# NOVONIX Set for Growth

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- NOVONIX Introduction
- Summary of Recent Notable Announcements
- Phillips 66's Strategic Investment in NOVONIX
- Battery Materials Market and North American EV/ESS Industry Momentum
- NOVONIX Anode Materials
  - Growth Plans
  - Performance
- NOVONIX Cathode Materials & Million Mile
   Battery Technology
- Conclusions

#### **NOVONIX Investment Highlights**



Our proprietary process technology and capabilities across the value chain drive innovation and commercial opportunities



We develop and supply industry leading battery testing equipment



We are a leading US-based battery materials and technology company with the first GWh-scale domestic supply agreement for synthetic graphite with KORE Power



Our offerings are directly compatible with today's installed and planned battery manufacturing technology



Demand for our technologies underpinned by exponential growth in EV sales and energy storage demand over the next decade and beyond



We have a clear path to profitability with global tier 1 customer base

Our leadership team is highly credentialed, continuing to successfully execute growth agenda

## Who We Are

NOVONIX is a battery materials and technology development company. We develop and supply what we believe to be the most accurate battery testing technology in the world. We are a leading US-based supplier with plans to scale significant domestic volumes of battery-grade synthetic graphite anode material.



## **Our Leadership and Board of Directors**





**Dr. Chris Burns** Chief Executive Officer

**Rashda Buttar** Nick A. Liveris

**Chief Financial Officer** Chief Legal and Administrative Officer



Leadership Team

**Suzanne Yeates Financial Controller and** Co Secretary



**Danny Deas** President | NAM



President | BTS

**Christopher York** Senior Vice President **Business Development** 

## Scientific & Technical Advisors





Dr. Jeff Dahn **Chief Scientific Advisor** 

**Dr. Mark Obrovac** Sponsored Researcher





**Admiral Robert J. Natter** Chairman & Non-Executive Director



**Tony Bellas** Deputy Chairman & Non-Executive Director



Andrew N. Liveris AO Zhanna Golodryga Non-Executive Director Non-Executive Director



**Robert Cooper** Non-Executive Director



Jean Oelwang Non-Executive Director



**Daniel Akerson** 

Non-Executive Director

**Ron Edmonds** Non-Executive Director



## We Play a Critical Role in the Lithium-Ion Battery Value Chain



Note: Companies presented above are for indicative purposes only and not a representation of customer relationships.

Battery Technology Solutions serves as the pillar for innovation across the NOVONIX ecosystem, creating a positive feedback loop to drive technological advancement and deliver best-in-class products and services for customers



(1) We are currently collaborating with Emera to design a battery pack including innovative designs, custom manufacturing and control systems to support Emera Technologies' BlockEnergy microgrid.

## **NOVONIX Notable Milestones**



## **Phillips 66 Announces Strategic Investment in NOVONIX**

#### Phillips 66

- Phillips 66 is a diversified energy manufacturing and logistics company.
- Phillips 66, with a portfolio of Midstream, Chemicals, Refining, and Marketing and Specialties businesses, the company processes, transports, stores and markets fuels and products globally
- Phillips 66 is a global producer of petroleum needle coke, the key precursor material for synthetic graphite
- Headquartered in Houston, the company has 14,000 employees committed to safety and operating excellence
- Phillips 66 produces the precursor for synthetic graphite at advanced facilities located in Lake Charles, LA and Humber, UK

#### Announcement

#### Phillips 66 Announces Strategic Investment in NOVONIX

Investment will expand Phillips 66's presence in the battery supply chain and advance NOVONIX's production of synthetic graphite for high-performance lithium-ion batteries



August 09, 2021 10:00 AM Eastern Daylight Time

HOUSTON & BRISBANE, Australia--(BUSINESS WIRE)--Phillips 66 (NYSE: PSX) today announced it has entered into an agreement to acquire a 16% stake in NOVONIX Limited (ASX: NVX, OTC: NVNXF), a Brisbane, Australia-based company that develops and supplies in-demand materials for lithium-ion batteries.

"This strategic investment enables Phillips 66 to directly support the development of the U.S. battery supply chain," said Greg Garland, Chairman and CEO of Phillips 66. "It advances our commitment to pursue lower-carbon solutions while leveraging our leadership position and expertise in the specialty coke market and supporting NOVONIX's emerging position in U.S.-based anode production."

Phillips 66 is a leading global manufacturer of specialty coke, a key precursor in the production of batteries that power electric vehicles, personal electronics, medical devices and energy storage units. NOVONIX, a leading producer of synthetic graphite, processes specialty coke to make high-performance anode material for these batteries. The investment supports the development of a fully domestic supply chain for sales into the U.S. electric vehicle and energy storage system markets.

"We're excited by Phillips 66's vision for a sustainable future and confidence in our business plan and management team," said NOVONIX CEO and co-founder Chris Burns, Ph.D. "Phillips 66's investment will provide us with the capital needed to support growth and ongoing R&D as we continue to scale our synthetic graphite production and develop new technologies for higher-performance energy storage applications. We look forward to continuing to build our relationship with Phillips 66 as both a strategic partner and investor."

#### **Transaction Highlights**

- Phillips 66 subscribed for 77,962,578 ordinary shares of NOVONIX for a total purchase price of US\$150 million
- Phillips 66 nominated Zhanna Golodryga to NOVONIX's Board of Directors
- This investment is driven by Phillips 66's Emerging Energy organization, which is tasked with building a lower-carbon business platform and shares a similar long-term vision and focus on sustainability as NOVONIX
- The investment by Phillips 66 will help support capacity towards 40,000 mt/year, which is expected to be completed by 2025
- The transaction closed September 30, 2021
- In addition to the investment NOVONIX and Phillips 66 entered into a strategic Technology Development Agreement with the intention to advance the production and commercialization of anode materials for lithium-ion batteries

## NCM is Expected to be the Leading Cathode Chemistry with Graphite Remaining the Dominate Anode Technology



Source: Benchmark Mineral Intelligence Q1 2021 Report

(1) Other Includes lithium manganese nickel oxide (LMNO) and lithium-ion manganese oxide (LMO) batteries

## **Global and Local Battery Growth is Driving Demand for Domestic Graphite Production**



(1) Source: Benchmark Mineral Intelligence Gigafactory Assessment – June 2022. Based on announced capacity.

(2) Assumes full utilization

## Battery Manufacturers and Auto OEMs Have Announced New Gigafactories to Support North American EV and ESS Growth



#### **Key Observations**

- Over 800 GWh across 55 manufacturing plants planned in North America
  - Announcements for new plants with clusters in the Midwest, Southeast and Ontario
  - The US Inflation Reduction Act will likely lead to more announcements.
  - Current capacity ~50 GWh
- KORE announced on 29 July 2021 the intention to build KOREPlex, a one million square foot manufacturing that will support up to 12 GWh of battery cell production in Buckeye, AZ
  - NOVONIX will be the exclusive supplier of graphite anode material to KOREPlex which when in full production will be close to 12,000 tonnes per year of material

Source: Bloomberg BNEF October 2022

## NOVONIX Enables the Only Fully Domestic US Supply Chain of EV Battery Anode Material (BAM)



NOVONIX facilitates a cleaner, more secure, supply chain of high-quality synthetic anode material to the North American market vs. Chinese competitors

## U.S. Legislation is Providing Direct Support to NOVONIX's Business Plan

Inflation Reduction Act of 2022 ("IRA") includes an estimated \$369 billion in investments related to "climate change and energy security", including tax and other incentives to promote US production of electric vehicles ("EVs"), renewable energy technologies, and critical minerals, representing the "single biggest climate investment in U.S. history", according to Senator Chuck Schumer.

• The IRA includes several provisions aimed at bolstering domestic and regional production of critical minerals. These include:

- \$7,500 federal consumer tax credit, starting in 2023 based on the origin of materials and localization of manufacturing
- New "advanced manufacturing" and production tax credits
- \$500 million appropriation for "enhanced" use of the Defense Production Act economic support under banner of national security
- \$40 billion authorized for loan guarantees under Title XVII of the Energy Policy Act of 2005
- From the Trade Act of 1974, if taken off suspension, would see tariffs imposed on foreign imports of graphite to help remove unfair market distortions imposed by China's anticompetitive behaviors and size advantage in the battery materials sector.

#### Section 301 Tariffs

IRA Tax

Credits &

Consumer

Credit

Includes a 25% tariff on artificial graphite imported from China. A waiver was applied to this material which is due to expire at the end of this year.

• A determination by the administration is anticipated after the mid-term election next month.

DOE Loan Program Office (LPO) has \$15.1 billion in loan authority to support the manufacture of eligible light-duty vehicles and qualifying components under the Advanced Technology Vehicles Manufacturing Loan Program (ATVM), authorized by the Energy Independence and Security Act of 2007, providing debt capital at U.S. Treasury rates.

## **NOVONIX Selected for US\$150 million in DOE Grant Funding**

#### **Department of Energy Grant Funding**

- A total of \$7 billion in grant funding under President Biden's Bipartisan Infrastructure Law (BIL) has been appropriated to strengthen the North American battery supply chain amidst surging demand and growing calls to onshore these critical industries
- On October 19, 2022, \$2.8 billion was provided by DOE's Office of Manufacturing and Energy Supply Chains (MESC) in collaboration with the Office of Energy Efficiency and Renewable Energy (EERE), authorized by last year's BIL to boost domestic battery manufacturing and supply chains
- NOVONIX was selected for US\$150 million of grant funding by the Department of Energy (DOE) to expand NAM's domestic production of high-performance, synthetic graphite anode materials – one of 21 winners across 12 categories
- Specifically, the grant funds will be dedicated to the Company's construction of a new U.S. manufacturing facility, including site selection, plant layout, and engineering design to allow for additional expansion after installation of an initial 30,000 tonnes per annum (tpa) of production equipment



Wednesday, October 19, 2022, DOE announced that NOVONIX was selected for US\$150 million in grant funding to support a 30,000 tonnes per annum (tpa) synthetic graphite U.S. manufacturing facility.

## **Phased Growth Plan for NOVONIX Anode Materials**



(1) Market share based off implied global graphite demand in 2021, 2026, and 2031. Source: Benchmark Mineral Intelligence Gigafactory Assessment – June 2022. Based on announced capacity. Assumes full utilization.

(2) Company expectations, which may or may not materialize.

(3) Assumes 55kg of graphite per EV.

## **NOVONIX Anode Materials Phase 2: Greenfield Site Selection Underway**

#### **Greenfield Plan Overview**

#### Site Rendering

- NAM is planning a new greenfield facility to support an initial 30,000 tonnes per annum (tpa) by 2025, with potential to expand up to 75,000 tonnes
- Site selection process currently underway with several jurisdictions currently being considered
- NOVONIX was selected for US\$150 Million in DOE grant funding to support buildout of this facility for domestic production of highperformance, synthetic graphite anode materials



## **NOVONIX Anode Material Outperforms In Head-to-Head Testing**



<sup>1.</sup> Data based on internal measurements taken as part of verificiation process.

## V2G is Expected to Further Drive Demand for High Battery Cycle Life

#### Vehicle to Grid Provides Two Key Advantages



Enables fleets and individuals to reduce cost of ownership by charging at non-peak times and discharging to buildings or selling to grid at peak times



Ability to provide power to buildings or national grids during peak hours provides stability to grids



Several Key EV OEMS Have Announced V2G Plans

- All VW MEB-based electric cars will be V2G capable beginning in 2022, includes cars from Audi, Skoda, and Seat-Cupra
- Currently testing DC-Wallbox with bi-directional DC charging stations in Germany



TESLA

- Integrating vehicle-to-grid technology in electrical architecture of Model 3
- Tesla's system could power up to 22kW at any one moment more than enough to power the dryer, heater or A/C.





- Currently conducting V2G project "i-rEzEPT", utilizing Nissan LEAF and temporary storage systems to power homes
- Produces the Nissan Leaf, the only mass production EV on the market with bi-directional capability
- Ford .
- 2022 F-150 Lightning will be one of the first EV's to take advantage of bi-directional charging in the U.S. market The Lightning will offer a solar option that will provide more energy independence and grid contribution

### NOVONIX's Proprietary Dry Particle Microgranulation (DPMG) is a Streamlined Patent-Pending All-Dry Synthesis Process that Produces High Nickel Cathode Material at a Significantly Lower Cost with no Water Waste

#### **Cathode Synthesis Development Overview**

- Cathode material represents about 30% of the cost of a battery cell
- In 2021 the global cathode market size value was US\$19B, with a forecasted revenue of US\$33B by 2030<sup>1</sup>
- Current synthesis process is complex, produces water waste and is costly
  - 15,000 liters of water waste is generated per tonne of cathode material<sup>2</sup>
- With multiple patent applications filed, NOVONIX's Dry Particle Microgranulation (DPMG) technology delivers:
  - Higher yields at lower costs
  - No water waste
  - High Nickel cathode materials

#### **Current Process vs. NOVONIX DPMG**



1. Emergen Research:https://www.emergenresearch.com/industry-report/cathode-materials-market

2. J.Power Sources: S. Ahmed, P.A. Nelson, K.G. Gallagher, N. Susarla, D.W. Dees. Cost and energy demand of producing nickel manganese colbalt cathode material for lithium ion batteries

Early Cathode Synthesis Technology Results Demonstrate Results Better or Comparable with Long Life High Nickel Commercial Single Crystal Cathode (SCC)



#### **Key Observations**

- Normalized electrochemical results in coin cell tests show NOVONIX materials have comparable first cycle metrics to commercial high nickel NMC materials (reversible capacity, first cycle efficiency)
- NOVONIX high nickel NMC materials show improved capacity retention in half cell testing



## NOVONIX's Complete Battery Cell Technology is Leading the way for Next Generation EV Batteries





## Next step to build full cells for performance testing to include in this data set and demonstrate NOVONIX anode, cathode and electrolyte technologies in a single cell

1. Data based on internal measurements taken as part of vérification process. 40°C full depth of discharge cycling, Assumed 330-mile range. Projection lines shown for guidance. SC NCM622 shown here is Commercial SCC reference material.

## **Our Goals for the Future of NOVONIX**





## **Contact Information**

#### **NOVONIX Anode Materials**

1029 West 19th Street, Chattanooga, TN 37408 USA



#### **NOVONIX Battery Technology Solutions**

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## APPENDIX



## NOVONIX Continues to Progress from 'Win' to 'Win' in its Commercialization Plan

**2017: BTS enabling NAM to accelerate sampling of anode product** Panasonic SAMSUNG **2019: Foundational Agreements and Strategic Relationships** SAMSUNG SDI Jan 2022: Largest US based battery grade synthetic graphite contract KOREPLEX signed with KORE Power U.S. DEPARTMENT OF Oct 2022: \$150 Million in DOE grant funding awarded to NOVONIX to expand its domestic production of high-performance, synthetic graphite anode materials NOVONIX **Tier-1 Contracts to Support 30,000+** tonnes Greenfield Facilities



## DOE Awarded NOVONIX US \$5.57M for New Furnace Technology Development



First "Generation 3" furnace system was installed at NOVONIX in 2021

## **NOVONIX's Proprietary Graphitization Process is Leading the Clean Energy Transformation**



1. May FY2021 figures from Tennessee Valley Authority.

## Secretary of Energy, Jennifer M. Granholm Celebrates NOVONIX's New Riverside Facility





#### **Key Observations**

- Purchased on July 28<sup>th</sup>, 2021, this 400,000+ square-foot plant will allow for 10,000 tonnes per year of synthetic graphite anode material production by 2023
- On November 22<sup>nd</sup>, 2021, NOVONIX celebrated Riverside Recharged to inaugurate the new Riverside facility with keynote speaker Secretary of Energy Jennifer M. Granholm
- Other speakers included:
  - Director Andrew Liveris AO
  - Director Zhanna Golodryga
  - CEO Chris Burns
  - U.S. Rep. Chuck Fleishmann

- TN ECD Commissioner Bob Rolfe
- Hamilton County Mayor Jim Coppinger
- City of Chattanooga Mayor Tim Kelly
- Former U.S. Senator Bob Corker
- "The local support for this means not just something for Chattanooga, and it's not just for Tennessee, but it really is for the country. The fact that we're at a facility that once employed about 230 people and that now is going to employ 300 people, making the future of our transportation energy system secure, is such a great day for America." Secretary of Energy Jennifer M. Granholm

## Strategic Relationship with KORE Power



Cantona Verlace of the Anzone Commerce Authority, Receive Magnel Intelliscom, Sev. Cong FLong and Receiver Co.O Lindoay Confil an counte Konfolin-schnore in Buckeye.

Kore Power to invest \$1B in Buckeye

#### **Highlights of Agreements**

- KORE Power is a leading US based developer of battery cell technology for clean energy industries
- NOVONIX and KORE Power have worked together since 2019 through NOVONIX's BTS division to improve and validate KORE's battery technology
- KORE announced on 29 July 2021 the intention to build KOREPlex, a one million square foot manufacturing that will support up to 12 GWh of battery cell production in Buckeye, AZ
- KOREPlex scheduled to begin production in early 2024
- Through the signed Supply Agreement, NOVONIX will be the exclusive supplier of graphite anode material to KOREPlex which when in full production will be close to 12,000 tonnes per year of material
- NOVONIX invested \$25M USD to acquire a roughly 5% stake in KORE Power



## **Mr. Akerson Joins Board of Directors**

#### About Mr. Akerson

- Mr. Akerson has served as an executive and director for multiple Fortune 100 companies, including as the former Chairman and Chief Executive Officer of General Motors from 2010 to 2014.
- Under his leadership, the company completed a successful IPO in November 2010, reported a record 15 consecutive quarters of profitability, reinvested nearly \$9 billion, and created or retained more than 25,000 jobs at its U.S. plants.
- In 2002, he joined The Carlyle Group as a Global Partner and Co-Head of U.S. Buyout, and then became head of the firm's Global Buyout operations. During his tenure, Carlyle's assets under management rose from \$30 to \$100 billion.
- In addition to his executive positions, Mr. Akerson currently serves as lead director on the Lockheed Martin Board of Directors and was previously Chairman of the United States Naval Academy Foundation.



## **Mr. Edmonds Joins Board of Directors**

#### **About Mr. Edmonds**

- Mr. Edmonds is a highly accomplished finance executive, currently serving as Chief Accounting Officer at Dow, a \$55 billion global materials science company.
- In that role, he spearheaded all financial activity supporting Dow's historic \$86billion merger with DuPont unlocking new sources of value, and creating three independent, publicly traded companies in materials science, agriculture, and specialty products sectors.
- Prior to Dow, he served in finance and accounting roles at Chiquita Brands International, The Upjohn Company, and Arthur Andersen & Company.



