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Lithium development

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Over the last decade, lithium has grown from having primary uses in glass and ceramic manufacturing to its now almost ubiquitous association with lithium-ion batteries. These batteries have emerged as a key component in energy storage applications ranging from small electronic devices through to electric vehicles for decarbonized transportation and grid scale energy storage. Given its increasingly important role in energy decarbonization, some forecasts suggest that lithium production will need to grow by as much as five times the current outputs by 2030 to satiate the surge in demand. With such a rapid expansion of supply required and relatively slow production scaling, a significant market opportunity exists for Canadian participants to capture a portion of this nascent supply chain in North America. These increased supply demands are in addition to a need to diversify the supply chain to support geopolitical stability, which is exemplified by the recent declaration by the United States to include lithium in its key strategic minerals deemed essential for future national energy independence and the recently formed *Canada-U.S. Joint Action Plan on Critical Minerals Collaboration*.

Canada is making advancements to fully quantify and understand its inventory of lithium resources, including lithium recovered from underground brines, and it is evident that subsurface brines present a potentially unique and accessible lithium resource in jurisdictions in Western Canada with existing oil and gas infrastructure and expertise. Various technologies are being designed and tested in Canada for processing and recovering lithium, with some promising concepts built upon ionic exchange, membrane and nano-filtration, and forms of electrochemical separation, all of which are also considering potential synergies with geothermal energy production.

This resource outlines environmental concerns related to lithium development in Western Canada, which are comparable to those encountered at existing oil and gas facilities and are expected to be managed consistent with the existing frameworks that regulate the environmental aspects of oil and gas facility operation within Alberta, British Columbia and Saskatchewan. It also discusses potentially applicable regulatory regimes in each of these provinces, including relating to licensing and ownership, access and royalties, as well as addresses uncertainties and concerns arising in this burgeoning industry.

Download *Emerging technologies in energy: Lithium* [PDF]

Download the full guide relating to geothermal, lithium and blue hydrogen development: *Emerging technologies in energy: Environmental and regulatory considerations for Western Canada*.