Energy Storage Webinar

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NRStor Summary

NRStor was founded in 2012 to develop low cost, reliable energy storage projects that provide value-add services to customers. NRStor's vision is to accelerate our transition to a low carbon energy system.

- **Team**: We boast a team of leading development, finance and technical professionals with extensive energy sector expertise and a proven ability to execute projects.
- **Strategic Partners:** We have negotiated agreements with industry-leading battery, compressed air (CAES), and flywheel technology suppliers and are supported by major financial institutions.
- **Portfolio:** We can execute on complicated and innovative energy storage projects, and have successfully delivered numerous first of a kind projects including:

Minto Flywheel Project

First commercial flywheel facility in Canada (2MW)

Goderich CAES Project

Largest fuel-free compressed air energy storage project in the world (2MW)

Industrial BTM Projects*

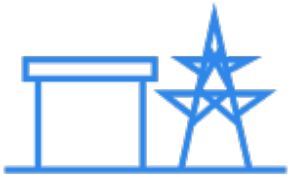
>150MW of behind the meter battery projects contracted in Ontario

Tesla Powerwall Fleet

Largest fleet of Tesla Powerwalls in Canada (>1MW)

NRStor Summary

NRStor works closely with communities, utilities, and energy consumers to identify opportunities and deliver world class projects.



Utilities
Enabling clean, flexible, and reliable electricity systems through large-scale energy storage projects

Remote Communities & Mines Partnering with remote communities & mines to reduce dependence on diesel fuel using clean energy microgrids

Residential
Empowering residential customers to take control of their energy supply with the Tesla Powerwall home battery

Intro to NRStor and Hydrostor

NRStor and Hydrostor are partnering to develop this project

- Two Ontario startup companies built a brand new green energy storage technology in Goderich that is entirely fuel-free and produces zero greenhouse gases
- NRStor is a privately held energy storage company focused on developing, owning and operating industry-leading energy storage projects
- Hydrostor is a leading provider of adiabatic (fuel free) Compressed Air Energy Storage (A-CAES) technology in underground geological formations
- Both companies have experience successfully executing first-of-a-kind projects:

NRStor owns and operates Canada's first commercial flywheel facility

Hydrostor owns and operates the world's first A-CAES facility

Benefits of Energy Storage

Energy storage solutions are an essential component of the smart grid

- Energy Storage solutions play an important role for the long-term planning on our electricity systems. Storage can optimize renewables, improve reliability, increase flexibility and reduce costs.

- Services energy storage technology can provide include:
  - Fast responding ancillary services
  - Long duration bulk energy storage
  - Deferral of transmission and distribution infrastructure investments
  - Customer energy and power quality management
  - Off-grid and remote microgrid services

- Over its lifetime, this demonstration facility is projected to provide:
  - **GHG savings of 22,330 tCO_{2e}**
    - This is equivalent to removing about 4500 cars from our roads for a year
  - **Air particulate matter savings of 602 kg $PM_{2.5e}$**
  - **Renewable energy integration potential of 40,950 MWh**

Benefits of Energy Storage

Energy storage will play a key role in building a low carbon economy

- Energy Storage supports increased penetrations of renewable energy on the grid and improves grid reliability and flexibility
- Fuel-free CAES technology has no emissions and can eliminate the need for GHG emitting gas peaking plants
- This project will demonstrate that fuel-free CAES technology can work effectively on salt caverns to provide environmental benefits
- Over its lifetime, this demonstration facility is projected to provide:
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    - This is equivalent to removing about 4500 cars from our roads for a year
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  - **Renewable energy integration potential of 40,950 MWh**

We believe this project, and the scale-up of fuel-free CAES technology, will play a significant role in Canada's transition to a low-carbon economy

Technology Details

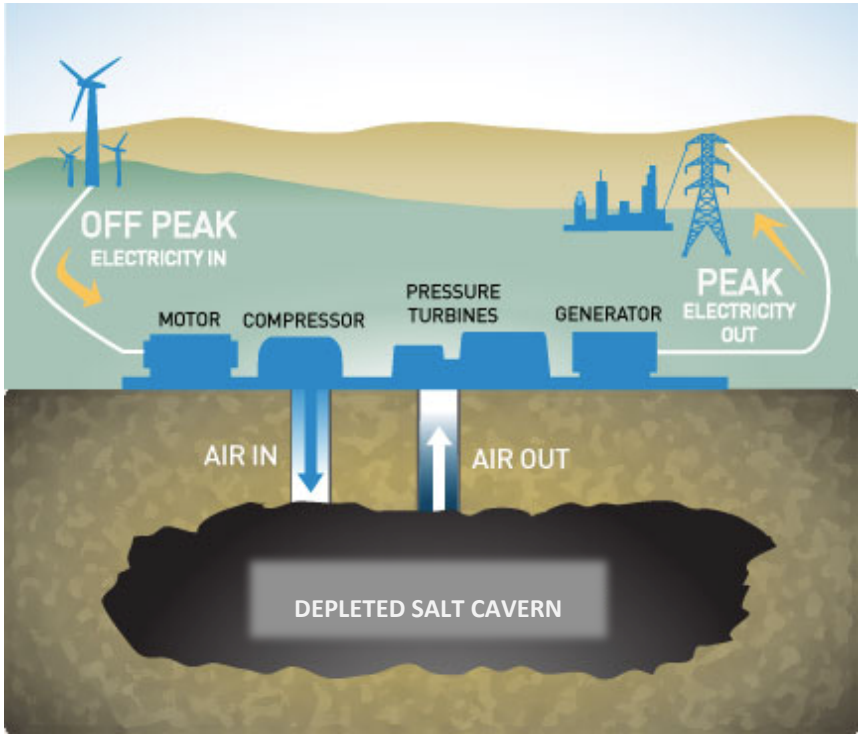
How Advanced Compressed Air Energy Storage works

Compression

- An electric motor-generator drives a rotating staged compressor to compress air
- Heat from compression is removed from air and stored in phase change material in a tank
- Compressed air is stored in an underground salt cavern at or near geostatic pressure

Expansion

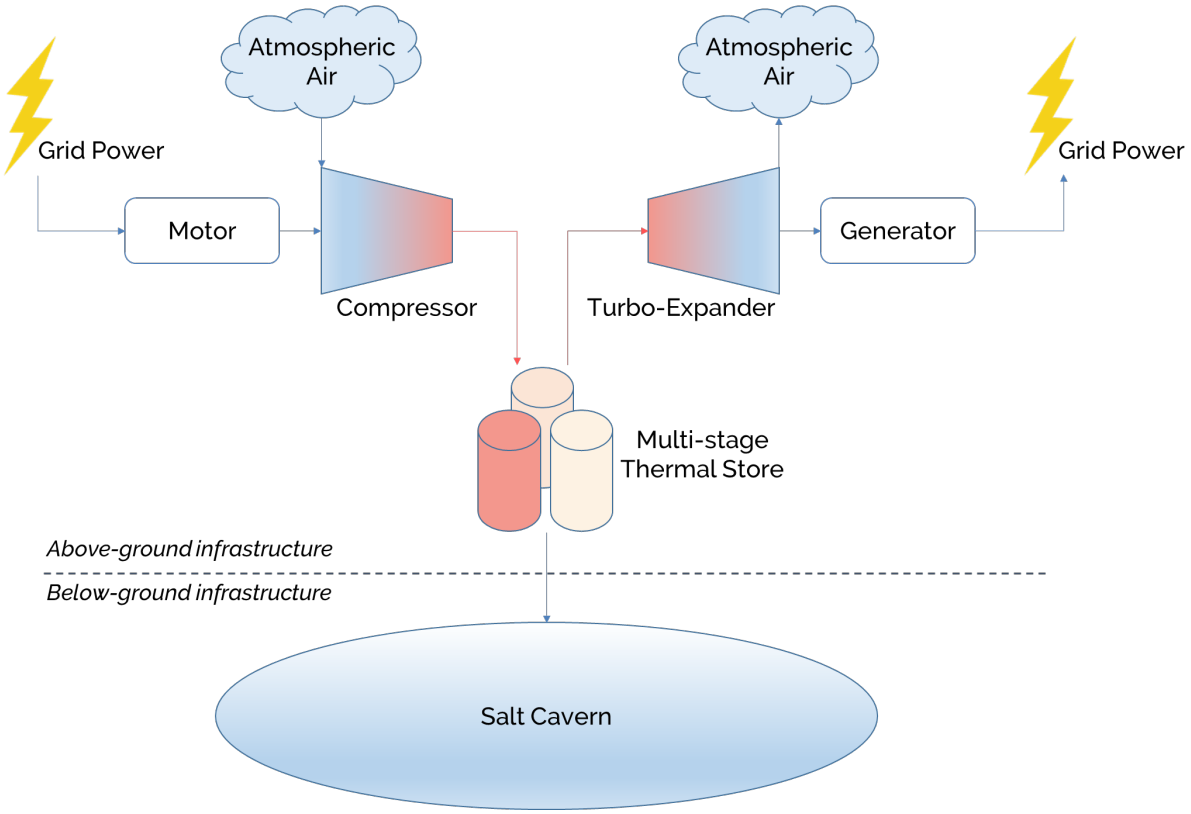
- Air from the cavern is released through a valve into the turbo-expander
- Heat from the phase change material is re-introduced to allow the air to warm as it expands
- Air expanding with re-introduced heat drives the turbo-expander and electric motor-generator



Technology Details

Hydrostor's Advanced Compressed Air Energy Storage Technology

- Fuel-free solution, no greenhouse gas emissions
- 1.75 MW discharge power, 4+ hour discharge duration
- Stores heat after compression and reuses heat for expansion



Project Studies Completed

A number of studies and assessments were conducted to ensure the safety of this project as well as ensure all regulations are met

Environmental Site Assessment

- No major environmental issues identified

Natural Heritage Review

- No negative impacts on the adjacent natural features were found following a review of the development by a County of Huron Biologist
- The Biologist as well as neighbours' suggestions for recommended trees and shrubs were incorporated into the Landscape Plan

Geotechnical Risk Review

- A review was conducted to identify and evaluate any potential geotechnical risks associated with the use of an existing cavern

Air Emissions Assessment

- A third party engineering firm was retained to prepare an Air Emissions Environmental Activity and Sector Registry (EASR) for the project

Noise Assessment

- A third party engineering firm evaluated the noise emissions from the facility's operations: when operating, noise from the project will range from 7 to 40 dBA. Normal breathing emits around 10 dBA and inside a library is around 40 dBA

Groundwater Well Assessment

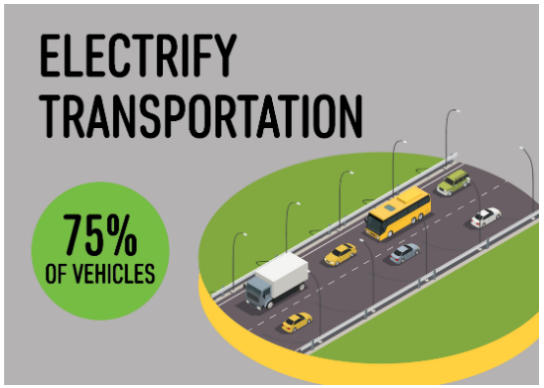
- The risk of air or fluid from the CAES cavern to pass through the ground to the nearest water well is negligible given the geological layers separating the cavern from the wells

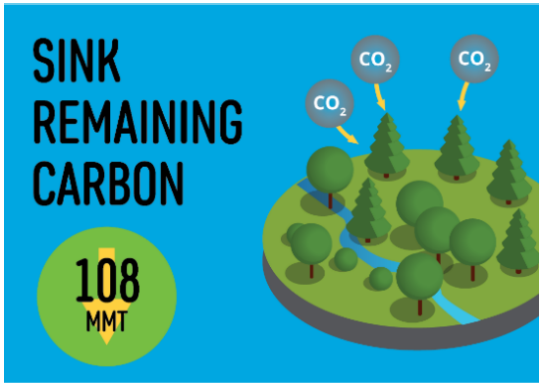
Aerial Project View

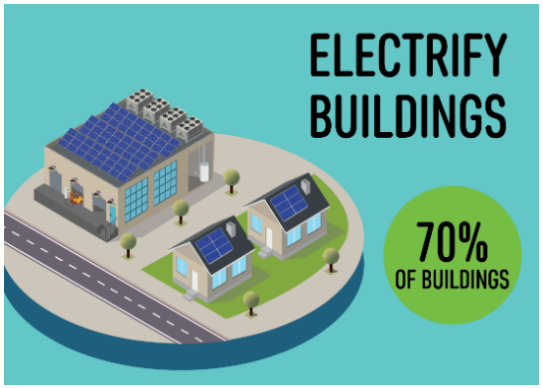
From summer 2019

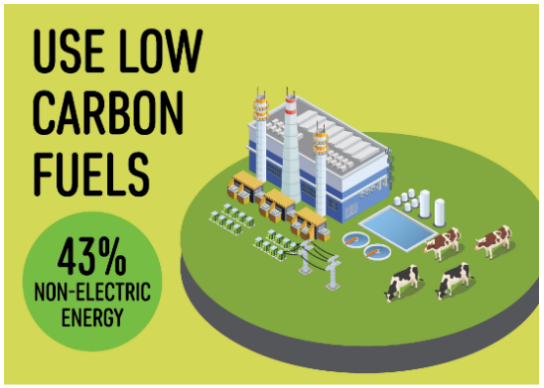
California - Carbon Neutrality BY 2045

By 2045, California will undergo a remarkable evolution to reduce the greenhouse gas emissions that contribute to climate change.









Enabling Energy Storage in Ontario

Identifying Energy Storage Opportunities

Collaboration Advocacy & Education

- Understand local energy challenges and opportunities
  - Load growth? Community regional planning? Renewable energy strategy?
- Incent storage with RFPs, storage-eligible energy loan programs, etc.
- Identify and address regulatory barriers
  - Utility connection processes, ESA permitting (eg. residential)
  - IESO ESAG summary (comprehensive list of storage barriers in ON)
  - Industry advocacy partners (ESC, OEA, etc.)

Development Opportunities

- Utility Projects: Identify congested substations for non-wires alternatives
- Commercial & Industrial BTM Projects: Identify ICI-eligible loads
- Residential BTM Projects: Identify load growth, congestion and reliability challenges
- Explore Private Sector Joint Ownership & Financing opportunities to share risk and lower costs

Highlighted Project: 2MW Battery Facility

Ontario's First Grid Scale Battery Energy Storage System

Toronto's First Virtual Power Plant

Bringing Affordable Resiliency To The Downtown Core

THE OPPORTUNITY

We are launching the first major residential battery (Tesla Powerwall) rental program in Canada in one of Canada's most densely populated and electrically congested neighbourhoods. Our project will provide affordable resiliency to homeowners while delivering much-needed local and system-wide services to reduce electricity costs and emissions while avoiding costly substation upgrade infrastructure.

We want to support Toronto's ambitious sustainability targets through an equally ambitious VPP pilot project.

BENFITS OF ENERGY STORAGE

Homeowners

- **Increased Resiliency:** Onsite storage improves power quality and better protects essential systems.
- **Peak Energy Cost Reductions:** Optimizing local energy consumption based on TOU price signals reduces peak energy charges to customers.

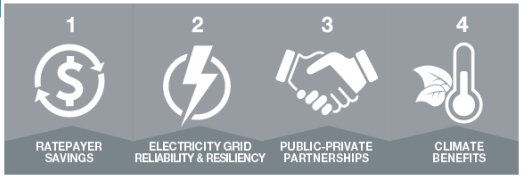
Toronto Hydro & City of Toronto

- **Utility Benefits:** Toronto Hydro will be able to better manage peak demand and defer conventional infrastructure costs, while improving local power quality & resiliency.
- **TransformTO Goals:** This project directly supports the City's TransformTO storage and climate objectives.

Ontario's Independent Electricity System Operator

- **System Services:** Energy storage can deliver system services including DR, OR, etc.
- **DER Test Services:** The microgrid can deliver new IESO DER services including ramping, transactive energy, etc.

BENEFITS FOR TORONTO



COST-EFFECTIVE, QUICK DEPLOYMENT

The Tesla Powerwall is a rechargeable lithium-ion home battery that optimizes energy usage. Homeowners living in the service area (below) are eligible to rent a Tesla Powerwall for **$29.99/month**, plus a one-time connection charge of **$1,500**, representing a >50 lifecycle cost savings compared to a standard direct system purchase.

STRATEGIC SITING: ELIGIBLE ZONE

Energy storage can be strategically sited to deliver a combination of local and system-wide benefits.

Our project will aggregate a "fleet" of Tesla Powerwall units connected to the Cecil street substation to act as a decentralized battery. Customers located in the Spadina and College area of Toronto will be eligible to participate in this program (subject to additional pilot terms and conditions):

GOVERNMENT PRIORITY

"Our government is building an electricity system that works for the people,.. We are taking a comprehensive, pragmatic approach to building the modern, efficient, and transparent electricity system that the people of Ontario deserve".

– Hon. Rod Phillips, MoECP

ABOUT NRSTOR INC.

NRStor is an industry-leading energy storage project developer. We provide innovative solutions based on our unparalleled understanding of energy storage technologies, their costs, and the benefits they can provide.

We have earned our reputation as a leader in energy storage. NRStor built the first commercial flywheel storage project in Canada and is now building the first commercial fuel-free compressed air energy storage project in the world. We have over 100MW of lithium ion battery projects in development and a growing pipeline of exciting innovative projects.

A CONSORTIUM THAT CAN EXECUTE

- **NRStor:** Battery developer/owner, commercial ops. manager
- **MPOWER:** Canada's certified installer of the Tesla Powerwall
- **Enbridge Gas:** Utility integration and overall program growth
- **Toronto Hydro & City of Toronto:** Utility connection and integration
- **Tesla Energy:** Tesla Powerwall supplier and aggregation platform

TESLA POWERWALL FUNCTIONALITY

- Save on energy during on-peak hours
- Receive alerts in the event of a power outage
- Rely on a 12 to 24-hour backup power supply for your essential appliances and devices in your home
- Monitor your home energy use in real-time on your phone from anywhere

Control Your Energy from Anywhere

Seamlessly monitor and automatically manage your Powerwall, solar panels, Model S or X anytime, anywhere with the Tesla App.

PROJECT PARTNERS

ENBRIDGE · TESLA ENERGY · MPOWER · TORONTO HYDRO · NRSTOR INC.

Thank You!

Any questions?

Thank you for joining! Please do not hesitate to contact us with further questions that may arise:

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