

**MINISTRY OF ENERGY, MINES AND LOW CARBON INNOVATION**

**BRIEFING NOTE FOR INFORMATION**

**PREPARED FOR:** Honourable Josie Osborne, Minister, Minister of Energy, Mines and Low Carbon Innovation

**ISSUE:** Proposed expansion of British Columbia - Alberta Intertie

**KEY MESSAGES/SUMMARY:**

- The British Columbia (BC) and Alberta (AB) high voltage electrical grids are connected by a 500 kV transmission line that runs from Cranbrook, BC, to just outside Calgary, AB, along with two smaller transmission lines which cross the BC border near Sparwood and Elkford (jointly referred to as the BC-AB Intertie).
- s.16
- For over 15 years the IESO has been directed under the Transmission Regulation to restore the capability of the Intertie. This requires investment on the Alberta side, and has been resisted by Alberta generators who derive additional profits absent competition from BC.
- s.13; s.16
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**BACKGROUND:**

**Alberta Electricity Market**

In 1986, AB and BC Hydro financed the construction of the Intertie, comprised of several transmission lines which connect the two provinces electrical grids. In the 1990s, Alberta deregulated its electricity market, and prices fluctuate hourly based on demand and the available supply that is bid. The BC market has remained subject to cost-based regulation of electricity prices.

The AESO and BC Hydro jointly operate the Intertie to ensure reliability of both electricity systems is maintained. The total rated transfer capacity of the Intertie is 1,200 megawatts (MW) from West to East and 1,000 MW from East to West. The bidirectional nature of the Intertie provides opportunities for both provinces to benefit from the import and export electricity. As a joint facility both BC Hydro and the AESO have a role in determining how much of the total capacity is available for commercial capacity and how much is set aside for reliability margin.

Typically, 80-90% of the transfer capability on interties is used for imports and exports of energy products (commercial capacity) and the remainder is held aside for inadvertent use as a reliability margin. Historically, the AESO has had a large need for a reliability margin and restricted the commercial capacity on the Intertie to an average of 400-600 MW (33-50%) with the remainder of capacity (50-67%) available for the reliability margin. By setting aside a reliability margin, AB can rely on BC and the rest of the western grid to instantly respond with increased energy flows in the event of a sudden loss of generation. Typically, reliability margins are provided between jurisdictions without compensation. s.17

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Recently, the AB electricity generation mix has transitioned from largely coal-fired to natural gas (59%), solar (7%), and wind generation (20%) comprising the majority of the province's generation. Under normal operating conditions, both imports from and exports to BC are fundamental to maintaining the supply-demand balance in AB. For example, when intermittent renewables like solar and wind are not available, the AESO may not have sufficient electricity available to meet provincial demand. s.17

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### **Montana/Alberta Tie Line (MATL)**

When the MATL connected to the AB system, BC's flow limit into AB was reduced by the same amount that was permitted to flow into AB from Montana. Against BC Hydro and Powerex protests, this led to a pro-rata allocation of commercial capacity between the BC and Montana ties. s.16

s.16 Until recently, this has kept the import capability from BC to AB typically in the 400-600MW range, which is less than half of the Intertie rating.

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## **DISCUSSION:**

### **Renewable Integration**

Integrating large quantities of wind and solar into the system is creating additional reliability issues in AB. Solar and wind generation are not able to respond in the same way that BC Hydro's hydroelectric generation can to mitigate sudden and unexpected losses of supply on other parts of the system. To address this growing problem, in March of 2023, the AESO chose to unilaterally, immediately, and without notification, further reduce the amount of electricity

they allow to flow on the Intertie. This is further limiting flows from BC to AB to between 250-350MW, or about one quarter of the Intertie’s rated capacity.

Instead of requiring AB electricity generators to hold back some capacity as a reliability margin to respond to sudden losses of supply, the AESO has chosen to put the whole requirement onto the Intertie, eroding Powerex’s ability to export into AB. While Powerex would not be opposed to providing this “headroom service” if it were compensated to do so, AESO is leaving the space on the Intertie ‘empty’, which allows them to rely on the Intertie to automatically respond to any sudden loss of generation within AB without compensation to BC.

### **Future Opportunities – Teck Elk Valley Electrification Project**

Teck Elk Valley metallurgical coal mining operation is working with BC Hydro to electrify its operations. Teck is seeking to fully electrify its operations by 2040, which could require up to 600 MW of new service to the area. To serve this new demand requires BC Hydro to upgrade the transmission system in the region, which is adjacent to the Intertie.

BC Hydro is conducting interconnection studies to determine what new infrastructure is required to electrify Teck’s operations and the impact it will have on the Intertie. s.13

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To date, neither BC Hydro nor Powerex has engaged directly with AB or Canada on the Teck Elk Valley project. However, EMLI and BC Hydro have raised the need for new electricity infrastructure in the southeast as a priority at the federal Regional Energy and Resources Table.

### **Intertie Expansion**

Periodically over the past three decades, the potential for adding another line to the Intertie has been studied, most recently in 2016-18 under the Regional Electricity Cooperation and Strategic Investment (RECSI) Initiative led by Natural Resources Canada. Two options were studied - a northern route and twinning existing lines in the south. Restoration of the existing Intertie and upstream electrification in the Montney Basin were also studied.

Both Intertie options showed modest emission benefits and increased cost, whereas Intertie restoration and upstream electrification both showed significant cost and emission benefits.

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the Ministry and Powerex have been focused on Intertie restoration as a pre-condition to considering any further investment.

**CONCLUSION:**

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