

**DATE:** September 12, 2017  
**TO:** Board of Trustees  
**FROM:** Darrel Robertson, Superintendent of Schools  
**SUBJECT:** District Energy and Environment Strategy 2016–2019  
**ORIGINATOR:** Dr. Lorne Parker, Executive Director  
**RESOURCE**  
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**REFERENCE:** N/A

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### ISSUE

Under the umbrella of the District's Infrastructure Plan, a District Energy and Environment Strategy 2016–2019 (Attachment I) has been developed. The Energy and Environment Strategy summarizes ongoing initiatives to reduce the District's impact on the environment and raises awareness of environmental sustainability goals that have been accomplished.

### BACKGROUND

Edmonton Public Schools' District Energy and Environment Strategy focuses on four key priorities: sustainable buildings, sustainable operations, sustainable planning and sustainable education. It will be used as a benchmarking and public reporting tool to report on the District's environmental performance. The strategy will be updated every four years to encourage goal setting and achievement. The Infrastructure department and EnviroMatters Office monitors and provides updates on all the initiatives outlined in the report, in partnership with both internal departments and external agencies as required.

Solar Solutions for Schools, one of the District Energy and Environment Strategy goals, is a large-scale concept in development that is focused on reducing our carbon footprint. A feasibility study has been conducted to determine the solar potential across our current facility portfolio. Additionally, six District schools have recently been approved by the Government of Alberta for funding on solar installations.

The District has recently partnered with Eco Ammo, an Edmonton based sustainable consulting firm, to start quarterly reporting of the District carbon footprint. The data from each quarterly report will be combined into an annual report complete with carbon mitigation suggestions. These annual reports will help develop our environmental goals and be another piece that is incorporated into the District Energy and Environment Strategy document review every four years.

### CURRENT SITUATION

The District's current environmental initiatives are outlined on the [EnviroMatters website](#). The strategy will be made available to the public via the EnviroMatters website and Edmonton Public Schools' social media channels to show the District's commitment to planning for energy and environmental sustainability. The strategy will also be integrated into planning and used internally to help inform new

school design. The Infrastructure department is working closely with Communications to develop a communication strategy and tiered release of the document, first internally and then publicly, beginning this year. Internal reporting of data and strategy goals will become important components.

Over the past year, the provincial and federal governments have been increasing regulations around carbon emissions with strategies like the Alberta Climate Leadership Plan and Pan-Canadian Framework on Clean Growth and Climate Change. With the increasing focus on emissions and carbon taxes, it is going to become commonplace and potentially an operating requirement for large institutions and building owners to develop mitigation strategies. Climate change strategy discussions are happening at every level of government and it is important for Edmonton Public Schools to be a part of the group that is leading change. As the sixth largest school district in Canada, releasing a comprehensive strategy puts Edmonton Public Schools in a position to influence change and be leaders in the city and across the province.

#### KEY POINTS

- The District Energy and Environment strategy allows this information to be organized into a concise document for ease of reference and monitoring, both internally and publicly.
- District staff and students will have online access to the strategy containing the entirety of information, initiatives and resources available to them.
- Moving forward, administration will work collaboratively with provincial ministries and industry to advance the Solar Solutions for Schools concept.

#### ATTACHMENTS and APPENDICES

ATTACHMENT I      District Energy and Environment Strategy 2016-2019

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# Edmonton Public Schools

## District Energy and Environment Strategy 2016–2019

Prepared by the EnviroMatters Office in Partnership with Edmonton Public Schools Infrastructure Department and the District Environmental Advisory Committee

*“Edmonton Public Schools is committed to environmental stewardship through continual improvement and modeling best practices of sustainability in education, conservation, protection and regulation.”*

— *Edmonton Public Schools, Environmental Policy, 2010*

Date: January 2017

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## 1 INTRODUCTION

The Vision and Mission of Edmonton Public Schools is to transform the learners of today into the leaders of tomorrow and to inspire student success through high quality learning opportunities, supported by meaningfully engaged students, parents, staff and community. Supporting the Vision, Mission and Priorities are the District's cornerstone values of accountability, collaboration, equity and integrity.

Diverse programs of study support the District Mission statement by giving parents and students different paths to achieve academic and personal success. The District believes that all students can learn and is committed to meeting the schooling needs of all students in Edmonton Public Schools through the provision of a range of programs and instructional options to accommodate their differing needs and interests.

Through commitment to environmental and social responsibility, as well as inclusive education, Edmonton Public Schools is making a strong statement about the District's ability to address and meet the changing needs of staff and students in 21<sup>st</sup> Century classrooms. This strategy document serves as an overview of existing sustainability efforts and a framework for upcoming initiatives.

### 1.1 Environmental Sustainability Commitment

Edmonton Public Schools recognizes the importance of environmental education and sustainable learning environments. The EnviroMatters Office is an initiative of the Infrastructure department and the center of the District's environmental initiative. It was created in the fall of 2008 to:

- Report on past, present and future District environmental initiatives
- Examine the environmental impact of schools and services upon their communities
- Recommend best practices to reduce environmental impacts
- Develop strategies, actions and programs that support sustainable research and innovation within the District
- Track District utility consumption and explore efficiency strategies
- Offer staff, students and community information about initiatives in our District schools
- Provide links to curricular resources, student activities and funding opportunities
- Provide links to local, provincial, federal and international energy and environmental websites

Edmonton Public Schools has been, and will continue to be involved in energy and environmental conservation projects in the areas of waste reduction, recycling, water and energy conservation, naturescapes and alternative and renewable energy sources.

### 1.2 Current Environmental Policy

Under the District Board Policy [EO.BP-Environment](#), Edmonton Public Schools recognizes that the consumption of resources in the pursuit of teaching and learning impacts the environment. The District is committed to environmental stewardship through continual improvement and modeling best practices of sustainability in the following four areas:

- **Education:** the District shall promote continual awareness of the environmental impact of District operations.
- **Conservation:** the District shall conduct its business in an environmentally responsible manner.

- **Protection:** the District shall encourage attitudes of continual improvement and lifelong care for the environment.
- **Regulation:** the District's environmental practices shall meet or exceed the existing regulations, standards and laws, as set out by the various levels of civic, provincial and federal government.

The application of this policy shall maintain a reasonable balance between sustainability and life cycle costs that ensures the primary role of teaching and learning is upheld. The success of this policy is the responsibility of all Edmonton Public Schools' students, staff and community stakeholders.

### 1.3 Strategy Framework

The framework for the Edmonton Public Schools Energy and Environment Strategy is guided by District Priorities and the District Board Policy [EO.BP–Environment](#), which was formalized in 2010. It is a comprehensive document that will acclimate to the needs of the District and to the ever changing environmental landscape. The strategy outlines District efforts ranging from small projects working under larger sustainability initiatives, through to District-wide environmental policy and program development.

## 2 Measuring Performance and Efficiency

Edmonton Public Schools follows the Leadership in Energy and Environmental Design (LEED) silver standard for building new District schools and looks to external consultants and best practice models for environmental program development and for upgrades to existing schools.

### 2.1 LEED Certification

Alberta recently adopted the Leadership in Energy and Environmental Design (LEED) Silver standard for all new schools. This started with the Alberta Schools Alternative Procurement (ASAP) Phase I project and the construction of 18 LEED schools in Edmonton and Calgary, using a Public-Private Partnership (P3) model. LEED schools provide a healthier learning and working environment through use of natural light, improved air quality, in addition to being more energy-efficient and more cost effective to operate.

ASAP Phase II featured 14 additional new schools in the Edmonton and Calgary regions, built to a minimum LEED Silver standard. This standard accommodates a range of green building strategies, such as: LED (light-emitting diode) lighting, lighting controls, occupancy sensors, high-efficiency boilers, heat recovery displacement ventilation and the use of select building materials such as wood and concrete to augment the 21<sup>st</sup> Century learning environment. The waste diverted from landfills, recycled materials, local content, low volatile organic materials and paints, and energy and water efficiencies all work to reduce the environmental footprint. Outlets to charge electric vehicles and reserve stalls to encourage carpooling are some other green design features.

Edmonton Public Schools' existing green cleaning products and recycling programs also meet LEED requirements that complement the ASAP schools.

Lillian Osborne School was Edmonton Public Schools' first LEED building to officially receive the Silver designation. This school was not part of the P3 project; it was completed with the consultant and general contractor working directly for Edmonton Public Schools. Michael Strembitsky, Major-General Griesbach, Bessie Nichols, Elizabeth Finch, A. Blair McPherson and

Johnny Bright schools have all received LEED Gold designations, with Esther Starkman, Florence Hallock and Dr. Donald Massey schools each receiving LEED Silver designations.

All new District schools are built to achieve a minimum LEED Silver certification, including Dr. Margaret Ann-Armour, Nellie Carlson and Roberta MacAdams, which opened in the fall of 2016. In the fall of 2017, eleven new schools will be opening throughout the city and will be pursuing LEED certification.

## 2.2 Sustainability Reporting

### 2.2.1 District Footprint Reporting

For all other Edmonton Public Schools, the District works with external energy and environmental consultants and looks to various best practice models to stay informed of industry trends, in an effort to meet or exceed standards in environmental responsibility.

Edmonton Public Schools waste, recycling and utility monitoring project is designed to provide up-to-date status of waste diversion rates, utility usage and building performance (environmental footprint and efficiency) information to central and school decision units. These systems provide a proactive approach with reporting tools that monitor and report on waste diversion rates and utility use. Baseline usage levels are established and reports are generated to include District and site level data on an annual and quarterly basis.

Since 2008, the EnviroMatters Office has been reporting on the District's environmental footprint and making it available online for staff, students and the public to view. The EnviroMatters Office has recently contracted EcoAmmo, an Edmonton based sustainable consulting firm, to start monitoring the carbon footprint of the District as a whole, with the future goals of investigating the footprint of individual schools. The information gathered through the monitoring process can assist in making informed decisions with regards to retrofitting, renovations and strategic planning for energy, waste, and water reductions.

### 2.2.2 Strategy Benchmarking

The District Energy and Environment Strategy is a benchmarking tool to track and report on the District's sustainable performance and will be reviewed every four years by the Infrastructure department and EnviroMatters Office to encourage goal setting and achievement. Consultations with external agencies will be ongoing to monitor goals, timelines and key performance measures and track the success of the strategy.

The Infrastructure department and EnviroMatters Office will work to monitor the initiatives outlined in the District Energy and Environment Strategy, in collaboration with both internal departments and external agencies, and adhere to a triple bottom line sustainability approach by focusing equally on environmental, economic and social factors in program and project development.

## 3 Key Priorities

The District Energy and Environment Strategy focuses on four main areas for implementing environmental initiatives: 1) Environmentally Sustainable Buildings, 2) Environmentally Sustainable Operations, 3) Environmentally Sustainable Planning and 4) Environmentally Sustainable Education. Each area is comprised of multiple sustainability initiatives from which projects are developed.

### 3.1 Environmentally Sustainable Buildings

#### 3.1.1 New Design

Through sustainable building construction, operation and maintenance practices, Edmonton Public Schools addresses the importance of creating healthy, 21<sup>st</sup> Century learning spaces while protecting the environment. The District works to meet and exceed industry standards by incorporating new advancements in sustainable design in all projects areas from large scale major maintenance plans and the construction of new schools, to small scale retrofits and operating procedures in existing District schools and administration buildings. Alternative energy projects such as solar PV continue to be investigated for feasibility and sustainability in both new design and upgrades. For all new schools, the Project Management Office (PMO) staff instructs consultants to implement specific, cost effective, and proven energy efficiency measures in their designs and specifications.

Incorporating environmental features and LEED standards into the design and construction of new District schools involves a range of green building strategies, such as; energy-efficient lighting, lighting controls, occupancy sensors, high-efficiency boilers, heat recovery displacement ventilation and the use of select building materials such as wood and concrete. For new school design, the long-term goal of the EnviroMatters Office is to have increasing input into the strategies and LEED credits pursued based on the outcomes of District carbon footprint reporting. Subsequent carbon monitoring of all LEED schools in the District, post-occupancy, would serve to investigate and report on the efficacy of such measures.

The District is currently investigating a new Integrated Project Delivery (IPD) strategy for replacement school projects with a focus on sustainable building design. The IPD process allows the school community, Infrastructure staff and other key stakeholders to be connected from project start to finish. This allows for a more collaborative approach than the current design, bid and build process. The new IPD strategy will be implemented in the upcoming Millcreek School replacement project and the lessons learned from this integrative design project will be used to guide future school replacement projects and the development of a 21<sup>st</sup> Century school design steering committee.

#### 3.1.2 Retrofit

An Energy Performance contract with Ameresco Canada is near completion for 30 school buildings, which resulted in significant and important infrastructure upgrades while reducing energy and water consumption. The Energy Performance contract is a 15 million dollar program; paid for via energy savings over a twenty-year period.

A similar Infrastructure Optimization project, with Ameresco Canada and a budget of 7.3 million dollars, is also underway over the next three years at 13 District schools. Forecasted annual energy savings are \$135,000 (400,000kWh of electricity and 6,000GJ of natural gas). The Infrastructure Optimization project seeks to apply the successful strategies, best ideas, and components proven in the Energy Performance Contract. The plan includes upgrading a significant amount of deferred infrastructure, aging mechanical systems that are close to failure, while leveraging and optimizing energy and water savings and avoidance of major mechanical failures. The budget has been allocated using a combination of the Energy Conservation Fund and operational reserves.

The District is continuing to identify, work with, and build relationships with consultants such Ameresco Canada and Relumen Engineering that bring a high level of specialized engineering and project management expertise on robust energy efficient retrofit designs and systems. Much has

been learned from Ameresco and the Energy Performance Contract which has been applied to the design of new schools and modernizations to ensure the best quality and value scenario for energy efficient systems.

For all modernizations, the PMO staff instructs consultants to implement specific, cost effective, and proven energy efficiency measures in their designs and specifications; post construction results are monitored and evaluated. Future goals of the EnviroMatters Office include carbon footprint reporting on select sites before and after upgrades, to monitor and report on success and to ensure that Edmonton Public Schools gets the most value possible from the expenditures of these modernizations.

### **3.1.3 Maintenance**

The Infrastructure department works to ensure the learning and working environments of schools and other District buildings are properly maintained and enhanced. Infrastructure Maintenance plays an integral role in the preservation, renovation and modification of District facilities and grounds. Edmonton Public Schools works to promote productivity in the workplace and classroom by improving ventilation and managing exposure to indoor pollutants. Indoor environment and air quality is addressed with the use of low volatile organic compound paints, green cleaning products, improved air exchangers in new mechanical upgrades, efficient heating systems and controls and scheduled filter cleaning. The District also developed a Green Cleaning Committee to provide leadership for the green cleaning initiative and implementation plan.

Capital maintenance, life cycle replacement and minor retrofits to District facilities are accomplished through the District's Major Maintenance Plan (MMP) which is funded by the Alberta Infrastructure Maintenance & Renewal Fund (IMR). Projects are identified for consideration by receiving input from schools, facilities staff, facilities inspections and regulatory agencies and are completed in accordance with District categories and priorities. Items such as health and safety, special needs or barrier free accommodation, student accommodation and failed equipment are funded through IMR's emergent funding throughout the year. Other projects are reviewed in comparison to the budget for possible implementation immediately or in the planning for the upcoming funding year. The District 2016–2017 MMP is currently being developed.

## **3.2 Environmentally Sustainable Operations**

### **3.2.1 Energy**

Edmonton Public Schools is committed to reducing energy consumption through conservation and efficiency and understands the importance of investigating renewable sources of energy. The importance of energy saving initiatives in the District was realized when Edmonton Public Schools took part in the EPCOR EnVest Stewardship Program for energy conservation in commercial and industrial enterprises. Through the EnVest program, EPCOR provided detailed audits of District buildings to find ways to curb consumption. Engineering teams drew up lighting designs and provided project management to retrofit District buildings in an effort to achieve the environmental benefits and cost savings. That program allowed Edmonton Public Schools to understand the financial and environmental benefits of energy savings, which led to a focus on more complex energy saving initiatives and energy performance contracts in the District.

Since 1982 the District has been replacing, retrofitting and eliminating older lighting systems with energy efficient ones; the life span of the light tubes increases with the newer lights and mercury content decreases, providing less environmental impact when recycling. Recently, LED lighting has

been implemented as costs decrease and technological advances continue. Daylight harvesting is a focus of all new building designs and is encouraged in existing spaces where there is adequate access to daylight. Occupancy sensors are also being implemented to automatically shut off lights during vacant periods.

Fan and pumps with high efficiency motors are being equipped with variable speed drive systems to adjust motor speed according to what is needed while reducing electricity usage. High efficiency boilers and domestic hot water heaters are being installed in older schools as well as all new schools. Building automation systems for controlling heating, ventilation and lighting systems are being continuously being upgraded and optimized for maximum quality school environment and energy efficiency.

Renewable and alternative energy sources also remain a focus for educational purposes within the District as they provide an important resource for 21<sup>st</sup> century teaching and learning. Several District sites have the potential to become alternative energy centres of excellence through the installation of solar PV, geothermal systems and wind turbines as teaching and learning tools. Rooftop solar modules have been designed and implemented in four District schools: Queen Elizabeth, Hillview, Riverdale and Kate Chegwin. Solar walls have also been explored and will be installed on one or possibly two District schools through the Energy Performance contract. Six district schools have recently been approved by the Government of Alberta for funding on solar installations. Included are the Mill Creek, Caernarvon and Highlands School modernizations as well as three new schools, The Meadows Junior High, Pilot Sound Elementary and the Edmonton Collegiate School for Science/Technology and Trades. The Infrastructure department is actively working on a solar strategy to expand rooftop solar development through feasibility studies and interconnection analysis reports in an effort to determine solar potential across the current facility portfolio.

Edmonton Public Schools also conducts utility monitoring, benchmarking and verification projects, designed to provide up-to-date status of utility costs and building performance (environmental footprint and efficiency) information to central and school decision units. This provides a proactive approach with reporting tools that monitor and report on utility use; baseline usage levels are established and reports are generated to include District and site level data on an annual and monthly basis. This information allows the Infrastructure department to successfully manage and improve on energy conservation initiatives.

### **3.2.2 Food**

The Centre for Education cafeteria employs numerous aspects of environmentally conscious dining services, including the installation of more energy efficient refrigeration and dishwashing systems, reusable container discount programs, compostable paper plates, sustainably manufactured cutlery made from sugarcane, hot tables to reduce packaged foods and packaging waste, in-house baking to reduce emissions from food delivery trucks and a variety of vegan, vegetarian and eat-smart lunch options. Centre for Education departments requiring catered meetings, sessions or workshops are required to purchase from the in-house cafeteria, to promote local and more sustainable food purchasing practices. The Centre also has a recyclable beverage container collection program with bins located throughout the building; all the funds raised through the program go to the Edmonton Public School Foundation to support full-day kindergarten classes.

All District administration cafeterias, school cafeterias and food design classrooms take part in the District wide co-mingled organic waste recycling program through City of Edmonton Waste Management Services, in an effort to reduce the amount of organic waste being sent to the landfill. Both pre-consumer and post-consumer food waste is included in this program. Several District schools employ litter-less lunch programs and litter-less classrooms, where only snacks and beverages in reusable containers can be brought into class. Jasper Place School became Canada's first high school to develop and build an aquaponics system and has since collaborated with Sustainable Food Edmonton to help coordinate the Urban Ag High program, in an effort to promote urban agriculture projects at the secondary school level.

### 3.2.3 Grounds

District Grounds crews are working within the Integrated Pest Management (IPM) policy and procedures developed and used by the [City of Edmonton](#). The IPM program is used on District sports fields that the City of Edmonton maintains and these procedures include the basic guidelines that chemical products are only used as the last solution when other methods have been tried. District sites have the opportunity to opt-out of herbicide use on school property and under the City of Edmonton IPM program, there are also restrictions on when and where pesticides can be applied around a school site. Since 2012, Edmonton Public Schools has stopped the use of non-essential pesticides on school property that the District maintains, which includes the school building envelope or approximately 10 meters around the school. Maintenance is currently monitoring turf quality and weed growth to determine the success of this program.

Naturescapes and outdoor classrooms are initiatives involving school communities that wish to increase or alter the green space around the school and provide an opportunity to teach outdoors. In collaboration with Evergreen and assistance from the Planning Department and Infrastructure staff, over thirty Edmonton Public Schools have undertaken this initiative. The Outdoor Classroom Institute is offered through Evergreen as a free Professional Development course for teachers to experience hands on, curriculum-based activities in natural outdoor spaces. Evergreen also offers evening workshops twice a year for District teachers to learn more about school greening projects. The EnviroMatters Office is always looking for new opportunities to support schools looking to adopt naturescape and community garden programs and has developed a detailed step-by-step project plan for District schools looking to start these types of initiatives.

The Maintenance department recycles District school leaf and yard waste and strives to utilize native plant species when landscaping green spaces. In an effort to further advance this program, the EnviroMatters Office is introducing a Closed-Loop Composting initiative through the use of Edmonton Public School generated compost in District flower beds and gardens. Maintenance offers a diverse range of services in the District which has led to a wide range of collection and recycling opportunities; including used paint and empty paint can recycling, copper and aluminum wire recycling and construction debris recycling.

The District has also incorporated sustainable practices into playgrounds, by using an asphalt surface treatment called "RePLAY" to extend asphalt life; it is made from recycled material and is non-toxic, biodegradable, and is safe for surrounding plants and animals. Approximately 20 District schools had the asphalt treatment applied while the pilot project was in effect from 2011 to 2012. Maintenance is continuing to monitor these schools to determine program effectiveness and potential expansion to other District sites.

### 3.2.4 Transportation

Edmonton Public Schools is moving toward more sustainable transportation systems as an important factor in reducing greenhouse gas emissions and other pollutants. As per Board Policy [DEA.BP–Student Transportation](#), the Student Transportation department works to create the most efficient routes possible to ensure the shortest ride times and shortest bus routes. The District has a long history of developing all school and administration sites to accommodate bicycle racks, in an effort to make them bicycle friendly and to promote alternate forms of transportation.

Edmonton Public Schools has recently designed a GPS technology initiative that is currently in the implementation phase across the District. This system will allow District departments and drivers to monitor idling time and mechanical service data on transportation vehicles. Governance surrounding vehicle idle times and service notifications will help District transportation fleet run more sustainably and with a reduced environmental footprint.

Edmonton Public Schools and Edmonton Catholic Schools are working on a joint initiative to develop the Edmonton Student Transportation Authority (ESTA), which will consolidate yellow bus transportation services for both jurisdictions. This initiative was brought forward by both the Edmonton Public and Catholic School Board of Trustees and is currently in the detail and design stage. Upon implementation, the ESTA will improve route efficiencies and decrease the number of student transportation vehicles on the road, resulting in a reduced District environmental footprint.

The District Planning department supports the School Travel Planning Initiative for schools in consultation with SHAPE (Safe Healthy Active People Everywhere). School Travel Planning initiatives encourage sustainable travel modes and increase travel awareness for Edmonton Public School students and their families. Several District schools have created active transportation plans as a tool to encourage more students to walk to school. The Planning department is represented at various active transportation committees with stakeholders including the Alberta Motor Association (AMA), Edmonton Police Services, Walkable Edmonton, City of Edmonton Transportation and the Office of Traffic Safety.

The District has worked to develop an idle-free campaign for District school sites, to raise student and staff awareness about the harmful effects of vehicle emissions. Recently, Alberta Environment and Edmonton Public Schools worked to introduce an official Idle Free pilot program to elementary schools, where students are involved in learning about the effects that vehicle idling may have on their health and environment. This program was passed as a Bylaw throughout the District in 2013 and No-Idling Zone signs were placed around the main entrances of elementary schools. These areas restrict stationary vehicles to running for five minutes each half hour and it does not apply to taxis, buses or emergency vehicles.

### 3.2.5 Waste

The EnviroMatters Office is steadily increasing waste diversion goals by managing and improving programs focused on reducing, reusing, recycling and composting District waste. These efforts provide savings on landfill and hauling service fees as well as engaging District schools with a marked sustainability goal. For four consecutive years the Edmonton Public School District has received certificates of recognition from the City of Edmonton Waste Management Services Branch and Mayor Don Iveson for demonstrating positive environmental stewardship and contributing to Edmonton's future as a sustainable city.

The Edmonton Public Schools Environmental policy [EO.BP—Environment](#) has led to the development of numerous recycling programs, with District wide procedures in place for:

- Co-mingled recycling of paper, cardboard, shredded paper glass, plastics and light metals
- Beverage container recycling
- Electronics, printer and toner cartridge recycling
- Battery and wire recycling
- Organic waste recycling
- Leaf and yard waste composting
- Hazardous waste and used oil recycling
- Paint and paint related material recycling
- Fluorescent tube and lighting ballast recycling
- Construction and demolition waste recycling
- Tire, wood and scrap metal recycling

In the fall of 2013, an organic waste recycling program was made available across the District through a new contract with the City of Edmonton Waste Services branch. This program has allowed the District to move from 14 to 55 per cent waste diversion from the landfill, with the potential to reach up to 90 per cent waste diversion by 2018. The non-source separated organics recycling program allows all District sites to comingle organic waste with regular waste, eliminating the problem of extra organic waste bins and odor on school sites. Service levels and waste weight audits are reviewed annually through service provider reports, to determine optimum bin size and service frequency for each District site. The EnviroMatters Office has also developed a Waste Reduction Work Plan initiative to help District sites manage, reduce and divert waste to their full potential.

All District schools are participating in organics recycling through the City of Edmonton; however, many schools also have outdoor composting programs and vermicomposting bins in their classrooms as a teaching tool and to increase waste diversion rates. District schools can request tutorials and classroom demonstrations for setting up these programs, offered for free through the City of Edmonton program.

Edmonton Public Schools has also implemented recycling programs that work with offices, administration buildings and the treatment of confidential documents. The District currently offers confidential shredded paper recycling programs and the secure computer recycling of confidential hard drives. Edmonton Public Schools has been participating in electronics recycling for over 15 years. Schools can accumulate computers, laptops, cell phones and various other types of electronics to be collected and responsibly recycled through the District electronic waste recycling process.

The District offers an all-inclusive beverage container recycling program, where collected containers can be recycled at bottle depots through the Beverage Container Management Board's (BCMB) recycling programs. Additionally, all District beverage containers can be recycled through the general recycling program with the City of Edmonton.

In the fall of 2016, the District centralized payment of District waste and recycling services. This change helped to reduce the amount of invoices the District receives and processes, saving the District money through reductions in paper waste and administrative work. Centralized payment

also provides the EnviroMatters Office and Infrastructure department with more leverage to curb spending through obligatory enhancements to waste reduction and recycling initiatives at individual school sites.

### 3.2.6 Water

Edmonton Public Schools is dedicated to conserving water and making efforts to protect water quality. The importance of water saving initiatives in the District was realized when Edmonton Public Schools took part in the EPCOR EnVest Stewardship Program for water conservation in commercial and industrial enterprises. Through the EnVest program, EPCOR provided detailed audits and project management to retrofit District buildings in an effort to curb water consumption. The EPCOR marketing team also developed resources, activities and literature to be distributed through selected schools with the goal to raise awareness and reduce the habits that lead to excess water consumption. That program allowed Edmonton Public Schools to achieve significant water savings and led to a focus on more complex water saving initiatives in the District.

In terms of school upgrades, the District has installed water-bottle filling stations, automated water conservation devices to optimize urinal flushing, low flow toilets and faucets, sensor faucets and waterless urinals. High efficiency domestic hot water heaters are also being installed with regular maintenance and inspection of flush valves to reduce wasted water; regular maintenance and inspection also helps to identify leaking valves for repair.

The Energy Performance contract with Ameresco Canada also implemented water saving retrofits, including conversion of high volume toilets to water saving toilets with auto flush valves, conversion of water-cooled refrigeration systems to air-cooled units for walk-in coolers and freezers at five school buildings, as well as optimized controls for tank-type urinal flushing systems. Total water savings are estimated to be 12 thousand cubic meters per year.

Several District schools have installed rain barrels as low-cost water conservation devices to reduce runoff volume and provide a source of untreated water for gardens and compost. Rainwater harvesting is an effective way for schools to maintain a sustainable landscape and complement existing naturescapes, outdoor classrooms and gardens. The set up and use of rain barrels on school sites has helped to foster environmental stewardship and also acts as a teaching and learning tool for students, teachers and members of the surrounding community.

### 3.2.7 Purchasing

As a large institution, Edmonton Public Schools has committed to using purchasing power to help influence a more sustainable economy. Demanding higher sustainability standards and vendor codes of conduct from service providers, allows the District to meet higher standards of environmental and social responsibility. The Purchasing and Contract Services (PCS) department employs a triple bottom line approach to business and recognizes the importance of incorporating social, environmental and economic concerns equally.

District Administration policy [CW.AR–Purchasing and Disposal](#) strives to ensure that business is conducted with outside agencies that comply with good social, ethical and behavior practices during the manufacturing process. Manufacturers must comply with all applicable laws and regulations in their business activities as well as follow good labor practices based upon the International Labor Conventions and the United Nations universal declaration of human rights. Business is conducted with vendors that can demonstrate environmental responsibility through

recognized certification standards within the industry and the symbol of a tree is placed next to products on the PCS website, to reveal that sustainable and ethical industry standards have been met in the production of that product.

The EnviroMatters Office is working with the PCS department to develop a standard and regular tender review process for District environmental services, to ensure that the District is working with the most ethically and environmentally conscious service providers at the best possible rate. Higher waste diversion standards were set as a requirement in the tender process for general waste and recycling services in 2013, resulting in a 40 per cent increase in District wide waste diversion rates; a similar process is currently being reviewed for the hazardous waste and recyclables tender process.

As per Board Policy [\*ELA.AR-School Consolidation-Equipment Disposal\*](#), PCS also manages a Site Asset Management System (SAMS), which allows District schools and departments to notify PCS of any furniture items or related goods that are no longer in use. Useable items in good condition are posted for sale on the SAMS website for other District schools and departments to have the opportunity to obtain. Items are also posted to the External Surplus website and made available for personal purchase by students, community leagues, daycares and non-profit organizations in the area. PCS is also making use of online local classifieds and government surplus auction sites in an effort to make any remaining surplus items available to the general public for reuse.

The District also strives to work with service providers that offer a comprehensive sustainable approach to their services. The Centre for Education is in the process of updating and replacing office furniture across several internal departments. Project leads are working closely with service providers who will be supplying new furniture as well as recycling or storing and redistributing old furniture to various decentralized administration locations in the District.

### 3.2.8 Technology

Edmonton Public Schools understands the importance of utilizing technology to enhance the learning and performance of students and staff, as per Board Policy [\*DK.BP-District Technology\*](#). Technology is also used by the District to reduce impacts on the environment. In 2007 the District Technology (ITS) department provided a study with recommendations for the reduction of paper and print technologies in the District. All District schools and departments can benefit from applying the recommendations to their own print strategies. District Technology has taken on the challenge of looking for ways to reduce energy consumption at each site by changing workstation settings to turn off monitors, Smart boards, projectors and desktop computers automatically after pre-set time periods. Where applicable, ITS recommends lower powered devices and solutions for schools such as laptops, chromebooks and tablets instead of full desktop computers. District Technology is also piloting ways in which to reduce environmental impacts through the reduction of print services and is currently involved in an enterprise print strategy for the Centre for Education; the learning from this initiative can be applied to all District sites.

Edmonton Public Schools has created options for online courses, documents and newsletters and promotes the use of electronic media versus paper media in schools. The District utilizes StaffZone, SchoolZone, Google drive, Google share and other internal share sites to relay information. The Communications department manages an online Bulletin Board where District resources and Need to Know News flashes are sent electronically to Edmonton Public staff.

Edmonton Public Schools' RAMP (Records Appropriately Managed Program) was an initiative started to examine how the District's records, whether student, staff, or administrative, are being managed. The task was to make a more efficient and effective method for tracking and retaining all District records. The work resulted in the creation of an electronic file management program aimed at creating a simplified, easy to access, safe and secure file management system. Staff can now view on line personnel files via remote access without having to travel to the central administrative building to view these documents. Some of the positive environmental impacts this initiative is having include:

- Less paper records; less demand for paper and paper production costs
- Less print devices in use; less electricity used
- Less print toner used; less toner cartridge waste in landfills
- Reduced records storage space; less heating and cooling required for storage buildings
- Greater remote electronic access to documents; reduced travel to, and couriering between, storage locations and District schools.
- Reduced printing, faxing and photocopying; less energy used as well as reduced toner and associated waste.

The District now utilizes electronic report cards and pay slips instead of distributing paper copies and the Centre for Education has also voluntarily reduced the number of phone book sets used. These initiatives have led to the reduction of paper and energy involved in the production, distribution and recycling of these products. Staff has switched to using secure online share sites to access report cards, pay slips and telephone directories as an alternative. Overall, these are further examples of Edmonton Public Schools using technology to reduce resource consumption.

### **3.3 Environmentally Sustainable Planning**

#### **3.3.1 Planning**

Establishing the Edmonton Public Schools EnviroMatters Office in 2008 was an important step for the District to move toward institutionalizing sustainability. The EnviroMatters Office provides the infrastructure necessary to influence budgeting and decision making; it also affords proper organization to dedicate resources and staff to sustainability coordination and strategic planning.

To further advocate sustainable changes, Edmonton Public Schools created an Environmental Coordinator position within the Infrastructure Department to provide environmental consulting services to the District. The scope of work for this position includes environmental and sustainable program development and project management across the District. This position led to the development of an Environmental Advisory Committee in 2012, to allow representatives from various departments to discuss environmental concerns and provide advice on existing and proposed sustainable program development.

A three, five and 10 year environmental sustainability strategy was established for the District in June 2012, with an update on current environmental and sustainability actions submitted in September 2013. This information was combined into a formal District Energy and Environment Strategy as a guiding document for the District; to help shape environmental priorities and act as a comprehensive summary of existing initiatives and future goals. As a supplement to the Edmonton Public Schools larger District Energy and Environment Strategy, an EnviroMatters Toolkit has been developed to provide necessary resources and easy to follow steps to help District schools adopt successful environmental practices.

To complement the larger District environmental plans, waste diversion, energy and utility audits are conducted annually to generate comprehensive usage reports. Data findings are used to manage and re-evaluate existing programming and to guide future direction of new sustainable planning. The EnviroMatters Office also uses data reporting to calculate the District environmental footprint, which is available online for staff, students and the public to view. The EnviroMatters Office has recently contracted Eco Ammo, an Edmonton based environmental consulting firm, to report on the District's carbon footprint on an annual basis. Once completed, each annual summary report will be available to view on the EnviroMatters home page.

The Centre for Education also houses the Planning department, which ensures that all students have access to quality learning environments and program choices. Planning leads facility and infrastructure initiatives for managing District space, school site development, capital plan development, portable classroom space, school closure and reopening, and urban development review. This department facilitates mature community discussions around rightsizing District spaces in all areas of the city and creating 21<sup>st</sup> century learning environments through modernizations and new construction. Planning also supports various government and community relationships, including coordinating community use of the District's facilities and distributing new programs in response to community demand.

### **3.3.2 Investment**

Edmonton Public Schools recognizes the importance of making partnership and investment decisions that promote sustainability. The District works to achieve a transparent and democratic investment processes to uphold accountability, community engagement and to support companies committed to social and environmental responsibility.

The District pursues positive sustainability investments and has contracted the City of Edmonton Waste Services Branch, Eco Ammo Sustainable Consulting and Ameresco Canada to invest in waste diversion, carbon footprint reporting and energy performance contracts, respectively. These investments offer both long and short term gains that will exceed the spending on program development. The District strives to work with and invest in companies with ethically, socially and environmentally sound practices for long term gains and lasting sustainable relationships.

### **3.3.3 Collaborations**

The Edmonton Public School District is committed to giving back to school communities through community service, public engagement and external collaborations. The District is actively engaged in communication and project development with local companies, institutions, non-profit organizations and school boards in an effort to realize sustainable initiatives on District sites.

Several external organizations are tied to sustainable initiatives in the District; including solar PV installations on District schools in collaboration with the Northern Alberta Institute of Technology (NAIT) and annual environmental education conferences and teacher professional development opportunities in association with the Alberta Council for Environmental Education (ACEE) and the Canada Green Building Council (CaGBC). Other programs include community electronic waste collection drives through Shanked Computer Recycling Inc. (SCRI) and Green Living Enterprises, as well as the development of teaching and learning resources in collaboration with the City of Edmonton Environmental Strategies and Parks Operations departments.

The District holds active memberships with ECO Canada, the Recycling Council of Alberta (RCA), the Alberta Energy Efficiency Alliance (AEEA) and the CaGBC on both a national level and through local membership with the CaGBC Alberta Chapter.

### 3.3.4 Communication

The Edmonton Public Schools EnviroMatters Office works closely with the District Communications department to inform staff, students and the general public of sustainable initiatives taking place in the District. In the spring of 2016 the EnviroMatters Office worked with the Communications department to launch the EnviroMatters Minute initiative, in an effort to recognize District schools for their everyday environmental successes through District social media channels. Additional materials are to be developed as part of the larger Infrastructure Communications Plan.

The EnviroMatters [website](#) is the primary method of communicating District initiatives to students, staff and the general public. The District Energy and Environmental Strategy will be available for viewing on the EnviroMatters homepage along with the Edmonton Public Schools annual Environmental Footprint report. The EnviroMatters Office will work with the Communications department to promote the strategy, both internally and externally, after it is revised and released every four years. Part of the communication plan will encourage schools to provide feedback to help inform the strategy on an ongoing basis.

## 3.4 Environmentally Sustainable Education

### 3.4.1 Co-Curricular

Edmonton Public Schools is committed to teaching students and staff to be global citizens and providing the resources necessary to use their knowledge about sustainability to take an active role in their surrounding community. The District offers numerous co-curricular activities, resources and outreach campaigns for schools and administrative buildings to engage in outside the formal curriculum; such as the annual Earth Day Lights Out Challenge, EnviroMatters Lights Out Stickers, Classroom Energy Monitors Program, Green Your Classroom Checklist, Schoolyard Rain Barrel Water Conservation Program, Waste Reduction Work Plan & Recycle Challenge, School Waste Audit Worksheet, Year End Locker Clean-Out Initiative, Classroom Vermicomposting Program and annual Electronic Waste Collection Drives for school communities and District staff.

Many Edmonton Public Schools take the initiative to host leadership and environmental conferences for District students to participate in, as a supplement to the existing curriculum. Several schools have peer-to-peer sustainability outreach programs through Green Clubs and Green Teams that allow students to learn about and take a more active role in sustainable practices at school. District students and teachers continue to be environmental leaders on both a national and global scale. Queen Elizabeth School has presented at the annual Conference of the Parties (COP) United Nations Climate Change Conference to youth delegates in both Qatar (2012) and Peru (2014) and in 2016 was named Canada's Greenest School by the Canada Green Building Council, in recognition of their outstanding environmental education programming.

The District EnviroMatters Office also takes an active role in teaching and engaging students through in-class presentations about sustainable programs and environmental initiatives the District is actively involved in. The EnviroMatters Office has also worked to create environmental educational events such as the Student Environmental Symposium in 2010, which was open to students from across the District and the Youth Environmental Stewardship Conference in 2011

that brought students together from across the province. These types of activities allow for an open discussion of ideas and give both students and staff access to the latest initiatives and technologies available to facilitate sustainability in schools.

In 2015 the EnviroMatters Office joined the Canada Green Building Council Green School Committee to help establish and lead a network of green schools within Alberta and work to develop an annual Green School Summit for leaders of all ages that are interested in Green Schools and Communities. The first Green School Summit took place in the fall of 2015 with plans to continue annually in various locations across Alberta.

### 3.4.2 Curriculum

Alberta Education works through Edmonton Public Schools to provide formal education programs and curricula that address the environment, as outlined in Board Policy [GA.BP-Student Programs of Study](#). Edmonton Public Schools introduces environmental and sustainability issues as part of the Grade 4 curriculum, with heavier integration in the sciences as students approach Junior High and Senior High School. Early introduction and integration of environmentally conscious values helps to equip students to lead society to a sustainable future.

To further aid in environmental education, Edmonton Public Schools reopened the Bennett Centre in 1981 as the Bennett Environmental Education Centre. The main goals of the Bennett Centre are to enhance students learning by providing indoor and outdoor experiences that actively engage students and to provide challenging and stimulating indoor and outdoor learning experiences with opportunities for student initiative and personal success. Hands-on, curriculum-based programs engage students in science and social studies, teach team-building, develop co-operative living skills, and introduce teachers to new teaching practices.

Several District schools such as W.P. Wagner and Jasper Place offer horticulture, aquaponic and permaculture courses as part of the standard curriculum. These courses involve student-built experiments, including an array of herbs, food forests, self-sustaining perennials and outdoor composting, with an emphasis on growing and harvesting sustainable food. These courses also teach students natural methods for insect and pest management. District teachers also take the initiative to develop curriculum materials that supplement the existing core curriculum; such as the unscheduled credit-based Student Led Initiatives for Sustainable Education (SLISE) program offered at Queen Elisabeth School, that uses CTS modules to guide project based learning around real-world issues involving sustainable development.

The EnviroMatters Office is currently working with the City of Edmonton Parks Operations & Sustainable Development departments to assist in the development of environmental programming for use in District classrooms. The Root for Trees yegTreeMap Education Program, Green Energy Toolkit and Energy Transition Teacher's Guide are recent City of Edmonton initiatives being developed and piloted in consultation with District teachers and staff. The goal is to create teaching and learning resources with ties to the curriculum that will help facilitate learning about sustainable issues and initiatives specific to the City of Edmonton.

## 4 Goals, Budgets and Timeline

Sustainability goals work to support the Key Priorities outlined in the District Energy and Environment Strategy and are developed through consultation with internal departments, as well as external organizations and consultants.

#### 4.1 Energy Initiatives

##### 4.1.1 Energy Performance Contract

The Energy Performance Contract with Ameresco Canada is near completion for 30 school buildings. The contract will be paid for via energy savings over a twenty-year period. The project was initiated in 2013 and is scheduled for completion in August 2017. Forecasted savings are over \$855,000 per year (4 million kWh of electricity per year and 35 thousand GJ of natural gas per year), with savings of \$884,000 achieved in 2015–2016.

- Budget – 15 million dollars
- Timeline
  - 2016–2017 – Detailed reporting and monitoring of performance of existing retrofits, commissioning and tuning of six building automation systems and two smart metering systems, and completion of a solar wall installation. Project is 99 per cent complete.

##### 4.1.2 Infrastructure Optimization Projects I and II

Infrastructure Optimization Project I with Ameresco Canada is underway for 13 District schools, with forecasted annual energy savings of \$135,000 (400,000kWh of electricity and 6,000GJ of natural gas). The project is scheduled for completion in 2018. Project II is in the RFP stages and will involve a minimum of 25 schools. A feasibility study will be conducted to determine energy savings and retrofit measures.

- Budget – 16.7 million dollars (7.7 million for Project I and 9 million for Project II)
- Timeline
  - 2016–2017 – Complete remaining project work including seven LED lighting retrofits, heating and mechanical upgrades at Hardisty School, building automation system upgrades at 13 schools, and tuning and commissioning.
  - 2017–2018 – Complete remaining five per cent of Project I including tuning, commissioning, project documentation and close-out. Conduct measurement and verification of energy savings performance.
  - 2017 – Award RFP, complete feasibility study and initiate Project II on first group of schools.
  - 2017–2019 – Complete Project II to close-out on remaining schools.

##### 4.1.3 District Energy Consultant

For the past 10 years, the District has retained the services of external energy consultants to provide consultation on procurement of energy contracts. The District recently secured a new contract to provide energy consulting services to the District until 2019. Once the contract is executed, the energy consultants will review all existing electricity and natural gas contracts.

- Budget – \$108,000 (\$36,000 annually)
- Timeline

- 2016 – District to go out to tender for energy consultation services and secure a contract to take effect late 2016.
- 2017–2019 – Consultant will continue to review current District energy needs and develop RFP's for tendering of energy contracts for District requirements up to five years in the future.

#### 4.1.4 Solar Solutions for Schools

Edmonton Public Schools has potential for approximately 20MW of solar power generating assets across the current facility portfolio. To expand rooftop solar development in the District, a portfolio feasibility study and interconnection analysis is underway to determine the most beneficial District sites for solar installations.

- Budget – \$48,000
- Timeline
  - 2017 – Contract external consultants for data collection to conduct subset feasibility tests as well as portfolio feasibility and interconnection analysis reports across select District sites.
  - 2017 – Develop key recommendations for the Board of Trustees showcasing appropriate sites for solar installations.
  - 2017 – Share key recommendations and budget projections with local and provincial government to discuss a funding strategy.
  - 2017–2019 – Initiate construction of solar projects based on approved recommendations.

### 4.2 Environmental Initiatives

#### 4.2.1 Annual Carbon and Sustainability Report

Annual District-wide Carbon and Sustainability Reporting is an ongoing initiative to formally report the District carbon footprint through carbon and sustainability audits. Annual reports and improvement suggestions will be incorporated into the Energy and Environment Strategy document update every four years.

- Budget – \$20,000 (\$5,000 annually)
- Timeline
  - 2016 – Complete the first verifiable report to capture the 2015 District-wide footprint.
  - 2017 – Initiate a quarterly reporting process to streamline data collection and allow for quarterly improvement measures to be implemented based on current data.
  - 2018–2019 – Continue annual reporting and initiating improvement suggestions.

#### 4.2.2 District Carbon and Sustainability Consultant

The District is in the beginning stages of retaining the services of an external carbon and sustainability consultant to provide consultation on major District carbon mitigation and environmental sustainability projects.

- Budget – \$20,000 (\$5,000 annually)
- Timeline

- 2016 – Secure contract to provide carbon consulting services for a one-year term. Once the contract is executed, carbon and sustainability consultants will review all existing environmental projects and advise on the development of future initiatives.
- 2017–2019 – Continue consultation meetings and initiating improvement suggestions.

## 5 Acknowledgements

The District Energy and Environment Strategy was developed by the EnviroMatters Office, with contributions from the Environmental Advisory Committee and reviewers across a broad range of departments and services in the Edmonton Public School District, including but not limited to the following:

### District Environmental Advisory Committee

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