SUSTAINABLE SCHOOLS
saving our energy for education

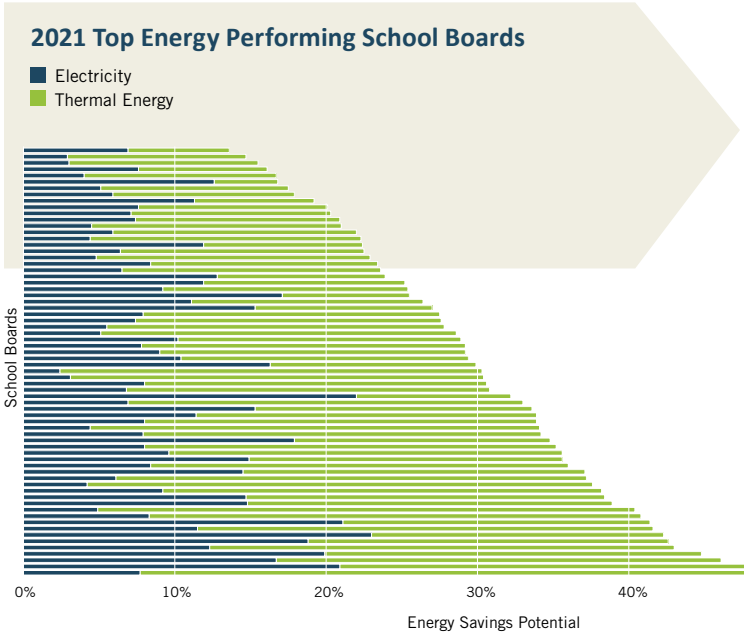
JUNE 2021

CLIMATE CHALLENGE NETWORK

2021 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 2018 – August 2019 school year. Every board has some opportunity for reducing energy use and greenhouse gas emissions, with board-wide achievable savings potential ranging from 13.7% for the most efficient to more than 60%. The top twenty boards (those with the least savings potential) are recognized below, along with their rankings from last year's report.

The total achievable potential across all boards is 32.5%, worth an estimated $117 million annually and accounting for 244,000 tonnes/year of avoidable greenhouse gas emissions (CO2e). Natural gas (35.5%) has a bigger percentage savings potential than electricity (26.9%) and offers the lion's share of emissions reductions. The Ontario school sector as a whole decreased electricity use by 1.4%, with a majority of boards recording savings. Overall weather-normalized thermal energy use increased by 0.6% in 2018-19 compared against the prior year, with almost half the boards showing net increases.



2021 Ranking	School Board	Number of facilities	2020 Ranking
1	Ottawa Catholic School Board	87	3
2	Superior-Greenstone District School Board	15	1
3	Conseil scolaire de district catholique du Nouvel-Ontario	32	4
4	Halton Catholic District School Board	57	12
5	Sudbury Catholic District School Board	18	2
6	Northwest Catholic District School Board	6	6
7	York Region District School Board	219	5
8	Upper Canada District School Board	82	9
9	York Catholic District School Board	101	7
10	Northeastern Catholic District School Board	23	15
11	Durham District School Board	131	8
12	Bruce-Grey Catholic District School Board	14	21
13	District School Board Ontario North East	32	11
14	Kawartha Pine Ridge District School Board	85	10
15	Conseil scolaire de district catholique Franco-Nord	12	14
16	Peterborough Victoria Northumberland & Clarington Catholic District School Board	37	18
17	Near North District School Board	39	13
18	Simcoe County District School Board	118	16
19	Nipissing-Parry Sound Catholic District School Board	13	22
20	Upper Grand District School Board	84	19
		1205	
		Total	

The Size of the Prize

The province-wide achievable conservation potential through meeting good practice (top quartile) energy use targets for each building type is summarized below. This level of energy savings can generally be reached through operational and controls improvements and cost-effective building system retrofits.

	Electricity savings potential	Natural gas savings potential	Utility cost savings potential	GHG emissions reduction potential
Percent	26.9%	35.5%	32.5%	34.8%
Quantity	506,072,409 kWh/year	119,494,398 m3/year	$116,693,295 /year	244,014 tonnes CO2e/year

ABOUT THIS REPORT

The Sustainable Schools program has been reporting on highly efficient K-12 school buildings since 2007. For the past 5 years we have been using the publicly disclosed Broader Public Sector energy data for Ontario's 5,000 school buildings to report on the comparative energy performance of the province's 72 boards. Sustainable Schools' data, webinars and this annual report provide evidence-based knowledge and a platform for the whole sector to share, learn, make improvements and track progress over time. The reporting on individual schools provides the foundation for each board to begin mapping its own practical pathway to utility cost savings and emissions reductions. The program demonstrates how well-organized data can enable collaboration, and how recognition drives continuous improvement, with a number of boards including their Sustainable Schools ranking in their own reporting to community and trustees and their management KPIs.

Sustainable Schools gratefully acknowledges the support of Enbridge Gas Distribution, the Independent Electricity System Operator (IESO) and the Ministry of Energy, Mines and Northern Development in the preparation of this report.

Methodology

This 2021 report uses energy data and building information for Ontario's approximately 5,000 schools and education centres as publicly reported by the 72 school boards. After screening for apparent data gaps and errors, 4,684 facilities (95%) 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, presence of air-conditioning, heating system type, number of portables and other material variables. 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 its buildings. For the White Paper outlining this methodology, visit the Sustainable Schools website at https://sustainableschools.ca.

Province-wide energy savings trends

Last year's report introduced province-wide estimates of actual energy savings achieved, derived by comparing the savings potential for each building between the two years adjusted for weather differences. This report adds one more year, for a three-year picture of energy use trends in Ontario's schools.

Actual Energy Savings Achieved	2016-17 vs 2014-15	2017-18 vs 2016-17	2018-19 vs 2017-18
Recorded electricity savings	4.7%	-0.7%	1.4%
Number of boards with net electricity savings	54	23	50
Recorded natural gas savings	1.7%	4.8%	-0.6%
Number of boards with net natural gas savings	23	54	37
% total energy savings	2.8%	2.8%	0.1%
Number of boards with total energy savings > 1%	44	44	36

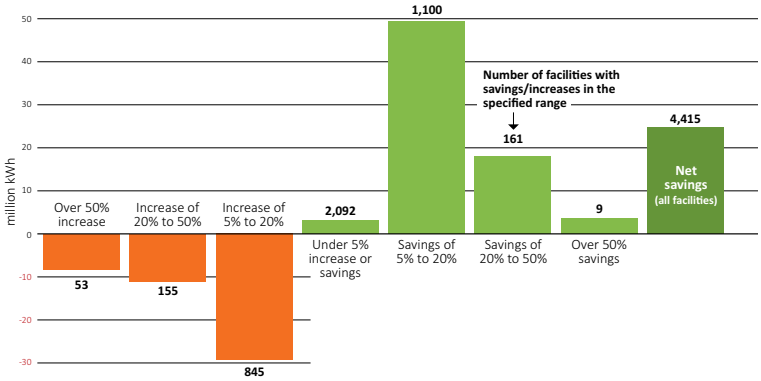
Energy savings are estimated by comparing the magnitude of savings potential for each building, between the two years (weather-normalized).

Accentuating the positives: energy variances

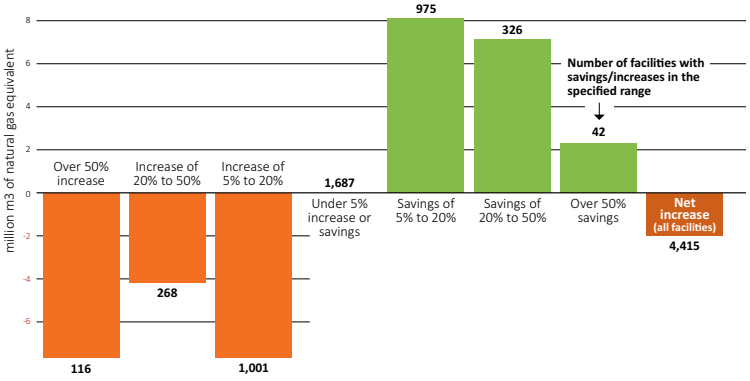
Net energy savings for the province as a whole indicate a small, positive trend. Variances between schools and boards provide further insight into opportunities for accelerating savings in future years. 1,270 buildings (29% of the total) recorded electricity savings greater than 5% in 2018-19, amounting to over 70 million kWh. However, 1,050 other buildings showed increases greater than 5%, offsetting those savings by almost 49 million kWh. The picture is even more pronounced with thermal savings where 30% of buildings saved 17.5 million m3 of natural gas while another 31% were responsible for 19.5 million m3 of increases.

Since buildings with significant area changes are filtered out of this analysis, energy increases are likely due to operational and maintenance factors. Avoiding the increases would almost double the total energy savings and we will be exploring further the management practices of the boards showing the least variances and offsets.

ELECTRICITY use trends: Cumulative savings or increases in Ontario school board facilities, by specified range, in 2018-19 vs 2017-18



GAS use trends: Cumulative savings or increases in Ontario school board facilities, in the specified range, in 2018-19 vs 2017-18



From analytics to savings: action planning charrettes

Lead project funder: Enbridge Gas Distribution
Project funder: Independent Electricity System Operator (IESO)

In late 2020 Enbridge and the IESO funded a pilot cohort project to help school boards translate the energy use profiles of their high savings potential schools into action to achieve targeted natural gas, electricity and emissions reductions. Six boards took part with 5 schools each. The schools had been identified as having high savings potential (including greater than 50% natural gas reduction potential) through the Sustainable Schools reporting. Over a 4-month period the boards supplied building information and updated utility data to create a detailed energy use profile for each school, quantifying savings by energy component. Multi-year trends and data analytics pointed to where the savings were to be found. Staff and service providers for each board then took part in an action planning charrette to review the data, including real-time building automation system (BAS) information, and begin work on comprehensive action plans of operational and retrofit measures for each participating school. The action plans include five building system categories with estimated savings, budget costs, incentives and paybacks so that priorities can be set and implementation decisions made based on available funding and resources. A strategic workshop was held on February 3rd, 2021 with all six boards together with Enbridge and IESO staff to discuss findings, conclusions and next steps for the individual participant schools, the boards' portfolios and future utility company programs. We will be monitoring actions taken and savings achieved through the rest of 2021.

For more information, please visit www.sustainableschools.ca
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Sustainable Schools is a program of the Climate Challenge Network.

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Technical direction by Enerlife consulting