

Ontario Emerges as a Hotspot for EV Battery Investment with Volkswagen's First Battery Plant Outside of Europe

written by InvestorNews | March 16, 2023

In fact, Ontario is becoming quite the hot spot for EV battery investment, both downstream and upstream. Along with the above-noted Volkswagen facility and the Stellantis/LGES joint venture, there have been other declarations in Ontario as well. In Eastern Ontario, not far from Kingston, Belgium-based Umicore announced a C\$1.5 billion investment in an EV battery facility last July.

A triple play deal for battery materials between Canada and Korea prove critical minerals incentives work

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When we started writing the [Dean's List series](#) back in late July to highlight the burgeoning government support for critical minerals, supply chain and EV battery manufacturing, I had no idea how quickly that support would start turning into tangible deals for producer supply agreements. Sure, the first big

facility announcement was way back in March with the Stellantis, LG Energy Solution [C\\$4.9 billion electric vehicle battery plant](#) in Windsor, Ontario, and there have been numerous deals announced in the interim both North and South of the 49th parallel for various multi-billion dollar facilities. But what happened on September 22 and 23 appears to have taken things to another level for the producers of the materials that go into EV batteries.

The aforementioned South Korean LG Energy Solution Inc. (LGES), a leading global manufacturer of lithium-ion batteries for electric vehicles, mobility, IT, and energy storage systems, [announced three agreements](#) in a span of 24 hours with Canadian miners to source materials required to make batteries for EVs. It appears the [Inflation Reduction Act](#), which requires that 40% of battery components be sourced from factories in the U.S. or its free trade agreement partners and that Chinese components and minerals be phased out beginning in 2024, has lit a fire under those who want to lead the charge to manufacture EV batteries for North American built vehicles. Given where demand is forecast to go over the next 5 to 10 years, these three deals could just be the tip of the iceberg as other manufacturers follow suit.

The first “winner” of the LGES battery supply lottery was [Electra Battery Materials Corporation](#) (TSXV: ELBM | NASDAQ: ELBM). Electra is a processor of low-carbon, ethically-sourced battery materials who is currently commissioning North America’s only cobalt sulfate refinery. Their deal is [a three-year agreement](#) to supply LGES with 7,000 tonnes of battery grade cobalt from 2023 to 2025. Electra will supply 1,000 tonnes of cobalt contained in a cobalt sulfate product in 2023 and a further 3,000 tonnes in 2024 and 2025 under an agreed pricing mechanism. Cobalt sulfate provided under the term of the contract with LGES will be sufficient to supply up to 1.5

million full electric vehicles. In addition to the supply agreement, Electra and LGES have agreed to cooperate and explore ways to advance opportunities across North America's EV supply chain, including, but not limited to, the securing of sustainable sources of raw materials.

Next up for LGES was a pair of lithium supply deals. We'll explore the [Avalon Advanced Materials Inc.](#) (TSX: AVL |OTCQB: AVLNF) news first, mainly because it was the first company highlighted on the [Dean's List](#), so indulge me while I pat myself on the back. Avalon is a Canadian mineral development company specializing in sustainably produced materials for clean technology. Avalon is currently focusing on developing its [Separation Rapids Lithium Project](#) near Kenora, Ontario while continuing to advance other projects, including its 100%-owned [Lilypad Cesium-Tantalum Lithium Project](#) located near Fort Hope, Ontario. The Company signed a non-binding [memorandum of understanding](#) (MOU) with LGES to supply battery-grade lithium hydroxide starting in 2025. The MOU would see Avalon commit, for five years initially, to provide LGES with at least 50% of its planned initial lithium hydroxide production from its Thunder Bay facility (11,000 tons per year), with the potential to increase production as demand grows.

The second lithium, and third overall deal for LGES in a 24 hours span was with [Snow Lake Resources Ltd.](#) (NASDAQ: LITM). Snow Lake is committed to creating and operating a fully renewable and sustainable lithium mine that can deliver a completely traceable and carbon neutral product to the North American electric vehicle and battery markets. The [Thompson Brothers Lithium Project](#) now covers a 55,318-acre site and contains an identified-to-date 11.1 million metric tonnes indicated and inferred resource at 1% Li₂O. Snow Lake signed a [non-binding MOU with LGES](#) to supply lithium hydroxide (20,000 tons per year) over a 10-year period once production starts in

2025. The deal between the two entities will see them collaborate to explore the opportunity to create one of Canada's first lithium hydroxide processing plants in CentrePort, Winnipeg, Manitoba.

It should be noted that the Electra deal is a binding term sheet, while the other two are non-binding MOUs. Investors need to understand that there is a lot more certainty to the Electra deal than the other two which is likely why, as of yesterday's close, Electra was still up 2% versus where it was trading before the LGES announcement while Avalon was down 6% and Snow Lake down 18% versus pre-LGES announcement trading. Not to take anything away from the non-binding deals, they are still very important and a positive sign for these companies, but the market isn't very forgiving these days so there is definitely value in certainty. For Avalon that certainty is anticipated to come with a definitive supply agreement, which is intended to be finalized in no later than 6 weeks. I could not find confirmation of timing to firm up commitments in any of Snow Lake's press releases.

Welcome to the Future, Critical Metals' Ventures Discover Reality

written by Jack Lifton | March 16, 2023

Way back in 2011 there were nearly 250 rare earth themed junior mining ventures looking at 400 "deposits" mainly in Canada and Australia. Today, just two of them are producing, [Lynas Rare](#)

[Earths Limited](#) (ASX: LYC) and [MP Materials Corp.](#) (NYSE: MP) (the successor in interest to the bankrupt Molycorp of yore). These two ventures, even then, stood out from the pack by their common purpose of delivering a value-added product, individual separated (or blended) rare earth chemical forms, in the case of Lynas, and “magnets,” in the case of Molycorp. All of the others, without exception, stated that their saleable product would be a “mixed con.” This was the great “con” of the rare earths’ boom and bust of 2010-2013.

A concentrate of a mixture of all of the rare earths, from which the chemical elements that interfere with the separation of those rare earths into individual, or purposely blended combinations, of individual rare earth salts, is what is targeted to be produced at a mining operation where the ore is “mined,” concentrated, cracked and leached, and then is chemically processed to remove elements that interfere with the next step, selective separation of the individual elements in a form required for the next step in the supply chain that ultimately results in a finished product for sale to consumers.

For the rare earths this concentrate is, for practical purposes of safety and economics, a mix of rare earth carbonate solids. This should have been the initial target of 2011’s 250 rare earth juniors. It wasn’t. They overwhelmingly (other than Lynas and Molycorp) did nothing to advance towards this target. That turned out to be a good thing, because the only non-Chinese customers for this “mixed con” before 2017 were Solvay in France (9,000 tpa capacity to produce individual rare earth salts), Silmet in Estonia (2,500 tpa), and assorted small operations in Asia, outside of China, with a combined capacity of perhaps 3,000 tpa. All of these bought their feedstock from China or (a tiny amount) from Russia at the time.

No 2011 junior sold a single gram of mixed con to the

marketplace prior to 2017 (Lynas)

Why was the first 21st century, rare earth boom, such a bust?

Because none of them had the knowledge, education, experience or skill in processing or mineral economics to see that integration into a total rare earths supply chain targeted to a final product is necessary for **profitable operation**. Almost without exception the profitable part of the rare earth supply chain is concentrated in the metals, alloys, and magnet making end, and the only way to make a mine and separation system profitable is to distribute costs along a total supply chain. (America's [Energy Fuels Inc.](#) (NYSE American: UUUU | TSX: EFR), which is operating on a total supply chain model through magnet alloys, is an exception, because it is able to make a profit selling a mixed carbonate due to the skill of its administrative and operation management and a unique, for North America, existing processing infrastructure).

If there is to be a domestic American, or European, total rare earth permanent magnet supply chain then there will have to be in place operating commercial rare earth separation systems, rare earth metals and alloys production, and rare earth permanent magnet production capability and capacity to support it.

In fact, if there are to be total domestic supply chains for any critical metals, then, not just a mine, but also all of the downstream elements of the supply chain have to be in place before that can happen.

I note that for the cobalt chemicals necessary for the production of lithium-ion battery cathodes, the Canadian integrated cobalt processing junior, Electra Battery Materials Corporation (TSXV: ELBM | OTCQX: FTSSF), has entered into a

supply agreement for cobalt concentrates from the world's largest non-Chinese producer, Glencore, to process that concentrate into fine cobalt chemicals for the battery manufacturing industry in its existing Canadian facility. When and if Electra can produce cobalt concentrates from its company-owned deposits there will already be in place the downstream operations to support that. In the meantime, it will buy feedstocks from others, and/or also toll them for others. Electra's management looks also to have given considerable thought to pricing, so as to ensure profitability.

This business model, to have in-house as much of the total final product supply chain as is necessary to be profitable, is the only practical business model for the production of critical metals and materials.

As of December 31, 2021, America's Energy Fuels (rare earths) and Canada's Electra (cobalt) are setting the pace for the future development of a North American critical metals' industry by commencing operations.

Happy New Year!