



## 2023 TOP ENERGY PERFORMING SCHOOL BOARDS REPORT

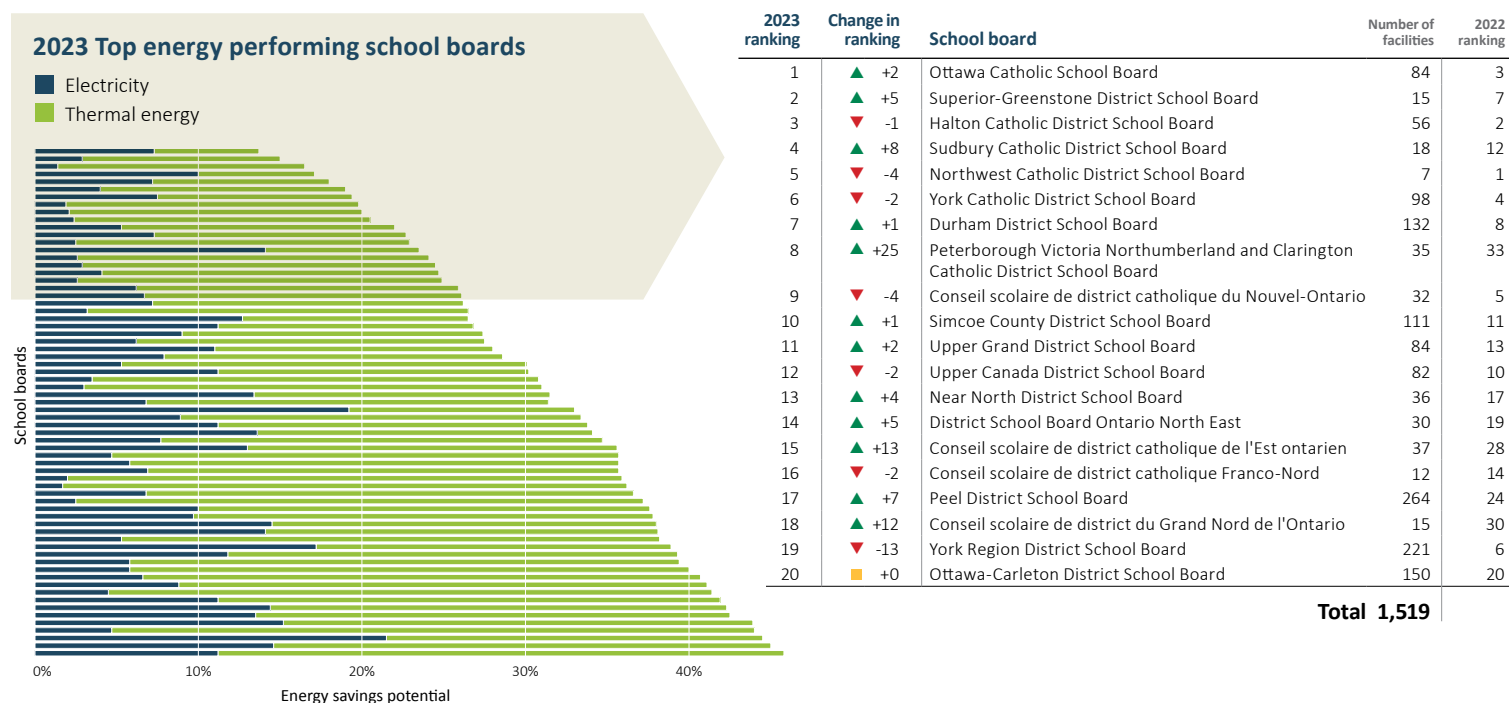
**SUSTAINABLE SCHOOLS** is pleased to present our latest report on the energy performance of school boards in Ontario, based on publicly reported annual data for the September 2020 – August 2021 school year<sup>1</sup>. This was the first full year when school operations were

affected by the COVID-19 pandemic. Periodic school closures were in effect from March 2020 as ventilation requirements for health and safety became the top concern.

1. White Paper detailing the methodology and analytics available on the Sustainable Schools website at <https://sustainableschools.ca/research>

### Ontario's most energy efficient school boards

The top twenty most energy efficient school boards in Ontario for 2020-21 are recognized below. The top boards are again determined by comparing actual energy use to top-quartile energy targets for elementary and secondary schools and other buildings. While most buildings and boards increased their energy use due to COVID-19 response in 2020-21, the established (weather-normalized) “normal operations” targets provide a consistent reference point for evaluating the energy performance of individual buildings and the boards as a whole.



### Achievable savings potential

As boards shift attention to meeting energy and emissions reduction targets, while still maintaining health and safety protocols, Table 1 summarizes the savings potential (from 2020-21 consumption levels) which are achievable through meeting top-quartile electricity and gas use targets for all of Ontario's school buildings. The [Sustainable Schools webinar conducted with ASHRAE](#) on September 2nd, 2020, examined the increased energy requirements of schools arising from changes in ventilation operation, outside airflow and filtration standards arising from the COVID-19 pandemic. We will be updating the Sustainable Schools standard targets in our 2024 report to reflect post-pandemic operations.

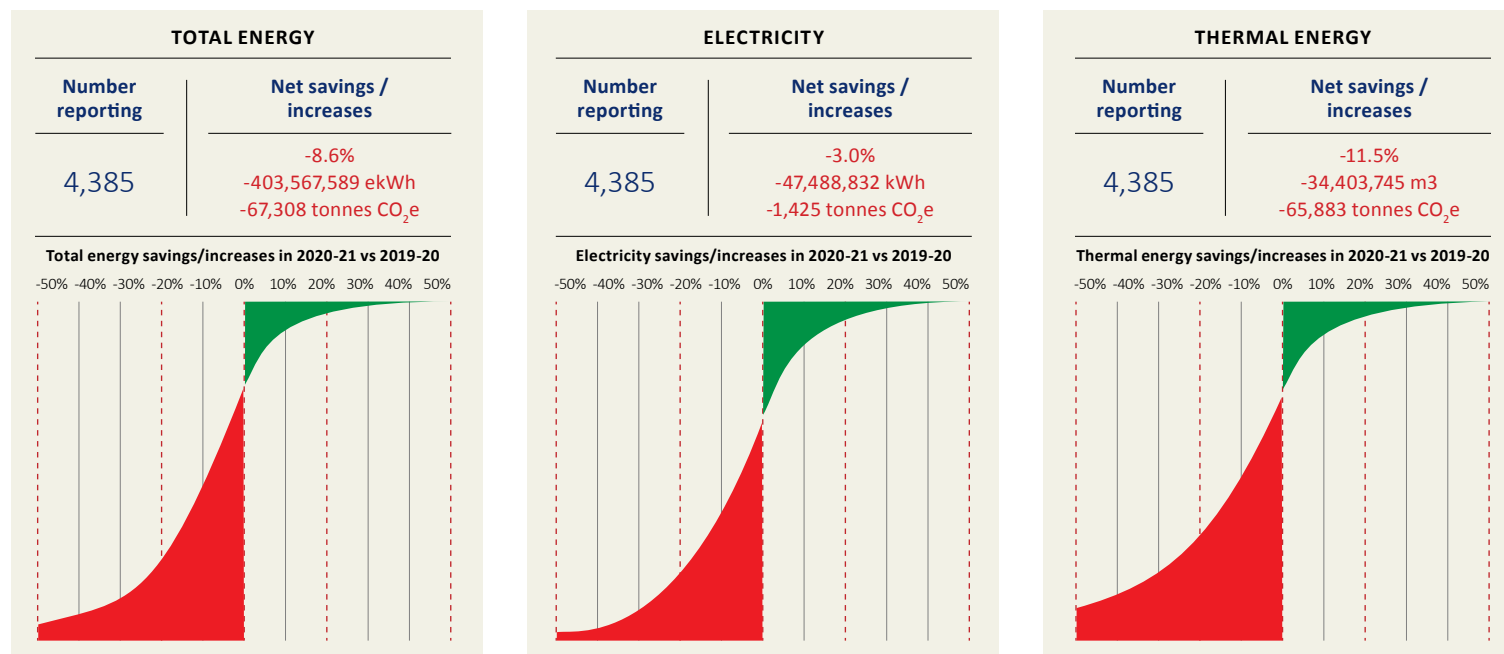
**TABLE 1: Energy and emissions savings potential of Ontario schools**

|                 | Electricity savings potential | Natural gas savings potential | Utility cost savings potential | GHG emissions reduction potential     |
|-----------------|-------------------------------|-------------------------------|--------------------------------|---------------------------------------|
| <b>Percent</b>  | 20.6%                         | 38.9%                         | 25.1%                          | 37.5%                                 |
| <b>Quantity</b> | 338,743 MWh/year              | 121,760,000 m3/year           | \$90 million/year              | 243,333 tonnes CO <sub>2</sub> e/year |

## Province-wide energy trends

Overall weather normalized changes in 2020-21 energy use by the 4,385 Ontario school buildings which made it through screening for data errors are shown graphically in Figure 1 below. Note that the 2019-20 comparison year also included 6 months of pandemic related school closures for most buildings. The green bars are schools which recorded energy reductions and the red bars showed increases. Thermal energy increases were the most pronounced and overall energy use rose by 8.6%, costing over \$17 million and 67,000 tonnes of greenhouse gas emissions.

**FIGURE 1: Energy use reductions (green) and increases (red) in 2020-21 school year**



For context, Table 2 summarizes energy savings recorded by Ontario's schools over the past 5 years. The first 3 years show general improvement trends in energy efficiency. The reductions in 2019-20 were discussed in last year's report and reflect school closures beginning in March 2020. Results for the current year (2020-21) show the dramatic reversal, with a bounce back in electricity partially offsetting last year's reductions and a much larger increase in thermal energy wiping out all the gains from the previous years as boards responded to directives to raise outside air supply volumes and operating periods. Results were more extreme in some schools than others, with about one in ten recording greater than 50% increases.

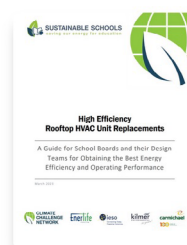
**TABLE 2: Five-year energy savings trends for Ontario schools**

| Actual energy savings achieved                 | 2016-17 vs 2014-15 | 2017-18 vs 2016-17 | 2018-19 vs 2017-18 | 2019-20 vs 2018-19 | 2020-21 vs 2019-20 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Recorded electricity savings                   | 4.7%               | -0.7%              | 1.4%               | 16.9%              | -3.0%              |
| Number of boards with net electricity savings  | 54                 | 23                 | 50                 | 68                 | 19                 |
| Recorded natural gas savings                   | 1.7%               | 4.8%               | -0.6%              | 4.3%               | -11.5%             |
| Number of boards with net natural gas savings  | 23                 | 54                 | 37                 | 49                 | 8                  |
| % total energy savings                         | 2.8%               | 2.8%               | 0.1%               | 8.7%               | -8.6%              |
| Number of boards with total energy savings >1% | 44                 | 44                 | 36                 | 59                 | 5                  |

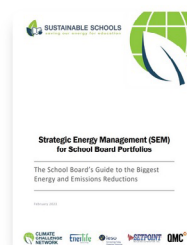
## Sustainable Schools resources

The purpose and goals of the Sustainable Schools program are entirely focused on helping school boards achieve and sustain deep reductions in energy use and greenhouse gas emissions. Our data analytics identify high savings potential buildings for attention and quantify the board-wide business case for action. We hold meetings with boards interested in understanding and making full use of their data.

Ongoing communications also surface opportunities for collaboration where school boards and industry experts can work together to fill knowledge gaps. We create best practice guides and case studies which are publicly available on our website for use by all. In 2022, the Sustainable Schools team undertook two cohort research projects: Strategic Energy Management for School Board Portfolios, and High Efficiency Rooftop HVAC Unit Replacements. Working with 8 Ontario school boards<sup>2</sup>, we developed two guidance reports to help all school boards achieve energy savings and avoid energy increases across whole portfolios, and to improve the design, equipment selection, BAS programming, and commissioning of future RTU replacement projects<sup>3</sup>.



**2022 HVAC Unit Replacements Guidance Report**



**2022 SEM for School Board Portfolios Guidance Report**

2. Brant Haldimand Norfolk Catholic District School Board, Conseil Scolaire de district catholique du Nouvel-Québec, Limestone District School Board, Ottawa Catholic School Board, Simcoe County District School Board, Board Simcoe Muskoka Catholic District School Board, Toronto District School Board, and York Catholic School Board.

3. Please visit <https://sustainableschools.ca/research> to download the guidance reports.

## Looking back for lessons learned

The pandemic has reinforced the value of resilience in responding to health and safety emergencies as well as optimizing energy efficiency, greenhouse gas emissions and occupant comfort and air quality. Boards with better building automation system (BAS) capability, air handling unit (AHU) testing and balancing and maintenance management practices rank higher in energy efficiency and fared better through the pandemic.

# Changing the trajectory

The climate crisis is upon us, threatening to wreak more chaos and take more lives over a longer time period than any pandemic. We are at the beginning of the biggest energy transition in human history, which is profoundly changing our means of transportation, production and heating and cooling of buildings. And, because we have been slow to react so far, change will happen over a remarkably short timeframe. Governments, international agencies and scientific bodies have set targets for 2030, 2040 and 2050. Every organization and individual has an important part to play, and the clock is ticking.

School boards and districts across North America have considerable potential to lower greenhouse gas emissions resulting from their own operations. This 2023 Sustainable Schools report quantifies the savings potential just for Ontario (with 5% of North America's population), only for buildings (with transportation being another area for attention), and simply through widespread adoption of improved operating and capital planning practices which are already in use by leading boards. This report is intended to be a rallying call to all parties to reprioritize climate action and work towards a systematic approach to immediate, deep reductions to greenhouse gas emissions.

Integrated planning helps. Your Sustainable Schools data analytics focus attention on the biggest opportunities. The technical scope of the necessary energy efficiency measures is well known and described in the webinar recording of the launch of this 2023 Top Energy Performing Boards report. Many involve little expense, and together they offer significant operating cost savings with positive financial returns as well as environmental benefits.

The bigger challenge for most boards is to realign management systems and practices to incorporate low carbon requirements in ongoing operations and maintenance, infrastructure renewal and new school construction. Aligning governance, allocation of resources, funding and roles and responsibilities with environmental imperatives as well as educational and economic outcomes is necessary for setting and meeting goals and targets.

This is a time for collaboration between school boards and other stakeholders. The challenges are too great and the timelines too short for reaching our targets with everyone working independently and reinventing wheels. Sustainable Schools looks forward to engaging more broadly with school boards and other concerned parties across Ontario, Canada and North America as together we change the trajectory of greenhouse gas emissions, plan our way through the energy transition to the low carbon future, and unlock the considerable environmental, economic and social benefits. I look forward to hearing from you.

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## ABOUT THIS REPORT

The Sustainable Schools program has been reporting on energy efficiency of K-12 school buildings since 2007. Our data, webinars and Annual Reports provide evidence-based knowledge and a platform for the whole sector to share, learn, make improvements and track progress over time. The data analytics are designed to provide the foundation for each board to begin mapping its own practical pathway to utility cost savings and emissions reductions.

Our latest news, results and resources, together with the White Paper detailing the methodology and analytics, are available on the Sustainable Schools website at <https://sustainableschools.ca/publications>.

*Sustainable Schools acknowledges the support of Enbridge Gas Distribution and the Independent Electricity System Operator (IESO) enabling delivery of our program.*

For more information, please visit [sustainableschools.ca](https://sustainableschools.ca) or contact Katia Osokine, Program Manager, at [kosokine@climatechallengenetwork.org](mailto:kosokine@climatechallengenetwork.org).

Sustainable Schools is a program of the Climate Challenge Network.

Technical direction by