

# The Energy Storage Investment Act

Steven Wall | Supervisors: Prof. Allan Ingelson, Faculty of Law and Haskayne School of Business, Nagwan Al-Guneid, Legislative Assembly of Alberta

## Abstract

Energy storage systems are one piece of Alberta's complex electricity puzzle that are under utilized, not yet properly integrated, and essential for decarbonization. When given the opportunity, the MLA for Calgary-Glenmore intends to introduce a Private Members' Bill (PMB) titled The *Energy Storage Investment Act*. The goal of this PMB is to create enabling legislation to enhance grid reliability, increase affordability, and attract new investment into Alberta's electricity sector. In Alberta's legislature, PMB's help focus government priorities and direct work to agencies and ministries but cannot include financial commitments, either to current or future governments. A literature review, a market analysis, and cross-jurisdictional assessments focused on California and Texas will complement expert information and opinions from the official transcripts of MLA led stakeholder engagements. This research will prove that energy storage expansion is a viable solution under the right circumstances and will identify economic and policy opportunities to influence enabling legislation to prepare for a future policy window.

## Research Questions

1. Is energy storage expansion in Alberta a viable solution to increase grid stability and affordability?
2. And if so, what legal, legislative and policy elements need to be incorporated into a PMB to incentivize and promote energy storage investment?

## Introduction

**Reliability risk:** Alberta's electric grid has faced several emergency alerts due to extreme cold and high demand, most notably on January 13, 2024, at 18:44 MST, when energy storage helped prevent rotating power outages.

**Limited capacity:** Alberta only has 190 MW of energy storage connected to the grid, representing 1% capacity, falling behind jurisdictions like California and Texas.

**Legislative action:** The MLA for Calgary-Glenmore plans to introduce the *Energy Storage Investment Act*, a Private Members' Bill (PMB), to enhance grid reliability, increase affordability, and attract new investment into Alberta's electricity sector.

**What is a PMB?** It is legislation introduced by an MLA that is not in cabinet that allows opposition members the opportunity to bring important issues to the Assembly for debate and review to help focus government priorities.

**Policy and regulatory gaps:** Bill 22 legally recognized energy storage but lacks regulations and implementation mechanisms to enact or assign actions.

## Methodology

### Literature review

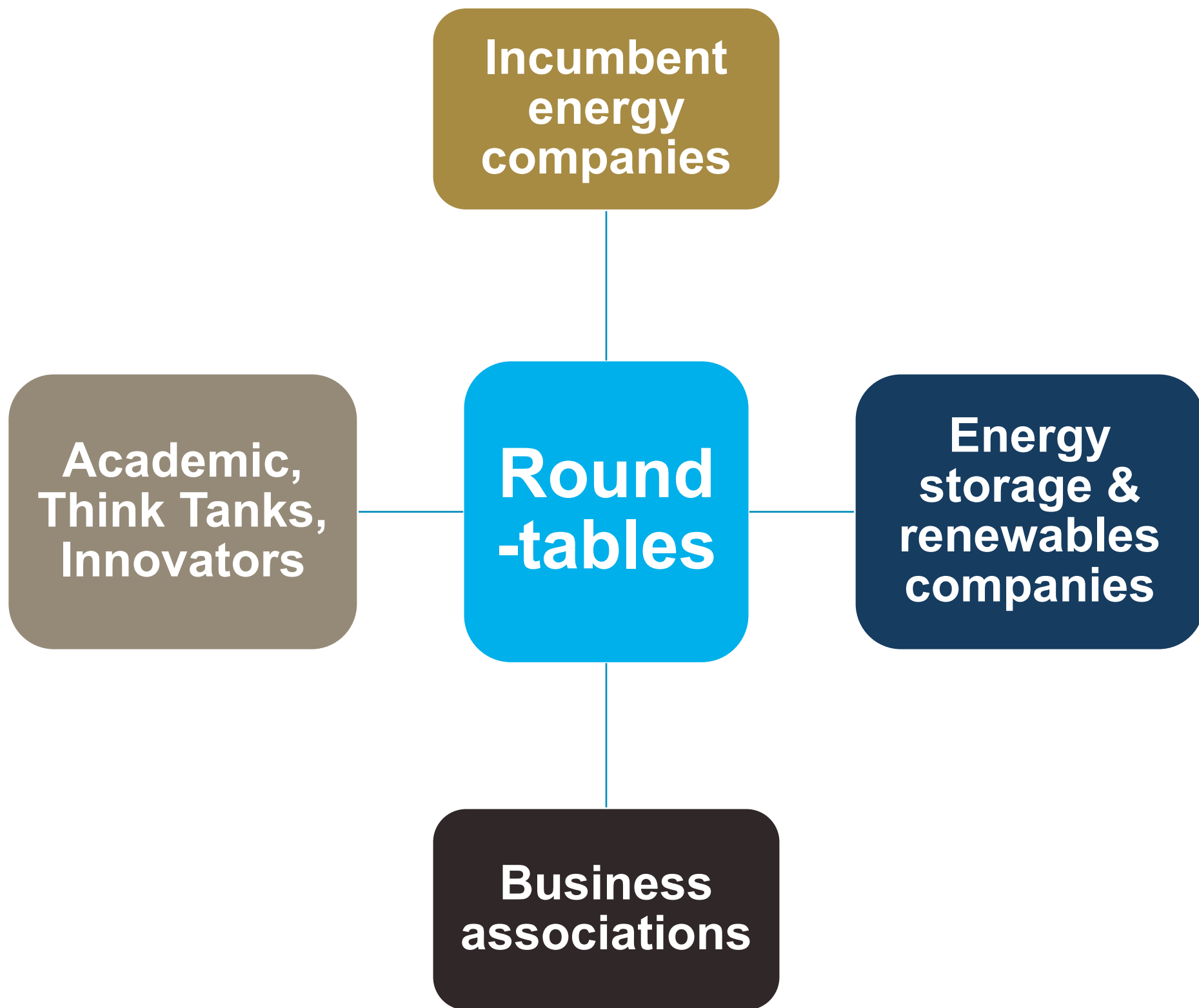
- AESO Energy Storage Roadmap (2019 – 2022)
- Energy storage legal review by Eeles et. al (2021)
- Bill 22 – *Electricity Statutes (Modernizing Alberta's Electricity Grid) Amendment Act*, 2022

### Market & jurisdictional assessments

- **Alberta energy storage:**
  - Installed: 190 MW, <1% capacity, ~1% generation
  - Enablers: Clean Energy ITC, ERA funding
- **California energy storage:**
  - Installed: ~16 GW, 18% capacity, ~35% generation
  - Enablers: *Inflation Reduction Act*, Assembly Bill 2541 (procurement target focused), Opt-in Fast Track Certification
- **Texas energy storage:**
  - Installed: ~12.6 GW, 8% capacity, ~15% generation
  - Enablers: *Inflation Reduction Act*, Texas House Bill 3809 (reclamation and liability focused)

### MLA led stakeholder engagements

- Over 50 industry participants and sector associations, representing over 50% of industrial electricity generation in Alberta, as well as subject matter experts, discussed the framing, opportunities, and challenges of the proposed PMB.
- Information and opinions provided under Chatham House Rule from the following groups:



## Findings

1. Energy storage is emerging and has the potential to be a fundamental component to ensure grid stability.
2. Overcoming regulatory barriers, such as tariff treatment and participation, is a cross-cutting topic.
3. Enabling multiple revenue streams would improve economic viability of energy storage projects.
4. Substantial criticism of the REM redesign process.
5. Pie-in-the-sky to very technical recommendations.

**Investment environment shrouded in uncertainty, clarity with data-informed policy making is required.**

## Analysis

Factor	Alberta	California	Texas
Reliability risk	<b>Best:</b> NERC "Normal"	Worst: NERC "Elevated"	Neutral: NERC "Elevated"
Affordability	<b>Best:</b> 12 ¢ / kWh (CAD)	Worst: 32 ¢ / kWh (USD)	Neutral: 16 ¢ / kWh (USD)
Profitability	Worst: 190 MW on grid	Neutral: Marginal price	<b>Best:</b> Highest growth
Grid emissions intensity	Worst: 470 g CO <sub>2</sub> e / kWh	<b>Best:</b> 194 g CO <sub>2</sub> e / kWh	Neutral: 333 g CO <sub>2</sub> e / kWh
Regulatory	Worst: Prohibitive	Neutral: Bureaucratic	<b>Best:</b> Enabling

**Alberta:** Leads in grid reliability and affordability, with high industrial cogeneration and flexible natural gas systems contributing to superior performance.

**California:** While California excels in emissions intensity, its aggressive decarbonization comes at a high cost to consumers compromising reliability and affordability.

**Texas:** Shows profitability advantages through broader pricing, increased revenue streams, fast-track permitting, and pro-business environment.

**Alberta can improve energy storage deployment by addressing regulatory gaps in grid integration, tariffing, market design, and end-of-life planning.**

## Conclusions and Recommendations

1. Energy storage is a viable option for jurisdictions that are nimble and have the foresight to harness the numerous benefits and flexibility of energy storage.
2. The PMB needs to incorporate the following elements to incentivize and promote energy storage investment:
  - Increase capacity for energy storage technical analysis.
  - Enhance market design by identifying, improving, and promoting additional revenue streams.
  - Regulatory enablement of evidence-based policies to be incorporated into AESO's new market design.
  - Set a single digit percentage energy storage capacity target, of the AESO's choosing, to accelerate deployment with desired outcomes to enhance grid reliability, increase affordability, and attract new investment in Alberta.

## Influential Works Cited

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