school following the Ontario EcoSchools "Six Pillar" program. The Eco Team may include teachers, the principal or vice-principal, staff, students and the custodian. Ontario EcoSchools hosts one workshop in October every school year and the District hosts two workshops

scheduled around the two main deadlines of the Ontario EcoSchools program to assist with certification completion.

- b. An energy conservation and waste minimization initial eco review is conducted in each school before the end of January as per the Ontario EcoSchools certification guide. A follow up review is completed before the end of April to finalize applications.
- c. The EMC division makes energy consumption, waste and recycling information, live solar generation data, Ontario EcoSchools resources, and other environmental stewardship links available through the live monitor displays, networking, and the District's internal Google system.

39. In order to support the Ontario EcoSchools program, the Environmental Management Coordinator liaises with the environmental representatives at the various schools to best support their efforts. School visits are scheduled upon request to help with the waste and recycling program and to coordinate waste audits. The main goal of the program is to promote conservation and create habits which students, teachers and staff can bring home and implement in their daily lives, creating a broader impact to community sustainability. More information reflecting all school environmental stewardship initiatives will be made available in the annual Stewardship Report.

## **Sustainability Initiatives**

40. The entire Facilities department is committed to sustainable initiatives across the Operations, Maintenance, Design & Construction, and Energy Management and Conservation divisions. The following is a brief overview of the areas that support the District's goals.

41. The benefits of all energy savings strategies help to reduce the District's carbon footprint and greenhouse gas emissions.

### **Waste & Recycling**

Through ongoing promotion from Facilities and increased efforts by the schools in the recycling and composting programs, our diversion rates have increased and the overall refuse being generated has been reduced.

### **Green Clean**

The District continues in its efforts to use green cleaning products so as to minimize the adverse effect cleaning products can have on the environment. Permissible products are "EcoLogo", "Green Seal", or "Environmental Choice Program".

### **Trees**

We continue our struggle to overcome the devastation caused by the emerald ash borer infestation. In the last year five years we have had to cut down over 1,160 dead trees. We have inoculated approximately 400 ash trees to keep them healthy. The District has planted over 350 new trees of various species at 49 different sites. Another 300 new trees have been planted through donations and programs from The City of Ottawa.

In addition, we have created an 'Adopt-a-Tree / Create-a-Forest' program. Seedlings are provided to the schools who care for the seedlings until they are of size suitable for planting. They are then planted at a location at the MacSkimming Outdoor Education Centre. Last year 300 seedlings were delivered to the schools which resulted in approximately 180 trees being planted at MacSkimming.

### **Fleet Vehicles**

Efficiency improvements within the fleet started with the replacement of 20 leased compact cars with hybrid subcompact cars cutting the fuel consumption in half. The process of right-sizing of vehicles for the individual trades is now ongoing. Instead of simply replacing large old vans with identical newer ones, large old vans are being replaced with more efficient mid-size work vehicles. Considerations are being made on the use of electric vehicles in the future.

### **Electric Vehicles (EV) Charging Stations**

With the introduction and public acceptance of electric vehicles, Facilities is rolling out some trials on EV charging stations at the Facilities Stittsville Depot and 133 Greenbank. Costs associated with the installation of the charging equipment were funded through GHG funding and other incentives. Future sites will be considered as trials are completed.

### **Water Bottles**

In support of the environmental initiative to reduce the amount of single use water bottles consumed within our schools, water bottle filling stations were installed throughout the District in 2011. To date an equivalent of over 5.9 million 16 oz. water bottles have been filled using the water bottle filling stations.

### **Carbon 613**

Carbon 613 is a made-in-Ottawa target-based sustainability program where member organizations are plugged in to a local network, supported in setting a green gas reduction target, and celebrated for progress made towards environmental results. As a key member of Carbon 613, the District will be revered as an environmental leader in the Capital Region.

### **Energy Evolution**

The District is working in collaboration with the City of Ottawa and other major stakeholders on the development and implementation of the Energy Evolution initiative to reduce city-wide greenhouse gas emissions.

### **New Construction**

New buildings and additions continue to be designed and constructed to LEED-like standards. The District receives energy efficiency rebates through programs like the High Performance New Construction (HPNC) incentives for investments into upgraded building components. A continued focus on improving new building construction designs to set targets towards a net-zero energy performance.

### **Lighting Upgrades**

Lighting on the exterior of buildings is being systematically changed to LED to improve the efficiency and take advantage of the extended lifespan. LED lighting is also being

introduced inside buildings along with occupancy sensors and daylight harvesting, where feasible, during renovations and new construction.

### **Green Energy**

The District owns green energy installations at several locations. One type of installation is a solar hot water heating system which is installed at a high school. There are 13 small (10 kW) solar photovoltaic (PV) MicroFIT arrays on the roof of 13 individual schools.

The District also has larger solar PV systems under a lease agreement at 28 schools through the FIT program. These arrays generate 50 to 250KW depending on the size of the installation.

Solar net-metering systems provide the District with the ability to consume the electricity generated on site. As part of a new initiative in 2018, five (5) sites had net-metering solar power generation systems installed. An additional four (4) sites have systems being installed in 2019. Further installations are being planned as future funding becomes available. In 2019 we will have net-metering systems in operation with a 1161 kW AC capacity.

### **Environmental Stewardship Program**

As part of the environmental stewardship program, many schools were actively participating in the EcoSchools program last year with 53 schools achieving certification. We will continue to promote participation in the EcoSchools program with the expectation that more schools will come on board next year.