



# SUSTAINABLE SCHOOLS

saving our energy for education

FEBRUARY 2019

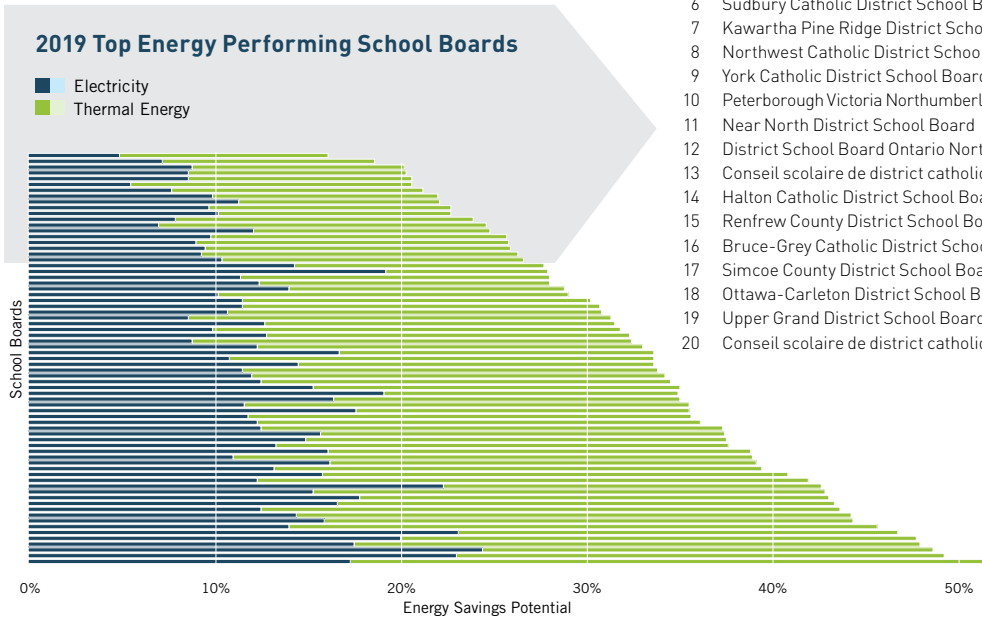
## 2019 Top Energy Performing School Boards Report

**SUSTAINABLE SCHOOLS** is pleased to recognize the most energy efficient school boards in Ontario, based on reported data for the September 2016 – August 2017 school year. The overall energy savings potential for individual boards ranges from 16% for the most efficient to more than 50%. The top twenty boards (those with the least savings potential) are reported below, along with

their rankings in the 2017 report. The total energy savings potential across all boards is 34.3%, worth close to \$112 million annually, accounting for 235,000 tonnes of avoidable greenhouse gas emissions. Natural gas has a bigger percentage savings potential than electricity and offers the lion's share of emissions reductions.

The Ontario school sector as a whole reduced its weather-normalized electricity use by 4.7%, and its thermal energy use by 1.7% over this 2-year period. There were a number of notable successes: 12 boards achieved more than 10% electricity savings board-wide, and 4 boards achieved over 10% natural gas savings.

2019 Ranking	School Board	Number of facilities	2017 Ranking
1	Conseil scolaire de district catholique du Nouvel-Ontario	34	4
2	York Region District School Board	222	2
3	Upper Canada District School Board	83	14
4	Ottawa Catholic District School Board	86	5
5	Durham District School Board	135	1
6	Sudbury Catholic District School Board	17	11
7	Kawartha Pine Ridge District School Board	90	10
8	Northwest Catholic District School Board	8	13
9	York Catholic District School Board	105	7
10	Peterborough Victoria Northumberland and Clarington Catholic District School Board	37	3
11	Near North District School Board	38	19
12	District School Board Ontario North East	33	33
13	Conseil scolaire de district catholique Franco-Nord	13	12
14	Halton Catholic District School Board	58	8
15	Renfrew County District School Board	30	37
16	Bruce-Grey Catholic District School Board	14	16
17	Simcoe County District School Board	117	23
18	Ottawa-Carleton District School Board	151	18
19	Upper Grand District School Board	82	26
20	Conseil scolaire de district catholique du Centre-Est de l'Ontario	54	30
		<b>1407</b>	<b>Total</b>



### The Size of the Prize

The province-wide conservation potential is summarized below. This level of savings is achievable through meeting good practice energy use targets for elementary schools, secondary schools, and administration buildings.

	Electricity savings potential	Natural gas savings potential	Utility cost savings potential	GHG emissions reduction potential
<b>Percent</b>	27.8%	38.3%	34.3%	37%
<b>Quantity</b>	518,540 MWh/year	113,627,000 m <sup>3</sup> /year	\$112 million/year	235,000 tonnes CO <sub>2</sub> e/year

### ABOUT THIS REPORT

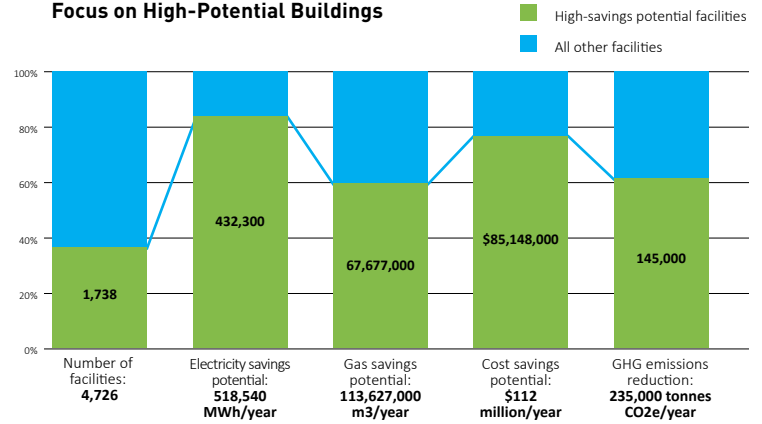
This 2019 report uses energy data and building information for Ontario's 4,968 schools and education centres as publicly reported by the 72 school boards. After screening for apparent data gaps and errors, 4,726 facilities were ultimately included. Site-specific energy targets are set for every building based on top quartile (good practice) benchmarks for elementary and secondary schools and administration buildings, adjusted for weather differences, heating system type and other material variables including numbers of portables. The energy savings potential is determined for each building as the difference between its actual and target energy use, and the energy efficiency of the school board is determined by rolling up results for all of their buildings. For the White Paper outlining the methodology visit [sustainable-schools.ca](http://sustainable-schools.ca). Despite modest overall electricity and gas savings achieved since the 2017 report (which was based on the 2014-15 school year), the overall savings potential is higher in this report due to downward energy target adjustments.

## Focus on High-Potential Buildings

Every school board, even the top-performers, has individual buildings with high savings potential. Across all of Ontario's boards, 37% of buildings (1,738 facilities) have annual utility cost savings potential of \$20,000 or more, and account for 76% of total utility cost savings and 62% of greenhouse gas emissions reductions.

Focusing resources on these high-potential buildings is the most cost-effective approach to lowering operating costs and delivering greenhouse gas reductions. The current priority for most boards is investment in schools with infrastructure deficiencies. To achieve the utility cost savings and greenhouse gas emissions reduction potential, funding and resources are also required to address operational improvements and retrofits in these high-potential buildings.

### Focus on High-Potential Buildings



## Sustainable Schools In Action

### UNION GAS CHARRETTES

Building on the 2017 Sustainable Schools Top Boards report, Union Gas conducted charrettes with ten high-potential schools from two school boards in their service territory. All 20 schools had targeted gas savings of more than 50%. The charrettes brought together board staff with utility company representatives and industry experts to convert energy savings potential into building-specific action plans. In-depth analysis of most recent utility data, combined with readily available building system and occupancy profiles, informed the evidence-based discussions by which



Clemens Mill Public School, WRDSB

participants identified the operational and control improvements and capital projects needed to deliver the targeted

savings. Capital budgets and business cases were prepared to enable the boards to plan and proceed with implementation.

Combined results for all twenty schools served to confirm the targeted savings potential. The pie charts below summarize where the biggest

savings are to be found. Upgraded ventilation systems eclipsed commonly understood energy conservation projects such as lighting retrofits and boiler replacements, accounting for 70% of total gas and 60% of total electricity savings with an average payback of less than 3 years.

Across the whole dataset, there are over 1,000 schools in Ontario with more than 50% gas savings potential, to which this approach could be applied.

### ONTARIO ECOSCHOOLS

In 2016 and 2017, Ontario EcoSchools used the Sustainable Schools database to report on the relative energy efficiency of schools certified within their program compared against non-certified schools. The energy savings potential of certified and non-certified schools confirmed that certified EcoSchools (both elementary and secondary) are more energy efficient than non-certified schools, and that the difference in energy efficiency is statistically significant.



### APPLIED RESEARCH

Analysis of the large Sustainable Schools database is uncovering important areas for research. We look forward to working on such projects with leading boards and other stakeholders to help advance collective progress towards higher energy efficiency.

### 1. Application of Geexchange to K-12 Schools

There are 50 self-reported schools with geexchange heating and cooling in the database, only a handful of which are operating close to their design efficiency levels. Research into system design, condition and operations can inform retrofits and upgrading of existing systems and guidelines for future installations.

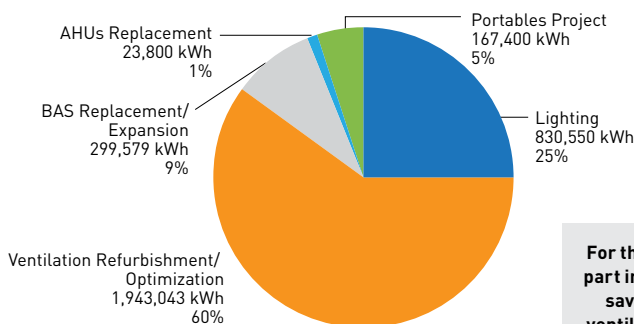
### 2. Portable Classroom Energy Use

There are approximately 7,000 portables reported across all Ontario boards, accounting for as much as 7.5% of total electricity use. A number of boards are working on advanced control strategies for portable HVAC units and their results informed the modified electricity targets in this year's report. Further research into operating performance and implementation costs of retrofitted portables can inform a best-practices guide for use by all boards in optimizing electricity use and savings.

### 3. Characteristics of High-Performing and Most Improved Boards

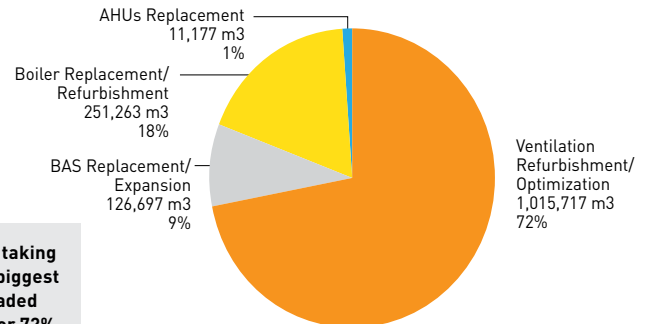
Evidence to date indicates that high performance among school boards has more to do with management than the age, condition or systems of their buildings. Research into policies, resources and management practices can isolate what sets the perennial Sustainable Schools top-performing boards apart and provide a useful reference for other boards to consider.

Achieving the Electricity Savings Potential



For the 20 high-potential schools taking part in Union Gas charrettes, the biggest savings are to be found in upgraded ventilation systems, accounting for 72% of gas and 60% of electricity savings.

Achieving the Gas Savings Potential



For more information, please visit [www.sustainableschools.ca](http://www.sustainableschools.ca) or contact Katia Osokine at [info@sustainableschools.ca](mailto:info@sustainableschools.ca)



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