



# Edmonton Public Schools

## District Energy and Environment Strategy (2017 - 2020)

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

# TABLE OF CONTENTS

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<b>1 Introduction</b> .....	3
1.1 Environmental Sustainability Commitment .....	3
1.2 Current Environmental Policy.....	3
1.3 Strategy Framework .....	4
<b>2 Measuring Performance and Efficiency</b> .....	4
2.1 LEED Certification .....	4
2.2 Sustainability Reporting.....	5
2.2.1 District Footprint Reporting .....	5
2.2.2 Strategy Benchmarking .....	5
<b>3 Key Priorities</b> .....	5
3.1 Environmentally Sustainable Buildings .....	5
3.1.1 New Design .....	5
3.1.2 Retrofit .....	6
3.1.3 Maintenance .....	7
3.2 Environmentally Sustainable Operations .....	7
3.2.1 Energy .....	7
3.2.2 Food .....	8
3.2.3 Grounds.....	8
3.2.4 Transportation .....	9
3.2.5 Waste .....	9
3.2.6 Water .....	10
3.2.7 Purchasing.....	11
3.2.8 Technology .....	12
3.3 Environmentally Sustainable Planning .....	12
3.3.1 Planning.....	12
3.3.2 Collaborations .....	13
3.3.3 Communication.....	13
3.4 Environmentally Sustainable Education .....	14
3.4.1 Co-Curricular .....	14
3.4.2 Curriculum.....	15
<b>4 Goals and Timeline</b> .....	15
4.1 Energy Initiatives .....	15
4.1.1 Infrastructure Optimization Projects I and II .....	15
4.1.2 Energy Consultant .....	16
4.1.3 Solar Solutions for Schools.....	16
4.2 Environmental Initiatives.....	16
4.2.1 Annual Carbon and Sustainability Report .....	16
4.2.2 Carbon & Sustainability Consultant .....	17
<b>5 Acknowledgements</b> .....	17

# 1 Introduction

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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 centre 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 on 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 information to staff, students and community about initiatives in District schools,
- provide links to curricular resources, student activities and funding opportunities, and
- provide links to local, provincial, federal and international energy and environmental websites.

## 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 Edmonton Public Schools Energy and Environment Strategy is supported by District Priorities and the District Environmental Policy, 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

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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 has adopted the 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 natural light and improved air quality, in addition to being more energy efficient and 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 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 standard 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. Over the 2017-2018 school year, 11 new schools opened throughout the city and are currently awaiting 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 best practice models to stay informed of industry trends in an effort to meet or exceed standards in environmental responsibility.

Edmonton Public Schools monitors waste, recycling and utility data 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 reports the District's environmental footprint and makes it available online for staff, students and the public. The EnviroMatters Office recently contracted an Edmonton-based sustainable consulting firm to monitor the District's carbon footprint in accordance with internationally-accepted WRI Greenhouse Gas Protocol and ISO 14064. The goal is to eventually investigate the footprint of individual schools. The information gathered through monitoring can assist the District to make informed decisions regarding 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. Ongoing consultations with external agencies will monitor goals, timelines and key performance measures to 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 look to a triple bottom line sustainability approach by focusing on environmental, economic and social factors in program and project development.

## 3 Key Priorities

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The District Energy and Environment Strategy focuses on four main areas for implementing environmental initiatives:

- environmentally sustainable buildings
- environmentally sustainable operations
- environmentally sustainable planning
- environmentally sustainable education

### 3.1 Environmentally Sustainable Buildings

#### 3.1.1 New Design

Through sustainable 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 for all projects, from large scale major maintenance projects and the construction of new schools, to small scale

retrofits and operating procedures in existing District schools and buildings. The District continues to look into using alternative energy, such as solar installations, in new design and upgrades. For all new schools and modernizations, the Project Management Office staff instructs consultants to use specific, cost effective and proven energy efficiency measures in their designs and specifications; post construction results are monitored and evaluated.

Putting 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 select building materials such as wood and concrete. For new school designs, the long-term goal of the EnviroMatters Office is to use the outcomes of the District's carbon footprint reporting to work with the Infrastructure department and implement strategies to help with LEED certification. Carbon monitoring of LEED schools in the District once they have opened would help evaluate the effectiveness of these measures.

The District is using a new Integrated Project Delivery (IPD) strategy for new and replacement school projects, focusing on sustainable building design. The IPD process allows the school community, Infrastructure staff and other key stakeholders to collaborate and be connected from project start to finish. Currently, the IPD strategy is being used for three school projects, including the Mill Creek School replacement project. The lessons learned from this integrative design process will be used to guide future projects and to potentially develop a 21<sup>st</sup> century school design steering committee.

### **3.1.2 Retrofit**

The importance of energy and water saving initiatives in the District was realized when Edmonton Public Schools took part in the EPCOR EnVest Stewardship Program for energy and water conservation in commercial and industrial enterprises. EPCOR provided detailed audits of District buildings to find ways to curb consumption. Engineering teams drew up designs and provided project management to retrofit District buildings to help achieve environmental benefits and cost savings. The program allowed Edmonton Public Schools to understand the financial and environmental benefits of energy and water savings, which led to a focus on more complex utility conservation initiatives in the District.

An energy performance contract with Ameresco Canada was completed for 30 school buildings. This resulted in significant and important infrastructure upgrades, while reducing energy and water consumption. The project started in 2013 and was completed in fall 2017. Edmonton Public Schools exceeded the forecasted electricity savings of over 4.5 million kWh of electricity per year by 41 per cent. The project generates savings of over \$1 million per year and will be paid for via energy savings in less than 20 years.

A similar two-phase Infrastructure Optimization Project is also underway and is scheduled to be completed in fall 2019. Phase one of the project involved infrastructure and energy efficiency upgrades at 13 schools and is now substantially complete. Phase two is now underway with upgrades happening at 21 schools. The Infrastructure Optimization Project applies successful strategies, ideas and proven components in the energy performance contract. The plan includes upgrading a significant amount of deferred infrastructure and aging mechanical systems at the end of their lifespan, while leveraging and optimizing energy and water savings and avoiding major mechanical issues. The budget was allocated using the Energy Conservation Fund and operational reserves.

The District is continuing to identify, work with and build relationships with consultants that bring specialized

engineering and project management expertise on energy efficient retrofit designs and systems. The District used information gained from working with consultants to implement energy efficient systems that provide the best value and energy efficiency in the design of new schools and modernizations.

### **3.1.3 Maintenance**

The Infrastructure department works to ensure schools and other District buildings are properly maintained and enhanced. Infrastructure Maintenance plays an integral role in preserving, renovating and modifying District facilities and school 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 by using 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.

Capital maintenance, life cycle replacement and minor retrofits to District facilities are accomplished through the District's Major Maintenance Plan, which is funded by the Alberta Infrastructure Maintenance and Renewal Fund (IMR). Projects are considered 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 emergent funding throughout the year. Other projects are reviewed for possible implementation immediately or in the planning for the upcoming funding year.

## **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 energy sources. 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 the technology improves. New building designs focus on storing and using natural light in the interior of buildings; this practice is also encouraged in existing spaces with available natural light. Sensors are also being installed to automatically shut off lights when spaces aren't being used.

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 continuously being upgraded and optimized for maximum efficiency.

Renewable and alternative energy sources are important for creating 21st century learning environments. Several schools have solar installations, which provide alternative energy to the school and serve as teaching and learning tools for students. Rooftop solar modules were added to four District schools: Queen Elizabeth, Hillview, Riverdale and Kate Chegwin.

The Government of Alberta recently announced funding for solar modules at five District schools. The Mill Creek, Caernarvon and Highlands school modernizations will include solar installations, as well as Soraya Hafez

and Thelma Chalifoux schools. The Infrastructure department conducted a feasibility study and developed a comprehensive solar strategy to expand rooftop solar module installations across the District.

Edmonton Public Schools conducts utility monitoring, benchmarking and verification projects designed to evaluate utility costs and building performance. This information allows the Infrastructure department to successfully manage and improve on energy conservation initiatives.

### **3.2.2 Food**

The Blackboard Deli provides food service and catering to the Centre for Education, Victoria School students and other District staff. The Blackboard Deli employs several environmentally-conscious dining services, including installing energy efficient refrigeration and dishwashing systems, a reusable coffee cup discount program, biodegradable plates made from 100 per cent recycled paper, compostable bowls, sustainably manufactured plant starch cutlery and hot tables to reduce packaged foods and packaging waste. The Deli also offers in-house baking as well as vegan, vegetarian and eat-smart lunch options. Centre for Education departments requiring catered meetings, sessions or workshops purchase food from the Blackboard Deli, which helps to reduce emissions from delivery trucks. The Centre for Education 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.

Many District schools are exploring food production and urban agriculture as curricular and extra-curricular initiatives. School activities include: container gardening, micro-greens, raised vegetable beds, perennial food forests, hydroponics, aquaponics, greenhouse production, mushroom cultivation, vermiculture and composting. Jasper Place School became Canada's first high school to design and build an aquaponics system, which provided tilapia, fresh vegetables and herbs to the school's culinary arts program. A number of District schools partnered with Sustainable Food Edmonton, a local not-for-profit that supports urban agriculture through their Community Garden, Urban Ag High and Little Green Thumbs programs. These programs work to support education through growing food and promoting urban agriculture as a viable career.

### **3.2.3 Grounds**

District grounds crews work within the Integrated Pest Management (IPM) policy and procedures developed by the City of Edmonton. The IPM program is used on District sports fields that the City of Edmonton maintains. Pesticides are only used as the last solution when other methods have been considered. Since 2012, Edmonton Public Schools stopped using 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.

Some District schools use naturoscapes and outdoor classrooms to teach outdoors. In collaboration with Evergreen and with assistance from the Infrastructure Planning department and Infrastructure staff, over 30 Edmonton Public Schools have participated in this initiative. The EnviroMatters Office is always looking for new opportunities to support schools looking to adopt naturoscape and garden programs and has developed a detailed step-by-step project plan for District schools interested in these opportunities.

The Maintenance department recycles District school leaf and yard waste and strives to utilize native plant species for landscaping. To help advance this program, the EnviroMatters Office introduced a closed-loop composting initiative using City of Edmonton compost in District flower beds and gardens. The District's Maintenance department offers a diverse range of services, leading to a wide range of collection and recycling

opportunities. These include: used paint and empty paint can recycling, copper and aluminum wire recycling and construction debris recycling.

The District incorporates 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 safe for surrounding plants and animals. Approximately 20 District schools had the asphalt treatment applied during the pilot project 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 to reduce 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 bus routes. Schools are paired on routes whenever possible so one bus can serve more students. Edmonton Public Schools and Edmonton Catholic Schools also work collaboratively to share bus routes at several schools across Edmonton, which decreases the number of buses on the road and reduces emissions. In January 2017, Edmonton Public Schools began to collect information to estimate fuel consumption on field trips. This will help the District monitor and better understand this aspect of our environmental footprint.

Edmonton Public Schools supports the School Travel Planning Initiative in consultation with SHAPE (Safe Healthy Active People Everywhere). School Travel Planning Initiatives encourage sustainable travel and increased 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 District provides bike racks at school and administrative buildings to make them bicycle-friendly and promote alternate transportation. Edmonton Public Schools is represented at various active transportation committees, including the Alberta Motor Association, Edmonton Police Services, Walkable Edmonton, City of Edmonton Transportation and the Office of Traffic Safety.

The District also developed an idle-free campaign for school sites to raise student, parent and staff awareness about vehicle emissions. Alberta Environment and Edmonton Public Schools worked to introduce an official Idle Free pilot program to elementary schools, where students learned about the effects that idling may have on their health and the 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. Vehicles in these areas can only run for five minutes per half hour. The bylaw does not apply to taxis, buses or emergency vehicles.

### **3.2.5 Waste**

The EnviroMatters Office is 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 sustainability goal. Edmonton Public Schools received certificates of recognition from City of Edmonton Waste Services 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 led to developing numerous recycling programs, with procedures in place for:

- Mixed recyclables and beverage containers,

- Food, leaf and yard waste,
- Electronics, batteries and printer/toner cartridges,
- Fluorescent tubes, bulbs and ballasts,
- Used oil, paint and paint-related materials,
- Construction and demolition waste, and
- Tires, wood, scrap metal and wire.

In fall 2013, the District started an organic waste and recycling program through a contract with City of Edmonton Waste Services. This program allowed the District to move from 14 to 55 per cent waste diversion from the landfill. The 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 weights are reviewed to determine optimum bin size and service frequency for District sites. The EnviroMatters Office is currently developing a strategy to pilot source-separated organics recycling to further increase waste diversion rates.

Some District schools reduce waste through litterless lunch programs by encouraging students to bring snacks and beverages in reusable containers, when possible. Many District schools 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 through the City of Edmonton. The EnviroMatters Office developed a Waste Reduction Work Plan initiative to help District schools manage, reduce and divert waste as much as possible.

Edmonton Public Schools has recycling programs in place for removing confidential documents and items. The District currently offers confidential shredded paper recycling programs and secure computer hard drive recycling.

In addition, Edmonton Public Schools has recycled electronics for more than 15 years. Schools collect computers, laptops, cell phones and other electronics to responsibly recycle them through the District electronic waste recycling program.

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

In fall 2016, the District centralized waste and recycling services payments. This change helped reduce the amount of invoices the District receives and processes, saving the District money through paper reduction and administrative costs. The EnviroMatters Office and Infrastructure department are also better able to monitor spending and enhance waste reduction and recycling initiatives at individual school sites.

### **3.2.6 Water**

Edmonton Public Schools is dedicated to conserving water and protecting water quality. The District has installed water bottle filling stations, automated water conservation devices for urinal flushing, low flow toilets and faucets, sensor faucets and waterless urinals. Water conserving cooling towers have been installed at W. P. Wagner and Vernon Barford schools, which use significantly less water. 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 helps to identify leaking valves for repair.

The energy performance contract also implemented water saving retrofits, including installing water saving toilets with auto flush valves, converting 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.

To help prevent flood damage and aid in water conservation, Infrastructure Maintenance is currently piloting a leak and flood detection system, initially within the maintenance facility and potentially expanding to up to 20 schools throughout the District. The system is will provide early detection of major water leaks and also minor toilet and tap leaks. Each group within the system has wireless devices to sense moisture, gather sensor data, measure water meter flow and report back. The cellular connection sends alerts via email and text messages, including whether a building has lost power. Water consumption and alert history are stored for review in an online dashboard.

Several District schools installed rain barrels 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 naturoscapes, outdoor classrooms and gardens. Rain barrels on school sites have helped foster environmental stewardship and acts as a teaching and learning tool for students, teachers and community members.

### **3.2.7 Purchasing**

Edmonton Public Schools committed to using environmentally-responsible vendors to help influence a 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.

District Administrative Regulation [CW.AR–Purchasing and Disposal](#) helps ensure business is conducted with outside agencies that have good social, ethical and behaviour practices in their 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. Vendors selected must demonstrate environmental responsibility through recognized certification standards within the industry. A tree symbol is placed next to products on the PCS website to show sustainable and ethical standards for the product are met.

The EnviroMatters Office is working with the PCS department to develop a standard and regular tender review process for District environmental services to ensure the District is working with the most ethically and environmentally conscious service providers at the best rate.

As per Administrative Regulation [ELA.AR–School Consolidation-Equipment Disposal](#), PCS manages a site asset management system (SAMS) and surplus website, which allows District schools and departments to notify PCS of any unused furniture items or related goods. Useable items in good condition are posted for sale on SAMS and the surplus website for other District schools and departments to purchase. PCS also uses online local classified and government auction sites to make these items available to anyone in Alberta to purchase.

The Centre for Education recently replaced office furniture across several internal departments. Project leads worked closely with service providers to supply new furniture and recycle, store and redistribute old furniture to other locations in the District.

### **3.2.8 Technology**

Edmonton Public Schools understands technology enhances learning and performance for students and staff, as per Board Policy [DK.BP–District Technology](#). Technology is also used to reduce environmental impact. In 2007 the District Technology (ITS) department provided a study with recommendations for paper conservation and expanding print technologies in the District. District Technology continuously looks for ways to reduce energy consumption at each site by changing settings to turn off monitors, Smartboards, projectors and desktop computers automatically after pre-set time periods. Where applicable, ITS recommends lower powered devices and solutions for schools, such as Chromebooks, tablets and laptops instead of desktop computers. District Technology also implemented ways to reduce environmental impacts and increase printed material security in the Centre for Education and at many school sites; results from this initiative are being applied to other District sites.

Edmonton Public Schools created options for online courses, documents and newsletters and promotes technology use to reduce using paper in schools. The District uses the Intranet and other internal sites, such as Google Drive, to share information. Communications manages news and an online Bulletin Board to share news, updates and resources with staff across the District.

Edmonton Public Schools' RAMP (Records Appropriately Managed Program) is an initiative that examines how all of the District's records are managed. The program efficiently and effectively tracks and retains District records. An electronic file management program allows for a simplified, easy-to-access, secure file management system. Staff can view online personnel files from any location. Positive environmental impacts of this initiative include reduced paper use and paper production costs, as well as electricity reductions and less printer and toner cartridge waste in landfills. Smaller storage areas use less heating and cooling, and electronic access reduces travel between storage locations and District schools.

The District is uses online pre-enrolment, electronic report cards and pay slips to reduce paper use. The Centre for Education also voluntarily reduced using phone books and uses an online staff directory for staff contact information. These initiatives led to reduced paper and energy required to produce, distribute and recycle these products.

## **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's sustainability efforts. The EnviroMatters Office provides knowledge to influence budgeting and decision making; it also dedicates resources and staff to sustainability coordination and strategic planning.

Edmonton Public Schools created Energy and Environmental Coordinator positions within the Infrastructure department to provide sustainable program development, project management and consulting services to the District. The Edmonton Public Schools Environmental Advisory Committee was also established 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 in June 2012, and was updated with additional environmental and sustainability actions in September 2013. This information was combined into a formal District Energy and Environment Strategy to be a guiding document for the District and show a comprehensive summary of existing initiatives and future goals. To supplement the District Energy and Environment Strategy, an EnviroMatters Toolkit was developed to provide resources and easy-to-follow steps to help schools plan and adopt successful environmental practices.

The Infrastructure Planning department creates enrolment projections to support informed strategy development and manages District space, school site development, capital plan development, portable classroom space, school closures and reopenings and urban development review. This department also coordinates community use of District facilities, and ensures that 21<sup>st</sup> century learning environments are achieved. Infrastructure Planning also monitors school building conditions and building statistics to inform and plan environmental strategies. Using the District's Integrated Workplace Management System (IWMS), Infrastructure Planning will develop systems to help track efficiencies and equipment for environmental initiatives.

### **3.3.2 Collaborations**

Edmonton Public Schools is committed to giving back to school communities through community service, public engagement and external collaborations. The District actively collaborates with local companies, institutions, non-profit organizations and school boards for sustainable initiatives in our District.

Several external organizations help with sustainable initiatives in the District including:

- solar module installations at schools in collaboration with NAIT,
- environmental education conferences, and
- professional development opportunities with the Alberta Council for Environmental Education and the Canada Green Building Council.

Other collaborative programs include:

- school community electronic waste collection drives in partnership with the Alberta Recycling Management Authority and Shanked Computer Recycling and
- developing teaching and learning resources in collaboration with City of Edmonton Parks and Roads Services and the Economic and Environmental Sustainability Branch.

Edmonton Public Schools is represented on:

- the Alberta Emerald Foundation Board of Directors,
- City of Edmonton Environmental Advisory Committee, and
- the University of Alberta, Integrative Health Institute, Community School Gardens Stakeholder Group.

The District also has active memberships with ECO Canada, the Solar Energy Society of Alberta, Recycling Council of Alberta, Alberta Energy Efficiency Alliance and the Canada Green Building Council (national and local chapter).

### **3.3.3 Communication**

The Edmonton Public Schools EnviroMatters Office works with Communications to inform staff, students and the general public of sustainable initiatives taking place in the District. In spring 2016, the EnviroMatters Office worked with Communications 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 will be developed as part of the larger Infrastructure Communications Plan.

The new District Intranet, called *Connect*, is also an important communication tool that helps staff access EnviroMatters resources to help with curricular and extracurricular environment initiatives across the District. Communications also shares the District's environmental sustainability work with the public through information posted on [epsb.ca](http://epsb.ca).

## 3.4 Environmentally Sustainable Education

### 3.4.1 Co-Curricular

Edmonton Public Schools is committed to teaching students and staff to be global citizens by providing resources that help them take an active role in their surrounding community. The District offers numerous co-curricular activities, resources and outreach campaigns for schools and staff to use outside of the formal curriculum. This includes:

- 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,
- Naturescape, Community Garden and Outdoor Classroom Guide,
- Waste Reduction Work Plan and 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 schools host leadership and environmental conferences for 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. In 2015, students from Queen Elizabeth and Lillian Osborne schools collaborated with students from around the world to produce a COP21 Global Youth Whitepaper on climate change, with recommendations about how government could tackle climate change. In 2016, Queen Elizabeth School was named Canada's Greenest School by the Canada Green Building Council for their outstanding environmental education programming.

The District EnviroMatters Office takes an active role in teaching and engaging students through in-class presentations about sustainable programs and environmental initiatives. The EnviroMatters Office also created 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 Summit Committee to help establish and lead a network of green schools within Alberta and work to develop a Green School Summit for environmental leaders of all ages. The first summit took place in fall 2015 in Calgary.

### **3.4.2 Curriculum**

Alberta Education develops 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 in the Grade 4 curriculum, with extensive integration through the science curriculum in junior and senior high school. Early introduction and integration of environmentally conscious values helps to equip students to be mindful of environmental sustainability.

To further aid in environmental education, Edmonton Public Schools reopened the Bennett Centre in 1981 as the Bennett Environmental Education Centre. The Bennett Centre helps provide environmental education to students by:

- enhancing students' learning through indoor and outdoor experiences that actively engage students in their curriculum, and
- providing 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 cooperative living skills and introduce teachers to new teaching practices.

Several District schools, including W. P. Wagner, Highlands and L. Y. Cairns, offer horticulture courses. These courses involve student-built experiments, including herb arrays and outdoor composting, with an emphasis on growing and harvesting sustainable food. Students learn the art and science of plant cultivation, as well as natural methods for insect and pest management. District teachers also develop learning materials that supplement the existing curriculum, such as the credit-based Innovate High School program that uses CTS courses and special projects to guide learning around real world issues involving sustainable development.

The EnviroMatters Office is currently working with City of Edmonton Parks and Roads Services and the Economic and Environmental Sustainability Branch to assist in developing environmental teaching and learning tools for use in District classrooms. The Root for Trees yegTreeMap Education Program and Green Energy Toolkit are recent City of Edmonton initiatives being piloted by District teachers and staff. The goal is to create curricular teaching and learning resources to facilitate learning about sustainable issues and initiatives specific to the City of Edmonton.

## **4 Goals and Timeline**

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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 Infrastructure Optimization Projects I and II**

Infrastructure Optimization Project I is now substantially complete for 13 District schools, with forecast annual energy savings of 400,000 kWh of electricity and 6,000 GJ of natural gas. Initial measurements show the

project is outperforming, electricity savings are 34 per cent above our target. Project II is currently underway for 21 schools. A feasibility study was conducted to determine energy savings and retrofit measures.

#### Timeline

- 2017–2018 – Complete tuning, commissioning, project documentation and close-out of Project I. Conduct measurement and verification of energy savings performance.
- 2017–2018 – Complete three LED lighting upgrades and 50 per cent of mechanical and boiler system replacements under Project II scope of work.
- 2018–2019 – Complete remaining 50 per cent of mechanical and boiler system replacements at 13 additional schools and Project II close-out.

#### **4.1.2 Energy Consultant**

For the past 10 years, the District has used external energy consultants to provide consultation on procuring energy contracts. The District recently secured a new contract to provide energy consulting services to the District until 2019.

#### Timeline

- 2017–2019 – Consultant will review current District energy needs, develop RFP documents and issue tenders for energy contracts for District requirements up to three years in the future.

#### **4.1.3 Solar Solutions for Schools**

Edmonton Public Schools has potential to have approximately 20 MW of solar power generating assets on buildings across the District. To expand rooftop solar development, a portfolio feasibility study and analysis was completed to determine the most beneficial District sites for solar module installations.

#### Timeline

- 2017 – Contract external consultants for data collection to conduct a feasibility study across select District sites.
- 2018 – Develop key recommendations for the Board of Trustees showcasing appropriate sites for solar installations.
- 2018 – Share key recommendations and budget projections with local and provincial governments to discuss a funding strategy.
- 2018–2020 – Initiate construction of solar projects based on approved funding and 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's carbon footprint in accordance with internationally accepted WRI Greenhouse Gas Protocol and ISO 14064. Projects and initiatives developed as a result of improvement suggestions will be incorporated into the Energy and Environment Strategy document update every four years.

#### Timeline

- 2017 – Initiate a quarterly reporting process to streamline data collection and allow for quarterly improvement measures to be implemented based on current data.
- 2018 – Review annual report and initiate discussions and planning around improvement suggestions.
- 2018–2020 – Continue quarterly and annual reporting process.

#### 4.2.2 Carbon and Sustainability Consultant

The District is using an external carbon and sustainability consultant to provide consultation on major District carbon mitigation and environmental sustainability projects.

##### Timeline

- 2017 – Secure contract to provide carbon consulting services. Once the contract is executed, carbon and sustainability consultants will advise on existing environmental projects and develop future initiatives, where requested.
- 2018–2020 – Continue consultation meetings and initiating improvement suggestions.

## 5 Acknowledgements

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

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