

Revised



Annual Report 2021: Climate Action

To: Planning and Priorities Committee

Date: 14 October, 2021

Report No.: 10-21-4172

Strategic Directions

- Transform Student Learning
- Create a Culture for Student and Staff Well-Being
- Allocate Human and Financial Resources Strategically to Support Student Needs
- Build Strong Relationships and Partnerships Within School Communities to Support Student Learning and Well-Being
- Provide Equity of Access to Learning Opportunities for All Students

Recommendation

It is recommended that:

- (a) Net Zero greenhouse gas (GHG) emissions be established by 2050 as an aspirational goal for the TDSB;
- (b) The Director:
 - i. Report annually on building-related emissions, vehicle fleet emissions and the revenue and projected expenditures of the Environmental Legacy Fund, as part of the annual Climate Action report;
 - ii. Update the Environmental Legacy Fund's terms of reference to focus support on climate action; and
 - iii. Reinvest utility incentives to fund GHG reduction initiatives.

Context

At its December 12, 2019 meeting, the Board of Trustees endorsed the City of Toronto's climate emergency declaration. In response to this endorsement, a staff report was presented to the Board of Trustees at its March 11, 2020 meeting, outlining planned

actions to address climate change in terms of both climate literacy and facility operations, including the formation of a new Energy and Climate Action technical team under the supervision of the Senior Manager of Sustainability. Following the assembly of this new team, staff committed to reporting to Trustees on a plan to reduce the TDSB's building-related greenhouse gas emissions.

A Climate in Crisis

The 2018 Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C, sounded the alarm for many and can be credited with sparking interest in youth around the world to demand immediate climate action from global leaders.

The latest IPCC report, released in August 2021 indicates that some of the effects of global warming are now irreversible and swift and intentional action will be required to avoid further detriment to the planet: "... unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C will be beyond reach".¹ The need to act on climate action is now unequivocally urgent and real.

A Generation in Crisis

"In Canada, almost half of students (46%) in Grades 7 to 12 understand that climate change is human caused, yet don't believe it can be addressed with current efforts, leading students to feel hopeless, scared, anxious, and dismissive".²

Youth today are rightly concerned about the future. As an institution dedicated to the education, health, and well-being of young people, it is incumbent on the TDSB to lead by example and navigate the climate crisis with integrity. Investments into what is taught, how buildings are operated and the ways in which school grounds are designed and maintained must respond to the deepening climate crisis.

To bring about real change at the TDSB, whole institution engagement will be required. Recognizing this, the following report will detail 22 actions the TDSB will undertake in response to the climate crisis, divided into six areas of focus:

I – Climate Change Education and Engagement

II – Buildings*

III – Transportation*

¹ Intergovernmental Panel on Climate Change (IPCC). Climate change widespread, rapid, and intensifying. Retrieved from: <https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>

² Field, E., Schwartzberg, P., Berger, P., Gawron, S. (2020, February 26). Change Education in the Canadian Classroom, Education Canada, 60 (1).

IV – Urban Forest

V – Communications

VI – Environmental Legacy Fund

* Actions within this section were informed by the Joint Management Labour Environment Committee

Part I – Climate Change Education and Engagement

At a time when feelings of hopelessness and grief related to the climate crisis are being experienced by young people across the world en masse, the TDSB has an obligation to offer support and resources that will equip students with 21st century global competencies in both traditional and non-traditional instructional settings.

Effective and intentional climate change education in TDSB schools will help to foster an appreciation for the natural world and empower students to take action. Connecting students to the natural world has long been a commitment in the TDSB through the provision of Experiential and Outdoor Education Experiences which support place-based, practical connections to the world around them.

Climate change education is also central to furthering the TDSB's commitment to truth and reconciliation. As stated in the Final Report of the Truth and Reconciliation Commission of Canada (Vol, 6, 13):

Reconciliation between Aboriginal and non-Aboriginal Canadians, from an Aboriginal perspective, also requires reconciliation with the natural world. If human beings resolve problems between themselves but continue to destroy the natural world, then reconciliation remains incomplete.

The Truth and Reconciliation Commission of Canada (Final Report of the Truth and Reconciliation Commission of Canada, Vol, 6, 15 – 17) has identified 10 guiding principles of truth and reconciliation that will assist Canadians moving forward including:

#1. The United Nations Declaration on the Rights of Indigenous Peoples is the framework for reconciliation at all levels and across all sectors of Canadian society.

#6. All Canadians, as Treaty peoples, share responsibility for establishing and maintaining mutually respectful relationships.

#7. The perspectives and understandings of Aboriginal Elders and Traditional Knowledge Keepers of the ethics, concepts, and practices of reconciliation are vital to long-term reconciliation.

Revised

#8. Supporting Aboriginal peoples' cultural revitalization and integrating Indigenous knowledge systems, oral histories, laws, protocols, and connections to the land into the reconciliation process are essential.

Article 14 of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) as well as the Truth & Reconciliation Calls to Action #43, 45 and 47 reflect the critical need to centre the TDSB'S Urban Indigenous Education Centre's (UIEC) Elders Council in guiding the process with regards to Indigenous Knowledge Systems.

The reopening of the TDSB's Boyne River Natural Science School as in Indigenous Land-Based Learning Centre will assist in further supporting TDSB students and the wider Indigenous Communities with making personal connections to the natural world through the application of Indigenous Land-Based pedagogies, responding to the Truth & Reconciliation Calls to Action #62 through #64.

The following actions will be implemented to support the teaching and learning of climate change education in TDSB schools.

Action 1: Facilitate youth-led community climate action projects

In 2020, building on the close working relationship of the TDSB's Sustainability Office and the City of Toronto's Environment and Energy division, staff began to discuss opportunities to work together to support climate change education and engagement of youth.

In consultation with TDSB youth, the City of Toronto, the Environmental Sustainability Community Advisory Committee and the Joint Management Labour Environment Committee, staff are now developing a youth community climate action guide, designed to support youth in mobilizing their communities towards climate action.

This guide is intended to offer students agency to develop climate action initiatives that are relevant and sensitive to the needs of their community. Five strategies for taking action will be suggested, paired with implementation examples:

1. Get people talking about climate change: e.g., talk to family members, friends, or peer groups about a climate issue, organize a lunch and learn, set up a noticeboard for people to share ideas and news.
2. Organize/lead a community event: e.g., host an information session and networking event for community partners, organize a fun day with a climate theme, host an environmentally-focused fashion show or talent show.

3. Advocate for system change: e.g., create a petition and gather signatures, write letters to local businesses or politicians, do outreach in the school or community to promote a specific call to action, participate in a ward or city council meeting.
4. Join a campaign: e.g., organize a themed school event such as Meatless Mondays or Walking Wednesdays, participate in tree planting events organised by another community group, sign and share petitions from climate action groups.
5. Implement climate action on the ground: e.g., Advocate for cycling infrastructure to be installed within your community, help a community partner complete an energy or waste audit, plant trees or create a food or wildlife garden in the community.

This guide will be launched in the fall of 2021.

To introduce TDSB educators to the youth climate action guide, it will be highlighted during the 2021 fall EcoSchools kick-off workshops and featured in an EcoSchools webinar during the 2021/22 school year.

To assist school teams with the planning and implementation of climate action projects, one-on-one support will be offered and piloted in the 2021/22 school year.

In January 2022, a new youth climate action grant program offered by the City of Toronto will be made available to TDSB schools to help fund student-led climate action projects and initiatives.

Action 2: Increase student engagement and leadership by fostering active participation in climate change education initiatives

To empower TDSB youth and offer tangible ways they can take leadership to actively participate in climate action, the following initiatives will be implemented:

a. The EcoSchools program

The EcoSchools program, first launched at the TDSB in 2003, aims to support students and staff in learning about, caring for and protecting the environment and provides a mechanism for tracking and celebrating climate action initiatives within school communities

In 2020, TDSB schools joined the national EcoSchools Canada certification program, offering enhanced supports and resources for schools and access to a network of schools across the country engaged in environmental action.

b. Student leadership conferences

The TDSB's annual EcoSchools Student Leadership Conference aims to equip students with skills to become environmental leaders at their schools and in their

communities. Using hands-on activities to engage and energize student teams, this conference helps students tap into their potential to take a greater role in organizing and implementing an EcoEvent, suitable for Earth Week or other environmentally focused days.

The 2021/22 EcoSchools Student Leadership Conference will centre on climate action.

c. Climate change education programming for schools offered by educational partners

TDSB Educational Partners are external agencies that offer programs, workshops, seminars, presentations, performances and/or educational services in schools during instructional time. The offerings of many of these partners enhance and enrich the quality of climate change education programming in TDSB schools.

Action 3: Offer professional learning opportunities for educators to support teaching and learning that moves beyond climate change awareness to empowerment and action

The following professional learning opportunities will be made available to TDSB educators in the 2021/22 school year, to help empower staff to support teaching and learning focused on climate action:

a. Environmental and sustainability education professional development delivered in collaboration with the Ontario Institute for Studies in Education at the University of Toronto (OISE/UT)

As reported to the Board of Trustees in August 2020, the TDSB's long-standing collaboration with OISE/UT was formalized in 2017 to provide a variety of environmental education professional development opportunities for TDSB educators including:

- Four annual Environmental Education conferences that have brought TDSB teachers and OISE/UT pre-service students together to deepen their knowledge of and competencies in environmental, ecological and sustainability literacy.
- Eighty+ professional learning events, including lectures, workshops, and webinars, on a wide range of sustainability topics. During the COVID-19 pandemic, these events have been offered virtually through webinars, with thousands of educators being involved.

- A TDSB Action Research team of EcoSchools teachers who develop evidence-informed approaches to Environmental & Sustainability Education and share their research with others through presentations and publications, helping to model shared leadership in ESE.
- Four annual end-of-year events for EcoSchools educators to share best practices and celebrate their achievements.

As the climate crisis involves many complex and intersecting problems, the approach to professional learning in this collaboration has connected environmental learning to key TDSB priorities, such as equity, inclusion, and well-being. A clear emphasis has been placed on learning from Indigenous Elders, Knowledge Keepers, and educators about Traditional Ecological Knowledge and Land-based learning for example, as well as from educators from marginalized groups about environmental racism and ecojustice education. Supporting the TDSB's initiatives on outdoor/nature-based learning and well-being have also been central, providing many entry points for teachers and their students, and offering ways for these educators to share promising practices in these areas.

Overall, this collaboration has offered an invaluable opportunity for the TDSB and OISE/UT to work in tandem to take action on the climate crisis by equipping educators, and subsequently their students, with the knowledge, skills and competencies needed to work towards more equitable, just and sustainable communities.

b. EcoSchools Kick-offs

Held annually, EcoSchools kick-offs provide school-based staff with an opportunity to learn about EcoSchools program changes, access resources to strengthen their programs and share best practices with colleagues from other TDSB schools. For the third year in a row, staff will have an opportunity to explore research-based approaches to climate change education.

c. Environmental Education Additional Qualification (AQ) Course Subsidies

Each year, AQ courses in Environmental Education are offered by OISE/UT to Early Childhood Educators, elementary, and secondary teachers. These interdisciplinary courses use an inquiry-based, experiential approach to explore what it means to learn about, for, and in the environment using both in-class and on-line learning. TDSB participants are eligible to receive a subsidy after completion of each course.

II – Buildings

A primary source of greenhouse gas emissions (GHG) at the TDSB is the natural gas used to heat nearly 44 million square feet of real estate, and the electricity needed to operate lighting, air conditioning, pumps, fans, computers, and other equipment.

For the last twenty years, as shown in Appendix A, the annual GHG emissions from the use of natural gas and electricity has been steadily declining, from 163,119 metric tonnes in 2000/01 to 110,661 metric tonnes in 2019/20. In the last school year, however, an increase in the use of natural gas has raised emissions to 119,900 metric tonnes, an 8.35% increase from the year before, but still far below 2000/01 levels.

The increase in natural gas consumption in 2020/21 was likely caused by introducing more fresh air into buildings during the heating season through extended run times for ventilation systems, and the opening of windows. This increase in natural gas consumption arising from the COVID-19 pandemic would likely have been higher without the significant investments in improvements to heating, ventilation and air conditioning (HVAC) systems outlined below.

The following actions are practical and achievable and will form the foundation for the TDSB's longer-term goal of achieving a reduction of GHG emissions.

Action 4: Establish Net Zero GHG emissions by 2050 as an aspirational goal for the TDSB

In 2019, Toronto City Council declared a climate emergency and committed to a city-wide GHG emissions reduction goal of net zero by 2050 or sooner. In 2020, the Canadian Net-Zero Emissions Accountability Act was introduced in Parliament, formalizing Canada's goal to achieve net zero emissions by 2050.

Achieving net zero GHG emissions across the TDSB's 44 million square feet of real estate, with the average building age of over 50 years, will be extremely challenging. Net zero will not only pose significant technical challenges and require major financial investments over many years but will also require the firm support and commitment of the Ministry of Education. Publicly funded schools in Ontario are funded by the provincial government, which also proscribes strict rules for how money can be spent. The TDSB simply does not have the financial tools, nor the decision-making latitude to achieve net zero on its own.

At the same time, the urgency of the climate crisis demands that the TDSB works towards reducing its GHG emissions as much as possible. For this reason, the TDSB

will establish net zero by 2050 as an aspirational goal and will use the resources at its disposal to reduce its emissions as much as possible in the years ahead.

Action 5: Participate in the City of Toronto's Green Will Initiative

The City of Toronto's Green Will Initiative (GWI) aims to accelerate greenhouse gas emission reductions within the city by improving the energy efficiency of public and privately-owned buildings. As a participant in the first cohort of this initiative which includes some of Toronto's largest property managers and owners, the TDSB will receive support to create a plan to accelerate emission reductions and achieve targets. The TDSB's unique pathway to net zero will be developed by:

- Establishing GHG emissions targets specific to the needs of the building portfolio
- Evaluating buildings' State of Good Repair and long-term capital planning
- Supporting integration of environmental and social goals, along with increased operational effectiveness, when formulating business cases for projects and plans
- Implementing strategies and plans that are portfolio-wide for existing buildings and new construction

The City of Toronto's recently released Net Zero Existing Buildings Strategy is a key component of the city's goal to reduce city-wide emissions to net zero by 2050 or sooner. This strategy outlines a path for a significant reduction in emissions from energy use in buildings, moving Toronto towards a decarbonized and net zero emissions building sector. Through the Net-Zero Existing Buildings Strategy, the TDSB will endeavor to align with a set of recommended building-scale actions, subject to available funding.

Action 6: Create Energy/GHG Report Cards for buildings and improve benchmarking

To assist staff with understanding the "environmental footprint" of individual buildings, energy/GHG report cards will be created for each TDSB school and administration site. Updated annually, these report cards will identify each facility's natural gas, electricity, and water consumption and related GHG emissions.

Efforts will also be made to improve the benchmarking of buildings so that facilities with similar characteristics (e.g. age, amenities, hours of operation and programs) can be compared. Improved benchmarking will help staff to identify and focus efforts on the buildings with excessive energy consumption.

Action 7: Implement targeted greenhouse gas reduction projects at facilities with high levels of emissions

The regular benchmarking of buildings will identify buildings with high levels of GHG emissions. Selected facilities will then be targeted for specific upgrades and retrofits aimed at reducing energy consumption and related GHG emissions. An annual budget for GHG reduction projects will be established. All project work will meet the criteria for School Condition Index (SCI) funding.

Action 8: Focus the work of the new Energy and Climate Action Team on GHG reductions

As outlined above, the Energy and Climate Action Team has been brought together to provide the engineering and analytical expertise required to put more emphasis on reducing the TDSB's greenhouse gas emissions. Since this is a newly formed group, with a mandate to reduce GHG emissions, a review of the duties and responsibilities of staff within this team is being undertaken to prioritize work and focus on activities that are directly related to reducing and monitoring GHG emissions and thereby accelerating progress towards the TDSB goal of achieving Net Zero by 2050.

Action 9: Continue to invest in state of good repair projects

With its \$3.7 billion backlog in major repairs, and state of good repair funding from the Ministry of Education (often referred to as School Condition Index (SCI) funding and/or Renewal), there is a significant opportunity to reduce GHG emissions as systems are replaced and upgraded.

State of good repair projects that reduce energy consumption and GHG emissions include:

- Steam-to-hot water heating plant conversions: old steam boilers and related controls that are replaced with hot water systems are more efficient and provide improved temperature control
- Heating plant replacements: old hot water boilers replaced with up-to-date boilers with more efficient modulating burners and related controls
- Ventilation upgrades: new air handling units provide increased fresh air delivery and improve comfort control for occupants
- Building HVAC controls upgrades: obsolete pneumatic temperature controls that are replaced with direct digital controls improve the control and monitoring of temperatures in schools
- Window upgrades: new insulated windows reduce heat loss, drafts, and noise transmission
- Roofing renovations: new roofing systems with significant upgraded insulation will reduce building heating losses in winter and solar gains in summer

For more information on the extent of work underway, refer to Appendix B.

Action 10: Review and update building design guidelines, standards, and practices to prioritize sustainable building strategies.

Since the 2015/16 school year, the TDSB has spent hundreds of millions of dollars on state of good repair projects, new schools, and major additions. Many projects include new or upgraded building systems that directly affect building energy consumption and related GHG emissions.

Since systems such as boilers, air handlers, windows and roofs typically have operational lifespans exceeding 25 years, the design criteria used to select and specify these systems can play a pivotal role in accelerating the TDSB's reduction of GHG emissions.

To this end, it is important that the school design guidelines provided to architects and engineers working on school renewal (state of good repair) and capital projects reflect current best practices in sustainable design and decarbonization strategies.

A Request for Proposal (RFP) will be issued to retain the services of a consultant specialized in sustainable building standards (e.g., LEED, Passive House, Net Zero Carbon) and GHG reduction strategies related to the design of school capital and renewal projects. The consultant will undertake a comprehensive review of current TDSB design guidelines and engage with staff to identify opportunities where energy efficient technologies and innovative construction practices can be applied. The consultant will then assist in producing updated design guidelines that include enhanced standards, practices and strategies that are best suited for application to TDSB schools building projects.

As part of this project, the Ministry of Education's expectation that school boards design and build new schools and additions to a construction cost benchmark will need to be considered, since it imposes limits on what is possible.

Action 11: Complete the TDSB's network of state-of-the-art building automation systems

Building automation systems (BAS) are computer-based systems that control the operation of heating, cooling, ventilation, and air conditioning (HVAC) within buildings. In response to the pandemic and concerns about air quality, a major effort has been made to upgrade the building automation systems in many schools.

State-of-the-art, networked BAS not only help improve and control the ventilation of schools but are the foundation for improving the efficient operation of buildings, particularly over the TDSB's vast building portfolio.

A well-operated and maintained network of BAS is a key building block for the long-term goal of achieving net zero GHG emissions. It is anticipated that all TDSB schools will have an up-to-date, networked BAS by the end of August 2022.

Action 12: Establish a series of initiatives to better support caretakers with the efficient operation of buildings

For the TDSB to achieve net zero by 2050, building operations excellence will be essential. As front-line building operators, caretakers play a key role in ensuring that a school's physical plant is operated efficiently and that equipment problems are understood, identified, and repaired as quickly as possible. This is critical to ensure that new building systems are able to deliver GHG emission reductions over many years of operation. Managing the timely repair of building equipment, especially repairs related to heating and ventilation systems, also contributes to a comfortable and safe learning environment in schools.

To support caretakers with efficient operation of the buildings they are responsible for, the following initiatives will be implemented:

a. Establish a Buildings Operations Help Desk

A Buildings Operations Help Desk will be created to provide caretakers with additional training and technical support to effectively manage the operations of their building systems. Help Desk staff will provide real-time, technical, and logistical support to caretakers with respect to the operation of their school's BAS, HVAC, and mechanical systems.

Caretakers will have the ability to contact the Help Desk during normal school operating hours with their questions or concerns. Assistance will be provided on how to operate their building systems and how to identify and troubleshoot equipment problems so that needed repairs can be completed quickly and efficiently. Caretakers in need of additional training will be guided on how to seek out support.

To establish and oversee the Building Operations Help Desk, a management-level position will be created, funded by the Environmental Legacy Fund. Over time, additional staff may be assigned to support the Operations Help Desk.

b. Create an online training video for caretakers that highlights actions they can take to reduce GHG emissions in their buildings

Responding successfully to the climate crisis as a school board will require the engagement of staff, particularly those with influence on the operation of TDSB buildings.

A short video will be created for caretakers for the 2021/22 school year with the possibility of creating more videos that reach a broader audience in the years ahead. The video will include a summary of climate science, and specific steps caretakers can make to improve energy efficiency and reduce GHG emissions.

c. Develop an interactive online platform to familiarize staff with site-specific mechanical systems

An interactive online platform will be created using a Geographic Information System (GIS)-based web application.

Through this platform, caretakers will gain access to site-specific GIS-based profiles for all TDSB schools and administration centres that detail the mechanical systems within each physical plant. Every profile will include short videos that explain how various mechanical components operate efficiently.

The platform will also help caretakers and maintenance staff work together to more effectively identify maintenance problems that impact energy consumption, and to expedite corrective actions.

III – Transportation

The City of Toronto's 2017 inventory on community-wide GHG emissions indicated that vehicles generate 38% of GHG emissions in the city.³

The modes of travel used by students travelling to school, and staff carrying out Board business have the potential to significantly impact GHG emissions in the City of Toronto.

Action 13: Report vehicle fleet GHG emissions annually

The TDSB's annual electricity and natural gas consumption has been reported regularly to the Board of Trustees for many years and is posted on the TDSB's public website. The deepening climate crisis demands similar attention be placed on the fuel consumption and GHG emissions related to the TDSB's fleet of vehicles. For this reason, fleet emissions will be reported annually to the Board through future climate action updates.

Action 14: Begin transition of vehicle fleet to electric vehicles

³ City of Toronto Environment and Energy Division. (2018). TransformTO: Climate Action for a Healthy, Equitable & Prosperous Toronto. Retrieved from: <https://www.toronto.ca/wp-content/uploads/2019/06/98c7-TransformTO-Implementation-Update.pdf>

As of September 2021, 759 vehicles comprise the TDSB's vehicle fleet; 664 vehicles owned by the TDSB, 12 that are leased and 83 rental units. The TDSB's owned vehicle inventory consists of both gasoline and diesel-fuelled vehicles and includes cars, SUVs, buses, pick-up trucks, dump trucks, aerial trucks, full-size cargo vans, cube vans and minivans. These vehicles serve a variety of functions within the system.

Gasoline and diesel engines produce an average of 2.3 kg of CO₂ and 2.7 kg of CO₂ respectively per litre of fuel consumed.⁴ In 2020/21, the TDSB's fossil fuel-powered vehicle fleet produced an estimated 2,756 metric tonnes of CO₂ (refer to Appendix C for more detail); this represents approximately 2.25% of the TDSB's total vehicle and building-related GHG emissions in 2020/21.

Of the 664 vehicles owned by the TDSB, 40% are models that are 15 years old or older. As TDSB vehicles age and manufacturers bring more electric vehicles to market, there is an opportunity to begin the transformation of the TDSB vehicle fleet.

To start the transition, funding from the Environmental Legacy Fund (ELF) will be used to subsidize the cost of procuring electric vehicles on a pilot basis as part of its annual replacement of vehicles. The ELF will cover the cost difference between procuring a conventional vehicle and a comparable electric vehicle. Specific details will be reported to the Board through the contract awards process.

To support the transition, charging station infrastructure will be installed at maintenance, construction, and administration facilities in tandem with the electrification of the fleet. TDSB mechanics will also receive training so that they have the knowledge to service electric vehicles.

Action 15: Install conduit for electric vehicle charging stations in new and renovated parking lots

The Canadian government has pledged to eliminate the sale of vehicles with internal combustion engines by 2035. Major manufacturers are projecting sales of electric vehicles to increase dramatically and are investing billions to facilitate the transition.

Many TDSB parking lots are at the end of their life and will continue to be replaced in the years ahead. As new lots are constructed, and old lots are replaced, electrical conduit will be installed as part of projects so that vehicle charging stations can be added in future without having to remove asphalt to install the wiring. This effort will make future installations easier and far less expensive.

⁴ Natural Resources Canada. (2014). Learn the facts: Emissions from your vehicle. Retrieved from: https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeef/pdf/transportation/fuel-efficient-technologies/autosmart_factsheet_9_e.pdf

At the same time, staff will explore opportunities to pilot the installation of vehicle charging stations at schools.

Action 16: Continue to support active, safe, and sustainable school travel

In 2013, the Board of Trustees approved the TDSB's Charter for Active, Safe and Sustainable Transportation. Since that time, a variety of active transportation supports have been offered to schools including the installation of hundreds of bike racks, the promotion of annual walk/wheel to school days and access to cycling workshops for students.

In addition to encouraging students to choose more active modes of transportation, in 2017 the TDSB recognized that more work could be done to help the schools under the most pressure from the surge in traffic during drop off and pick up times and launched the Traffic Safety Program. This program, modeled after school travel planning, aims to support school communities with identifying travel issues faced by staff, students and their families and identify workable solutions in collaboration with school board and City staff.

In 2021/22, the supports described above will continue to be offered to TDSB schools.

IV – Urban Forest

The TDSB is committed to building climate resilient school grounds. As the climate warms, and extreme weather events become more commonplace, it will become increasingly important for school ground investments to address some of the key environmental challenges influenced by climate change.

Trees provide critical benefits for the environment including habitat for wildlife, shade protection, absorption of carbon dioxide, and filtering of air pollutants.

The presence of trees on school grounds has also been linked to improved mental health and has been proven to support student learning. Recent research from the University of Toronto found the proportion of tree cover on TDSB school grounds to be a positive predictor of student achievement and that the effects of tree cover were most pronounced in schools that had the highest level of external challenges.⁵

Given the environmental and social benefits of trees, the TDSB will continue to invest in its urban forest through enhanced tree planting and maintenance programs.

⁵ Sivarajah, S., Smith, S.M., & Thomas, S.C. (2018). Tree cover and species composition effects on academic performance of primary school students. PLoS ONE 13(2): <https://doi.org/10.1371/journal.pone.0193254>

Action 17: Double the size of the TDSB's large tree planting program

The TDSB's large tree planting program began in 2006. Since that time, an average of 300 large caliper trees have been donated by the City of Toronto and planted by in-house trades each year.

While gains have been made to expand the TDSB's urban forest since that time, the social and environmental benefits of trees support the need to accelerate this work, particularly in communities that have been historically underserved. Beginning in the autumn of 2022, the TDSB will aim to plant 600 large trees annually.

To ensure schools with the most need for trees are prioritized, beginning in 2022, two thirds of the TDSB's annual large tree planting will occur through a planned program. Schools will be selected using the following criteria: canopy coverage, Learning Opportunities Index, proximity to major arterial roads and highways, and heat vulnerability. The remaining one third of large trees will be planted in response to emerging needs. Instances include when a tree has died and needs to be replaced, memorial tree planting, and for small-scale succession planting at schools with mature trees.

Action 18: Use soil cells when planting trees in harsh conditions as part of major site projects

Small school sites in densely populated neighbourhoods, particularly in areas with a lot of hard surfaces, are often harsh environments for trees. For trees to thrive in the harshest of conditions, the use of soil cells below ground has proven to be very successful as they provide generous soil volumes and help prevent soil compaction.

For this reason, staff will endeavor to include soil cells when planting trees in harsh conditions as part of large landscaping projects, subject to available funding on a case by case basis.

Part V: Communications

To highlight the TDSB's environmental initiatives that have occurred over the last 20 years and communicate the school board's commitment to climate action moving forward, the following will be implemented.

Action 19: Launch a new Environment, Energy and Climate Action website as part of the TDSB's public website

In October 2021, the TDSB will launch a new Energy, Environment and Climate Action website. This site replaces the previous EcoSchools webpages and covers a much broader range of environmental information and resources, including educational programs, site-specific climate action and guiding resources. The new site is designed

with diverse audiences in mind, with the goal to increase opportunities for learning, engagement, and action.

Part VI: Environmental Legacy Fund

The Board of Trustees had the foresight to approve the TDSB's first Climate Change Action Plan in 2010. A cornerstone of that report was the approval of the Environmental Legacy Fund. Revenue from the sale of carbon credits, income from the sale of electricity generated by 11 TDSB-owned solar PV projects and sale of TDSB e-waste has been directed into the Fund. As reported to the Board, terms of reference with spending parameters were created, and have guided the use of the fund ever since. Refer to Appendix D for a summary of the Environmental Legacy Fund's existing terms of reference.

As we enter the third decade of the twenty-first century, the climate crisis has only deepened, and with it, a new sense of urgency for action. The seriousness of the crisis is such that changes to the terms of reference are required, and new sources of revenue need to be found.

Action 20: Update the Environmental Legacy Fund's Terms of Reference to focus support on climate action

Changes are needed to the Environmental Legacy Fund's terms of reference to ensure money is invested into high priority initiatives directly related to responding to the climate crisis. The funding priorities outlined in the terms of reference will be revised to include:

- Building-related GHG reduction (e.g., staffing Building Operations Help Desk, professional fees for building standards review)
- Sustainable transportation (e.g., subsidizing electric vehicles and charging stations, active transportation investments)
- Building climate resilient school grounds (e.g., professional fees related to school ground enhancement programs)
- Climate change education and engagement (e.g., staff professional development, student engagement in climate change literacy initiatives)

There will be no set annual spending limit for the Environmental Legacy Fund, or its individual priority areas.

Action 21: Report annually on projected revenue and expenditures for the Environmental Legacy Fund

As part of the annual Climate Action report to the Board, staff will report on the Environmental Legacy Fund, outlining revenue into the fund and projected

expenditures. Refer to Appendix E for a summary of revenue and expenditures to date and Appendix F for spending projections for the 2021/22 school year.

Action 22: Reinvest utility incentives to fund GHG reduction initiatives

When the TDSB makes wise investments into state of good repair projects that reduce energy consumption, it often qualifies for incentives and rebates offered by Enbridge and/or Toronto Hydro.

As noted in Appendix G, the TDSB expects to receive a total of \$615,222 in utility incentives for 2021-22. Directing utility incentives to the Environmental Legacy Fund will create a self-sustaining cycle whereby earned incentives will help to fund future GHG reduction projects and initiatives.

Action Plan and Associated Timeline

Action 1: Facilitate youth-led community climate action projects – Community climate action guide for youth will be launched in Autumn 2021.

Action 2: Increase student engagement and leadership by fostering active participation in climate change education initiatives – supports are already underway and will be on-going in the years ahead.

Action 3: Offer professional learning opportunities for educators to support teaching and learning that moves beyond climate change awareness to empowerment and action – supports are already underway and will be on-going in the years ahead.

Action 4: Establish Net zero GHG emissions by 2050 as an aspirational goal for the TDSB – Effective upon approval of the report.

Action 5: Participate in the City of Toronto's Green Will Initiative – Participation has begun and will be ongoing in the years ahead.

Action 6: Create Energy/GHG Report Cards for buildings and improve benchmarking – Work has started and will continue through the 2021/22 school year.

Action 7: Implement targeted GHG reduction projects at facilities with high levels of emissions – Projects will be identified, and designs developed and tendered in the 2021/22 school year.

Action 8: Focus the work of the new Energy and Climate Action Team on GHG reductions – Work has started and will continue for this school year.

Action 9: Continue to invest in state of good repair projects – Annual program.

Action 10: Review and update building design guidelines, standards, and practices to prioritize sustainable building strategies – A Request for Proposal (RFP) for professional services will be issued by August 2022.

Action 11: Complete the TDSB's network of state-of-the-art building automation systems – To be completed by August 2022.

Action 12: Establish a series of initiatives to better support caretakers with the efficient operation of buildings

- a. Build an Operations Help Desk – Schedule II-level position to be established and filled by April 2022.
- b. Create an online training video for caretakers that highlights actions they can take to reduce GHG emissions in their buildings – To be completed by August 2022.
- c. Develop an interactive online platform to familiarize staff with site-specific mechanical systems – To be completed by January 2024.

Action 13: Report vehicle fleet GHG emissions annually – Reported in the annual Climate Action report to Board.

Action 14: Begin transition of vehicle fleet to electric vehicles – Electric vehicle procurement and the installation of charging stations will begin on a pilot basis in 2021/22. Training for mechanics will also start in 2021/22.

Action 15: Install conduit for electric vehicle charging stations in new and renovated parking lots – Conduit for vehicle charging stations will be specified in parking lot projects starting upon approval of this report.

Action 16: Continue to support active, safe, and sustainable school travel – Annual Traffic Safety Program.

Action 17: Double the size of the TDSB's large tree planting program – Fall 2022.

Action 18: Use soil cells when planting trees in harsh conditions as part of major site projects – Soil cells will be specified in large landscaping projects starting upon approval of this report, subject to available funding.

Action 19: Launch a new Environment, Energy and Climate Action website as part of the TDSB's public website – October 2021.

Action 20: Update the Environmental Legacy Fund's Terms of Reference to focus support on climate action – Terms of reference will be revised upon approval of this report.

Action 21: Report annually on projected revenue and expenditures for the Environmental Legacy Fund – Reported in the annual Climate Action report to Board.

Action 22 – Reinvest utility incentives to fund GHG reduction initiatives – starting in 2021/22.

Resource Implications

Action 1: Facilitate youth-led community climate action projects – Professional fees to provide one-on-one support to schools initiating climate action projects to be funded using existing resources. No new funding required.

Action 2: Increase student engagement and leadership by fostering active participation in climate change education initiatives – Existing staff and program resources will be used. No new funding required.

Action 3: Offer professional learning opportunities for educators to support teaching and learning that moves beyond climate change awareness to empowerment and action – Collaboration with OISE/UT and educator Environmental Education AQ course subsidies to be funded from the Environmental Legacy Fund, subject to available funding.

Action 4: Establish Net zero GHG emissions by 2050 as an aspirational goal for the TDSB – subject to available funding from the Ministry of Education and other levels of government.

Action 5: Participate in the City of Toronto's Green Will Initiative – Existing staff resources will be used. No new funding required.

Action 6: Create Energy/GHG Report Cards for buildings and improve benchmarking – Existing staff resources will be used. No new funding required.

Action 7: Implement targeted GHG reduction projects at facilities with high levels of emissions – School Condition Index Funding.

Action 8: Focus the work of the new Energy and Climate Action Team on GHG reductions – No funding required.

Action 9: Continue to invest in state of good repair projects – School Condition Index Funding.

Action 10: Review and update building design guidelines, standards, and practices to prioritize sustainable building strategies – Existing staff resources will be used to issue RFP. No new funding required.

Action 11: Complete the TDSB's network of state-of-the-art building automation systems – School Condition Index Funding.

Action 12: Establish a series of initiatives to better support caretakers with the efficient operation of buildings

- a. Build an Operations Help Desk – Schedule II-level position to be funded from the Environmental Legacy Fund, subject to available funding.
- b. Create an online training video for caretakers that highlights actions they can take to reduce GHG emissions in their buildings – Existing resources will be used. No new funding required.
- c. Develop an interactive online platform to familiarize staff with site-specific mechanical systems – Two temporary AutoCAD specialists will be funded from the Environmental Legacy Fund, subject to available funding.

Action 13: Report vehicle fleet GHG emissions annually – No new funding required.

Action 14: Begin transition of vehicle fleet to electric vehicles – Premiums, charging infrastructure and training to be funded from the Environmental Legacy Fund, subject to available funding.

Action 15: Install conduit for electric vehicle charging stations in new and renovated parking lots – Cost to be included in project budgets.

Action 16: Continue to support active, safe, and sustainable school travel – Traffic Safety Program funded from the Environmental Legacy Fund, subject to available funding.

Action 17: Double the size of the TDSB's large tree planning program – Trees provided by the City at no cost. Planting and watering for two years will be funded by a combination of Renewal and City of Toronto grants.

Action 18: Use soil cells when planting trees in harsh conditions as part of major site projects – Include in project budgets, subject to available funding

Action 19: Launch a new Environment, Energy and Climate Action website as part of

the TDSB's public website – Existing staff resources will be used. No new funding required.

Action 20: Update the Environmental Legacy Fund's terms of reference to focus support on climate action – No funding required.

Action 21: Report annually on revenue and expenditures for the Environmental Legacy Fund – No funding required.

Action 22: Direct all utility incentives and rebates into the Environmental Legacy Fund.

Communications Considerations

N/A

Board Policy and Procedure Reference(s)

Policy P028 – The Environment

Appendices

1. Appendix A: Annual Building-Related GHG Emissions
2. Appendix B: State of Good Repair Projects that Reduce GHGs, 2020/21 & 2021/22
3. Appendix C: Fuel Consumption and Vehicle-Related GHG Emissions
4. Appendix D: Summary of the Environmental Legacy Fund Terms of Reference
5. Appendix E: Environmental Legacy Fund Revenue and Expenditures, 2015 - 2021
6. Appendix F: 2021/22 Environmental Legacy Fund Projected Expenditures
7. Appendix G: Annual Utility Incentives (Received and Expected)

From

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Appendix A - Annual Building-Related GHG Emissions

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School Year	Natural Gas Consumption (M ³)	Electricity Consumption (kWh)	Natural Gas GHG Emission (Metric Tonnes)	Electricity GHG Emission (Metric Tonnes)	Total GHG Emission (Metric Tonnes)
2000-2001	78,501,852	368,754,633	148,369	14,750	163,119
2001-2002	79,347,623	347,661,265	149,967	13,906	163,873
2002-2003	75,231,043	333,316,665	142,187	13,333	155,519
2003-2004	76,051,686	309,601,970	143,738	12,384	156,122
2004-2005	76,000,254	315,032,747	143,640	12,601	156,242
2005-2006	72,635,507	303,814,556	137,281	12,153	149,434
2006-2007	69,270,181	299,533,789	130,921	11,981	142,902
2007-2008	68,548,051	296,663,356	129,556	11,867	141,422
2008-2009	65,852,488	290,813,317	124,461	11,633	136,094
2009-2010	67,593,837	282,849,303	127,752	11,314	139,066
2010-2011	66,163,829	281,796,769	125,050	11,272	136,322
2011-2012	66,705,319	273,167,297	126,073	10,927	137,000
2012-2013	64,964,893	274,323,820	122,784	10,973	133,757
2013-2014	63,032,907	278,871,809	119,132	11,155	130,287
2014-2015	61,651,153	277,037,698	116,521	11,082	127,602
2015-2016	62,453,473	278,570,853	118,037	8,357	126,394
2016-2017	62,151,045	271,040,478	117,465	8,131	125,597
2017-2018	58,539,822	278,062,568	110,640	8,342	118,982
2018-2019	57,195,697	276,675,788	108,100	8,300	116,400
2019-2020	54,746,472	239,664,423	103,471	7,190	110,661
2020-2021	59,736,955	233,239,811	112,903	6,997	119,900

Electricity: 0.03kg CO₂e/kWh
 Nat gas: 1.89kg CO₂e/M³
 Gas weather normalized based on 2005-2006
 2020-2021 Gas and Electricity consumptions are projected for the months of July and August

Appendix B: State of Good Repair Projects that Reduce GHGs, 2020/21 & 2021/22

2020/21

	Budget	Number of Schools	Size of Projects (sq. ft.)	R Value
Heating Plant Replacements	\$ 17,724,525	21		
Steam -to-how water heating plant conversions	\$ 24,761,100	10		
Ventilation upgrades	\$ 35,203,350	59		
Building HVAC Controls Upgrades	\$ 4,961,775	10		
Window Upgrades	\$ 20,591,528	15	76,778	2.8-3.4
Roofing Renovations	\$ 16,842,283	14	187,685	20-30
	\$ 120,084,561			

2021/22

	Budget	Number of Schools	Size of Projects (sq. ft.)	R Value
Heating Plant Replacements	\$ 7,332,525	11		
Steam -to-how water heating plant conversions	\$ 19,524,000	8		
Ventilation upgrades	\$ 33,485,400	28		
Building HVAC Controls Upgrades	\$ 341,250	1		
Window Upgrades	\$ 8,268,400	10	39,125	2.8-3.4
Roofing Renovations	\$ 64,815,275	67	761,500	20-30
	\$ 133,766,850			

Appendix C - Fuel Consumption and Vehicle-Related GHG Emissions

School Year	Diesel Consumption (L)	Gas Consumption (L)	Diesel GHG Emission (Metric Tonne)	Gasoline GHG Emission (Metric Tonne)	Total GHG Emissions (Metric Tonnes)
2019-2020	204,808	850,454	553	1,956	2,509
2020-2021	220,198	939,761	595	2,161	2,756

Diesel engines produce 2.7 kg of CO₂ per litre of diesel fuel consumed*

Gasoline engines produce 2.3 kg of CO₂ per litre of gasoline consumed*

*Natural Resources Canada. (2014). Learn the facts: Emissions from your vehicle. Retrieved from:

https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeef/pdf/transportation/fuel-efficient-technologies/autosmart_factsheet_9_e.pdf

Appendix D - Summary of the Environmental Legacy Fund Terms of Reference

The Terms of Reference for the Environmental Legacy Fund, received by the Board of Trustees in 2013, set an annual expenditure limit of \$125,000 for each priority area, with the total annual expenditure limit for the Environmental Legacy Fund being \$500,000.

The priority areas identified in 2013 included:

- Professional development for teachers
- Professional development for caretakers
- School-based projects
- Ash tree management
- Information technology
- Pilot projects
- Energy projects
- Greening of the TDSB's fleet of vehicles

In 2014, the Board approved the addition of an active, safe, and sustainable transportation priority area for the Environmental Legacy Fund.

Appendix E - Environmental Legacy Fund Revenue and Expenditures, 2015 - 2021

Revenue Source	2015-2016 Revenue	2016-2017 Revenue	2017-2018 Revenue	2018-2019 Revenue	2019-2020 Revenue	2020-2021 Revenue	TOTAL REVENUE
Carbon Credits	\$0	\$101,005	\$34,748	\$36,166	\$0	\$19,358	\$191,277
Solar Installations	\$202,955	\$161,775	\$163,574	\$142,809	\$88,619	\$169,341	\$929,072
Waste Management	\$11,151	\$0	\$0	\$0	\$0	\$0	\$11,151
Total Revenue	\$214,106	\$262,780	\$198,321	\$178,975	\$88,619	\$188,699	\$1,131,500
Funding Priority	2015-2016 Expenditures	2016-2017 Expenditures	2017-2018 Expenditures	2018-2019 Expenditures	2019-2020 Expenditures	2020-2021 Expenditures	TOTAL EXPENDITURES
Information Technology	\$27,277	\$4,904	\$0	\$55,064	\$0	\$0	\$87,245
Ash Tree Management	\$20,634	\$85	\$0	\$0	\$0	\$0	\$20,718
Energy Contingency	\$24,000	\$0	\$0	\$0	\$0	\$0	\$24,000
School Based Projects	\$19,144	\$21,285	\$8,828	\$17,201	\$28,848	\$0	\$95,306
Teacher Professional Development	\$49,593	\$32,476	\$97,543	\$93,850	\$91,030	\$91,400	\$455,892
Pilot Projects	\$26,753	\$22,577	\$33,542	\$34,052	\$3,056	\$0	\$119,981
Active, Safe and Sustainable Transportation	\$82,573	\$41,279	\$111,904	\$107,666	\$81,728	\$90,718	\$515,868
Total Expenditures	\$249,973	\$122,606	\$251,817	\$307,835	\$204,662	\$182,118	\$1,319,010
Year End Balance	\$2,902,490	\$3,042,665	\$2,988,905	\$2,859,409	\$2,742,980	\$2,748,770	

Appendix F - 2021/22 Environmental Legacy Fund Projected Expenditures

2020/21 Year End Balance
\$2,748,770

Forecasted 2021/22 Revenue	
Solar Installations	\$169,000
Utility Incentives	\$615,222
	\$784,222

Forecasted 2021/22 Available Budget
\$3,532,992

Funding Priority	Annual Report 2021: Climate Action	Expenditure Description	Projected Cost*
1. Climate change education and engagement	Action 3 - Offer professional learning opportunities for educators to support teaching and learning that moves beyond climate change awareness to empowerment and action	Environmental and sustainability education professional development opportunities for educators delivered in collaboration with (OISE/UT).	\$91,000.00
		Environmental Education Additional Qualification (AQ) course subsidies.	\$32,000.00
2. Building-related GHG reduction	Action 12 – Establish a series of initiatives to better support caretakers with the efficient operation of buildings	Schedule II-level position to manage Operations Help Desk.	\$125,600.00
		Two temporary AutoCAD specialist positions to develop an interactive online platform to familiarize staff with site-specific mechanical systems.	\$190,600.00
3. Sustainable transportation	Action 16 - Continue to support active, safe and sustainable school travel	Deliever Traffic Safety Program at select schools.	\$88,800.00
	Action 14 – Begin transition of vehicle fleet to electric vehicles	Premiums, charging infrastructure and training to transition to electric vehicles.	\$175,000.00
Annual Total			\$703,000.00

* Projected costs are estimated.

Appendix G - Annual Utility Incentives (Received and Expected)

YEAR	Hydro Incentive		Enbridge Incentive		Total Annual Incentive (Received + Expected)
	Incentive received	Incentive Expected	Incentive received	Incentive Expected	
2016-17	\$13,063	\$0	\$25,218	\$0	\$38,281
2017-18	\$85,947	\$0	\$138,339	\$0	\$224,286
2018-19	\$186,141	\$0	\$213,867	\$0	\$400,008
2019-20	\$107,542	\$0	\$197,389	\$0	\$304,932
2020-21	\$47,774	\$0	\$137,463	\$0	\$185,237
2021-22	\$0	\$365,274	\$12,477	\$237,471	\$615,222