

# **Energy** and **Environment** **Strategy**

**2023–2026**

*April 2023*



EDMONTON PUBLIC SCHOOLS

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# 1 Introduction

The Vision of Edmonton Public Schools is enhancing pathways for student success. Commitment to high-quality public education serves the community and empowers each student to live a life of dignity, fulfillment, empathy and possibility. Division Priorities include building outstanding learning opportunities for all students by promoting competencies to empower students to meet the needs of a changing society, workforce and climate.

Through commitment to environmental and social responsibility, as well as inclusive education, Edmonton Public Schools is making a strong statement about the Division's ability to address and meet the changing needs of staff and students. 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 Division EnviroMatters Office, within the Infrastructure department, was created in the fall of 2008 to:

- report on past, present and future Division 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 Division
- track Division utility consumption and explore efficiency strategies
- offer information to staff, students and community about initiatives in Division schools
- provide links to curricular resources, student activities and funding opportunities
- provide links to local, provincial, federal and international energy and environmental websites

## 1.2 Division Environmental Policy

Under the Division 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 Division is committed to environmental stewardship through continual improvement and modeling best sustainability practices in the following four areas:

- Education: the Division shall promote continual awareness of the environmental impact of Division operations.
- Conservation: the Division shall conduct its business in an environmentally responsible manner.
- Protection: the Division shall encourage attitudes of continual improvement and lifelong care for the environment.
- Regulation: the Division'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, and initiatives shall be in alignment with the Division's commitment to reconciliation. The success of this policy is the responsibility of all Edmonton Public Schools students, staff and community stakeholders.

## 1.3 Strategy Framework

Edmonton Public Schools' Division Energy and Environment Strategy is supported by Division Priorities and the Division Environmental Policy, which was formalized in 2010. It is a comprehensive, rolling document that will acclimate to the needs of the Division and to the ever-changing environmental landscape. The Strategy outlines Division efforts ranging from small projects working under larger sustainability initiatives, through to Division-wide environmental policy and program development. Action items for 2023 are specifically noted throughout the strategy and [summarized at the end of the document](#)

## 2 Measuring Performance and Efficiency

Edmonton Public Schools follows, as a minimum, the Leadership in Energy and Environmental Design (LEED) Silver standard for building new Division schools. For upgrades to existing schools and administrative sites, the Division 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.

### 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 (opened 2010) 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 (opened 2012) 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 Division learning environments. 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. In some school projects, LEED Gold proved attainable through a combination of design elements and certification points awarded by virtue of external factors such as access to public transit. Division LEED certified schools are listed below.

#### LEED Gold Schools

- A. Blair McPherson
- Bessie Nichols
- Elizabeth Finch
- Major General Griesbach
- Michael Strembitsky
- Nellie Carlson
- Roberta MacAdams
- Svend Hansen
- Soraya Hafez
- Aleda Patterson
- Alex Janvier

#### LEED Silver Schools

- Lillian Osborne
- Dr. Donald Massey
- Esther Starkman
- Johnny Bright
- Florence Hallock
- Dr. Margaret-Ann Armour
- Ivor Dent
- Dr. Lila Fahlman
- Jan Reimer
- Constable Daniel Woodall
- Donald R. Getty
- David Thomas King
- Hilwie Hamdon
- Shauna May Seneca
- Michael Phair
- Kim Hung
- Mill Creek
- Thelma Chalifoux
- Garth Worthington

All new Division schools are built to achieve a minimum LEED Silver certification, including the new Southeast High School. Recently completed schools, including Joey Moss, Dr. Anne Anderson and the Highlands School addition, are currently awaiting certification.

## 2.2 Sustainability Reporting

### 2.2.1 Utility Reporting

Edmonton Public Schools is committed to reducing utility consumption through conservation and efficiency and 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 conservation initiatives.

Utility and carbon tax costs in the Division are steadily increasing and this trend will continue unless strategic action is taken to reduce emissions and improve efficiencies. Figure 1 shows the rising costs of energy in the Division. Gas and electricity retail prices continue to rise, as does energy consumption in the Division. It is projected that Edmonton Public Schools will see an increase of \$4 million for electricity in the 2023 fiscal year and another \$4 million for gas in 2024. With business as usual, energy costs could exceed \$45 million per year by 2035.

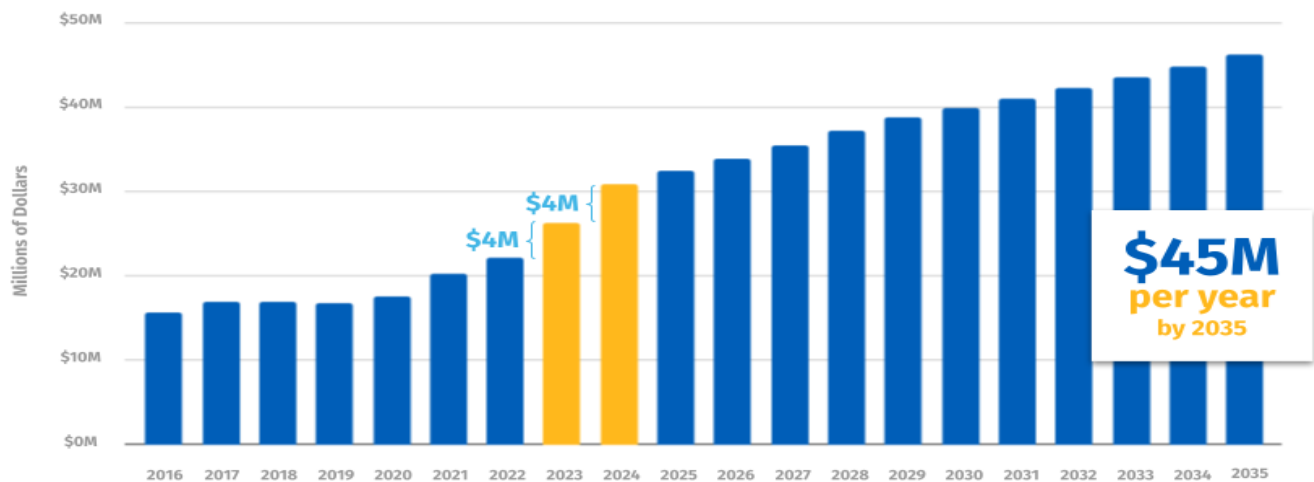


Figure 1. Actual and projected Division cost of electricity and gas (2016–2035)

Edmonton Public Schools monitors waste and recycling totals as well as utility use and solar generation data to provide building performance (environmental footprint and efficiency) information to central and school decision units. These systems support a proactive approach with reporting tools that monitor and report on waste diversion rates and energy consumption, enabling the measurement/metrics necessary to set targets and track progress. Baseline usage levels are established and reports are generated to include Division and site-level data on an annual and quarterly basis.

Currently, Administration is working to develop the Edmonton Public Schools online Environmental Dashboard (Figure 2). The goal is to summarize environmental and utility data in simple charts at both the School and Division level so that patterns will emerge that could assist students and administration to better understand the impact of Division buildings on the environment. Key features include annual carbon footprint charts, monthly and quarterly utility consumption and one-stop access to energy

production from Division schools equipped with solar electricity generation capability. While still in a beta version until development is finalized, it is anticipated that the dashboard will support curricular units of study, as well as rich project-based learning opportunities across grade levels.

**2023 Action Item:** Administration will test and finalize the Environmental Dashboard and lead an internal Division-wide launch.

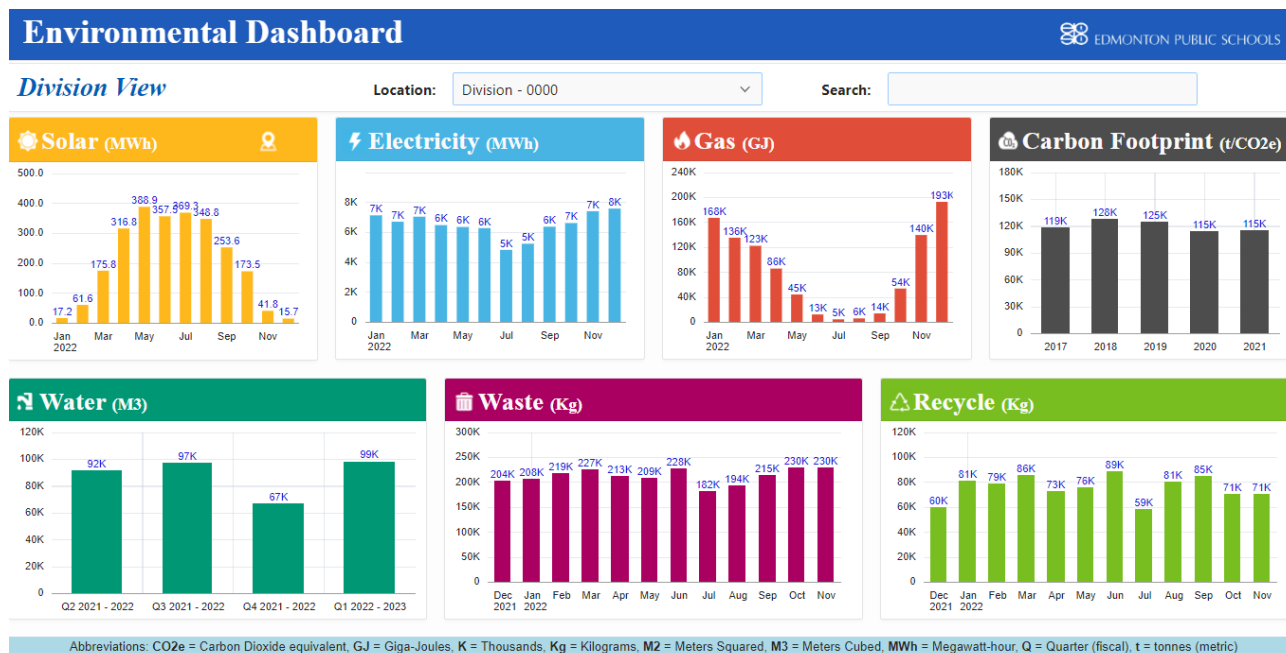


Figure 2. Environmental Dashboard

### 2.2.2 Carbon Footprint

Monitoring greenhouse gas (GHG) emissions is becoming increasingly important for public facing institutions. Since 2015, Administration has been working with a sustainable consulting firm to monitor the Division’s carbon footprint and in 2017, began reporting in accordance with internationally accepted World Resources Institute Greenhouse Gas Protocol and International Organization for Standardization (ISO) 14064 protocols.

In carbon reporting, operational boundaries refer to the sources of GHG emissions within an organization’s operations that are included in their emissions profile. They are commonly referred to as either direct emissions, which are those that an organization has direct control over, or indirect emissions, which are a consequence of an organization’s activities, yet are controlled by someone else. Operational boundaries are divided into three areas known as Scopes (Figure 3).

The scopes that Edmonton Public Schools measures include:

- **Scope 1** – all direct emissions from the activities controlled by the Division, including onsite fuel combustion in gas boilers and fleet vehicles. This scope accounts for 51 per cent of the Division’s emissions profile. The consumption of natural gas is responsible for the majority of Scope 1 emissions.
- **Scope 2** – all indirect emissions from electricity purchased and used by the Division. This scope accounts for approximately 41 per cent of the Division’s emissions profile.

- Scope 3** – all other indirect emissions from activities of the Division, occurring from sources that the Division does not own or directly control, including student bus transport, air travel, land transport and landfill waste. This scope accounts for approximately eight per cent of the Division’s emission profile. Student bus transport comprises the majority of emissions in this scope.

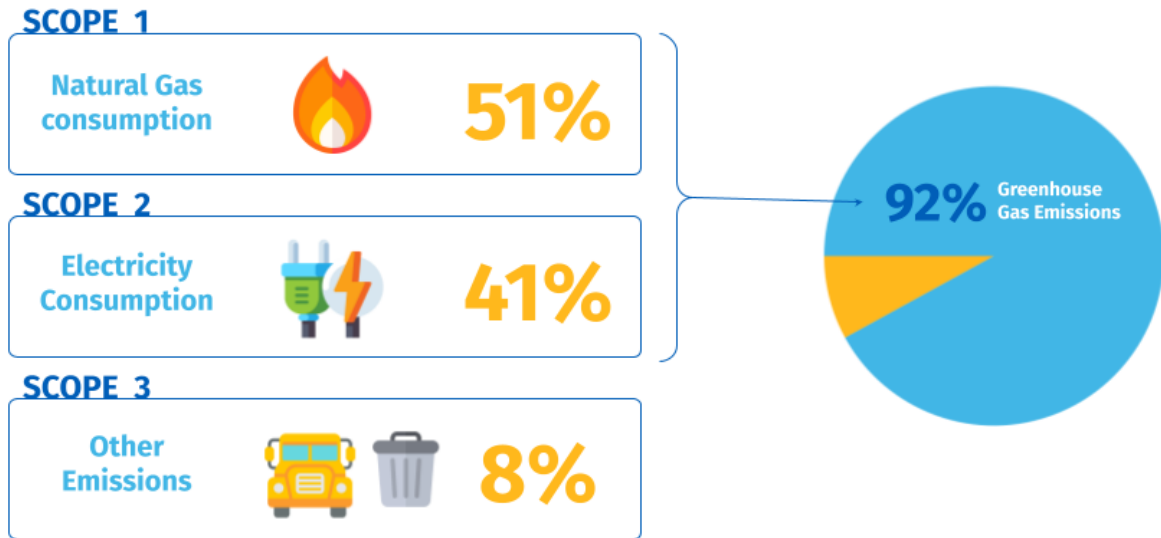


Figure 3. Operational boundaries

Carbon footprint reporting since 2017 has indicated a baseline upon which Edmonton Public Schools can establish reduction targets. Figure 4 outlines the Division footprint, showing both actual emissions and projected emissions in the absence of emissions reduction targets. The projected emissions are based on a moderate growth rate of Division energy (gas and electricity) consumption and represent a business as usual scenario.

Numerous factors contribute to fluctuations in actual emissions, including the addition of new schools, energy efficiency initiatives and solar installations, as well as COVID-19 pandemic response measures. Until recently, the Division had been monitoring its carbon footprint to observe trends, without a formal mandate to decrease emissions. Edmonton Public Schools is now working towards actively decreasing emissions with evidence-based targets and a strategic reduction plan.



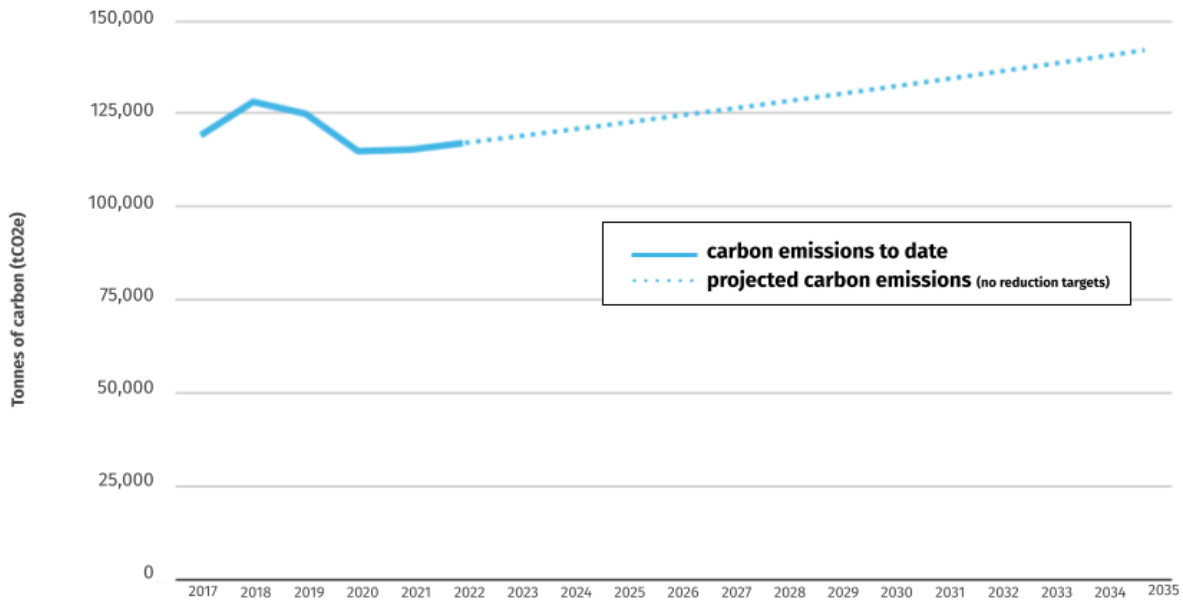


Figure 4. Actual and projected Division carbon emissions (2017-2035)

Annual carbon footprint reporting keeps Edmonton Public Schools in line with current environmental reporting standards and practices. The Division’s goal is to eventually investigate and measure the footprint of individual sites to support the Division in achieving organization-wide GHG reduction targets. Given that the formal tracking and reporting of the Division’s carbon footprint is an emerging body of work, enhanced analytics and reporting structures will be an area of focus for Administration in the near term. Tracking individual sustainability initiatives and the carbon footprint of individual sites and building systems represents a granular level of reporting that will require additional structure and metrics. Moving forward, enhancements in reporting will allow the Division to evolve in how reduction targets are updated and informed. The information gathered through reporting assists the Division in making informed decisions regarding retrofitting, renovations and strategic planning for energy, waste and water reductions.

Edmonton Public Schools’ buildings, and how they operate, comprise the largest portion of the Division’s emissions profile (approximately 92 per cent). Considering the projected increases in utility costs and energy consumption due to enrolment growth, the addition of new infrastructure, and the aging of existing facilities and building systems, moving forward without reduction targets would represent a significant challenge to the Division from both an environmental and fiscal perspective.

### 2.2.3 Emissions Reductions

In May 2021, the Board of Trustees supported a [motion](#) to have the Division join the City of Edmonton Corporate Climate Leaders Program (CCLP), which is an initiative to help organizations take action on climate change through active GHG management across their operations. Membership calls on corporations to establish and maintain a corporate GHG inventory, develop plans and targets for reducing emissions, and share commitments publicly.

**2023 Action Item:** The Division will establish GHG emissions reduction targets for 2025 and 2035 and share those targets publicly.

The program facilitates the sharing of best practices and lessons learned, exploring emerging business opportunities related to the low carbon economy, and celebrating success. Edmonton Public Schools is the first Kindergarten to Grade 12 school district in the city to participate. Through membership in the CCLP, the Division has an opportunity to lead by example and incorporate climate action and literacy into schools to benefit staff and students, while also building resilience in the Division and surrounding school community.

This Division Energy and Environment Strategy document serves as a tool to track and report on the Division's sustainability performance and supports the membership requirements of the CCLP. Administration works to monitor the initiatives outlined in the Division Energy and Environment Strategy in collaboration with schools, Division central units, and external agencies. The goal of the Strategy is to seek a triple bottom line sustainability approach by focusing on environmental, financial and social factors in program and project development.

In order to support tangible reductions in the Division's carbon footprint, the Division Energy and Environment Strategy document is organized into four areas of focus or Key Priorities. Major initiatives are organized within the Key Priorities in thematic groupings, allowing for quick reference and logical progression.

## 3 Key Priorities

The Division Energy and Environment Strategy focuses on four main areas for implementing environmental initiatives, including environmentally sustainable planning, buildings, operations and education.

### 3.1 Environmentally Sustainable Planning

#### 3.1.1 EnviroMatters Office

Establishing the Edmonton Public Schools EnviroMatters Office in 2008 was an important step for the Division'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.

The Edmonton Public Schools Environmental Advisory Committee (EAC) was established in 2012 to allow representatives from various departments to discuss environmental solutions and provide advice on existing and proposed sustainable program development. The EAC will assist with ongoing membership requirements related to Division participation in the CCLP, to effectively engage all departments and staff involved and raise awareness in the Division.

#### 3.1.2 Capital Planning

Infrastructure Planning is responsible for the Division's capital strategy development, based on demographic and student data analysis, as well as monitoring building conditions and performance, to inform development of environmental strategies. Using the Division's Integrated Workplace Management System (Archibus), Infrastructure Planning is developing systems to help track efficiencies and equipment for environmental initiatives by monitoring performance and costs. Improvements can be planned for capital investments based on performance measures and cost benefit analysis, with the goal of reducing the Division's carbon footprint and operating costs.

For new school requests, Infrastructure Planning monitors and provides the City of Edmonton with input on urban development plans for future school sites in developing areas based on an analysis of existing and projected student residency.

This allows the Division to continually apply a strategic lens to the need for new schools. The analysis also allows the Division to assess the need for and coordinate the implementation of relocatable classroom space (e.g., portables/modulars) throughout the city. In coordinating school capacity and accommodation, the Division makes every effort to accommodate students closest to where they live. As such, transportation requirements can be minimized to reduce the environmental cost of student travel in vehicles and the impacts of associated emissions. Providing high quality learning environments, which includes minimizing environmental impacts through proactive planning, remains an overarching goal and guiding [Infrastructure Planning Principle](#) in planning Division school facilities. Ultimately, however, funding new school construction is a Provincial decision, meaning the ability of the Division to honour the concept of proximity, avoid the environmental cost of student travel, and glean the environmental benefit of operating newer and more efficient facilities rests largely outside the Division's control.

In terms of modernization and replacement school requests, as noted in the Division's capital planning documents, the average age of an operational school in the Division is 51 years, with 24 buildings built before 1950, 83 buildings built between 1950 and 1969, and 57 buildings built between 1970 and 1989. Due to many schools being built in the same era, a large cohort of schools require substantial

maintenance and capital renewal. The Division also prioritizes requests for Provincial funding to support larger modernization or replacements through the annual Three-Year Capital Plan. Building condition is based on eight categories, with an environmental lens incorporated through the consideration of mechanical systems, electrical systems, and a review of building utility costs.

The most impactful manner in which both deferred maintenance and carbon footprint can be addressed in Capital Planning is through consolidation or solution projects, which is an integrated solution where more than one school facility will require construction. The Division worked collaboratively with communities to successfully deliver consolidated school replacement projects in the greater Beverly, Westlawn and Highlands areas. The Division's approved Three-Year Capital Plan continues to include a solution project in the mature area of Britannia. The approved consolidation concept was determined through comprehensive consultation with the community including a review of current and projected student enrolment, school utilization, deferred maintenance, cost of utilities, accessibility, and program suitability. The approved concept would consolidate four schools onto two sites and represents the Division's continued commitment to working collaboratively with communities to ensure efficient, sustainable solutions to aging Division infrastructure while supporting a legacy of high quality infrastructure in all parts of the City. Projects identified in the Division's Three-Year Capital Plan require Provincial funding in order to proceed.

Long-term, sustainable funding is key for the Division to reach our emissions reduction goals. The Division is currently investigating a potential internal evergreen or environmental legacy fund, where a portion of savings realized from efficiency initiatives are used to fund further projects.

### 3.1.3 Real Estate Strategy

In February 2022, the Board of Trustees approved the [Division Real Estate Strategy](#) (RES). Premised on values, such as the belief that the Division must be good stewards of public land and education funding, the RES represents a single strategy to help ensure informed decision making about the Division's real estate assets. The Division currently holds 21 closed school buildings, which collectively represent approximately 4.3 per cent of the Division's total carbon footprint and have carbon tax implications of approximately \$150,000 annually.

**2023 Action Item:** The Division continues to consider intentional ways in which closed school buildings can be divested, ensuring that community voice is heard and that public lands are used for public benefit.

### 3.1.4 Collaborations

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

Several external organizations have assisted with sustainable initiatives in the Division, including but not limited to:

- Division-led solar installations in partnership with the Municipal Climate Change Action Centre and the Solar for Schools Program
- schoolyard litter clean up events through the Capital City Clean Up program with the City of Edmonton
- school community electronic waste collection drives in partnership with the Alberta Recycling Management Authority
- the EcoSchools Canada certification program in Division schools with the Alberta Council for Environmental Education

- encouraging safe and sustainable forms of transportation with Ever Active Schools and the Alberta Motor Association’s School Safety Patrol program

In an effort to stay informed of industry trends and foster opportunities for collaboration, Edmonton Public Schools is represented on the City of Edmonton’s Environmental Advisory Committee and Energy Transition Leadership and Waste Reduction Networks. The Division also has active memberships with the Recycling Council of Alberta and the Canada Green Building Council.

One of the benefits of participating in the CCLP is the opportunity to collaborate, share best practices and learn from the experiences of other member institutions, as part of a team taking collective action to reduce emissions across the city.

## 3.2 Environmentally Sustainable Buildings

### 3.2.1 Capital Construction

Through sustainable construction, operation and maintenance practices, Edmonton Public Schools addresses the importance of creating healthy learning spaces while protecting the environment. The Division works to meet and exceed industry standards by incorporating new advancements in sustainable design for projects, from large-scale maintenance projects and the construction of new schools, to small scale retrofits and operating procedures in existing Division schools and buildings. The Division continues to pursue the use of alternative energy, such as solar installations, in new designs and upgrades. For new schools and modernizations, Integrated Infrastructure Services 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.

Incorporating environmental features and LEED standards into the design and construction of new Division schools involves a range of green building strategies, such as energy-efficient lighting, energy and building management control systems (controls), occupancy sensors, high-efficiency boilers, heat recovery ventilation and select building materials. For new school designs, the long-term goal of Administration is to use data collected from the Division’s carbon footprint monitoring and reporting efforts to implement strategies and steer design based on those methodologies proven most effective through actual use and measurement.

The Division has utilized an Integrated Project Delivery (IPD) strategy for new and replacement school projects, focusing on sustainable building design. The IPD strategy supports collaboration between the school community, Division staff, industry and other key stakeholders to provide a strong connection to the project from start to finish. Edmonton Public Schools has completed several IPD projects to date, at Mill Creek, Soraya Hafez, Thelma Chalifoux, Aleda Patterson, Alex Janvier, Dr. Anne Anderson and Garth Worthington schools.

### 3.2.2 Renewal

Edmonton Public Schools understands the financial and environmental benefits of complex utility conservation initiatives in the Division. Large renewal projects completed to date include:

- A \$16 million energy performance contract (EPC) was completed for 30 school buildings in 2017, which resulted in significant and important infrastructure upgrades, while reducing energy and water consumption. The EPC project generates savings of approximately \$1 million per year and will be paid off via energy savings in less than 20 years.
- An \$18 million two-phase Infrastructure Optimization Project (IOP) was completed in fall 2019 for 34 schools. The plan included addressing a significant amount of deferred maintenance and upgrading aging mechanical systems at the end of their lifespan, while optimizing energy and water savings and avoiding major mechanical issues. The IOP was extended to include boiler system replacement projects at Homesteader, Lymburn and York schools, completed in fall 2021.

Infrastructure Maintenance and Renewal (IMR) and Capital Maintenance and Renewal (CMR) funding are critical annual Provincial funding grants that support the Division's efforts to address component replacement and major repair needs in schools. Through a variety of projects each year, Integrated Infrastructure Services ensures that priority infrastructure needs are addressed. The replacement of major building systems, such as air exchange units, boilers, electrical upgrades, controls systems, and building envelope upgrades help to ensure that energy efficiency in Division facilities is improved.

In 2021, boiler replacement projects were completed at Beacon Heights, Edith Rogers, Fraser, J. Percy Page and Windsor Park schools.

**2023 Action Item:** Using CMR and IMR funding, Integrated Infrastructure Services intends to:

- Replace controls systems in 12 schools, replacing boilers at Coronation, Laurier Heights, Hillview, Malmo and Sweet Grass schools, as well as replacing the boiler and upgrading the air handling system at McKee School.
- Undertake building envelope upgrades such as window replacements at Jasper Place, Gold Bar, Scott Robertson, The Academy at King Edward, Satoo, Overlanders and Ellerslie schools, and roofing replacements are being completed at Vernon Barford, Overlanders, Queen Elizabeth and Jackson Heights schools.
- Install new LED lighting at Malcolm Tweddle, Calder, Athlone, Mary Butterworth, Waverley, Parkview, Killarney and Laurier Heights schools.

In the coming years, Edmonton Public Schools expects to specifically target approximately 40 to 50 per cent of IMR and CMR funds toward energy efficiency and sustainable operations.

An advantage to replacing the controls system in a school involves the ability to retain a central lens related to mechanical systems. This was beneficial during the COVID-19 pandemic and during air quality advisories through wildfire season, as Infrastructure staff were able to adjust system settings to the situation across the entire Division remotely. Future efforts to respond to energy consumption analytics with system-wide operational parameters will also benefit from a central lens on controls and mechanical systems.

In order to maximize the delivery of recent IMR and CMR projects, the Division has utilized IPD to support larger combined projects across multiple schools. Having smaller individual budgets than a traditional IPD project, these projects include washroom upgrades, boiler replacements, architectural upgrades and roofing replacements. To date, the Division has completed six of these renewal IPD

projects. The IPD strategy has allowed the Division to effectively realize sustainability goals, providing approximately \$570,000 in additional scope items to schools. The additional scope provided is a result of efficiencies realized through projects being ahead of schedule and on or under budget. The lessons learned from this integrative design process will be used to guide future projects.

Integrated Infrastructure Services maintains a priority list of sustainability projects so that any surplus or other alternative funds that become available can be rapidly utilized to further enhance building efficiency. The opportunity exists for the Division to consider an ongoing accelerated renewal program, funded with savings resulting from energy efficiencies.

The Division 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 Division uses 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. As noted above (Section 2.2.2 Carbon Footprint), the ability to track individual sustainability initiatives represents a granular level of carbon footprint reporting that will require additional structure and metrics.

**2023 Action Item:** Administration is collaborating with external industry experts and consultants to develop a more robust framework for reporting carbon footprint implications represented by individual maintenance and renewal projects.

### 3.2.3 Preventative Maintenance

The Infrastructure department works to ensure schools and other Division buildings are properly maintained and enhanced. Integrated Infrastructure Services plays an integral role in preserving, renovating and modifying Division 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, ventilation and air conditioning (HVAC) systems and controls; and scheduled filter cleaning. The Division also developed a Green Cleaning Committee to provide leadership for the green cleaning initiative and implementation. Integrated Infrastructure Services offers a diverse range of services, leading to a wide range of collection and recycling opportunities.

### 3.2.4 Resilience

Resilience is an important area of focus for the Division, and an emerging item for the [Government of Alberta](#), given that climate resilient infrastructure will help reduce direct loss or damages associated with severe climatic events and help prevent associated indirect costs such as interruptions to education service delivery to students.

Administration is exploring climate resilience strategies in an effort to determine the qualities of a resilient school and school Division. Developing building and community-scale climate resilience requires a multifaceted approach to inform solutions. Investigating key concepts such as adaptable school communities, resilient school design and climate change education, will allow Edmonton Public Schools to better plan for, recover from, and more successfully adapt to adverse events.

Current practices include:

- water conservation initiatives
- on-site renewable energy
- flood risk assessments

- facilitating social structures and community gathering places

To support these efforts, future strategies can include incorporating climate literacy into schools to benefit staff and students, while also building resilience in the community and working with external experts to conduct climate impact assessments to help create sustainable, low maintenance and resilient schools.

## 3.3 Environmentally Sustainable Operations

### 3.3.1 Energy Efficiency

Edmonton Public Schools has focused on replacing, retrofitting and eliminating older lighting systems with energy efficient ones for over 30 years. LED lighting has been implemented as costs decrease and the technology improves. New building designs focus on optimizing natural light in the interior of buildings; this practice is called daylighting and is also encouraged in existing spaces with available natural light. Sensors are also being installed to automatically shut off lights when spaces are not being used. Fans and pumps with high efficiency motors are being equipped with variable speed drive systems to adjust motor speed according to varying load conditions, therefore, reducing electricity usage. High efficiency condensing boilers and domestic hot water heaters are being retrofitted in older schools and are the standard for new schools.

Administration is currently exploring partnership opportunities to expand sustainability initiatives and achieve energy cost savings in the Division, including additional EPC's and creative energy procurement models. Future initiatives being considered include energy audits at administrative sites and expanding these efforts to other Division sites as savings are realized. Work will continue on customizing building energy consumption to meet occupancy by enhancing controls and optimization efforts for maximum efficiency, including lighting systems, HVAC settings and schedules and decreasing the run time of buildings.

Upcoming work in this area includes a focus on shifting consumption practices with all staff and students in Division buildings through EcoSchools initiatives and other Division programs, as well as educating staff about efficient building operations through resources and training.

### 3.3.2 Renewables

Renewable and alternative energy sources are important for creating sustainable learning environments. There are presently 24 schools with Division-led solar installations, which provide alternative energy to the school and serve as teaching and learning tools for students.

The Government of Alberta funded solar modules at nine Division schools, including the Caernarvon, Highlands and Mill Creek school modernizations, as well as new schools Soraya Hafez, Thelma Chalifoux, Aleda Patterson, Alex Janvier, Dr. Anne Anderson, and Garth Worthington.

In 2019, the Infrastructure department conducted a feasibility study that informed the development of a comprehensive Solar Strategy to expand solar installations on existing schools across the Division. The Board of Trustees supported a [motion](#) to present the Division's Solar Strategy to the Province and request funding for implementation of the plan.



As a result of the Solar Strategy, the following 15 schools also had modules installed by the end of 2022:

- Belmont
- Lillian Osborne
- Victoria
- Constable Daniel Woodall
- David Thomas King
- Dr. Lila Fahlman
- George P. Nicholson
- Hilwie Hamdon
- J. Percy Page School
- John D. Bracco
- Mary Butterworth
- S. Bruce Smith
- Shauna May Seneca
- Svend Hansen
- Velma Baker

The most recent phase of work on the Solar Strategy, which included 12 schools, was completed in partnership with the Municipal Climate Change Action Centre and the Solar for Schools Program with funding from the Government of Alberta (the Municipal Climate Change Action Centre is a partnership between the Government of Alberta, Alberta Municipalities, and the Rural Municipalities of Alberta). While the Division is not eligible to receive the emissions reductions that result from these Provincially-funded solar installations, future financial savings will benefit the Division’s operational budget.

The combined Division-led solar initiatives from 2018-2022 are expected to generate approximately 5,500 megawatt-hours of electricity and save an estimated \$650,000 per year. These solar installations are expected to offset about 7.5 per cent of the Division’s electricity consumption, or that of about 800 Alberta homes per year. As a result of the Division Solar Strategy, Edmonton Public Schools has the largest solar array installed on a secondary school in western Canada (Lillian Osborne High School).

**2023 Action Item:** Infrastructure is developing recommendations, funding strategies and possible school locations for future phases of the Division Solar Strategy. Considering potential infrastructure limitations (such as older roofs incapable of supporting solar installations), future phases of the strategy may involve transitioning to a more comprehensive renewables strategy and investigating different concepts, including green energy procurement and heat pump studies, with the goal of piloting preferred systems.

**2023 Action Item:** Infrastructure will review the feasibility of purchasing utilities from renewable sources, such as solar and wind farms. Since electricity contributes to nearly half of the Division’s overall carbon footprint, there is an opportunity to reduce the Division’s annual emissions by about 40 per cent if electricity is fully sourced from renewable energy. Next steps in this area include contracting a new Division Energy Advisor who will work with Infrastructure to develop a green electricity recommendation report to identify costs and timelines, and exploring a green energy procurement “consortium” with other like-minded public educational organizations.

### 3.3.3 Grounds

Division grounds crews follow the City of Edmonton’s Integrated Pest Management (IPM) Policy (C501A). The IPM program is a multidisciplinary, evidence-based approach to pest management based first on prevention and, when necessary, control. Since 2012, Edmonton Public Schools stopped using non-essential pesticides on school property that the Division maintains, which includes the school building envelope or approximately 10 meters around the school. Grounds crews also strive to utilize native plant species for landscaping.

Some Division schools use naturoscapes, community gardens and outdoor classrooms to teach outdoors. Many of these schools have associated gardening clubs or other supports, like Elmwood School which has a gardener in residence. Administration is always looking for new opportunities to support schools looking to adopt naturoscape and garden programs and has developed a project planning resource for Division schools interested in these opportunities.

EPCOR has been engaging with Edmonton Public Schools on the development of two proposed Low Impact Development (LID) projects near Calder and L. Y. Cairns schools. The objective of these projects is to improve the local stormwater drainage systems. These improvements will include bioretention basins to collect stormwater with ornamental shrubs, grasses and deciduous trees. Edmonton Public Schools can look to these projects as models, should the Division pursue similar LID projects as resiliency and flood mitigation initiatives on school sites in the future.

### 3.3.4 Transportation

In the area of yellow busing, Edmonton Public Schools is moving toward more sustainable transportation systems to reduce GHG 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 many schools across Edmonton, which decreases the number of buses on the road and reduces emissions. In total, the Division is responsible for designing approximately 750 daily routes which require approximately 500 buses owned and operated by contract carriers.

Student Transportation has also begun working with other Division departments, including Integrated Infrastructure Services and the Distribution Centre, to utilize existing software and help create efficiencies in their routes. Edmonton Public Schools is continuing to collect information to estimate fuel consumption on field trips to better understand this aspect of the Division environmental footprint.

**2023 Action Item:** Student Transportation is currently investigating the feasibility of an electric bus pilot project; carriers have indicated that collaboration on charging infrastructure could be a potential strategy to complement adoption of a limited number of electric buses into their fleets. One of the goals of a potential electric bus pilot project would include a better understanding of the opportunities and challenges associated with facilitating an initial capital investment in electric buses within the next competitive procurement process (anticipated within 24 months). The proposed review will capture data related to the following energy and service indicators:

- A business model that considers all costs and any potential efficiencies related to the required infrastructure and equipment to operate electric buses.
- Operational opportunities and challenges related to vehicle reliability and resulting service interruptions, cold weather performance, impacts to current routing practices or bus utilization, as well as staff training.
- Funding opportunities or legislative considerations that could provide support to a sustainable business model.
- Equipment availability and lead times as they relate to potential transition strategies and future timelines.

In terms of active transportation, Edmonton Public Schools supports the School Active Travel Planning Initiative in consultation with Ever Active Schools. The School Active Travel Planning Initiative encourages sustainable travel and increased travel awareness for Edmonton Public School students and their families. Several Division schools have established active transportation plans as a tool to encourage more students to walk to school. The Division provides bike racks at schools and administrative buildings to make them bicycle-friendly. An increasing number of schools also have lockers for skateboards, rollerblades and scooters to further promote alternate transportation options. Edmonton Public Schools is a member of the School Traffic Safety Committee along with representation

from Conseil scolaire Centre-Nord (CSCN) and Edmonton Catholic School Division (ECSD), Alberta Motor Association, Edmonton Police Service, Ever Active Schools, and the City of Edmonton (including Transportation, Bylaw, Communications, as well as the Traffic Safety Section).

The Division 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 helped inform a City bylaw passed in 2013, and No-Idling Zone signs were placed around the main entrances of elementary schools.

Future initiatives in the area of electrification and vehicle emissions reductions will also consider Division owned fleet vehicles and involve working to align with national standards to transition to electric vehicles, where possible, through scheduled replacement and efficiency initiatives.

### 3.3.5 Waste

Administration is increasing waste diversion goals by managing and improving programs focused on waste reduction, reuse, recycling and composting Division waste. These efforts provide savings on landfill and hauling service fees as well as engaging Division sites with sustainability goals. The Division also has centralized waste and recycling services payments to reduce the amount of invoices the Division receives and processes, saving money through paper reduction and administrative costs. Administration is also better able to monitor spending in an effort to reduce costs and enhance waste reduction and recycling initiatives at individual sites.

The Edmonton Public Schools Environmental Policy led to the development of numerous recycling programs, including but not limited to:

- mixed recyclables and beverage containers
- electronics, batteries and printer/toner cartridges
- fluorescent tubes, bulbs and ballasts
- used oil, paint and paint-related materials
- scrap metal and wire

In the fall of 2018, standardized three-stream sorting stations were piloted in the Centre for Education. The sorting stations consist of one bin for general waste, one bin for mixed recycling and one bin for refundable bottle collection and are labeled with signage to indicate how to sort items for waste and recycling. In 2019, the program was successfully expanded to the remaining administrative sites in the Division as well as three pilot schools (Avonmore, Dr. Anne Anderson and Joey Moss). The stations replaced single garbage bins throughout each building, providing options to divert and recycle waste which were not previously available. To build on this program and increase use of the sorting stations, the next steps are to remove personal under desk waste bins at all pilot sites. Administration is conducting further investigations into an expanded waste diversion model involving standardizing sorting stations across the Division to allow for the separation of organics and decreased waste going to landfills. Prior to implementation, any such model would need to ensure financial feasibility and involve additional engagement with schools.

At the school level, some Division schools reduce waste through litterless lunch programs by encouraging students to bring snacks and beverages in reusable containers, when possible. Many Division schools have outdoor composting programs or vermicomposting bins in their classrooms as a teaching tool and

to increase waste diversion rates. Administration developed a Waste Reduction Work Plan initiative to help Division schools manage, reduce and divert waste as much as possible.

While landfill waste represents about one per cent (Scope 3) of Edmonton Public Schools overall carbon footprint, waste diversion and waste reduction efforts remain a priority in the Division in terms of utilities savings and resource conservation. Future work in this area will include enhanced waste reduction efforts by exploring zero waste initiatives and circular economy strategies, where possible.

### 3.3.6 Water

Edmonton Public Schools is dedicated to conserving water and has rolled out numerous initiatives including 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 Daly Grove, Minchau, 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. An EPC 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 eight Division buildings, as well as optimized controls for tank-type urinal flushing systems.

To help prevent flood damage and aid in water conservation, Integrated Infrastructure Services is piloting a leak and flood detection system, within the Integrated Infrastructure Services building and 21 buildings throughout the Division. The system provides early detection of major water leaks and also minor toilet and tap leaks. Each group within the system has wireless devices to sense moisture, temperature and power levels, measure water metre flow and report problems with the location, date and time of each event. The cellular connection sends alerts via email and text messages, including whether a building has lost power. Water consumption and alert history are also stored for review in an online dashboard.

The Infrastructure department has been working with EPCOR as part of their Stormwater Integrated Resource Plan, which provides information to assist the Division in future land planning and stormwater runoff management related to green infrastructure. The resources include a facts-sheet complete with water usage data, flood risk and risk mitigation strategies for all Division sites, with an emphasis on sites in high flood risk areas. Strategies can be developed to address high water usage in schools, both operationally and behaviourally, and flood prevention initiatives can include projects such as dry ponds, bioswales and naturalized drainage ways.

Some Division schools have 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 naturescapes, outdoor classrooms and gardens. Rain barrels on school sites have helped foster environmental stewardship and act as a teaching and learning tool for students, teachers and community members.

### 3.3.7 Purchasing

Edmonton Public Schools has committed to using environmentally-responsible vendors to help influence a sustainable economy. Encouraging higher sustainability standards and vendor codes of conduct from service providers allows the Division to meet higher standards of environmental and social responsibility. Administration works to develop standards for all Division environmental services to ensure the Division 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](#), Purchasing and Contract Services (PCS) manages a site asset management system (SAMS) and surplus website (currently under construction), which allows Division schools and departments to notify PCS of any unused

furniture items or related goods. Usable items in good condition are posted on the internal SAMS Surplus Site for use by other schools or departments in the Division. If these items are no longer required within the Division, they are then posted on the external Surplus Site for sale to the general public.

**2023 Action Item:** Administration will collaborate with industry to review the feasibility of greening procurement practices which would require consultants and vendors to contribute to Division emissions reduction goals and maintain standards through regular reviews. Updating standard contract terms and conditions to reflect sustainable priorities, where possible, will also be considered.

### 3.3.8 Technology

Edmonton Public Schools understands that technology enhances learning and performance for students and staff, as per Board Policy [DK.BP–Division Technology](#). Technology is also used to reduce environmental impact. In 2007, the Technology and Information Management (TIM) department provided a study with recommendations for paper conservation and expanding print technologies in the Division. TIM implemented an Enterprise Print strategy to reduce the environmental impacts of printing and increase printed material security in the Centre for Education. This strategy is in the process of being deployed at all school sites.

TIM continuously looks for ways to reduce energy consumption at each site by configuring systems to turn off monitors, Smartboards, projectors and desktop computers automatically after pre-set time periods. Where applicable, TIM recommends devices that consume less power to schools, such as Chromebooks, tablets and laptops instead of desktop computers.

Edmonton Public Schools utilizes information management to examine how all of the Division's records are managed and to efficiently and effectively track and retain them. An electronic file management program allows for a simplified, easy-to-access, secure file management system. Student records and employee files have been digitized and staff can view online personnel files from any location. Positive environmental impacts 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 Division schools.

Edmonton Public Schools provides options for online courses, documents and newsletters and promotes technology use to reduce using paper in schools. The Division intranet (Connect) and other digital tools, such as Google Drive, are used to share news, updates and resources with staff across the Division. Online pre-enrolment, student transportation applications and route change requests, electronic report cards, pay slips and staff directories are some of the initiatives put in place to reduce paper use and the energy required to produce, distribute and recycle these products. The Division also is piloting electronic timesheets in some departments and anticipates full scale implementation in the near future.

### 3.3.9 Food

The Centre for Education houses Café 1881, which provides food service and catering to Division staff. Energy and environmentally conscious best practices guide the daily operations of the Café and the culinary team. Energy efficiency is found through the use of Energy Star rated preparation, holding and warewashing equipment in addition to the use of LED lighting within the kitchen. An investment into both reusable melamine plates and stainless steel cutlery reduced the need for single use items. The Café's menu is focused on fresh, in-house made products that allows for items to be purchased in bulk, eliminating the packaging waste generated by prepared items. Events requiring catering held at the Centre for Education must purchase food and beverages from Café 1881, helping to reduce emissions from delivery trucks as well as the non-reusable packaging associated with outside services.

Many Division 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 Division schools have 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 sustainable education through growing food and promoting urban agriculture as a viable career.

Future work in this area will include resources for schools and administrative sites around the importance of minimizing food and packaging waste to save costs and reduce emissions, as well as encouraging increased plant-based food options in Division cafeterias and cafes as a way for sites to lower their carbon footprint.

## 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 Division 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
- Classroom Energy Monitors Program
- Green Your Classroom Checklist
- School Green Space Project Resource
- Waste Reduction Work Plan
- School Waste Audit Worksheet
- Year End Locker Clean-Out Initiative
- Annual Electronic Waste Collection Drives for school communities and Division staff

A toolkit was developed to provide these resources and easy-to-follow steps to help schools plan and adopt successful environmental practices. The Division will be focusing on behavioural change initiatives by reviewing and updating existing resources and increasing engagement with Division schools and administration sites on issues of utility conservation and waste reduction.

The Division takes an active role in teaching and engaging students about sustainable programs and initiatives. Administration created environmental educational events such as the Student Environmental Symposium and the Youth Environmental Stewardship Conference that brought students together from across the Division and province. Edmonton Public Schools was also represented on the Canada Green Building Council Green School Summit Committee to help establish a network of green schools within Alberta and develop a Green School Summit for environmental leaders of all ages. 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.

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

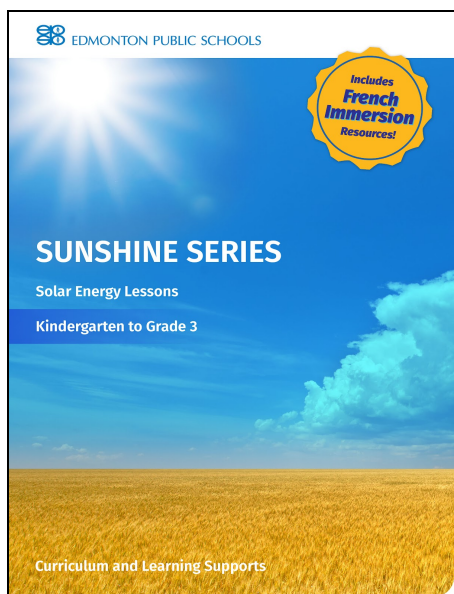
programs through Green Clubs and Green Teams that allow students to learn about and take a more active role in sustainable practices at school. In 2015, Queen Elizabeth School was named one of Canada’s Greenest Schools by the Canada Green Building Council for their environmental education programming. Over the years several Division schools have been recognized by the Alberta Emerald Foundation for outstanding achievements in environmental education. Queen Elizabeth and Westglen schools are past recipients of the Emerald Award and Hillview school is a past recipient of the Emerald People’s Choice Award.

In fall 2021, Administration began working with the Alberta Council for Environmental Education to pilot the EcoSchools Canada certification program in Division K-12 schools. This initiative supports schools with a framework for climate action and environmental learning with links to the Alberta curriculum and to Indigenous perspectives. Edmonton Public Schools was represented on the Capital Region EcoSchools Advisory Committee and worked to launch the program in Edmonton. The EcoSchools program provides resources and opportunities to support staff and students.

In 2022, Division schools were leaders in Alberta with two Platinum (Wagner and Elmwood) and four Bronze (Avonmore, Mary Butterworth, Vimy Ridge Academy, and Ross Sheppard) certified schools. A total of 16 schools have signed up to date and it is possible that an additional 10–15 schools may choose to participate in the EcoSchools program through 2023.

### 3.4.2 Curriculum

Alberta Education has developed programs of study for Kindergarten to Grade 12. The concept of caring for the environment is introduced in Grade 1 Social Studies programs of study, with extensive consideration of environmental and sustainability issues in junior and senior high school science and social studies curriculum. Early introduction and integration of environmentally conscious values helps to equip students to be mindful of environmental sustainability.



Curriculum and Learning Supports (CLS), in collaboration with schools and Infrastructure Supports and Operations, has developed teaching and learning resources to support students in learning about solar energy and solar panels. The resources are called the Sunshine Series: Solar Energy Lessons (Figure 5) and are designed to engage teachers in all Division schools, from Kindergarten to Grade 12. These support resources align with the curriculum from Grade 4 to Grade 12. Alberta Education recently authorized a new science curriculum for Kindergarten to Grade 3 beginning in the fall of 2023. Kindergarten to Grade 3 teachers may adapt this resource to support the new curriculum. These resources are intended to provide teachers in multiple subject areas with activity ideas to address solar energy and its use in society.

Figure 5. Sunshine Series: Solar Energy Lessons

All of the activities in this resource include explicit references to connections to Alberta Programs of Study and they also include French Immersion resources. Key features of the series include:

- background information for teachers regarding solar panels and solar energy
- curricular and cross-curricular connections identified for each grade from K–12
- curricular connections for each grade, which can support the delivery of curriculum through the context of solar energy and solar panels
- one unit plan with sample lesson plans for each grade, with accompanying student materials
- identification of additional sample resources

Another piece of collaborative work with CLS will potentially see concepts of sustainability and environmental stewardship reflected in resources to support the new science curriculum, which was released by Alberta Education in Spring 2023.

Some Division schools, including W. P. Wagner and L. Y. Cairns, offer natural science and 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. Other schools, like Queen Elizabeth, have career and technology studies courses focused on environmental sustainability.

### 3.4.3 Communication

Administration works to inform staff, students and the general public about sustainable initiatives in the Division and to recognize Division schools for their everyday environmental successes. Upcoming work in this area will include engagement and feedback with staff and students around Division emissions reduction targets through avenues such as the EAC, Division science consultants, school environmental clubs and the Student Senate.

The Division intranet, Connect, is an important communication tool that provides staff with access to resources that help with curricular and co-curricular environmental initiatives across the Division. The Communications department also shares the Division's environmental sustainability work with the public through Division social media channels and information posted on [epsb.ca](https://epsb.ca).

**2023 Action Item:** In order to maximize the Division's efforts to communicate environmental initiatives effectively, Administration will work to enhance the profile of the Division's environmental initiatives on the Division's website. Future Division communication efforts will increase awareness around the CCLP, as well as showcase future successes.



## 4 2023 Action Items

Below is a summary of the 10 action items identified in the Energy and Environment Strategy. Refer to the full report for more information about each item.

1. Establish greenhouse gas (GHG) emissions reduction targets for 2025 and 2035, and share those targets publicly.
2. Increase awareness of the Corporate Climate Leaders Program (CCLP) and enhance the profile of environmental initiatives on the Division's website.
3. Test and finalize the internal Environmental Dashboard and lead a Division-wide launch.
4. Consider intentional ways in which closed school buildings can be divested, ensuring that community voice is heard and that public lands are used for public benefit.
5. Review the feasibility of purchasing utilities from renewable sources, such as solar and wind farms (includes exploration of the "consortium" opportunity described in the main report).
6. Target approximately 40 to 50 per cent of Infrastructure Maintenance and Renewal (IMR) and Capital Maintenance and Renewal (CMR) funds toward energy efficiency and sustainable operations.
7. Continue to collaborate with external industry experts and consultants to develop a more robust framework for reporting carbon footprint implications represented by individual maintenance and renewal projects.
8. Develop recommendations, funding strategies and possible school locations for future phases of the Division Solar Strategy.
9. Investigate the feasibility of an electric bus pilot project.
10. Review the feasibility of greening procurement practices which would require consultants and vendors to contribute to Division emissions reduction goals.