



ENERGY STORAGE CANADA

AMO LAS Municipal Energy Symposium

November 2nd, 2023





Energy Storage Canada's Mission

Energy Storage Canada leads the growth and market development of the energy storage sector in Canada as part the ongoing energy transition through policy, advocacy, education, collaboration, and research.



Energy Storage Canada's Vision

Energy storage is a key element of an affordable, sustainable, and resilient electricity grid with diversified energy storage technologies and applications deployed across all provinces and territories, with a vital and complete Canadian energy storage value chain.



About Energy Storage Canada

Represent Canadian Storage Industry

- Energy Storage Canada is the voice of the energy storage industry in Canada
- Represents the industry at all levels: Grid Level, Distribution Level, and Behind the Meter
- Technology-agnostic and support all durations of energy storage

Advance Policy & Regulation

- Work with decision makers to develop Canada's energy storage market to create a more reliable, flexible, sustainable & affordable energy grid
- Ensure regulatory policies reflect the value provided by energy storage and advocate to remove barriers to its integration
- Outline the role energy storage can play in Canada's energy transition & net-zero future

Engage Members & Industry Stakeholders

- Host the only national energy storage-only conference in Canada
- Provide opportunities for leadership, access to experts & government representatives
- Host and facilitate forums on current policy & regulatory issues related to energy storage across the country
- Membership represents the entire energy storage value chain

2023 LEADERSHIP COUNCIL



2023 ESC MEMBERS








2023 ESC INDUSTRY PARTNERS



What Is Energy Storage?



Energy storage is any technology or process that captures energy when it is not needed and stores it for later use, eventually discharging it.

	Chemical	Batteries (<i>lithium-ion, zinc, sodium, etc.</i>) Power-to-Clean Fuels (<i>1-way power flow</i>)
	Electrical	Capacitors / Supercapacitors
	Thermal	Steady State Materials (<i>1-way power flow</i>) Phase Change Materials (<i>1-way power flow</i>)
	Mechanical	Pumped Hydro Compressed Air / Liquids / Gases (CAES, LAES, CO2, etc.) Flywheel Gravity
	Industrial Process	Demand response enabled by storage of commercial/industrial manufacturing and product fabrication processes <i>(1-way power flow)</i>

<i>Real-Time</i>	Inertia	<ul style="list-style-type: none"> • Electrical • Chemical • Mechanical
<i>Seconds</i>	Frequency Response	<ul style="list-style-type: none"> • Chemical • Mechanical
<i>Minutes</i>	Operating Reserve	<ul style="list-style-type: none"> • Chemical • Mechanical
<i>Hours</i>	Capacity Load Following	<ul style="list-style-type: none"> • Chemical • Mechanical • Thermal • Industrial Process
<i>Days</i>	Time-Shifting	<ul style="list-style-type: none"> • Chemical • Mechanical • Thermal • Industrial Process
<i>Seasonal</i>	Long-Duration	<ul style="list-style-type: none"> • Chemical • Mechanical • Thermal • Industrial Process

The Value Proposition of Energy Storage

The electricity supply mix is changing

Demand patterns are changing

Grid operators need additional resources & tools

Energy storage resources can increase the utilization & efficiency of existing assets

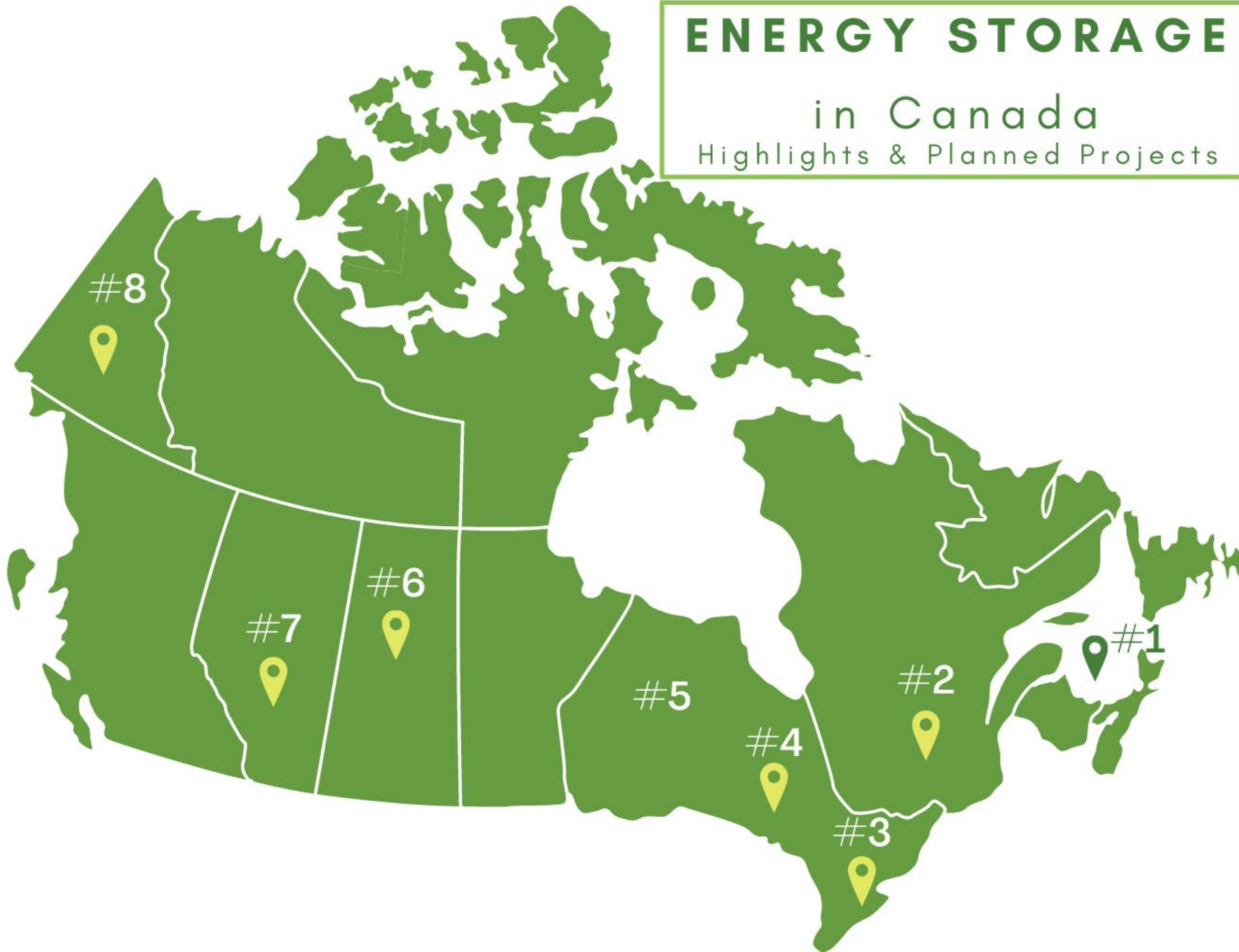
Energy storage resources offer versatility, sustainability & reliability

Energy storage can help support net-zero goals & decarbonization efforts.

ENERGY STORAGE

in Canada

Highlights & Planned Projects



#1 PRINCE EDWARD ISLAND
10 MW Slemon Park Microgrid
& Summerside Sunbank BESS

#2 QUEBEC
2.5 MW - EVLO storage & solar

#3 NIAGARA FALLS
OPG 174 MW Pumped Storage

#4 Oneida Energy Storage
Oneida LP 250 MW Battery

#5 Ontario
2500 MW Procurement
(929.9 Announced to Date)

#6 SASKATCHEWAN
20 MW Utility Scale BESS

#7 ALBERTA
10 MW ENMAX Crossfield
20 MW Enfinite Rycroft
10 MW TransAlta WindCharger
20 MW Enfinite Clairmont
20 MW Hughenden
20 MW Buffalo Creek
Projects in AESO connection queue

#8 YUKON
40 MW Yukon Energy & Sungrid

ENERGY STORAGE: A Key Net Zero Pathway

- Report Released October 11, 2022
- Estimates 8-12 GW of potential, with the largest potential in AB/ON
- Canada has committed to ambitious net-zero targets, which will require a change of supply mixes across the country.
- The flexibility & reliability of energy storage makes it a critical component





Energy Storage Benefits

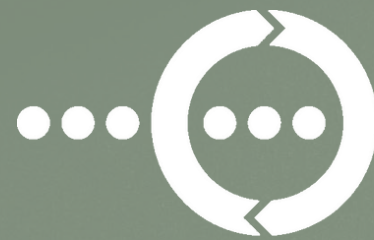
- Energy storage can serve as a **non-wires alternative (NWA)**, relieving pressure points in the electricity grid, delaying or replacing the need for major transmission/distribution projects at a lower resource cost.
- Energy storage provides ratepayer savings by storing low-cost excess energy when it's not needed, to give back to the system during periods of high use.
- Energy storage projects provide significant, long-term tax contributions to a municipality's tax base, while accessing minimal municipal services. This money can go back into the community.
- Energy storage projects provide economic benefits through local employment including, but not limited to, road construction, concrete supply, substation construction, electrical testing & technical consulting.
- Energy storage can even be attached to municipal buildings to ensure power reliability and improved management of energy consumption.



Battery Energy Storage Systems (BESS)

- FAQs
 - BESS are regulated by several categories of safety standards including manufacturing of equipment, installation requirements, and thermal runaway (fire) safeguards.
 - OEMs have tested strategies and tools to ensure safe operations, including 24/7 system monitoring, ventilation, site design, heat/smoke/gas/fire detection and advanced shutdown systems, fire suppression walls, thermal imaging and more.
 - With proper codes, standards, and mitigation measures (like those above) the risk of a fire event is greatly reduced.
 - Much consideration goes into where to install these facilities with the landowners and community stakeholders, with regard to noise pollution, agricultural land etc.
 - BESS enhances the feasibility of clean energy sources. A 2020 study found a minimum of 1000MW of energy storage in Ontario would result in major ratepayer savings.





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