



District School Board
Ontario North East

Energy Conservation and Demand Management Plan



2024-2029

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ABOUT DISTRICT SCHOOL BOARD ONTARIO NORTH EAST

BOARDS STRATEGIC PLAN

The District School Board Ontario North East (Board) is an Ontario English public school board serving to the population of Northeastern Ontario, from Hearst to Temagami, and everywhere in between. It covers the extensive area of 25,000 square kilometers.

The Board has a proud history of innovation and community service. This is spread across the 30 schools the Board operates (23 elementary, 9 secondary, 1 alternate education). Our schools offer English, French immersion, and alternate education programming, including the early learning kindergarten program with full-day junior and senior kindergarten. The Board also has a strong online learning community through e-Learning Ontario of the Ontario Ministry of Education.

Our commitment to fostering strong relationships and effective communication is vital to our success:

Communication

Pathways and
Partnerships

Student Voice

Understanding Our
Needs

Mission Statement

Together, we inspire innovation and a passion for learning.

Vision Statement

We empower all learners to achieve personal excellence.

3 Priorities Supported by the Our 9 Strategic Actions

Culture:
We foster caring, wellness and model high expectations.

Communication
We collaborate with stakeholders through clear, transparent and timely communication.

Relationships
We celebrate each learner by providing opportunities to build a sense of belonging.

Resiliency
We embrace opportunities which challenge us to adapt and grow.

Innovation:
We cultivate thinking and specific actions to improve.

Pathways and Partnerships
We build strong partnerships and varied pathways for students to succeed.

Trust
We foster the necessary conditions to encourage all learners to take risks and learn.

Growth Mindset
We support all learners to be curious and seek opportunities for growth.

Equity:
We anticipate, identify and work to remove barriers for each learner.

Understanding our needs
We respond to the diverse learning needs through informed decisions and resource allocation.

Courage
We challenge the status quo by engaging in impactful conversations.

Student Voice
We actively listen to and support students to become confident leaders and learners.

FUNDING AND ENERGY MANAGEMENT PLANNING

Each year school boards receive approximately \$1.4 billion school renewal funding from the province. In addition, school boards may receive time-limited funds over this period.

The Ministry typically announces each Board's funding allocations, for the upcoming school board Fiscal Year (September 1st to August 31st), in March-April.

While a board may have a five-year energy management strategy, the ability to implement their strategy depends on the funding that's received for each of the five years covered by their plan.

ASSET PORTFOLIOS AND ENERGY MANAGEMENT PLANNING

The education sector is unique in that a board's asset portfolio can experience important changes that crucially impact a board's energy consumption over a five-year period. A detailed list of some of the most common variables and metrics that change in the education sector is included in Appendix A.

ENERGY PLAN

District School Board Ontario North East's (Board) Conservation and Demand Management (CDM) plan, which was first completed in 2014, then updated in 2019, is a step to understanding the impact of our operations on Greenhouse Gas (GHG) emissions, and to act by setting energy conservation and GHG reduction measures. Our 2024 plan reviews all related energy management processes and assesses adequate planning and communication strategies and opportunities supporting the reduction of energy demand and consumption for the Board. As part of our plan the Board would like to renew its Commitment Statement along with our Energy Management Goals and Objectives.

COMMITMENT STATEMENT

District School Board Ontario North East is committed to promoting a culture of energy conservation, efficiency through sustainable and innovative practices and stewardship.

ENERGY MANAGEMENT GOALS AND OBJECTIVES

District School Board Ontario North East is committed to putting their current Strategic Plan into action. The three priorities of culture, innovation and equity will align with energy goals and objectives. The Board will endeavor to:

- ✓ Reduce energy consumption through all available means
- ✓ Reduce operating costs associated with utility energy consumption
- ✓ Have champions to communicate the benefits of energy efficiency
- ✓ Collect and utilize information to manage energy use
- ✓ Have an energy management plan for the short and long terms
- ✓ Have a procurement policy that favours energy efficient equipment and materials

- ✓ Provide leadership on energy management through a dedicated committee
- ✓ Improve energy awareness in the overall school environment by effectively involving students and staff
- ✓ Enhance the classroom learning environment for students and staff (increased comfort conditions and improved lighting standards through maintenance and capital projects)
- ✓ Be an effective leader of energy awareness by showing and teaching the benefits of environmental awareness

PART I: A REVIEW OF PROGRESS & ACHIEVEMENTS IN THE PAST FIVE YEARS

A. THE BOARD'S ASSET PORTFOLIO

The following table outlines the energy-related variables and metrics in the Board's asset portfolio that changed from the baseline Fiscal Year 2017 to 2018 to the end of the five-year reporting period Fiscal Year 2022 to 2023.

TABLE 1: BOARD'S ASSET PORTFOLIO

Key Metrics	(Baseline Year) Fiscal Year 2017 to 2018	Fiscal Year 2022 to 2023	Variance
Total Number of Buildings	42*	32	(10)
Total Number of Portables/Portapaks	0	10	10
Total Floor Area (square feet)	1,963,210	1,771,655	(191,555)
Average Operating Hours	47	47	0
Average Daily Enrolment	4,935	6,873	1,938
% of Total Floor Area Air Conditioned	N/A	29.86%	N/A
Number of Facilities with Mechanical Ventilation	N/A	20	N/A
Total Floor Area Occupied by Childcare	N/A	11,903	N/A
Net Metered Solar Generation (kWhs)	113,573	87,663	(25,910)
*Total numbers of buildings in base year included portables.			

B. ENERGY USAGE DATA FOR THE BOARD

The following table lists the “metered”¹ consumption values in the common unit of Equivalent Kilowatt Hours (ekWh) and Kilowatt Hours (kWh). Appendix B provides a summary of each building’s individual energy intensity along with a ranking.

TABLE 2: METERED USAGE VALUES

Utility	Fiscal Year 2017 to 2018 (Baseline year)	Fiscal Year 2022 to 2023
Total Electricity (kWh)	10,261,500	10,023,648
Total Natural Gas (ekWh)	27,012,850	22,340,311

C. WEATHER NORMALIZED ENERGY CONSUMPTION VALUES

In Ontario, 25% to 35% of energy consumption for a facility is affected by weather. To demonstrate the effect of weather, the following table shows the Heating Degree Days (HDD)² and Cooling Degree Days (CDD)³ for the Timmins Ontario Environment Canada weather stations.

TABLE 3: ONTARIO DEGREE-DAYS

Ontario Degree Days	Fiscal Year 2017 to 2018	Fiscal Year 2018 to 2019	Fiscal Year 2019 to 2020	Fiscal Year 2020 to 2021	Fiscal Year 2021 to 2022	Fiscal Year 2022 to 2023
HDD	6,583	6,862	6,857	6,480	6,720	6,538
CDD	101	58	139	54	53	63

¹ Metered consumption is the quantity of energy used and does not include a loss adjustment value (the quantity of energy lost in transmission).

² Heating Degree Day (HDD) is a measure used to quantify the impact of cold weather on energy use. In the data above, HDD are the number of degrees that a day's average temperature is below 18C (the balance point), the temperature at which most buildings need to be heated.

³ Cooling Degree Day (CDD) is a measure used to quantify the impact of hot weather on energy use. In the data above, CDD are the number of degrees that a day's average temperature is above 18C, the temperature at which most buildings need to be cooled. It should be noted that not all buildings have air conditioning and some building have partial air conditioning. The UCD only applies CDD to meters that demonstrate an increase in consumption due to air conditioning.

The best way to compare energy usage values from one year to another is to use weather normalized values as they take into consideration the impact of weather on energy performance and allows an “apple-to-apple” comparison of consumption across multiple years.

However, a straight comparison of Total Energy Consumed between one or more years does not take into consideration changes in a board’s asset portfolio, such as changes in buildings’ features (refer to Appendix A for Facility Variables list), and newly implemented programs (refer to the Note to Readers below) which will greatly impact energy consumption.

As a result, weather normalized Energy Intensity⁴ is the most accurate measurement that allows the evaluation of a board’s energy use from one year to another as it cancels out any change in floor area. The unit of measurement used is either equivalent kilowatt hours per square foot (ekWh/ft2) or equivalent kilowatt hours per square metre (ekWh/m2).

TABLE 4: WEATHER NORMALIZED VALUES

Weather Normalized Values	Fiscal Year 2017 to 2018 (Baseline Year)	Fiscal Year 2022 to 2023 (Most Recent Data Available)
Total Energy Consumed (ekWh)	37,274,350	31,134,152
Energy Intensity (ekWh/ft2)	18.70	17.59
Total GHG Emissions (kgCO ₂)	5,684,000	4,393,410
Emissions Intensity (kgCO ₂ /ft ²)	2.90	2.48

D. REVIEW OF PREVIOUS ENERGY CONSERVATION GOALS AND ACHIEVEMENTS

In 2019, the Board set annual energy conservation goals for the following five fiscal years. The following table compares the Energy Intensity Conservation Goal with the Actual Energy Intensity Reduced for each year.

⁴ Energy Intensity (known as EI) is the quantity of total energy consumed divided by the total floor area. EI is typically expressed as equivalent kilowatt hours per square foot (ekWh/ft2), gigajoule per square metre (GJ /m2), etc., depending on the user’s preference.

TABLE 5: COMPARISON OF ENERGY INTENSITY CONSERVATION GOAL AND ACTUAL ENERGY INTENSITY REDUCED

Fiscal Year	Conservation Goal ekWh/ft ²	Conservation Annual Goal Percentage (%)*	Actual Energy Savings ekWh/ft ²	Actual Annual Energy Percentage*
2018 to 2019	1.02	5.37	(4.77)	(23.50)
2019 to 2020	0.31	1.63	4.39	17.52
2020 to 2021	0.93	4.88	0.35	1.68
2021 to 2022	0.43	2.29	2.74	13.50
2022 to 2023	0.21	1.10	0.57	3.23
*Percentages are not cumulative. They are annual percentage changes.				

CONSIDERATIONS:

When reviewing annual Actual Energy Savings and Actual Energy Percentage across the five (5) years in the chart above, the following should be considered:

- ✓ Conservation goals in the above chart were forecast in Spring 2019 based on the assumption that operational parameters would remain consistent from FY2019 through FY2023. However, the pandemic that arrived in early 2020, significantly changed how schools operated and impacted their energy consumption.
- ✓ As a result of significant operational changes from one year to the next from FY2019 to FY2023, an apple-to-apple comparison of Energy Intensity (ekWh/ft² – the quantity of energy consumed per area) is not possible.
 - Factors that reduced energy consumption include:
 - Temporary school closures in FY2020 and FY2021, due to the pandemic
 - Boards with centralized Building Automation Systems (BAS) that could be remotely programed to “unoccupied set points,” should show a reduction in consumption.
 - Temporary suspension of community use of schools, before/after school programs, childcare programs, continuing education, and summer school programs
 - for schools with these programs, the number of “occupied set point” operating hours would be significantly reduced.
 - Factors that increased consumption include:
 - Implementation of new health and safety factors in FY2021 through FY2023 to address pandemic issues, such as:

- increased ventilation (intake of fresh air),
- increased filtration requirements
- expanded operating hours of HVAC equipment.

A board's ability to achieve their 2019 forecasted Conservation Goals may be limited by some or all the above factors.

In addition to the pandemic-related factors outlined above, there are a number of other factors that regularly impact a board's ability to achieve their conservation goals, including:

BEFORE AND AFTER SCHOOL PROGRAMS

Before-School and After-School Programs need a facility's Heating, Ventilation, and Air Conditioning (also known as HVAC) system to operate for an extended period of time on a daily basis, which increases the overall energy intensity.

COMMUNITY USE OF SCHOOLS

Both indoor and outdoor school space is available to not-for-profit community groups at reduced rates, outside of regular school hours. The use of spaces in schools, typically gymnasiums and libraries, has increased over time. The use of these spaces during non-school hours requires a facility's HVAC system to operate for an extended period on a daily basis, which will increase the overall energy intensity.

COMMUNITY HUBS

Many schools now offer a greater range of:

- events (cultural),
- programs (arts, recreation, childcare), and
- services (health, family resource centres).

The dramatic increase in community use means that many schools now run from 6:00 a.m. until 11:00 p.m. during weekdays and are open many times on weekends. The use of these spaces during non-school hours requires a facility's HVAC system to operate for an extended period on a daily basis, which will increase the overall energy intensity.

AIR CONDITIONING

Historically, schools have not had air conditioning, or it has been a minimal space in the facility. However, with changing weather patterns, "shoulder seasons" such as May, June and September are experiencing higher than normal temperatures and there is an increased desire for schools to have air conditioning. Air conditioning significantly increases a facility's energy use, specifically electricity consumption.

COMPLIANCE WITH CURRENT ONTARIO BUILDING CODE (ALSO KNOWN AS OBC)

When renovations or an addition is built onto an existing school, in-place equipment such as HVAC systems, lighting etc., may be required to meet current OBC standards which may result in increased energy use.

For example, under the OBC, buildings built today have increased ventilation requirements, meaning more outside air is brought into a facility. As a result, HVAC systems need to work longer to heat or cool the outdoor air to bring it to the same temperature as the standard indoor temperature for the building.

PANDEMIC

When reviewing year-over-year value, it should be noted that FY2020 values will be lower as schools were closed due to the pandemic (March 2020 until June 2020). During that time, the sector saw a decrease of 16% in electricity consumption and 3% in natural gas consumption. The difference in the percentage for the two utilities, reflects that natural gas is primarily used for heating and April, May and June do not have the same heating demands due to weather.

In FY2021 consumption values were typically higher than FY2020, but due to limited occupancy as a result of the ongoing pandemic, lower than previous consumption levels.

VENTILATION AND FILTRATION

In consultation with the Office of the Chief Medical Officer of Health, the Ministry of Labour, Immigration, Training and Skills Development and others, school boards have been expected continue to build on established practices to optimize air quality to support healthy and safe learning environments for students and staff.

Many of these new recommendations/requirements can impact utility consumption. For instance, the implementation of standalone HEPA filtration units has impacted energy consumption, primarily electricity.

E. CUMULATIVE ENERGY CONSERVATION GOAL

The following table compares the 2019 Forecasted Cumulative Energy Intensity Conservation Goal with the Actual Cumulative Energy Intensity Reduced Savings.

**TABLE 6: CUMULATIVE ENERGY INTENSITY GOAL FROM FISCAL YEAR 2018 TO 2019
THROUGH FISCAL YEAR 2022 TO 2023**

Cumulative Energy Intensity	(ekWh/ft ²)	Variance
Forecasted Cumulative Energy Intensity Conservation Goal of Fiscal Year 2018 to 2019 through Fiscal Year 2022 to 2023.	2.90	
Forecasted Cumulative Energy Intensity Conservation Goal as a Percentage	15.51	
Actual Cumulative Energy Intensity Reduced from Fiscal Year 2018 to 2019 through Fiscal Year 2022 to 2023 – Weather Normalized	3.28	
Variance between 2019 Forecast Cumulative Conservation Goal and Actual Cumulative Energy Intensity– Weather Normalized	0.38	
% of Cumulative Energy Intensity Conservation Goal Achieved - Weather Normalized		113.10

F. MEASURES IMPLEMENTED FROM FISCAL YEAR 2018 TO 2019 TO FISCAL YEAR 2022 TO 2023

A detailed list of the measures implemented, the related costs, and the fiscal year that the measure was implemented within the Board are outlined in **Appendix C**. The table below is summary of all investments in measures taken by year and area.

Total Investment in Energy Management Strategies						
Area of Focus	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Total
Design, Construction and Retrofit Investments Total	\$ 5,573,856	\$ 3,986,840	\$ 9,241,480	\$ 9,419,915	\$ 5,243,596	\$ 33,465,687
Operations and Maintenance Investments Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Occupant Behaviour Investments Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Renewable Energy Investments Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Investment Per Fiscal Year	\$ 5,573,856	\$ 3,986,840	\$ 9,241,480	\$ 9,419,915	\$ 5,243,596	\$ 33,465,687

NOTE TO READERS:

Important Consideration - It takes a minimum of one full year after an energy management strategy has been implemented before an evaluation can measure the related actual energy savings achieved.

PART II – ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN FOR FISCAL YEAR 2022 TO 2023 TO FISCAL YEAR 2027 TO 2028

Part II outlines the Board’s plan to reduce energy consumption through renewable energy and energy management strategies including:

RENEWABLE ENERGY - a strategy to cut down a Board’s energy use from the province’s electricity grid and includes solar panels, wind turbines, etc. The table below outlined in Appendix D shows the Board’s renewable energy project being considered over the next five years.

DESIGN/CONSTRUCTION/RETROFIT - includes the original and ongoing intent of how a building and its systems are to work through the combination of disciplines such as architecture and engineering. For the Board’s relevant projects over the next five years, please refer to Appendix E.

OPERATIONS AND MAINTENANCE – includes the strategies the Board uses to make sure that the existing buildings and equipment performs at maximum efficiency. The Board’s relevant projects over the next five years are outlined in Appendix F.

OCCUPANT BEHAVIOUR - Strategies that the Board uses to teach occupants, including staff, students, and community users, with an emphasis on changing specific actions to reduce energy consumption. For the Board’s relevant projects over the next five years, please refer to Appendix G.

A. FUTURE ENERGY CONSERVATION GOALS

The Board has set out the following energy intensity reduction conservation goals for the next five fiscal years.

TABLE 7: ANNUAL ENERGY INTENSITY CONSERVATION GOALS

Annual Energy Intensity Conservation Goal	Fiscal Year 2023 to 2024	Fiscal Year 2024 to 2025	Fiscal Year 2025 to 2026	Fiscal Year 2026 to 2027	Fiscal Year 2027 to 2028
ekWh/ft ²	1.01	0.79	0.70	0.37	0.16
% Decrease	4.95	3.87	3.41	1.83	0.77

The following table shows the Board's Cumulative Energy Intensity Conservation Goal for the next five fiscal years.

TABLE 8: CUMULATIVE CONSERVATION GOAL

Cumulative Conservation Goal	Fiscal Year 2023 to 2024 through Fiscal Year 2027 to 2028
ekWh/ft ²	3.02
Percentage Decrease	14.82

B. ENVIRONMENTAL PROGRAMS

In the current fiscal Year 2023 to 2024, the Board participated in Sustainable Schools Climate Change Network. We are proud to say that DSBONE has improved from number 14 to number 9 of the top energy performing school boards in Ontario.

In addition, the Board is looking at revitalizing the Energy Environmental Committee which was established in line with the Board's policy on Environmental Education prior to the pandemic. The primary task of the committee has been to contribute to the development of this plan. The Energy Environmental Committee:

- ✓ Participates in energy management planning, and development of the energy management plan
- ✓ Increases awareness and engagement across Board departments in energy/water management
- ✓ Practices to reduce energy and water consumption

- ✓ Develops strategies and supporting initiatives to integrate best energy and water management
- ✓ Practices in daily operations
- ✓ Ensures that the appropriate resources are used in support of the ECDMP
- ✓ Monitors, evaluates, and reports on energy and water use performance across the Board Portfolio.

C. ENERGY EFFICIENCY INCENTIVES

The Board applies to incentive programs to support the implementation of energy efficient projects on a regular basis. For example, in the past three full years alone the Board has received over \$170,000 in incentive funding from different agencies (IESO- SaveonEnergy, FIT, and Enbridge) to support the implementation of energy efficient projects. These funds are a critical to the successful implementation of conservation initiatives.

D. ENERGY PROCUREMENT

The Board participates in a consortia to purchase electricity via OECM's Strategic Electricity Management and Advisory Services. The Board also has an authorized agent for the direct purchase of their natural gas supply. Target prices are established, and new strategies are implemented if target prices are not met.

The Board's purchasing policy and procedures and environmental education policy require that it should have environmentally responsible purchasing practices, while considering quality, price, and service.

E. CONSUMPTION AND DEMAND MANAGEMENT

The Board monitors utility usages (natural gas, electricity, and water) via several different methods including but not limited to, the Utility Consumption Data Base, monthly utility invoices, and real-time data where available. All electrical panels are being mapped in order to better identify locations to resolve maintenance issues while detecting any issues.

In an effort to cut down overall energy intensity and electrical demand the Board schedules/stages the use of equipment, defers the start-up of large equipment, along with setting back temperatures are schools when not in use. The Board has also installed voltage harmonizers at all high schools to clean up the power quality issues coming from the grid. In addition, the Board has implemented devices to monitor water flow and detect for leaks.

F. CARBON REDUCTION STRATEGIES

The Board is undertaking many different initiatives as outlined above to reduce our energy intensity which in turn reduce overall carbon emissions. In addition, projects which focus on reducing our reliance on carbon intensive fuels such as natural gas are of particular focus. The table below outlines the anticipated emissions reductions associated with conservation measures outlined in this plan. It is important to keep in mind while the Board anticipates implement most if not all the projects outlined in this plan, the ability to do so depends on the funding that's received for each of the five years covered by their plan.

Annual Emission Intensity Conservation Goal	Fiscal Year 2023 to 2024	Fiscal Year 2024 to 2025	Fiscal Year 2025 to 2026	Fiscal Year 2026 to 2027	Fiscal Year 2027 to 2028
kgCO ₂ /ft ²	0.109	0.096	0.089	0.04	0.015
Percentage Decrease	4.40	4.05	3.93	1.81	0.70

To manage energy consumption, the Board has established operational guidelines on the following that are employed in different seasonal periods depending on the sophistication of the facility HVAC systems, occupancy levels, and mechanical systems available. The table below provides an overview of these schedules and setbacks.

OPERATIONAL GUIDELINES FOR BUILDING SYSTEMS			
by type of building system			
BUILDING SYSTEMS	SUMMER	LATE SUMMER-EARLY FALL	FALL
Complete HVAC throughout Building	Occupied - supply ventilation and cooling for occupancy standard (24°C max) (75°F).	Occupied - supply ventilation, heating and cooling for occupancy standard (19° to 24°C) (66° to 75°F) Introduce “free cooling” strategies whenever possible.	
	Unoccupied - all systems will be set to achieve 16° winter & 35°C summer set points (61° and 95°F). All ventilation systems will be scheduled off.		
Heating,	Occupied - supply ventilation and cooling for 24°C (75°F) degrees maximum.		Occupied - supply ventilation heating and cooling for 19° to 24°C temperatures (66° to 75°F).

Ventilation and Partial A/C	In non-air-conditioned areas, ventilation units will operate to maintain optimum indoor air temperature. Introduce “free cooling” strategies whenever possible.			
	Unoccupied - all systems will be set to achieve 16° & 35°C set points (61° and 95°F). All ventilation systems will be scheduled off.			
Heating, Ventilation Only	Occupied - ventilation units will operate (to maintain optimum indoor air temperature).	Occupied - ventilation units will operate (to maintain optimum indoor air temperature).	Occupied - heating and ventilation units will operate as required to heat spaces to 21°C (70°F).	
	Introduce “free cooling” strategies whenever possible.			
	Unoccupied - all systems will be set to achieve 16°C set point (61°F) All ventilation systems will be scheduled off.			
Heating & Exhaust Only		Occupied - heating will operate as required to maintain optimum indoor air temperature.	Occupied - heating will operate to heat spaces to 21°C (70°F).	
	Occupied - operate exhaust fans from ½ hour before occupancy to ½ hour after occupancy. Introduce “free cooling” strategies whenever possible.			
	Unoccupied - heating systems will be set to 16°C set point (61°F). All exhaust systems will be scheduled off.			
OPERATIONAL GUIDELINES FOR BUILDING SYSTEMS ...cont’d				
BUILDING SYSTEMS	WINTER	LATE WINTER EARLY SPRING	SPRING	LATE SPRING EARLY SUMMER
Complete HVAC throughout Building	Occupied - supply ventilation and heating for occupancy standard (21°C, 70°F).		Occupied - supply ventilation, heating and cooling for occupancy standard (19° to 24°C) (66° to 75°F). Introduce “free cooling” strategies whenever possible.	
	Unoccupied - all systems will be set to (16° & 35°C set points) (61° and 95°F). All ventilation systems will be scheduled off.			
Heating, Ventilation	Occupied - supply ventilation and heating for occupancy standard (21° to 24°C)	Occupied - supply ventilation, heating and cooling for occupancy standard (19° to 24°C) (66° to 75°F). Introduce “free cooling” strategies whenever possible.		

and Partial A/C	(70 to 75°F).	
	Unoccupied - all systems will be set to 16° & 35°C set points (61° and 95°F). All ventilation systems will be scheduled off.	
Heating, Ventilation Only	Occupied - heating ventilation units will operate to heat spaces to 21°C (70°F).	Occupied - supply ventilation and heating for occupancy standard (19° to 24°C) (66° to 75°F). Introduce “free cooling” strategies whenever possible.
	Unoccupied - all systems will be set to 16° set point (61°F). All ventilation systems will be scheduled off.	
Heating & Exhaust Only	Occupied - heating will operate to heat spaces to 21°C (70°F). Operate exhaust fans for ½ hour before occupancy and ½ hour after occupancy.	Occupied - supply heating as required for occupancy standard (19° to 24°C) (66° to 75°F). Introduce “free cooling” using exhaust fans whenever possible.
	Unoccupied - all systems will be set to achieve 16°C set point (61°F). All exhaust systems will be scheduled off.	

**G. SENIOR MANAGEMENT APPROVAL OF THIS ENERGY CONSERVATION AND
DEMAND MANAGEMENT PLAN**

I confirm that District School Board Ontario North East's senior management has reviewed and approved this Energy Conservation and Demand Management Plan.

Lesleigh Dye
Director of Education
District School Board Ontario North East

June 25, 2024

Date

APPENDIX A – COMMON VARIABLE AND METRICS THAT CHANGE IN THE EDUCATION SECTOR

FACILITY VARIABLES:

Construction

- Year built
- Number of floors
- Orientation of the building

Building Area

- Major additions
- Sites sold/closed/demolished/leased
- Portables
 - Installed
 - Removed
 - Areas under construction

Equipment/Systems

Age

Type of technology

Lifecycle

Percentage of air-conditioned space

Site Use

- Elementary school
- Secondary school
- Administrative building
- Maintenance/warehouse facility
- Community Hubs

Shared Site Use (For example: two or more boards share common areas and/or partnered with a municipality)

- Swimming pools
- Libraries
- Lighted sports fields
- Sports domes

OTHER VARIABLES:

- Programs
 - Child care
 - Before/After School Programs
 - Summer School
 - Community Use
 - Outdoor ice rinks

- Occupancy
 - Significant increase or decrease in number of students
 - Significant increase in the hours of operation
 - New programs being added to a site
- Air Conditioning
 - Significant increase in air-conditioned space
 - Portables

APPENDIX B –SCHOOL SPECIFIC ENERGY INTENSITY AND RANKING

District School Board Ontario North East - Energy Intensity FY 22/23								
School	Year Built	Primary Property Type	Total Building Area (includes portables) (ft ²) CDM 2024	Electricity Intensity (kWh/ft2)	Natural Gas Intensity (ekWh/ft2)	Total Energy Intensity (ekWh/ft2)	FY22/23 Ranking	Previous Ranking
Diamond Jubilee Storage	1927	Office	264	0.170	-	0.17	1	1
Kerns Public School	1961	K-12 School	23,153	7.962	-	7.96	2	2
Timmins High & Vocational School	1980	K-12 School	194,004	6.775	2.38	9.16	3	7
Central Public School	1964	K-12 School	25,399	4.678	10.55	15.23	4	5
Kapuskasing District High School & Diamond Jubilee	1939	K-12 School	157,944	2.750	13.06	15.81	5	13
Schumacher Public School	1909	K-12 School	45,367	5.133	11.08	16.22	6	21
Temagami Public School	1957	K-12 School	27,200	3.912	12.67	16.58	7	3
W. Earle Miller Public School	1985	K-12 School	38,091	5.689	10.89	16.58	8	4
Smooth Rock Falls PS	1981	K-12 School	29,688	2.951	14.66	17.61	9	17
Timmins Centennial Public School	2011	K-12 School	56,564	5.815	12.34	18.16	10	19
New Liskeard Board Office	1968	Office	8,220	18.228	-	18.23	11	9
Iroquois Falls Secondary School	1941	K-12 School	156,008	4.482	14.03	18.51	12	29
Golden Avenue Public School	1975	K-12 School	35,526	5.971	12.99	18.96	13	28
ES Cochrane HS & PS	1972	K-12 School	123,242	4.155	14.82	18.98	14	20
Englehart High School	1957	K-12 School	58,903	6.275	12.83	19.11	15	14
Elk Lake Public School	1969	K-12 School	11,458	19.174	-	19.17	16	10
Kirkland Lake District Composite School & Elementary	2006	K-12 School	110,000	6.255	12.94	19.19	17	16
Bertha Shaw Public School	1965	K-12 School	26,934	5.559	14.60	20.15	18	15
Timiskaming District Secondary School	1953	K-12 School	158,971	5.015	15.15	20.17	19	23
Roland Michener Secondary School	1947	K-12 School	128,166	4.900	15.41	20.31	20	31
Englehart Public School	1964	K-12 School	36,414	14.555	6.02	20.57	21	11
Pinecrest Public School	1950	K-12 School	27,826	4.982	16.31	21.29	22	26
Clayton Brown Public School	1950	K-12 School	39,897	4.942	17.73	22.67	23	18
New Liskeard Public School	1950	K-12 School	59,674	6.923	16.42	23.35	24	30
Federal Public School	1977	K-12 School	24,909	6.242	17.48	23.72	25	25
Iroquois Falls Public School	1967	K-12 School	46,963	5.052	18.80	23.86	26	22
Joseph H Kennedy Public School	1953	K-12 School	38,278	5.973	18.23	24.20	27	12
Schumacher Board Office	2014	Office	19,224	9.809	15.38	25.19	28	27
R. Ross Beattie Sr. Public School	1970	K-12 School	55,853	8.001	18.25	26.25	29	6
Timiskaming District SS (New Liskeard Maintenance Shop)	1989	Office	1,800	13.270	15.93	29.20	30	24
Kinder School (Kirkland Lake Mtce. Shop)	1959	Office	2,700	5.157	24.80	29.96	31	32
P.A.C.E.- leased	0		3,015				33	33

APPENDIX C – MEASURES IMPLEMENTED SINCE LAST PLAN

Completed Energy Projects 2019-2023 (Projects identified through assessments, audits and maintenance)					
YEAR	SCHOOL (ASSET)	PROJECT#	PROJECT (ELEMENT)	DETAILS (EVENT)	COST
2018-19	Clayton Brown PS, Building ID 8834-1	7631	HVAC - Other (Describe)	Exhaust Fan Upgrade to Building Automation System	\$93,394
2018-19	Cochrane HS, E.s., Building ID 5004-1	7626	HVAC - Other (Describe)	Replace HRV Cartridges	\$18,695
2018-19	Elk Lake PS, Building ID 6059-1	7454	BUILDING ENVELOPE - New Windows	Replace windows	\$65,721
2018-19	Englehart HS, Building ID 8204-1	7344	BUILDING ENVELOPE - New Roof	Roof replacement	\$703,175
2018-19	Englehart PS, Building ID 5792-1	7663	HVAC - Energy efficient Rooftop units	Replace roof top unit above library	\$54,784
2018-19	Englehart PS, Building ID 5792-1	7547	BUILDING ENVELOPE - New Windows	Window Replacement	\$22,950
2018-19	Golden Avenue PS, Building ID 5900-1	7398	HVAC - Energy efficient Rooftop units	Replace roof top unit	\$24,491
2018-19	Golden Avenue PS, Building ID 5900-1	7594	BUILDING ENVELOPE - New Windows	Replace all windows	\$118,929
2018-19	Iroquois Falls SS, Building ID 5006-1	7471	BUILDING ENVELOPE - New Roof	Replace boiler room roof	\$13,053
2018-19	Kapuskasing DHS, Building ID 5007-1	7474	BUILDING ENVELOPE - New Roof	Replace roofing	\$75,757
2018-19	Kapuskasing DHS, Building ID 5007-1	7476	HVAC - Other (Describe)	Replace various exhaust fans throughout building	\$148,738
2018-19	Kapuskasing DHS, Building ID 5007-1	7479	CONTROLS - Building Automation Systems - Upgrade	Replace Pneumatic controls with Honeywell	\$30,114
2018-19	Kapuskasing DHS, Building ID 5007-1	7477	BUILDING ENVELOPE - New Windows	Replace windows	\$266,268
2018-19	New Liskeard Public School - East Wing, Building ID 6347-1	7598	BUILDING ENVELOPE - New Roof	Replace roofing, 2nd story of East Wing	\$219,915
2018-19	New Liskeard Public School - East Wing, Building ID 6347-1	7552	BUILDING ENVELOPE - New Windows	Replace windows	\$302,327
2018-19	R Ross Beattie Sr PS, Building ID 6557-1	7644	BUILDING ENVELOPE - New Roof	Replace roofing on upper level	\$286,759
2018-19	R Ross Beattie Sr PS, Building ID 6557-1	7583	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$106,913
2018-19	Roland Michener SS, Building ID 8378-1	7674	HVAC - Energy efficient HVAC systems	Replaced unit ventilators	\$60,007
2018-19	Roland Michener SS, Building ID 8378-1	7590	BUILDING ENVELOPE - New Roof	Replace roofing over science labs	\$178,885
2018-19	Roland Michener SS, Building ID 8378-1	7648	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade lighting to LED	\$181,399
2018-19	Schumacher PS, Building ID 6647-1	7584	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade lighting to LED	\$119,861
2018-19	Schumacher PS, Building ID 6647-1	7668	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$25,615
2018-19	Temagami PS, Building ID 6765-1	7553	HVAC - Energy efficient HVAC systems	Replace 3 air handling units	\$137,601
2018-19	Timiskaming Dist.SS, Building ID 8394-1	7595	BUILDING ENVELOPE - New Windows	Replace windows on old side of building and offices	\$15,819
2018-19	Timiskaming Dist.SS, Building ID 8394-1	7650	BUILDING ENVELOPE - New Roof	Replace roofing above science rooms and triage	\$399,712
2018-19	Timiskaming Dist.SS, Building ID 8394-1	7585	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$269,290
2018-19	Timmins H & VS, Building ID 8406-1	7331	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade Auditorium Lighting (LED) and sound	\$372,422
2018-19	Timmins H & VS, Building ID 8406-1	7593	BUILDING ENVELOPE - New Windows	Replace windows	\$93,170
2018-19	Timmins H & VS, Building ID 8406-1	7604	CONTROLS - Building Automation Systems - Upgrade	Replace Pneumatic controls and convert to BAS	\$20,825
2018-19	Timmins H & VS, Building ID 8406-1	7637	HVAC - Other (Describe)	Exhaust Fan Upgrade	\$15,116
2018-19	W Earle Miller PS, Building ID 6283-1	7544	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$15,859
2018-19	W Earle Miller PS, Building ID 6283-1	7656	HVAC - Energy efficient HVAC systems	Replace ERV	\$1,067,082
2018-19	Various Schools	7653	CONTROLS - Other (Describe)	Study/Investigation - Real Time Energy Monitoring	\$49,210
	TOTAL 2018-2019				\$5,573,856

Completed Energy Projects 2019-2023 (Projects identified through assessments, audits and maintenance)					
YEAR	SCHOOL (ASSET)	PROJECT#	PROJECT (ELEMENT)	DETAILS (EVENT)	COST
2019-20	Bertha Shaw PS, Building ID 5413-1	7788	BUILDING ENVELOPE - Other (Describe)	Exterior walls - joint sealant	\$18,041
2019-20	Bertha Shaw PS, Building ID 5413-1	7709	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$52,273
2019-20	Central Public School, Building ID 8865-1	7706	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$48,502
2019-20	Central Public School, Building ID 8865-1	7694	HVAC - Energy efficient Rooftop units	Replaced RTU	\$14,738
2019-20	Clayton Brown PS, Building ID 8834-1	7631	HVAC - Other (Describe)	Exhaust Fan Upgrade to Building Automation System	\$76,528
2019-20	Clayton Brown PS, Building ID 8834-1	7632	BUILDING ENVELOPE - Other (Describe)	Replace Main Exterior Doors	\$34,193
2019-20	Cochrane HS, E.s., Building ID 5004-1	7596	BUILDING ENVELOPE - New Windows	Replace exterior windows that have broken seals	\$10,688
2019-20	Cochrane HS, E.s., Building ID 5004-1	7658	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$106,799
2019-20	Elk Lake PS, Building ID 6059-1	7454	BUILDING ENVELOPE - New Windows	Replace windows	\$4,135
2019-20	Englehart HS, Building ID 8204-1	7344	BUILDING ENVELOPE - New Roof	Replace roofing	\$470,768
2019-20	Englehart PS, Building ID 5792-1	7663	HVAC - Energy efficient Rooftop units	Replace roof top unit above library	\$1,017
2019-20	Englehart PS, Building ID 5792-1	7790	BUILDING ENVELOPE - Other (Describe)	Replace exterior wall sealant	\$29,116
2019-20	Federal Public School, Building ID 8864-1	7723	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$41,911
2019-20	Golden Avenue PS, Building ID 5900-1	7594	BUILDING ENVELOPE - New Windows	Replace all windows	\$6,202
2019-20	Iroquois Falls PS, Building ID 5490-1	7728	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$102,944
2019-20	Joseph H Kennedy PS, Building ID 6252-1	7738	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$91,060
2019-20	Kapuskasing DHS, Building ID 5007-1	7477	BUILDING ENVELOPE - New Windows	Replace windows	\$69,512
2019-20	Kapuskasing DHS, Building ID 5007-1	7476	HVAC - Other (Describe)	Replace various exhaust fans throughout building	\$14,457
2019-20	New Liskeard Public School - East Wing, Building ID 6347-1	7552	BUILDING ENVELOPE - New Windows	Replace windows	\$261,140
2019-20	New Liskeard Public School - East Wing, Building ID 6347-1	7598	BUILDING ENVELOPE - New Roof	Replace roofing, 2nd story of East Wing	\$45,999
2019-20	New Liskeard Public School - East Wing, Building ID 6347-1	7752	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Replace Lighting equipment	\$89,357
2019-20	New Liskeard Public School - West Wing, Building ID 6347-2	7783	BUILDING ENVELOPE - New Windows	Replace exterior widow	\$65,494
2019-20	Pinecrest PS, Building ID 6462-1	7700	CONTROLS - Building Automation Systems - New	Provide Building Automation System for Energy Management - Ventilation and Heating	\$9,567
2019-20	Pinecrest PS, Building ID 6462-1	7483	BUILDING ENVELOPE - New Windows	Replace exterior widows	\$36,173
2019-20	R Ross Beattie Sr PS, Building ID 6557-1	7605	HVAC - Energy efficient HVAC systems	Replace two AHUs upstairs	\$377,019
2019-20	R Ross Beattie Sr PS, Building ID 6557-1	7644	BUILDING ENVELOPE - New Roof	Replace roofing original building	\$123,000
2019-20	Roland Michener SS, Building ID 8378-1	7674	HVAC - Energy efficient HVAC systems	Replaced unit ventilators	\$12,606
2019-20	Roland Michener SS, Building ID 8378-1	7684	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Replace Lighting equipment	\$70,690
2019-20	Roland Michener SS, Building ID 8378-1	7590	BUILDING ENVELOPE - New Roof	Replace roofing over science labs	\$87,552
2019-20	Roland Michener SS, Building ID 8378-1	7786	BUILDING ENVELOPE - New Roof	Replace roofing over addition 1	\$257,380
2019-20	Roland Michener SS, Building ID 8378-1	7757	HVAC - Energy efficient HVAC systems	Replaced MUA Unit	\$21,981
2019-20	Roland Michener SS, Building ID 8378-1	7785 / 7685	BUILDING ENVELOPE - New Windows	Replace exterior widows	\$209,076
2019-20	Schumacher PS, Building ID 6647-1	7784	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$169,462
2019-20	Schumacher PS, Building ID 6647-1	7703	HVAC - Energy efficient HVAC systems	Installed ERV	\$334,685
2019-20	Timiskaming Dist.SS, Building ID 8394-1	7595	BUILDING ENVELOPE - New Windows	Replace windows	\$131,943
2019-20	Timmins Centennial PS, Building ID 18047-1	7772	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Replace Lighting equipment	\$15,703
2019-20	Timmins H & VS, Building ID 8406-1	7776	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$20,765
2019-20	Timmins H & VS, Building ID 8406-1	7848 / 7774	HVAC - Other (Describe)	Exhaust Fan Upgrade	\$14,481
2019-20	Timmins H & VS, Building ID 8406-1	7604	CONTROLS - Building Automation Systems - Upgrade	Replace Pneumatic controls and convert to BAS	\$56,014
2019-20	Timmins H & VS, Building ID 8406-1	7673	BUILDING ENVELOPE - New Roof	Replace roofing over exit K	\$70,369
2019-20	W Earle Miller PS, Building ID 6283-1	7708	CONTROLS - Building Automation Systems - New	Provide Building Automation System for Energy Management	\$313,500
	TOTAL 2019-2020				\$3,986,840

Completed Energy Projects 2019-2023 (Projects identified through assessments, audits and maintenance)					
YEAR	SCHOOL (ASSET)	PROJECT#	PROJECT (ELEMENT)	DETAILS (EVENT)	COST
2020-21	Bertha Shaw PS, Building ID 5413-1	7850	HVAC - Energy efficient HVAC systems	Install 9 ERV	\$141,155
2020-21	Bertha Shaw PS, Building ID 5413-1	7850	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$74,384
2020-21	Central Public School, Building ID 8865-1	7694	HVAC - Energy efficient Rooftop units	Replaced RTU	\$79,502
2020-21	Central Public School, Building ID 8865-1	7851	HVAC - Energy efficient HVAC systems	Install 3 ERV	\$178,829
2020-21	Central Public School, Building ID 8865-1	7851	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$63,239
2020-21	Clayton Brown PS, Building ID 8834-1	7862	HVAC - Energy efficient HVAC systems	Install 2 ERV	\$57,648
2020-21	Cochrane HS, E.s., Building ID 5004-1	7868	Electrical - Other	Install voltage harmonizer	\$59,593
2020-21	Cochrane HS, E.s., Building ID 5004-1	7713	HVAC - Energy efficient HVAC systems	Install 4 ERV	\$934,013
2020-21	Elk Lake PS, Building ID 6059-1	7861	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$23,086
2020-21	Elk Lake PS, Building ID 6059-1	7855	HVAC - Energy efficient HVAC systems	Install 4 ERV	\$355,939
2020-21	Englehart HS, Building ID 8204-1	7857	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$220,035
2020-21	Englehart HS, Building ID 8204-1	7857	HVAC - Energy efficient HVAC systems	Installed 7 ERVs	\$250,000
2020-21	Englehart HS, Building ID 8204-1	7670	BUILDING ENVELOPE - New Roof	Replace roofing	\$18,610
2020-21	Englehart PS, Building ID 5792-1	7859	HVAC - Energy efficient HVAC systems	Installed 4 ERVs	\$350,453
2020-21	Englehart PS, Building ID 5792-1	7859	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$100,997
2020-21	Federal Public School, Building ID 8864-1	7722	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$18,623
2020-21	Federal Public School, Building ID 8864-1	7886	HVAC - Energy efficient HVAC systems	Installed 2 ERVs	\$300,000
2020-21	Federal Public School, Building ID 8864-1	7886	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$317,979
2020-21	Iroquois Falls PS, Building ID 5490-1	7866	HVAC - Energy efficient HVAC systems	Installed 2 ERVs	\$80,000
2020-21	Iroquois Falls PS, Building ID 5490-1	7866	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$25,340
2020-21	Iroquois Falls SS, Building ID 5006-1	7867	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$147,932
2020-21	Joseph H Kennedy PS, Building ID 6252-1	7870	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$81,217
2020-21	Joseph H Kennedy PS, Building ID 6252-1	7870	HVAC - Energy efficient Rooftop units	Installed 2 ERVs	\$497,912
2020-21	Kapuskasing DHS, Building ID 5007-1	7871	Electrical - Other	Install voltage harmonizer	\$54,516
2020-21	Kapuskasing DHS, Building ID 5007-1	7934	HVAC - Energy efficient Rooftop units	Installed ERV	\$70,909
2020-21	Kapuskasing DHS, Building ID 5007-1	7477	BUILDING ENVELOPE - New Windows	Replace windows	\$2,349
2020-21	Kapuskasing DHS, Building ID 5007-1	7791	BUILDING ENVELOPE - New Roof	Replace roofing areas 1 and 2	\$576,314
2020-21	Kapuskasing DHS, Building ID 5007-1	7620	HVAC - Efficient Chillers and Controls	Replace A/C units - library, auditorium and main office	\$23,775
2020-21	Kerns PS, Building ID 6097-1	7555	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$25,963
2020-21	New Liskeard Public School - East Wing, Building ID 6347-1	7873	HVAC - Energy efficient Rooftop units	Installed ERV	\$386,401
2020-21	New Liskeard Public School - West Wing, Building ID 6347-2	7873	HVAC - Energy efficient Rooftop units	Installed 2 ERVs	\$141,878
2020-21	New Liskeard Public School - West Wing, Building ID 6347-2	7783	BUILDING ENVELOPE - New Windows	Replace windows	\$2,031
2020-21	Pinecrest PS, Building ID 6462-1	7700	CONTROLS - Building Automation Systems - New	Provide Building Automation System for Energy Management - Ventilation and Heating	\$92,405
2020-21	Pinecrest PS, Building ID 6462-1	7700	HVAC - Energy efficient Rooftop units	Installed 3 ERVs	\$400,000
2020-21	R Ross Beattie Sr PS, Building ID 6557-1	7605	HVAC - Energy efficient HVAC systems	Replace two AHUs upstairs	\$527,575
2020-21	R Ross Beattie Sr PS, Building ID 6557-1	7876	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$45,768
2020-21	Roland Michener SS, Building ID 8378-1	7786	BUILDING ENVELOPE - New Roof	Replace roofing on addition 1	\$2,906
2020-21	Roland Michener SS, Building ID 8378-1	7785 / 7685	BUILDING ENVELOPE - New Windows	Replace exterior widows	\$124,295
2020-21	Roland Michener SS, Building ID 8378-1	7799	CONTROLS - Building Automation Systems - Upgrade	Replace Pneumatic controls with digital	\$22,924
2020-21	Roland Michener SS, Building ID 8378-1	7757	HVAC - Energy efficient HVAC systems	Replaced MJA Unit	\$113,723
2020-21	Roland Michener SS, Building ID 8378-1	7757	CONTROLS - Building Automation Systems - New	Added BAS for MJA	\$100,000
2020-21	Schumacher PS, Building ID 6647-1	7784	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$19,714
2020-21	Schumacher PS, Building ID 6647-1	7703	HVAC - Energy efficient HVAC systems	Installed ERV	\$488,117
2020-21	Smooth Rocks Fall PS, Building ID 5106-1	7821	HVAC - Energy efficient HVAC systems	Replace HRV	\$29,606
2020-21	Smooth Rocks Fall PS, Building ID 5106-1	7879	HVAC - Energy efficient HVAC systems	Replace RTU	\$2,496
2020-21	Temagami PS, Building ID 6765-1	7891	HVAC - Energy efficient HVAC systems	Replace AHU	\$399,622
2020-21	Timiskaming Dist.SS, Building ID 8394-1	7877	BUILDING ENVELOPE - New Roof	Replace Section of Roof 1	\$808,370
2020-21	Timiskaming Dist.SS, Building ID 8394-1	7690	BUILDING ENVELOPE - New Roof	Replace Section of Roof 2	\$144,077
2020-21	Timiskaming Dist.SS, Building ID 8394-1	7875	HVAC - Energy efficient HVAC systems	Install 8 ERV and MJA	\$7,673
2020-21	Timmins Centennial PS, Building ID 18047-1	7772	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Replace Lighting equipment	\$171,413
2020-21	Timmins H & VS, Building ID 8406-1	7848	HVAC - Other (Describe)	Exhaust Fan Upgrade	\$20,984
2020-21	Timmins H & VS, Building ID 8406-1	7673	BUILDING ENVELOPE - New Roof	Replace roofing over exit K	\$13,484
2020-21	Timmins H & VS, Building ID 8406-1	7775	HVAC - Energy efficient HVAC systems	Replaced Entrance Fan Forced Heaters	\$21,811
2020-21	W Earle Miller PS, Building ID 6283-1	7780	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$23,915
	TOTAL 2020-2021				\$9,241,500

Completed Energy Projects 2019-2023 (Projects identified through assessments, audits and maintenance)					
YEAR	SCHOOL (ASSET)	PROJECT#	PROJECT (ELEMENT)	DETAILS (EVENT)	COST
2021-22	Bertha Shaw PS, Building ID 5413-1	7850	HVAC - Energy efficient HVAC systems	Install 9 ERV	\$572,655
2021-22	Central Public School, Building ID 8865-1	7851	HVAC - Energy efficient HVAC systems	Install 3 ERV	\$392,924
2021-22	Central Public School, Building ID 8865-1	7396	BUILDING ENVELOPE - New Roof	Replace gym roof	\$17,265
2021-22	Clayton Brown PS, Building ID 8834-1	7862	HVAC - Energy efficient HVAC systems	Install 2 ERV	\$257,390
2021-22	Clayton Brown PS, Building ID 8834-1	7078	BUILDING ENVELOPE - Other (Describe)	Exterior walls - joint sealant	\$53,634
2021-22	Cochrane HS, E.s., Building ID 5004-1	7079	BUILDING ENVELOPE - Other (Describe)	Exterior walls - joint sealant	\$58,742
2021-22	Cochrane HS, E.s., Building ID 5004-1	7713	HVAC - Energy efficient HVAC systems	Install 4 ERV	\$237,486
2021-22	Elk Lake PS, Building ID 6059-1	7855	HVAC - Energy efficient HVAC systems	Install 4 ERV	\$268,133
2021-22	Elk Lake PS, Building ID 6059-1	7861	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$2,716
2021-22	Englehart HS, Building ID 8204-1	7080	BUILDING ENVELOPE - Other (Describe)	Exterior walls - joint sealant	\$35,756
2021-22	Englehart HS, Building ID 8204-1	7857	HVAC - Energy efficient HVAC systems	Installed 7 ERVs	\$377,548
2021-22	Englehart PS, Building ID 5792-1	7859	HVAC - Energy efficient HVAC systems	Installed 4 ERVs	\$771,795
2021-22	Federal Public School, Building ID 8864-1	7886	HVAC - Energy efficient HVAC systems	Installed 2 ERVs	\$279,462
2021-22	Golden Avenue PS, Building ID 5900-1	7081	BUILDING ENVELOPE - Other (Describe)	Replace exterior wall joint sealant original building	\$79,174
2021-22	Iroquois Falls PS, Building ID 5490-1	7866	HVAC - Energy efficient HVAC systems	Installed 2 ERVs	\$512,675
2021-22	Iroquois Falls PS, Building ID 5490-1	7099	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$38,310
2021-22	Iroquois Falls SS, Building ID 5006-1	7091	BUILDING ENVELOPE - New Roof	Replace portion of roofing area #1	\$132,665
2021-22	Iroquois Falls SS, Building ID 5006-1	7867	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$49,456
2021-22	Iroquois Falls SS, Building ID 5006-1	7096	HVAC - High Efficiency Boilers (condensing)	Replaced 2 boilers	\$26,022
2021-22	Iroquois Falls SS, Building ID 5006-1	7623	HVAC - Energy efficient HVAC systems	Replaced 3 heat exchangers	\$26,583
2021-22	Joseph H Kennedy PS, Building ID 6252-1	7870	HVAC - Energy efficient Rooftop units	Installed 2 ERVs	\$611,790
2021-22	Kapuskasing DHS, Building ID 5007-1	7082	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$69,690
2021-22	Kapuskasing DHS, Building ID 5007-1	7871	Electrical - Other	Install voltage harmonizer	\$18,172
2021-22	Kapuskasing DHS, Building ID 5007-1	7791 / 7258	BUILDING ENVELOPE - New Roof	Replace roofing areas 1 and 2	\$72,926
2021-22	Kapuskasing DHS, Building ID 5007-1	7934	HVAC - Energy efficient Rooftop units	Installed ERV	\$620,271
2021-22	Kerns PS, Building ID 6097-1	7746	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Upgrade interior and exterior lighting to LED	\$49,049
2021-22	Kerns PS, Building ID 6097-1	7555	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$455,928
2021-22	Kirkland Lake District Composite School, Building ID 12029-1	7083	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$75,088
2021-22	Kirkland Lake District Composite School, Building ID 12029-1	7748	CONTROLS - Building Automation Systems - New	Added BAS for HVAC System	\$17,929
2021-22	New Liskeard Public School - East Wing, Building ID 6347-1	7873	HVAC - Energy efficient Rooftop units	Installed 3 ERVs	\$255,487
2021-22	New Liskeard Public School - East Wing, Building ID 6347-1	7458	CONTROLS - Building Automation Systems - New	Added BAS for Hydronic Heating System	\$6,330
2021-22	New Liskeard Public School - West Wing, Building ID 6347-2	7873	HVAC - Energy efficient Rooftop units	Installed 2 ERVs	\$451,230
2021-22	Pinecrest PS, Building ID 6462-1	7084	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$37,288
2021-22	Pinecrest PS, Building ID 6462-1	7700	CONTROLS - Building Automation Systems - New	Provide Building Automation System for Energy Management - Ventilation and Heating	\$140,352
2021-22	Pinecrest PS, Building ID 6462-1	7700	HVAC - Energy efficient Rooftop units	Installed 3 ERVs	\$1,000,000
2021-22	R Ross Beattie Sr PS, Building ID 6557-1	7876	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$2,201
2021-22	R Ross Beattie Sr PS, Building ID 6557-1	7605	HVAC - Energy efficient HVAC systems	Replace two AHUs upstairs	\$21,508
2021-22	Roland Michener SS, Building ID 8378-1	7757	HVAC - Energy efficient HVAC systems	Replaced MUA Unit	\$689,181
2021-22	Roland Michener SS, Building ID 8378-1	7757	CONTROLS - Building Automation Systems - New	Added BAS for MUA	\$165,642
2021-22	Roland Michener SS, Building ID 8378-1	7276	HVAC - Energy efficient HVAC systems	Replaced AHU Unit	\$12,134
2021-22	Roland Michener SS, Building ID 8378-1	7883	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$20,932
2021-22	Roland Michener SS, Building ID 8378-1	7272	HVAC - Energy efficient HVAC systems	Replaced Entrance Fan Forced Heaters	\$24,720
2021-22	Smooth Rocks Fall PS, Building ID 5106-1	7085	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$24,273
2021-22	Smooth Rocks Fall PS, Building ID 5106-1	7879	HVAC - Energy efficient HVAC systems	Replace RTU	\$5,697
2021-22	Schumacher PS, Building ID 6647-1	7089	HVAC - Energy efficient HVAC systems	Replaced gym AHU	\$10,054
2021-22	Temagami PS, Building ID 6765-1	7891	HVAC - Energy efficient HVAC systems	Replace AHU	\$97,758
2021-22	Timiskaming Dist.SS, Building ID 8394-1	7877	BUILDING ENVELOPE - New Roof	Replace Section of Roof 1	\$48,797
2021-22	Timiskaming Dist.SS, Building ID 8394-1	7086	BUILDING ENVELOPE - Other (Describe)	Exterior walls - joint sealant	\$81,258
2021-22	Timiskaming Dist.SS, Building ID 8394-1	7875	HVAC - Energy efficient HVAC systems	Install 8 ERV and MUA	\$72,948
2021-22	Timmins Centennial PS, Building ID 18047-1	7772	LIGHTING - High Efficiency Lighting Systems (T-8, T-5, CFL, LED ...)	Replace Lighting equipment	\$19,759
2021-22	Timmins H & VS, Building ID 8406-1	7485	BUILDING ENVELOPE - New Roof	Replace roofing on original building	\$5,487
2021-22	Timmins H & VS, Building ID 8406-1	7775	HVAC - Energy efficient HVAC systems	Replaced Entrance Fan Forced Heaters	\$5,292
2021-22	W Earle Miller PS, Building ID 6283-1	7087	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$40,353
	TOTAL 2021-2022				\$9,419,915

Completed Energy Projects 2019-2023 (Projects identified through assessments, audits and maintenance)					
YEAR	SCHOOL (ASSET)	PROJECT#	PROJECT (ELEMENT)	DETAILS (EVENT)	COST
2022-23	Bertha Shaw PS, Building ID 5413-1	7850	HVAC - Energy efficient HVAC systems	Install 9 ERV	\$34,287
2022-23	Central Public School, Building ID 8865-1	7851	HVAC - Energy efficient HVAC systems	Install 3 ERV	\$21,158
2022-23	Clayton Brown PS, Building ID 8834-1	7955	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors - original building	\$29,257
2022-23	Clayton Brown PS, Building ID 8834-1	7862	HVAC - Energy efficient HVAC systems	Install 2 ERV	\$168,064
2022-23	Cochrane HS, E.s., Building ID 5004-1	7713	HVAC - Energy efficient HVAC systems	Install 4 ERV	\$13,123
2022-23	Cochrane HS, E.s., Building ID 5004-1	7868	Electrical - Other	Install voltage harmonizer	\$19,864
2022-23	Elk Lake PS, Building ID 6059-1	7855	HVAC - Energy efficient HVAC systems	Install 4 ERV	\$7,469
2022-23	Englehart HS, Building ID 8204-1	7857	HVAC - Energy efficient HVAC systems	Installed 7 ERVs	\$29,068
2022-23	Englehart PS, Building ID 5792-1	7859	HVAC - Energy efficient HVAC systems	Installed 4 ERVs	\$22,547
2022-23	Federal Public School, Building ID 8864-1	7886	HVAC - Energy efficient HVAC systems	Installed 2 ERVs	\$14,054
2022-23	Iroquois Falls PS, Building ID 5490-1	7866	HVAC - Energy efficient HVAC systems	Installed 2 ERVs	\$116,411
2022-23	Iroquois Falls SS, Building ID 5006-1	7096	HVAC - High Efficiency Boilers (condensing)	Replaced 2 boilers	\$615,142
2022-23	Iroquois Falls SS, Building ID 5006-1	7623	HVAC - Energy efficient HVAC systems	Replaced 3 heat exchangers	\$18,885
2022-23	Iroquois Falls SS, Building ID 5006-1	7140	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$70,000
2022-23	Iroquois Falls SS, Building ID 5006-1	7140	BUILDING ENVELOPE - Other (Describe)	Exterior walls - joint sealant	\$49,226
2022-23	Joseph H Kennedy PS, Building ID 6252-1	7870	HVAC - Energy efficient Rooftop units	Installed 2 ERVs	\$63,534
2022-23	Joseph H Kennedy PS, Building ID 6252-1	7253	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$74,532
2022-23	Kapuskasing DHS, Building ID 5007-1	7934	HVAC - Energy efficient Rooftop units	Installed ERV	\$357,814
2022-23	Kerns PS, Building ID 6097-1	7555	BUILDING ENVELOPE - New Windows	Replace exterior windows	\$77,360
2022-23	New Liskeard Public School - East Wing, Building ID 6347-1	7458	CONTROLS - Building Automation Systems - New	Added BAS for Hydronic Heating System	\$187,508
2022-23	New Liskeard Public School - East Wing, Building ID 6347-1	7458	HVAC - Energy efficient HVAC systems	Replaced all Rads	\$187,508
2022-23	New Liskeard Public School - West Wing, Building ID 6347-2	7873	HVAC - Energy efficient Rooftop units	Installed 2 ERVs	\$18,873
2022-23	Pinecrest PS, Building ID 6462-1	7266	HVAC - High Efficiency Boilers (condensing)	Replaced 2 boilers	\$207,481
2022-23	Pinecrest PS, Building ID 6462-1	7700	HVAC - Energy efficient Rooftop units	Installed 3 ERVs	\$70,194
2022-23	R Ross Beattie Sr PS, Building ID 6557-1	7974	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$8,474
2022-23	Roland Michener SS, Building ID 8378-1	7272	HVAC - Energy efficient HVAC systems	Replaced Entrance Fan Forced Heaters	\$32,826
2022-23	Roland Michener SS, Building ID 8378-1	7757	HVAC - Energy efficient HVAC systems	Replaced MUA Unit	\$271,128
2022-23	Roland Michener SS, Building ID 8378-1	7200	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$89,206
2022-23	Roland Michener SS, Building ID 8378-1	7200	HVAC - Energy efficient HVAC systems	Replace Gym AHU Unit	\$44,603
2022-23	Schumacher PS, Building ID 6647-1	7089	HVAC - Energy efficient HVAC systems	Replaced gym AHU	\$311,821
2022-23	Smooth Rocks Fall PS, Building ID 5106-1	7085	BUILDING ENVELOPE - Other (Describe)	Replace exterior window sealant	\$40,455
2022-23	Smooth Rocks Fall PS, Building ID 5106-1	7879	HVAC - Energy efficient HVAC systems	Replace RTU	\$67,260
2022-23	Temagami PS, Building ID 6765-1	7891	HVAC - Energy efficient HVAC systems	Replace AHU	\$11,988
2022-23	Timiskaming Dist.SS, Building ID 8394-1	7875	HVAC - Energy efficient HVAC systems	Install 8 ERV and MUA	\$50,995
2022-23	Timiskaming Dist.SS, Building ID 8394-1	7094	BUILDING ENVELOPE - Other (Describe)	Replace exterior doors	\$62,011
2022-23	Timmins Centennial PS, Building ID 18047-1	7095	HVAC - High-efficiency motors	Replaced Boiler Pumps	\$61,179
2022-23	Timmins H & VS, Building ID 8406-1	7338	BUILDING ENVELOPE - New Windows	Replace windows	\$58,457
2022-23	Timmins H & VS, Building ID 8406-1	7485	BUILDING ENVELOPE - New Roof	Replace roofing on original building	\$394,661
2022-23	Timmins H & VS, Building ID 8406-1	7485	HVAC - Energy efficient HVAC systems	Upgrade Science Lab Ventilation / Controls	\$1,161,755
2022-23	Timmins H & VS, Building ID 8406-1	7984	HVAC - Energy efficient HVAC systems	Install ERV	\$37,014
2022-23	W Earle Miller PS, Building ID 6283-1	7986	BUILDING ENVELOPE - Other (Describe)	Upgraded Roof Insulation	\$66,404
	TOTAL 2022-2023				\$5,243,596

APPENDIX D – RENEWABLE ENERGY

Renewable Energy														
Type of Renewable Energy	Define	Number of existing systems in asset portfolio (owned)	Estimated number of systems installed					Estimated total number of ekWh generated annually					Total Size (kW)	Estimated Total Generation (ekWh)
			2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2023 - 2024	2024 - 2025	2025 - 2026	2026 - 2027	2027 - 2028		
Solar photovoltaic							\$ 500,000					110,000		110,000
Solar air														0
Solar water														0
Wind Turbine														0
Biomass														0
Other														0

APPENDIX E – DESIGN, CONSTRUCTION AND RETROFIT STRATEGIES

Design, Construction and Retrofit Strategies												
Lighting	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation2	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Saving (ekWh)	
High Efficiency Lighting Systems (D5020, D502001, D502003, D502004)	30	\$ 150,000	42,544	\$ -	-	\$ -	-	\$ -	-	\$ -	-	212,721
Outdoor Lighting (D502004)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Occupancy Sensors (D5021, D5022)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Describe)			-		-		-		-		-	-
H.V.A.C.	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation2	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Saving (ekWh)	
Efficient Boilers (near condensing) (D3020, D302001, D302002)	30		-		-		-	\$ -	-	\$ -	-	-
High-efficiency Boilers (condensing) (D3020, D302001, D302002)	15	\$ 176,560	260,543	\$ 250,000	368,916	\$ 250,000	368,916	\$ -	-	\$ -	-	3,885,128
High-efficiency Boiler Burners (D3020)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Geothermal (D302099)	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Heat Recovery/Enthalpy Wheels (D3090)	20	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Economizers (D306002)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Energy Efficient HVAC systems (D3050, D3040)	35	\$ 1,761,268	179,714	\$ 2,535,000	258,663	\$ 3,100,000	316,314	\$ 3,150,000	321,416	\$ 1,650,000	168,361	3,693,357
Energy Efficient Rooftop Units (D302098)	25	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
High Efficiency Domestic Hot Water (D2020)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Efficient Chillers and Controls (D3030, D303011, D303012)	25	\$ -	-	\$ 650,000	165,922	\$ -	-	\$ -	-	\$ -	-	663,689
High-efficiency Motors (D304007, D303011)	20	\$ 293,323	124,792	\$ -	-	\$ 300,000	127,632	\$ -	-	\$ -	-	1,006,856
VFD (D302056)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Demand Ventilation (D3040)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Entrance Heater Controls (D302099)	20	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Destratification Fans (D3090)	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Perimeter Rads)	20	\$ 100,000	42,544	\$ 150,000	63,816	\$ -	-	\$ -	-	\$ -	-	467,986
Controls	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation2	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Saving (ekWh)	
Building Automation Systems - New (D3060)	15	\$ 300,000	204,074	\$ 200,000	136,049	\$ 350,000	238,086	\$ -	-	\$ -	-	2,278,821
Building Automation Systems - Upgrade (D3060)	15	\$ 826,000	561,882	\$ 550,000	374,135	\$ 200,000	136,049	\$ 300,000	204,074	\$ -	-	5,122,245
Real-time energy data for operators to identify and diagnose building issues	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Voltage Harmonizers (D501001)	15	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Building Envelope	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation2	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Saving (ekWh)	
Glazing (B302006, B2020, B3021)	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Increased Wall Insulation (B2010)	50	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
New Roof (B3010, B3020)	30	\$ 571,736	45,530	\$ 530,000	42,207	\$ 1,600,000	127,416	\$ 1,175,000	93,571	\$ 1,060,000	84,413	1,050,284
New Windows (B2020)	32	\$ 2,495,715	397,494	\$ 850,000	135,380	\$ 300,000	47,781	\$ 650,000	103,526	\$ 300,000	47,781	2,927,166
Treatments	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Shading Devices	30	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Exterior Doors)	32	\$ 600,000	119,453		-		-		-		-	597,265
Total		\$ 7,274,602	1,978,570	\$ 5,715,000	1,645,088	\$ 6,100,000	1,362,195	\$ 5,275,000	722,587	\$ 3,010,000	300,555	21,905,516

APPENDIX F – OPERATIONS AND MAINTENANCE STRATEGIES

Operations and Maintenance Strategies												
Policy and Planning	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
New School Design/Construction Guidelines and Specifications	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
24/7 Night Temperature Guidelines for all Schools	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Nighttime Blackout of Sites - Interior	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Nighttime Blackout of Sites - Exterior	10	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Use Only Energy Star Certified Appliances	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Demand Ventilation (servicing) (D3020,D3030, D3040)	3	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
HVAC Optimization (coil cleaning, re-calibration of equipment) (D3020)	3	\$ 1,000	3,401	\$ 1,000	3,401	\$ 1,000	3,401	\$ 1,000	3,401	\$ 1,000	3,401	51,018
Commissioning (retro and re)	10	\$ -	-	\$ -	-	\$ -	-	\$ 5,000	5,102	\$ 5,000	5,102	15,306
Other (Describe)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Energy Audits	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Walk Through Audit	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Engineering Audit	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other (Panel mapping of Electrical systems and repairs)	15	\$ 30,000	191	\$ 30,000	191	\$ 30,000	191	\$ 30,000	191	\$ 30,000	191	2,872
Total		\$ 31,000	3,593	\$ 31,000	3,593	\$ 31,000	3,593	\$ 36,000	8,695	\$ 36,000	8,695	69,196

APPENDIX G – OCCUPANT BEHAVIOUR STRATEGIES

Occupant Behaviour Strategies												
Training and Education	Quantity of Time that Measure will be in place (years)	2023-2024		2024-2025		2025-2026		2026-27		2027-2028		2023/24-2027/28
		Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Cost of Implementation	Estimated Annual Energy Savings from all projects (ekWh)	Estimated Total Accumulated Energy Savings (ekWh)
Building Operator Training	3	\$ -	-	\$ 500	5	\$ 500	5	\$ -	-	\$ -	-	32
Energy Benchmarking Program	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Building Automation Training (site specific)	3	\$ -	-	\$ 1,000	91	\$ 1,000	91	\$ -	-	\$ -	-	638
Ongoing Training and Awareness Programs for Energy Conservation	5	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Detailed Information on Building Operational Costs	1	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Detailed Information on Energy Consumption (e.g. via the Utility Consumption Database or other database)	1	\$ 200	2	\$ 200	2	\$ 200	2	\$ 200	2	\$ 200	2	31
Participate in Environmental Programs, such as EcoSchools, Earthcare	1	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Other Tools (Define)		\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-
Occupant Behaviour Strategies Total		\$ 200	2	\$ 1,700	98	\$ 1,700	98	\$ 200	2	\$ 200	2	700