NEO Battery Materials Reports Robust Economics and High-Profitability with Internal Feasibility Study of South Korean Silicon Anode Commercial Plant

written by Raj Shah | July 10, 2023
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NEO Battery Materials Ltd. ("**NEO**" or the "**Company**"), a low-cost silicon anode materials developer that enables longer-running, rapid-charging lithium-ion batteries, is pleased to announce that the Company has recently conducted an internal feasibility study (the "**Study**") of its Silicon Anode Commercial Plant in South Korea. The preliminary assessment has yielded robust economics and high profitability for NEO's cost-transformative silicon anode materials ("**NBMSiDE™**"), demonstrating the substantial potential for scalability, international plant expansion, and mass adoption in electric vehicle ("**EV**") batteries. NEO will appoint a 3rd party engineering firm to validate the projections and figures through an industry-approved feasibility study.

Initial Production Capacity Evaluation of South Korean Commercial Plant

The internal feasibility study has been conducted with the assumption that the South Korean Commercial Plant is the only operational, revenue-generating asset of NEO Battery Materials. The Study utilizes updated mass-production models generated by

the EPC contractor, preferential bids submitted by construction contractors, cost projections of the optimized NBMSiDE™ derived from supplier and market quotations, and general macroeconomic conditions of the past fiscal year.

By the first half of 2024, NEO targets to complete the plant construction with an initial commercial capacity of 240 tonnes per annum ("**TPA**"). Financial projections integrated an equal proportional production of the two main product lines of NBMSiDE™, P-100 and P-200. Each silicon anode material will be supplied to global battery manufacturers and EV automakers at an initial average price of US$ 50,000 per tonne (US$ 50 per kg), resulting in maximum annual revenues of US$ 12.0 million at 240 TPA and US$ 50.0 million at 1,000 TPA.

Table 1: Maximum Annual Revenue Projection with Phase Expansions

	Phase I: 240 TPA	**Phase II: 1,000 TPA**	**Phase III: 2,500 TPA**	**Phase IV: 5,000 TPA**
Maximum Annual Revenue	US$ 12.0 M	US$ 50.0 M	US$ 125.0 M	US$ 250.0 M

Through NEO's proprietary one-step manufacturing process and the use of a cost-effective raw material, metallurgical-grade silicon or MG-Si, the Company expects to decrease the selling price of NBMSiDE™ while widening gross and EBIT margins with Phase I to Phase IV expansion. With mass production and material optimization, the Company is projected to achieve a 70% to 80% cost reduction in the selling price compared to current silicon anode options. Growing demand for lithium-ion batteries and advanced technologies will bolster NEO's cost differentiation strategy to capture a more significant proportion of the global silicon anode market share on a sustaining basis.

Economic Assessment of Final Phase IV Commercial Plant Capacity

In each phase, NEO targets to double the annual maximum capacity each year to achieve a final production of 5,000 TPA in the next 5 years. Assuming full-scale NBMSiDE™ production, the Company expects average annual revenues of US$ 235.0 million to US$ 250.0 million, representing an after-tax net present value ("**NPV**") of US$ 316.2 million discounted at an 8% cost of capital and an after-tax internal rate of return ("**IRR**") of 33.3%.

Table 2: Final Phase IV Capacity Economic Evaluation

Financial Criterion	**South Korean Commercial Plant at Maximum Final Capacity**	
Production	5,000 TPA	
Average Selling Price	US$ 50,000 per tonne	
Average Annual Revenue	US$ 235,000,000	
Pre-Tax NPV @ 8% Cost of Capital	US$ 434,433,000	
Post-Tax NPV @ 8% Cost of Capital	US$ 316,240,000	
Pre-Tax IRR	40.6	%
Post-Tax IRR	33.3	%
Pre-Tax Payback Period	4.5 years	
Post-Tax Payback Period	5.0 years	
CAPEX	US$ 80,600,000	
Average Annual OPEX	US$ 72,818,000	

Without forgoing the long-term selling price reduction strategy, the financial projection integrated constant NBMSiDE™ selling prices and margins to reflect the Study's evaluation methods and current market conditions. Unlike other core battery metal prices traded as standardized commodities, cost projections for NBMSiDE™ were derived from direct quotations from upstream suppliers and estimates with long-term supply or forward contracts for metallurgical-grade silicon.

CAPEX and average annual OPEX figures are to be optimized through each phase expansion, occurring through adjustments with contractors and economies of scale with increased silicon anode production. The initial CAPEX outlays for the 240 TPA equipment will not directly reflect the CAPEX for subsequent phase expansions. Instead, with cost efficiency, the capacity-to-CAPEX is expected to grow at an exponential rate as CAPEX is substantially minimized with each capacity addition. As discussed, NEO will target to partner with downstream battery manufacturers and EV automakers for strategic investments in each expansion phase. Strategic partnerships will expedite commercialization efforts, minimize dilution impact, and enable improved economics and efficiency by transferring and learning of production and management know-how.

Continuing Course for 3rd Party Feasibility Study & Cautionary Statements

To validate the internal feasibility study conducted, NEO Battery Materials will appoint a 3rd party South Korean engineering firm specializing in the battery manufacturing and materials industry. After conducting due diligence and extensive review, the Company will select a firm with a proven track record.

There can be no assurance that the economic projections upon which this Study is founded will be realized. Not limited to the viability of mass production scale-up, product optimization, financial considerations, and macroeconomic and environmental factors, several risks and uncertainties are inherently associated with any nascent technology commercialization. The Study is intended to be comprehended as a cohesive whole, and individual sections should not be interpreted or relied upon in isolation or without the accompanying context. Readers are duly advised to consider all assumptions, limitations, and exclusions

that pertain to the information provided in the Study.

About NEO Battery Materials Ltd.
NEO Battery Materials Ltd. is a company focused on electric vehicle lithium-ion battery materials. NEO has a focus on producing silicon anode materials through its proprietary single-step nanocoating process, which provides improvements in capacity and efficiency over lithium-ion batteries using graphite in their anode materials. The Company intends to become a silicon anode active materials supplier to the electric vehicle industry. For more information, please visit the Company's website at: https://www.neobatterymaterials.com/.

On behalf of the Board of Directors
Spencer Huh
President and CEO
604-355-6463
shuh@neobatterymaterials.com

Not limited to phase expansion capacity projections, NPV, IRR, payback period, average annual revenue, average selling price, CAPEX, average annual OPEX, NBMSiDE™ cost projections, the Company's cost reduction strategy, the Company's expected value propositions, the Company's expectations of capturing a large proportion of market share, capacity-to-CAPEX ratio estimates, input price estimations, strategic partnership establishments, and international expansion strategies, this news release includes certain forward-looking statements as well as management's objectives, strategies, beliefs and intentions within the meaning of Canadian and U.S. securities laws. Forward looking statements are frequently identified by such words as "may", "will", "plan", "expect", "anticipate", "estimate", "intend" and similar words referring to future events and results. Forward-looking statements are based on the current opinions, expectations of management, estimates, and

assumptions. All forward-looking information is inherently uncertain and subject to a variety of assumptions, risks and uncertainties, including the speculative nature of technology development, fluctuating commodity and raw material prices, the effectiveness and feasibility of technologies which have not yet been tested or proven on a commercial scale, competitive risks, and the availability of financing, as described in more detail in our recent securities filings available at www.sedar.com. Actual events or results may differ materially from those projected in the forward-looking statements, and we caution against placing undue reliance thereon. We assume no obligation to revise or update these forward-looking statements except as required by applicable law.

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