

# Electra Provides Update on Refinery Project and Black Mass Economics; Launches Strategic Review Process

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[Electra Battery Materials Corp.](#) (NASDAQ: ELBM; TSX-V: ELBM) ("Electra" or the "Company") today released updated economics and capital spend estimates for its refinery complex currently under construction north of Toronto.

Pending completion, Electra's refinery complex will be the first in North America to integrate the production of critical minerals, including cobalt sulfate and nickel sulfate, needed for the electric vehicle battery supply chain and the processing of black mass material designed to recover high value elements found in recycled lithium-ion batteries, including lithium, nickel, cobalt, manganese, graphite, and copper.

"Consistent with our recent disclosure, we completed a re-baseline engineering report to fully determine the impacts supply chain delays, inflationary price pressures, and scope changes have had on the capital budget required to complete our cobalt refinery project," said Trent Mell, CEO of Electra. "In tandem, we also completed a desktop scoping study to assess the potential economics to process black mass material from recycled lithium-ion batteries at our refinery complex.

"As expected, the capital spend requirements for completing our refinery project have risen beyond our initial forecasts due to higher material and labor costs, scope expansion, and supply chain disruptions over the past 18 months. Offsetting this development are the compelling economics identified by our desktop scoping study to build a permanent black mass processing operation, given its low capital intensity estimated at US\$6 million and its high rate of internal return of more than 120%. Leveraging existing infrastructure, equipment, permits, and personnel, Electra can quickly transition from a plant-scale demonstration facility to a scalable, continuous battery recycling operation in 12 months from financing.

"Development of both studies marks a significant step towards the completion of our integrated refinery complex and reduces considerable uncertainty from our efforts to secure the remaining capital needed from various stakeholders. We can now accelerate our funding efforts with government, commercial, and strategic partners, and prioritize the processing of black mass material given the anticipated payback of less than two years and estimated EBITDA of US\$10 million per year," Mr. Mell also said.

## Black Mass Economics

Electra launched a black mass trial late in 2022 at its Ontario refinery complex to recover high-value elements found in shredded lithium-ion batteries. Using its proprietary hydrometallurgical process, Electra successfully completed the first plant-scale recycling of black mass material in North America and confirmed the recovery of a number of critical metals, including lithium, nickel, cobalt, copper, manganese, and graphite, needed for North America's EV battery supply chain, surpassing initial expectations.

To date, Electra has produced quality nickel-cobalt mixed hydroxide, graphite, and lithium carbonate products in its black mass recycling trial. The Company expects to begin commercial shipments of product to customers in Q2 2023.

Electra completed an desktop scoping study to evaluate the potential economics of developing a standalone black mass process plant within its refinery complex capable of processing 2,500 tonnes of black mass material per annum. The Phase 1 facility could be scaled over time as the market for battery recycling expands.

Highlights from Electra's desktop scoping study include:

- Capital spend is estimated at approximately US\$6 million.
- The internal rate of return is estimated at 127%.
- EBITDA is estimated to be in the range of US\$9.6 to US\$12.6 million per year beginning in the first full year of operations.
- The payback period is estimated at between 1 and 2 years.

Electra's desktop scoping study was based on a number of assumptions, including annual processing of 2,500 tonnes of black mass, metal prices using analysts' long-term forecasts, recovery rates consistent with those achieved to date, and US\$9.2 million of committed capital comprised of US\$5.9 million for capital costs and US\$3.3 million in working capital.

At this time, black mass recycling capabilities remain at the evaluation stage and the decision to commercialize these capabilities remains subject to financing and additional engineering work to incorporate process modifications arising from the demonstration plant and the successful evaluation of samples by customers. Subject to these two conditions, expansion to 2,500 tonnes per annum could occur in 2024 pending the securing of financing for the project and installation of additional vessels and equipment within the existing footprint of the refinery complex being utilized for the black mass trial.

From an ESG perspective, Electra's hydrometallurgical recycling plant is estimated to be five times less carbon intensive than a comparable production facility using a pyrometallurgical process with a similar electricity grid as found in China and four times lower than a similar facility in the state of Michigan.

Electra's proprietary hydrometallurgical process produces less waste and enables the recovery of high value lithium and by-products that pyrometallurgical process cannot recover.

#### Refinery Project Capital Spend Update

Electra launched a project in June 2021 to expand and recommission an idled refinery capable of producing 5,000 tonnes of cobalt contained in cobalt sulfate per year. Electra's refinery, which is located in Temiskaming Shores, Ontario, is a fully permitted facility with the capacity, once fully constructed, to expand to 6,500 tonnes of cobalt contained in cobalt sulfate per year.

Electra's progress on its refinery project is reflected the following achievements:

- Completed 98% of detailed engineering.
- Completed 85% of process equipment procurement (in fabrication or delivered).
- Completed 90% of site infrastructure and foundations.

The project has been de-risked through the delivery of most long lead equipment and by commissioning the legacy refinery operations for the black mass demonstration plant. There remains, however, a significant amount of construction work to complete and commission the solvent extraction plant and the crystallizer circuit.

On February 14, 2023 Electra announced that due to the receipt of damaged equipment critical to the completion of the refinery project, ongoing supply chain disruptions causing delays in the delivery of equipment, including components to process control systems, and inflationary pressure on capital costs, the Company withdrew its previous guidance relating to the refinery project's estimated capital spend and construction timelines. Subsequent inspection of the damaged equipment has determined that the falling film evaporator vessel is suitable for installation. The damaged equipment will require onsite repairs before it can be commissioned.

Also on February 14, 2023 Electra announced the launch of a re-baseline engineering report to identify the refinery's updated project scope, scheduling, and capital expenditures. This updated re-baseline engineering work, which has been undertaken by the refinery project's engineering, procurement, and construction management (EPCM) contractor, has now been completed and has been reviewed by an independent, third-party estimator.

The re-baseline engineering report has determined that the total capital costs is now estimated at US\$110 to \$121 million, of which approximately US\$48.6 million has been spent as of April 30, 2023. The increase in capital costs has been driven by changes in scope, including increasing production capacity from 5,000 to 6,500 tonne per annum of cobalt contained in cobalt sulfate, supply chain disruptions, and inflationary price pressures over the past 18 months that negatively impacted all aspects of the refinery project, including contractor labour rate, costs for concrete, steel, piping, and freight. The Company had disclosed previously that estimated capital costs for completing its refinery project would be between US\$76 and US\$80 million.

Selected additional capital costs for completing the refinery project include:

- US\$18.8 million for solvent extraction and crystallization mechanical equipment.
- US\$7.4 million for indirect construction costs.
- US\$7.3 million for equipment replacement and installation.
- US\$5.7 million for construction management and permit costs.
- US\$4.1 million for engineering and procurement.
- US\$3.7 million for higher freight rates.

The Company will require additional capital to complete construction and final commissioning. Discussions are underway with various commercial partners, government agencies and other parties to address the funding shortfall. Until such time as additional funding is secured, operational costs related to the development of the refinery are expected to be less during the next 12 months than in previous comparable periods. As at March 31, Electra held cash and marketable securities totaling \$12.9 million.

The timeline for completing the refinery project will be contingent on securing the needed capital.

Electra will provide regular updates on the progress of capital raise efforts and status its refinery complex projects.

#### Strategic Business Review Process

During the quarter, Electra initiated a process to evaluate potential strategic alternatives to maximize shareholder value, and retained BMO Capital Markets to assist with the process. The Company's Board of Directors will evaluate a range of alternatives identified by the process, including but not limited to a potential equity/debt investment from a strategic partner, sale of all or selected portions of the Company's assets, and merger opportunities with other entities.

During this process, the Company intends to continue processing black mass while implementing cost control measures and limiting expenditures on the cobalt refinery project, with a view to preserving liquidity until a strategic process is complete. There can be no assurance that the strategic review process will culminate in any transaction or alternative.

#### About Electra Battery Materials

Electra is a processor of low-carbon, ethically-sourced battery materials. Currently building North America's only cobalt sulfate refinery, Electra is executing a multipronged strategy focused on onshoring the electric vehicle supply chain. Keys to its strategy are integrating black mass recycling and nickel sulfate production at Electra's refinery located north of Toronto, advancing Iron Creek, its cobalt-copper exploration-stage project in the Idaho Cobalt Belt, and expanding cobalt sulfate processing into Bécancour, Quebec. For more information visit [www.ElectraBMC.com](http://www.ElectraBMC.com).

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