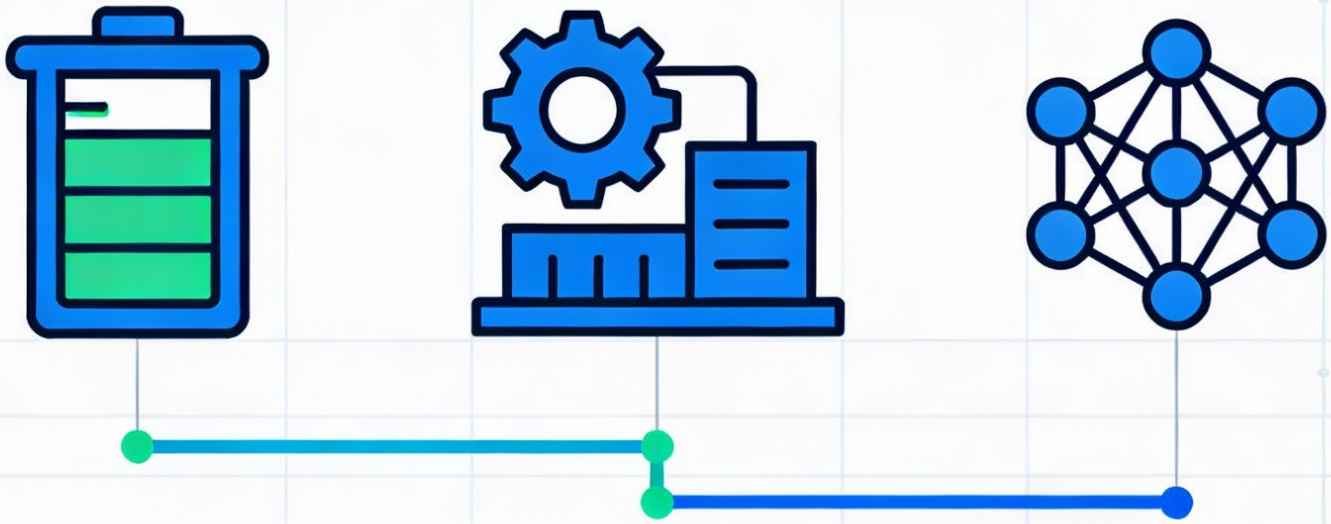
SUPPLY CHAIN ANALYSIS:
Diesel Plant vs. Battery Energy Storage System– Timeline and Risk Assessment



Energy Democracy Now! Co-operative Limited

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TABLE OF CONTENTS

SUPPLY CHAIN ANALYSIS: DIESEL PLANT VS BATTERY ENERGY STORAGE SYSTEM

Maritime Electric Application UE20742

Diesel Plant (ProEnergy PE6000, 2×50 MW) Supply Chain Analysis

Regulatory Approval and Siting (IRAC, PEI, Permitting)

Timeline & Key Milestones

- **Need determination, IRAC application, environmental assessment, and municipal approvals** are forecast to occur in parallel with initial procurement steps leveraging "brownfield" siting at the Charlottetown Generating Station (CGS).
- *Key schedule advantages* are claimed for prior environmental assessment and existing fuel/utility infrastructure, supporting "leveraging an updated EIA" rather than a full new one. Maritime Electric asserts this defers to Section 7.3, p.37 of Exhibit M12.
- **Expected duration:** regulatory and permitting (including EIA update) is estimated at **12-18 months**, overlapping with procurement (Exhibit M12.pdf, Sec. 6.4, p.33). Siting at CGS is expected to substantially reduce risk of delay.
- Overlapping approvals with early procurement is explicitly described and justified as low risk due to brownfield status (Exhibit M12.pdf, Sec. 6.4, p.33; Sec. 7.3, p.37).

Approval Risks & Factors

- "MECL's ability to leverage an updated EIA" reduces approval risk (Exhibit M12.pdf, Sec. 7.3, p.37).
- "Early procurement can proceed at risk in parallel" (Exhibit M12.pdf, Sec. 6.4, p.33).

Critical Path: Equipment Manufacturing and Procurement

Supply Chain Strategy & Schedule Claims

- **Slot Reservation Agreement (SRA)** with ProEnergy enables refurbishment and delivery of the PE6000 turbines ahead of global supply constraints (Exhibit M12.pdf, Sec. 5.1–5.3, p.14–22, Table 1 p.19).
- Turbine reservation is contingent upon NB Power's unique "one-time supply window," which *short-circuits* global turbine backlogs of 2–4 years (Exhibit M12.pdf, Table 1 p.19; Sec. 5.2, p.17).
- **Payment schedule for major equipment is triggered in late 2025 (SRA sign/ execution deadline),** with turbines ready for shipment by late 2026 and remaining balance-of-plant equipment by late 2027 (Exhibit M12.pdf, Table 1, p.19).

Timeline

- Slot reservation & purchase: **Late 2025**
- Major equipment ready for shipment: **Late 2026**
- Balance-of-plant packages: **Late 2027**
- Missing SRA deadline = project delay, loss of reserved supply window; alternative dispatchable supply would not commission prior to 2030 ([M12.pdf], Sec. 3.0, p.6–7; Sec. 6.3, p.33).

Construction & Grid Tie at Charlottetown Brownfield Site

Construction Milestones

- **EPC contract award:** November 2025
- **Site mobilization:** Mid-2027
- **Mechanical completion:** Summer 2028
- **Commissioning:** By winter 2028/29 (Exhibit M12.pdf, Sec. 5.1, Table 1 p.15, 19)

Efficiency & Risk Factors

- Construction and grid-tie benefits include use of an existing substation, pre-developed site, and proximity to fuel utility infrastructure (Exhibit M12.pdf, Sec. 6.4–6.5, p.33–35).
- Coordination overlap with NB Power project crews further expedites schedule (Exhibit M12.pdf, Sec. 6.4–6.5, p.33–35).

Risks (Critical Path and Unique Claims)

- **Loss of gas turbine slot:** If SRA not executed by late 2025, project is delayed and "it is unlikely that any alternative dispatchable project could commission before 2030" (Exhibit M12.pdf, Sec. 3.0, p.6–7; Sec. 6.3, p.33).
- **Procurement or payment delays:** Jeopardize delivery timeline.
- **Permitting/approval delays:** Mitigated by brownfield use, but risk exists if regulatory context changes.
- Only "Accelerated Capacity Solution" using SRA and brownfield siting is predicted to deliver dispatchable capacity by 2028/29.

Step-by-Step Timeline (Gas Plant)

Major Step	Timeline	Key Source Reference
Regulatory & EIA approvals	12–18 months (overlap)	M12.pdf, Sec. 6.4–7.3, p.33–37
SRA and purchase order	By Q4 2025	M12.pdf, Sec. 5.1–5.3, p.14–22
Equipment ready for shipment	Late 2026	M12.pdf, Table 1, p.19
Construction (EPC start)	Mid-2027	M12.pdf, Table 1, p.19
Mechanical completion	Q3 2028	M12.pdf, Table 1, p.19
Commissioning (commercial operation)	By winter 2028/29	M12.pdf, Table 1, p.19

Independent BESS (100 MW): Canadian Supply Chain Analysis

Planning and Siting

- **Benchmark:** Waterton BESS (Alberta, 1.5 MW/5.2 MWh) design: 2 years (2019–2021); Tilbury (80 MW/320 MWh, Ont): ~3 years (2022–2025); Lennox BESS (200 MW/1600 MWh, Ont): 4–5 years from concept to COD ("Lennox BESS Open House"; "Waterton BESS ERA Final Outcomes").
- **Typical PEI/Canadian context for 100 MW BESS:** 12–24 months for detailed planning, design, host utility engagement.

Permitting, Approvals, Utility Interconnection

- Municipal/EA/utility approvals take **6–24 months** for brownfield or utility-connected BESS (see Ontario DERCP, Hydro One/IESO practices).
- *Ontario DERCP guidance*: utility interconnection study (CIA) phases may overlap with permitting, but connection can be limiting, sometimes 12–36 months.
- BESS approvals increasingly familiar: see rapid DERCP rollouts, but site/context matters ("Ontario DERCP").

Procurement: Equipment Manufacturing

- **Typical global Li-ion lead times**: 6–18 months (2025 industry guides, Waterton and Ontario projects).
- Trade/tariff volatility is a risk, but not typically as severe as for gas turbines.

Construction & Commissioning

- BESS construction/commissioning phases: 1–2 years for modular containerized systems; often starts on enabling works while final batteries are procured ("Waterton BESS ERA Final Outcomes"; Tilbury/Lennox BESS Open House).
- PCS (power conversion/storage integrator) delivery is a modest risk, susceptible to supplier capacity.

Interconnection

- **Hydro One/IESO DERCP:** 12–36 months, can overlap with build, but successful commissioning is bottleneck if utility queue is delayed.

Step-by-Step Timeline (100 MW BESS, Canadian Evidence)

Major Step	Timeline	Canadian Reference
Planning/siting	12–24 months	Waterton/Lennox/Tilbury BESS
Permitting/approvals	6–24 months (overlap)	Ontario DERCP, Lennox BESS Open House
Procurement	6–18 months	Waterton, Tilbury
Construction	12–24 months	Waterton, Tilbury, Lennox
Interconnection	12–36 months (overlap)	Ontario DERCP, Hydro One/IESO
Commissioning	Overlaps build	Waterton, Tilbury
Total (planning–COD)	3–5 years (aggregate)	Lennox BESS; ERA Alberta

Comparative Analysis: Speed, Certainty, and Capacity Gap (2028/29)

Timeline Summary (to Winter 2028/29)

Project Type	End-to-End Timeline	Earliest Firm COD	Speed/Certainty Factor
Gas (PE6000, MECL)	~3.5–4 years (Q4 2025–Q4 2028)	Winter 2028/29	Only path if SRA/NB Power slot secured, but a single-proponent risk if missed.
BESS (100 MW)	3–5 years (Canadian average); earliest: end 2027-mid 2028	Q1 2028–Q1 2029	Modular, multiple suppliers, but utility connection can be bottleneck.

Comparative Risks and Advantages

- **Gas supply chain:** single choke point at turbine slot; key advantage is weeklong dispatchable autonomy in emergencies.
- **BESS:** Faster modular construction, less site works, but up to 12–36 months for large utility interconnection. **This could be lower if the brownfield site is used.**
- Both solution timelines are in the 3–5 year range, but ***MECL's slot-reservation claim*** **for gas is uniquely time-sensitive and would, if missed, push new gas or any alternative dispatchable buildout beyond 2030.**

Conclusion

For **PEI's emergency capacity gap by winter 2028/29**, both supply chains (if started promptly) are *theoretically capable,* but the gas plant (using SRA and brownfield acceleration) provides slightly higher certainty if the SRA window is met, while BESS offers a more modular, lower-emission path if grid interconnection can be secured quickly. Failure to hit the SRA deadline would make new gas capacity unavailable before 2030, but BESS would still deliver capacity within a 3–5 year window if permitting and utility coordination are well managed (Exhibit M12.pdf, Sec. 3.0, 5.1, 6.3, 6.4, 7.3).

References

- Exhibit M12.pdf which is Maritime Electric Supplemental Filing, especially Sec. 3.0, 5.1–5.3, 6.3–6.5, 7.3, and Table 1 (https://irac.pe.ca/electric/ue20742/)
- FortisAlberta Waterton BESS ERA Final Outcomes Report
- Lennox BESS Open House, Boralex September 2023
- Ontario DER Connection Procedure (DERCP), OEB

About Energy Democracy Now! Co-operative Limited

Energy Democracy Now! Co-operative Limited is a community-based advocacy organization working to put Islanders in charge of their energy future. Founded in 2023 and incorporated in 2023, we believe the climate crisis demands more than small fixes — it requires a bold shift from corporate control of fossil fuels to renewable energy that is owned, governed, and guided by local communities.

We're building a future where decisions about energy on PEI are made transparently, with health, fairness, and community well-being at the centre.

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