February 13, 2024

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Novonix Ltd (NVX-NASDAQ)

Panasonic Energy & NVX Binding Off-Take Agreement – Positive Takeaways

Research Note

NVX secures new demand with Panasonic Energy, validating high quality of material…

Last week Novonix (NVX-NASDAQ) announced that it has signed a binding off-take agreement to supply high-performance synthetic graphite anode material to Panasonic Energy's North American operations. The materials will come from Novonix's Riverside facility, which is located in Chattanooga, Tennessee. Panasonic Energy has agreed to purchase at least 10,000 tonnes of anode material over the 2025-2028 period for use in its U.S. plants, subject to Novonix achieving certain milestones regarding final mass production qualification timelines prior to 4Q25.

In addition, Novonix has agreed to use "best efforts" to deliver volumes that exceed this level if Panasonic Energy requests additional materials during the term of the agreement. Panasonic Energy also has the right to reduce the 10,000 tonne off-take volume (by up to 20%) if the above noted milestones are not achieved by the designated timeline. The agreement includes a step-up pricing component to adjust Panasonic Energy's purchase price if Novonix's raw material costs change significantly.

We view this agreement as a significant positive for NVX and believe this and other agreements with leading participants related to the battery cell space, such as LGES and Kore, underscore the benefits of and validate Novonix's strategy. Moreover, the agreement fulfills an important component of the company's 2024 objectives, which overall rests on four key pillars:

- Pursue / maintain industry leading R&D efforts for battery materials
- Scale operations – NVX believes it is on-track for timeline to deliver commercial production
- **Secure new demand** – NVX continues providing samples to major Tier 1 prospective customers
- Obtain additional financing – NVX has been awarded funds from DOE, industrial leader partners

Securing new demand, as major Tier 1 prospective customers assess NVX materials

We anticipate additional agreements in the near- to medium-term, as NVX continues its strategy to secure demand in advance of commercial production at the Riverside plant. The company has indicated that it continues to provide samples to major Tier 1 prospective customers so that they can assess the quality and performance of the samples. After performing this assessment process, Panasonic Energy entered into this binding off-take agreement with NVX. Specifically, NVX and Panasonic Energy North America (PENA) began working together on product sampling and testing in 2019, after NVX signed an MOU (memorandum of understanding) with Panasonic Corporation subsidiary Sanyo Electric Co., a leading battery producer and supplier to Tesla. In fact, at the time of the MOU, Sanyo – together with

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Samsung SDI (which also signed an agreement to test samples of NVX materials) – accounted for a combined estimated roughly 30% of the global lithium-ion battery market. Panasonic Energy Co. was established in April 2022 as a result of parent company Panasonic Group's transition to an operating company system.

Anticipate additional off-take agreements as Riverside nears commercial production…

We would anticipate that Novonix will form additional off-take agreements in the near- to medium-term, as noted. The company has indicated that it is engaged in discussions with Tier 1 OEMs as it advances its strategy to secure demand in advance of commercial production at the Riverside plant. As many of these OEMs sample and assess NVX materials, we expect new agreements over time.

Novonix believes its Riverside facility is set to become the first large-scale production site dedicated to high-performance synthetic graphite for the battery sector in North America. The company is pursuing a r strategy to ramp production over three planned phases, with production of deliverable materials slated to begin in late 2024 and plans to grow output to 20,000 tonnes per annum (tpa) in Phase 1 to meet anticipated customer demand as commercial production ramps.

NVX, Panasonic Energy share goal for local supply supporting battery sector….

Panasonic Energy of North America's goal to obtain locally sourced critical battery materials aligns with Novonix's goal to develop a North American supply chain for battery space. PENA is a leading battery cell provider. In particular, Panasonic Energy is a key developer of battery cell technology for electronic vehicles (EVs) and battery electric storage system (ESS) solutions in the U.S., which are also NVX's initial focus areas, as well. In North America, PENA has relationships with major automotive OEMs such as Tesla, Honda, Toyota, Mazda, Subaru, Ford, and Lucid to supply EV batteries. Panasonic Energy intends to help drive the adoption of EVs in North America by innovating EV batteries and production to meet increased demand, while also increasing the percentage of materials it obtains locally.

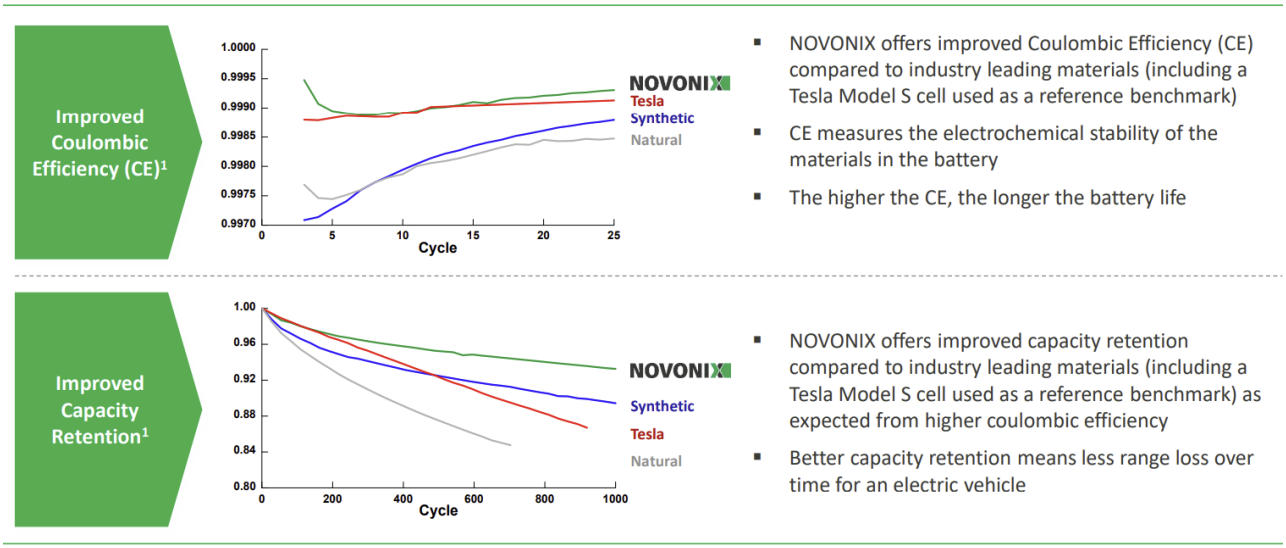
The off-take agreement with NVX advances Panasonic's commitment to lower its overall carbon footprint and create a flexible North American supply chain. Panasonic Energy intends to reduce the carbon footprint of the lithium-ion battery EV supply chain by 50% by 2031 compared to 2022 levels. Thus, Panasonic Energy is establishing a sustainable supply chain for EV batteries. Advantages of NVX's materials include that it can help customers reduce carbon footprints.

NVX material shows ~30%-60% lower global warming potential…

NVX's 'cleaner' materials compared to that of competitors reflects its lower carbon intensive production method, as well as its proximity to North American end markets. In testing its materials, the company has found that they are as or more effective compared to other products. In a study comparing its synthetic anode graphite material to that supplied from China, the leading source of the material, Novonix material demonstrated a roughly 30% to 60% decrease in GWP (global warming potential) when compared to synthetic graphite produced in two key regions in China that account for a combined 79% of global production of synthetic anode material, according to the study.

… and also outperforms for EV range, charge retention …

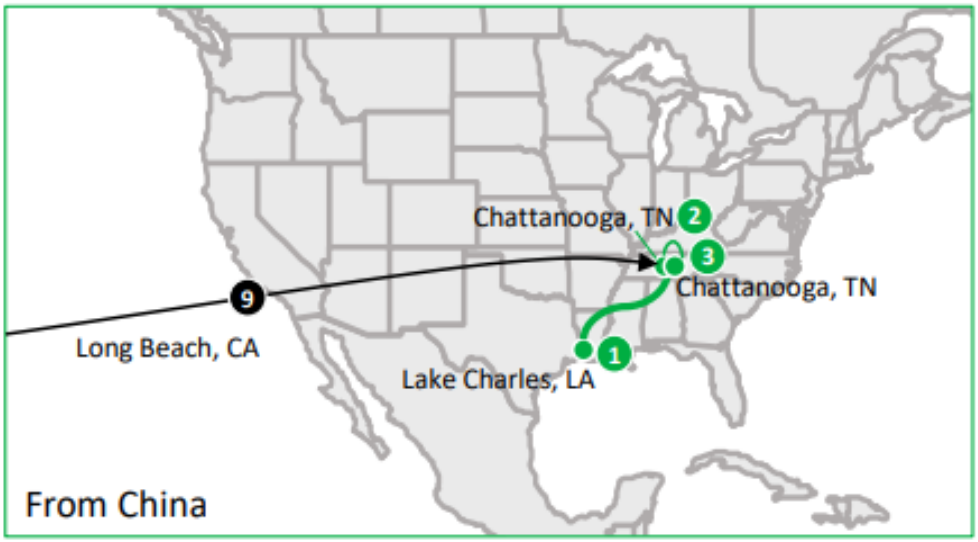
All in all, the company has tested its anode materials compared to industry leading materials including a Tesla Model S cell used as a reference benchmark and based on test results, the company believes that its anode material outperforms in direct head-to-head testing.



Source: Company presentation

The proximity of NVX's Tennessee plant also means that the overall distribution carbon footprint is likely to be lower than for that of materials from overseas competitors. The current supply of critical battery materials is sourced primarily from China (see below). Moreover, sourcing critical battery materials primarily from China has other potential risks, in our opinion, including possible delivery disruption due to logistics challenges and due to geopolitical challenges, particularly given sometimes shifting trade relations between China and the U.S.

NVX Riverside Plant Near to North American End Markets



Source: Company presentation

Manufacturers in China produce about 65% of the world's graphite, according to the U.S. Geological Survey, and Chinese companies control an estimated 80+% of the market for automotive battery anodes. China is requiring government approval for exports of graphite, reflecting legislation to strengthen export controls on strategic materials. According to Nikkei Asia, analysis of China's General Administration of Customs trade statistics shows that exports of items subject to the licensing requirements that took effect Friday have doubled in the last three years to $8.4 billion in 2022, which is thought to largely reflect

growing demand for EVs. NVX believes China's measures underscore the need for North American producers to develop a local supply chain for battery materials in the U.S.

Regulatory incentives in place to develop local battery space, supply chain…

Conversely, the proximity of NVX's Tennessee plant is a competitive advantage compared to materials from China. Importantly, Novonix believes it has first mover advantage as an early manufacturer of synthetic graphite in North America. It also expects to benefit from regulatory incentives to develop clean energy sources. recent regulatory indications are favorable for NVX; synthetic graphite is eligible for rebates under government programs.

The Inflation Reduction Act (IRA) provides economic incentives to companies that are developing a local supply chain for batteries and battery materials. These benefits support the production of critical minerals and battery materials such as synthetic graphite, for which Novonix will be eligible, and for local manufacturing of battery cells and Panasonic Energy's North American plants will qualify.

Moreover, regulators recently clarified language supporting "electrode active materials" and critical materials and also announced the Foreign Entity of Concern (FEOC) guidance, implying that foreign companies such as Novonix's Chinese competitor producers, cannot hold greater than 25% control for a company in order to qualify for incentives. Also, to qualify for tax credits in 2025, an electric vehicle (EV) cannot contain any critical minerals that were extracted, processed, or recycled by an FEOC.

With products that are competitive compared to dominant producers in China in terms of quality and energy consumption during production and the proximity of its Riverside, Tennessee plant to North American demand, the company believes it has multiple competitive advantages. In fact, NVX has received funding from the U.S. Department of Energy Office of Manufacturing and Energy Supply Chains (MESC), which awarded NVX US$100 million in grant funding earmarked for expanding the Riverside plant to strengthen the local supply chain. The MESC grant funding will support the installation and commissioning of equipment to produce the above-noted targeted 20,000 tpa of capacity from Riverside.

Multiple supply agreements pre-commercial production: LG Energy Solution…

In addition to the Kore and Panasonic agreements, the company recently formed an agreement with LG Energy Solution (LGES) to jointly research and develop artificial graphite anode material for lithium-ion batteries. We believe this is among the most important of the many agreements Novonix has formed to-date. LGES will have the option to purchase up to 50,000 tons of artificial graphite anode material over a 10-year period once mass production commences.

NVX also attributes these and potentially other wins to its strong IP (intellectual property) position. Novonix is leveraging proprietary technology to process and develop anode and also cathode materials, critical materials for the battery supply chain. The company has developed an efficient, low-cost process to produce *synthetic* graphite anode material that is designed to be competitive with China-sourced materials and also produced in more sustainable and efficient ways compared to competitors. The company's third operating unit, its BTS division, is an important element of the R&D for the other businesses.

We believe there are multiple positive takeaways from the Panasonic Energy agreement, including advance commitment to purchase NVX anode materials from a prominent player in the battery sector. This, in our view, supports Novonix expectations that 2024 will be an important year as it begins to scale the anode business nearing commercial production. The company also expects to continue to advance its cathode synthesis operations and secure additional capital to support growth measures to advance all operating segments, including through the DOE Loan Program Office.

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