



**Waterloo Catholic
District School Board**
Quality, Inclusive, Faith Based Education



ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

PUBLISHED MAY 2024

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Introduction

The Waterloo Catholic District School Board (WCDSB) has a long history of environmental protection and awareness, and of innovative action toward sustainable operations. The Board's collective dedication for creating a better future for its students, staff, and community members stems from a deep appreciation of God's world.

The WCDSB Energy Conservation and Demand Management Plan Report is written to satisfy legislative requirements as they relate to energy conservation, local commitments made to reduce greenhouse gas emissions (GHG), a need to address budget pressures and the current state of our environment, supporting the creation of a sustainable future for younger generations, and in the context of the requirements contained in the 2022-2025 [Multi-Year Strategic Plan](#).

WCDSB is actively addressing long-term sustainability in the following key areas:

- **Energy & Water Conservation**
 - Through energy audits, capital renewal programs, monitoring local consumption, and conducting repairs and preventative maintenance on equipment.
- **Purchasing & Waste**
 - Through contractual terms and conditions with vendors, social procurement programs, waste audits, recycling, and composting programs, and raising awareness around waste with students and staff.
- **Buildings & Grounds**
 - Through tree-planting for shading and greenhouse gas reduction, eco-friendly turf management, repairs and maintenance, and monitoring and managing building controls for efficiency.

- **Food & Drink**
 - Through education and awareness programs in the curriculum delivered to students, modelling desirable behaviours, and through administrative procedures providing guidelines to schools on healthy options during food days.

- **Inclusion & Participation**
 - Through encouraging both students and staff to be proactive in supporting ethical actions, providing training to all on EDI, being mindful of others, and acting in alignment with Catholic teachings.

- **Local Well-Being**
 - Through receiving feedback from students and staff, designing programs to increase physical and mental wellness while at school/work, providing central resources and materials to support wellness, and identifying and training staff experts as wellness champions.

This is in keeping with the guidance of Pope Francis in his historic encyclical, [Laudato Si' – On Care for our Common Home](#) as well as WCDSB's own mission and vision.

Ontario Regulation 25/23: Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans requires Broader Public Sector (BPS) organizations to develop an Energy Conservation and Demand Management (CDM) plan and update it every five years. Our updated CDM plan was developed in compliance with the regulation and covers the period from FY2023-2024 to FY2027-2028. The plan was approved in May 2024.

Our updated CDM plan builds on the Board's previous conservation and demand management efforts as outlined in past plans found here <https://ecozone.wcdsb.ca/energy/>. This updated plan also continues to build on experience gained in energy conservation and demand management over the last five years.

Hard copies of the CDM plan are available at the Catholic Education Centre located at 35 Weber St W, Kitchener.

Guiding Principles

Vision

“Our Catholic Schools: heart of the community -- success for each, a place for all.”

Mission

"As disciples of Christ, we educate and nurture hope in all learners to realize their full potential to transform God's world."

Our Beliefs

All students nurtured in a community grounded in our Gospel values, and experiencing authentic learning environments of collaboration, inquiry, and engagement, will become global citizens who transform God's world.

We maximize the God-given potential of each child when we welcome all students, believe in all students, and instill hope in all students, basing our decisions on stated priorities. In fostering students who meet the Ontario Catholic School Graduate Expectations we also produce successful and independent global 21st century learners who give witness to their faith.

Goals & Objectives

The goal of the Waterloo Catholic District School Board Energy Conservation and Demand Management Plan is to guide students and staff to understand the impacts of greenhouse gas (GHG) emissions and to take actions to reduce energy consumption. To meet this goal, an action plan was created using achievable energy conservation targets. These goals and objectives were influenced by and are in alignment with Board plans, policies, principles, and Catholic teachings.

Methodology

- **Vision**
 - An innovative school board where students and staff work together to reduce energy usage in all Waterloo Catholic District School Board buildings.
- **Energy Reduction Target**
 - Reduce energy consumption by 1.5% on annual basis from 2022/2023 school year while maintaining improved occupancy comfort.
- **Approaches**
 - Using existing resources and infrastructure.
 - Developing professional networks with partners in the Ontario Broader Public Sector, Ministry of Education, utility companies, and local experts.
 - Measuring and monitoring progress on energy use and GHG emissions.
 - Committing to continuous energy reductions and best practices.
 - Promoting ongoing training and awareness programs for energy conservation.
 - Encouraging students and staff to participate in environmental initiatives and programs.
- **Focus Area**
 - To reduce electricity, natural gas, and water consumption at all WCDSB sites.
- **Goals & Objectives**
 - To reduce energy use per square meter in all WCDSB buildings.
 - To develop best practices for the operations, maintenance, and retrofit of existing buildings and design of new buildings.
 - To engage students, staff, and stakeholders in sustainable practices and programs.

Education Sector Background

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.

The following is a list of some of the most common variables 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/Portapaks
 - 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

Other Variables:

- Programs
 - Childcare
 - Before/After School Programs
 - Summer School
 - Community Use
- 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

PART I: A REVIEW OF PROGRESS & ACHIEVEMENTS in the PAST FIVE YEARS

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	60	56*	-4
Total Number of Portables/Portapaks	127	213	86
Total Floor Area (m2)	273,507	286,186	12,493
Average Operating Hours	78	98**	20
Average Daily Enrolment	22,094	26,310	4216
% of Total Floor Area Air Conditioned	83%	98%	15%
Number of Facilities with Mechanical Ventilation	60	56	-4

* Refer to the detailed asset list in “APPENDIX A: PROFILE OF WCDSB BUILDINGS.

** We have increased the daily operating hours of the mechanical equipment as one of our COVID-19 prevention measures.

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).

Table 2: Metered Usage Values

Utility	Fiscal Year 2017 to 2018 (Baseline year)	Fiscal Year 2022 to 2023
Total Electricity (kWh)	26,472,808	23,866,964.00
Total Natural Gas (ekWh)	38,419,280	29,035,062.00

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

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 Weighted Average Heating Degree Days (HDD)² and Cooling Degree Days (CDD)³ for the six most common Environment Canada weather stations in the Ontario education sector.

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	3,989	4,196	3,837	3,696	3,799	3,611
CDD	432	334	415	392	340	267

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 the Facility Variables listed on pages 12 and 13), and newly implemented programs (refer to the Note to Readers on pages 17-21) 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)	64,190,596	54,512,104
Energy Intensity (ekWh/ft ²)	21.07	17.70
Energy Intensity (ekWh/m ²)	233.11	190.38
Total GHG Emissions (kgCO ₂)	7,714,507.50	6,291,496
Emissions Intensity (kgCO ₂ /ft ²)	2.60	2.04
Emissions Intensity (kgCO ₂ /m ²)	28.01	21.98

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.

Review of Previous Energy Conservation Goals & 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.

Table 5: Comparison of Energy Intensity Conservation Goal and Actual Energy Intensity Reduced

Fiscal Year	Conservation Goal ekWh/ft2	Conservation Goal ekWh/m2	Conservation Goal Percentage	Actual Energy Savings ekWh/ft2	Actual Energy Savings ekWh/m2	Actual Energy Percentage
2018 to 2019	0.73	7.83	3.36	0.20	2.15	0.92
2019 to 2020	0.84	9.07	3.90	3.02	32.51	14.09
2020 to 2021	0.52	5.64	2.42	-0.34	-3.61	-1.82
2021 to 2022	0.77	8.31	3.57	0.85	9.12	4.52
2022 to 2023	0.66	7.07	3.04	0.22	2.33	1.21

NOTE TO READERS:

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

1. 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.
2. 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/m² – 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 programmed 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 several 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 to 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.

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/m ²)	Variance
Forecasted Cumulative Energy Intensity Conservation Goal of Fiscal Year 2018 to 2019 through Fiscal Year 2022 to 2023	37.92	
Forecasted Cumulative Energy Intensity Conservation Goal as a Percentage		16.29%
Actual Cumulative Energy Intensity Reduced or Increased from Fiscal Year 2018 to 2019 through Fiscal Year 2022 to 2023 – Weather Normalized	42.50	
Variance between 2019 Forecast Cumulative Conservation Goal and Actual Cumulative Energy Intensity– Weather Normalized	4.58	

Cumulative Energy Intensity	(ekWh/m ²)	Variance
% of Cumulative Energy Intensity Conservation Goal Achieved - Weather Normalized		18.91%

Measures Implemented from Fiscal Year 2018/2019 to Fiscal Year 2022/2023

A list of the measures implemented, the related costs, and the fiscal year that the measure was implemented within the Board are outlined in **Appendix: Investments in Energy Efficiency between Fiscal Year 2019 and Fiscal Year 2023**. Here is the list of sheets:

1. Design, Construction and Retrofit Investments
2. Operations and Maintenance Investments
3. Occupant Behaviour Investments
4. Summary of All Investment Types

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 & DEMAND MANAGEMENT PLAN for FY 2022/2023 to FY 2027/2028

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

1. Design, Construction and Retrofit;
2. Operations and Maintenance;
3. Occupant Behavior.

Design/Construction/Retrofit

Definition

Design, construction, and 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 **Calculating Energy Conservation Goals Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028, Appendix A: Design, Construction, and Retrofit.**

Operations and Maintenance

Definition

Operations and maintenance include the strategies the Board uses to make sure that the existing buildings and equipment performs at maximum efficiency. For the Board’s relevant projects over the next five years, please refer to **Calculating Energy Conservation Goals Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028, Appendix B: Operations and Maintenance.**

Occupant Behaviour

Definition

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 **Calculating Energy Conservation Goals Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028, Appendix C: Occupant Behaviour.**

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
ekW/ft ²	0.32	0.32	0.32	0.32	0.32
ekW/m ²	3.49	3.49	3.49	3.49	3.49
Percentage Decrease	1.50	1.50	1.50	1.50	1.50

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	1.62
ekWh/m ²	17.47
Percentage Decrease	7.50

Environmental Programs

In Fiscal Year 2022 to 2023, schools within the Board participated in environmental programs.

1. EcoSchools:
28 schools participated

Energy Efficiency Incentives

1. The Board applies to incentive programs to support the implementation of energy efficient projects on a regular basis.

Yes No

If yes, between Fiscal Year 2018 to 2019 and Fiscal Year 2022 to 2023, the Board has applied for approximately \$350,000 in incentive funding from different agencies to support the implementation of energy efficient projects.

2. The Board uses external resources, such as IESO Service Representatives and / or Enbridge Service Representatives, to apply for incentives.

Yes No

If yes,

IESO Service Representative

Enbridge Service Representative

Energy Procurement

1. The Board participates in a consortia arrangement to purchase electricity.

Yes No

2. The Board participates in a consortia arrangement to purchase natural gas.

Yes No

If yes,

Ontario Education Collaborative Marketplace's (also known as OECM) Natural Gas Management and Advisory Services

3. The Board participates in a consortia arrangement to purchase alternative utilities (fuel oil, propane, wood, district heat, district cool).

Yes No

Demand Management

1. The Board uses the following method(s) to monitor electrical Demand:

Invoices

Real-time data

Online data from the Local Distribution Company (LDC)

2. The Board uses the following methodologies to cut down electrical Demand:

Equipment scheduling

Phased/staged use of equipment

Demand-limit equipment

Deferred start-up of large equipment (e.g. chiller start-up in spring)

Other:

Variable Frequency Drives

Energy Management Strategies

A description of WCDSB historic, current, and proposed measures to reduce energy consumption including a forecast of expected results of current and proposed measures is described in sections below.

In 2008, WCDSB established the Environmental Committee Group (now called Sustainable Development Committee). The role of the committee is to make recommendations to WCDSB Executive Council to ensure broad-based, long term sustainability. The committee consists of members from various areas of the WCDSB. The Sustainable Development Committee meets quarterly and uses communication technology frequently to reduce the need for in-person meetings.

In 2009, a Sustainable Development Policy was created to establish sustainable practices and initiatives across the school system.

In 2011, WCDSB developed its first Energy Conservation Plan that contained energy conservation measures and best practices. The plan proposed indoor and outdoor lighting to be upgraded to more efficient fixtures. The plan also included a temperature standard for heating and cooling. During winter months, heating was set at 22°C for classrooms, offices, and meeting rooms. Secondary school shops, gymnasiums, change rooms, washrooms, and corridors were set at 20°C. All buildings had their night temperature set at 18°C. Cooling was set at 27°C after the first week in July until the last week of August, except where summer school was in session. In response to the COVID-19 pandemic, the heating set points were changed from 21°C to 18°C from March until September.

The Board has been applying for incentive programs to support the implementation of energy efficient projects on a regular basis. Since fiscal year 2010-11, the Board received over \$200,000 in incentive funding from various agencies to support the implementation of energy efficient projects. The Board has also been leveraging the services of the sector's Incentive Program Advisor.

In 2013, through a partnership with a solar developer, WCDSB received an approval from the Ontario Power Authority to install 17 solar photovoltaic (PV) systems through the FIT2 program. The 17 sites include: St. Agnes (100 kW), St. Benedict (325 kW), Canadian Martyrs (120 kW), St. Clement (60 kW), St. David (375 kW), St. Dominic (115 kW), St. Elizabeth (100 kW), Holy Spirit (175 kW), Saint John Paul II (145 kW), St. Kateri Tekakwitha (160 kW), St. Luke (200 kW), St. Mary (400 kW), St. Margaret (150 kW), St. Matthew (175 kW), St. Nicholas (180 kW), Resurrection (425 kW), St. Teresa of Calcutta (175 kW). These sites generate a total of 3380 kW of electricity that is being fed to the Ontario electricity grid.

As part of the Green Schools Pilot Initiative, WCDSB installed hot water solar panels at St. Mary's Secondary School. In addition, a 10kW solar PV system was installed at Monsignor Doyle Secondary School.

Social media presence was established in 2016 through the development of the www.ecozone.wcdsb.ca website and an associated twitter handle. The EcoZone website provides information on the Board's annual energy consumption, energy conservation projects, and sustainable initiatives and practices.

In 2016, an energy reduction target of 1% a year from 2013-14 levels was set to be achieved by 2023.

In addition, a 20% GHG emissions target was set to be achieved by 2024 from 2014 levels.

In 2018, the Sustainable Development AP was updated and renamed [Environmental Education, Stewardship and Sustainability](#). The goal of this AP is to enable and coordinate sustainable practices throughout the organization. The WCDSB is committed to achieving continual, measurable improvements in the environmental education, stewardship, and sustainability practices within its control.

The Sustainable Development Committee meets quarterly to discuss sustainable initiatives at the school and board office level.

In 2019, the Pope Francis Award for Ecological Leadership was created to recognize school staff members who actively demonstrate a love for creation

and care for the planet in all their interactions.

In 2019, four ASHRAE II energy audits were completed at low performing schools to determine energy saving measures.

Facility Services meets regularly to discuss energy-related projects to ensure proposed targets are being met.

An internal process has been put in place to help address and track progress of energy goals. This allows for a continuous measuring and monitoring of energy use and GHG emissions.

WCDSB participates in the CSBSA Natural Gas Management and Advisory Service natural gas purchasing consortium to cut down on procurement costs.

Current construction and energy projects include indoor and outdoor lighting upgrades, high efficiency boilers/HVAC upgrades, new energy efficient windows and doors. Several schools are also getting upgraded building automation systems (BAS).

Due to the COVID-19 pandemic, ventilation has been programmed to turn on for up to 3 hours before and after occupancy times. Starting in December 2020 higher-rated MERV air filters were added to HVAC equipment and ventilation rates were increased where systems can accommodate, also HEPA air filter units have been placed in classrooms to ensure safety for students and staff.

Real-time water flow sensors have been installed at nearly all schools to monitor and track water consumption. This has resulted in utility meter issues being identified and rectified, several maintenance issues being identified to reduce wasted water, and many opportunities to ensure water is consumed in a responsible and efficient manner.

In 2023 several sustainability/climate awareness field trips and professional development workshops were arranged for students/teachers at a local sustainably designed net-zero building.

In 2024 WCDSB received the Greatest GHG Emissions Reduction Award from Sustainable Waterloo Region for the 2022/2023 Fiscal Year.

Canada EcoSchools

Canada EcoSchools program has been instrumental in the development of sustainability education at the WCDSB. With the help of teachers and support staff at the Board's schools (particularly custodians), students are far more aware about the state of our natural environment and are tremendously engaged in environmental initiatives. WCDSB has put a lot of focus on student engagement and environmental programming. The Board continuously collaborates with local stakeholders such as local municipalities, not-for-profit organizations, charities, local colleges and universities, and businesses, to bring meaningful and hands-on sustainability experience. To support our student's experiential learning, we deliver customized workshops on topics included but not limited to waste diversion strategies, energy conservation practices, greening grounds, and food systems. In 2019-2020, 47 of WCDSB schools received the 2020 Special Edition Seal for their participation in EcoSchools Program. Due to the pandemic, staff are reviewing program requirements and will report on certification in future reports.

Food, Pollinator Gardens and Grounds Greening

Our students have enormous interest for pollinator and food gardens. Many of our schools grow pollinator flowers, veggies, herbs, and fruit in their gardens that they get to enjoy. Food gardens are an excellent means of community building and discovery-based learning. By growing their own food students learn the importance of eating healthy. As a result of the high demand for food gardens, in 2019, 15 garden beds were distributed to elementary schools. These garden beds were made by students from our five secondary schools.

More recently, WCDSB has been working with Sustainable Waterloo Region on implementing several Microforests at our schools which aims to plant between 10-100+ native species trees/shrubs. The goal is to provide long-term environmental and aesthetic benefits for the schools, surrounding neighbourhoods, and communities by absorbing heat from paved areas,

reducing stormwater runoff, and providing habitat for local wildlife, among several other vital functions.

Integrating ongoing maintenance of these microforests with our teacher/parent volunteers as well as youth teams that are paid stipends through support of several local not-for-profit organizations.

To manage energy consumption, the board has in place the following set point temperatures:

Category	Definition	Winter		Summer	
		Applicable Dates	Set Point	Applicable Dates	Set Point
Occupied	Full or near full occupancy	September 15	21°C	June 1	23°C
Unoccupied	No occupants; closed or empty	September 15	17°C	June 1	28°C

** Heating/Cooling switchover dates vary from year to year depending upon weather*

*** Many HVAC systems do not require a switchover date and heat/cool year-round based upon outside air temperature*

**** Most thermostats provide occupants with a 1-3°C variance from the set point*

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APPENDICES

PROFILE OF WCDSB BUILDINGS

Building Name	Building ft ²	Year Built
Elementary Schools		
Blessed Sacrament	39,522	1988
Canadian Martyrs	30,733	1967
Christ The King	26,237	1978
Holy Family	25,381	1959
Holy Rosary	50,916	1989
Holy Spirit	49,390	2002
John Sweeney	59,948	2003
Monsignor Haller	23,296	1971
Our Lady of Fatima	49,949	1959
Our Lady of Grace	22,131	1976
Our Lady of Lourdes	32,930	1948
Saint John Paul II	60,476	2010
Sir Edgar Bauer	47,165	1970
St. Agnes	25,909	1956
St. Aloysius	28,064	1954
St. Anne (Cambridge)	27,966	1965
St. Anne (Kitchener)	49,712	1947
St. Augustine	39,407	1991
St. Bernadette	27,454	1952
St. Boniface (Breslau)	43,500	2021
St. Brigid	54,517	2017
St. Clement	27,119	1969
St. Daniel	28,709	1958
St. Dominic Savio	44,303	1999
St. Elizabeth	39,590	1992
St. Gabriel	45,897	2014
St. Gregory	25,517	1958
St. John	48,402	1929
St. Joseph	22,176	1959
St. Kateri Tekakwitha	40,205	1992
St. Luke	60,088	2002
St. Margaret of Scotland	38,115	1990

St. Mark	23,011	1978
St. Matthew	44,329	1995
St. Michael	30,390	1952
St. Nicholas	45,370	2002
St. Paul	35,032	1964
St. Peter	34,656	1963
St. Teresa (Kitchener)	30,545	1953
St. Teresa of Avila (Elmira)	26,763	1964
St. Teresa of Calcutta (Cambridge)	46,033	1998
St. Timothy	25,092	1981
St. Vincent de Paul	62,678	2018
Secondary Schools		
St. Benedict	200,985	1997
St. David	161,012	1965
Resurrection	201,850	1990
St. Mary	215,878	2002
Monsignor Doyle	150,720	1976
St. Francis Cambridge (Leased)	27,882	1968
St. Louis Adult Learning & Continuing Education Centre - (St. Francis campus - Kitchener)	14,651	1958
St. Louis Adult Learning & Continuing Education Centre - Main Campus	83,642	1957
St. Don Bosco Alternative Education (St. Mary's West Campus)	20,204	1966
St. Don Bosco (Leasing)	2,475	1974
Administrative Buildings		
WCDSB Catholic Education Centre	112,136	1955
Facility Services	34,179	1979
Administrative Operations (Maryhill)	22,162	1898

APPENDIX A: Calculating Energy Conservation Goals Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028: Design, Construction, and Retrofit

	FY2024	FY2025	FY2026	FY2027	FY2028
Lighting					
High-efficiency Lighting Systems including Occupancy and Daylighting Sensing	\$700,000	\$500,000	\$900,000	\$700,000	\$700,000
Exterior Lighting – LED retrofits	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
HVAC					
Efficient Boilers (high efficiency)	\$710,000	\$600,000	\$820,000	\$520,000	\$900,000
Energy Efficient HVAC Systems (Heat pump etc.)	\$775,000	\$750,000	\$1,250,000	\$950,000	\$775,000
Energy Efficient Rooftop Units	\$1,000,000	\$750,000	\$800,000	\$825,000	\$1,000,000
Domestic Hot Water (High Efficiency)	\$1,500,000	\$2,050,000	\$1,775,000	\$1,850,000	\$1,700,000
Controls and Automation					
Building Automation Systems – Upgrade	\$350,000	\$320,000	\$405,000	\$200,000	\$500,000
Building Envelope					
New Roofing	\$1,500,000	\$2,000,000	\$1,550,000	\$1,000,000	\$1,775,000
New Windows	\$275,000	\$0	\$0	\$775,000	\$0
Total Investments	\$6,820,000	\$6,980,000	\$7,510,000	\$6,830,000	\$7,360,000

APPENDIX B: Calculating Energy Conservation Goals Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028: Operations and Maintenance.

	FY2024	FY2025	FY2026	FY2027	FY2028
Policy and Planning					
Procures Energy Star Certified Appliances	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Commissioning					
Commissioning (Retro/Recommissioning)	\$0	\$10,000	\$0	\$10,000	\$0
Total Investments	\$3,000	\$13,000	\$3,000	\$13,000	\$3,000

APPENDIX C: Calculating Energy Conservation Goals Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028: Occupant Behaviour.

	FY2024	FY2025	FY2026	FY2027	FY2028
Training and Education					
Building Operator Training	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
Participate in Environmental Programs, such as EcoSchools/SWR	\$13,000	\$13,000	\$13,000	\$13,000	\$13,000
Total Investments	\$15,500	\$15,500	\$15,500	\$15,500	\$15,500

APPENDIX D: Planned Investments in Energy Efficiency Fiscal Year 2023 to 2024 to Fiscal Year 2027 to 2028– Total Investments

	FY2024	FY2025	FY2026	FY2027	FY2028
Design, Construction, and Retrofit	\$6,820,000	\$6,980,000	\$7,510,000	\$6,830,000	\$7,360,000
Operations and Maintenance	\$3,000	\$13,000	\$3,000	\$13,000	\$3,000
Occupant Behaviour Strategies	\$15,500	\$15,000	\$15,500	\$15,500	\$15,500
Total Investments	\$6,838,500	\$7,008,500	\$7,528,500	\$6,858,500	\$7,378,500
Estimated Annual Energy Savings (ekWh)	962,580	962,580	962,580	962,580	962,580

Senior Management Approval of this Energy Conservation and Demand Management Plan

I confirm that Waterloo Catholic District School Board’s senior management has reviewed and approved this Energy Conservation and Demand Management Plan.

Updated by:

Full Name: Zeb Foss

Job Title: Energy Conservation Supervisor

Date: May 13, 2024

Reviewed by:

Full Name: Shesh Maharaj



Job Title: Executive Superintendent, Corporate Services

Date: June 17, 2024