



TRBA **SUMMIT 2024**
OKLAHOMA'S NEW ENERGY ECONOMY



Arkansas Smackover: Sustainable Domestic Lithium to Power the New Energy Economy

Jesse R. Edmondson, PG

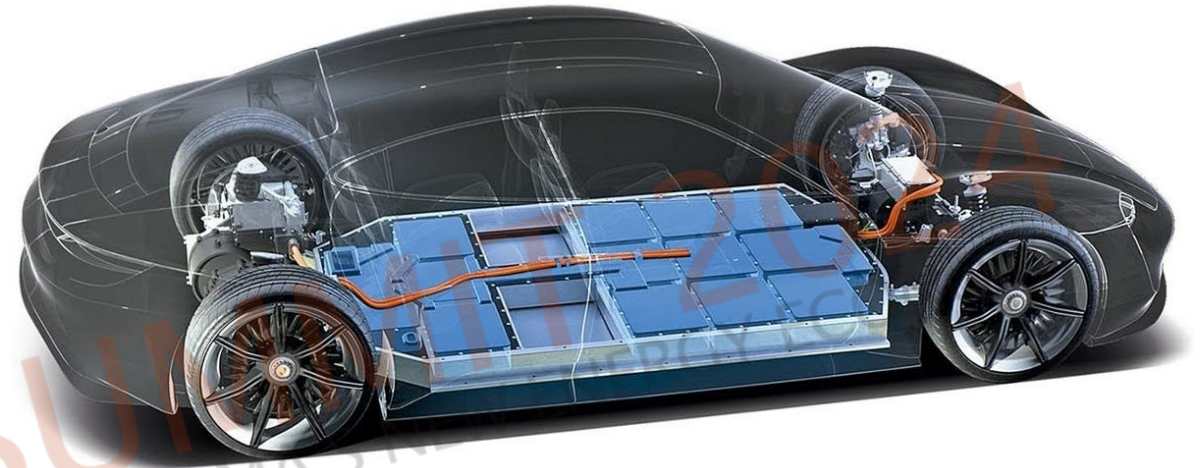
Director of Government Relations

Standard Lithium

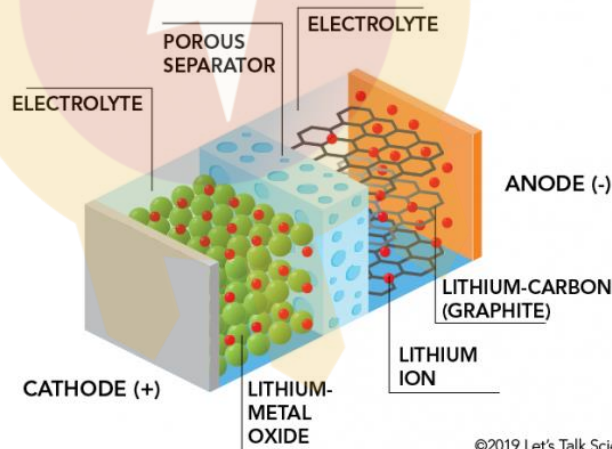


Lithium-Ion Batteries 101:

- LiBs are key technology for 21st century portable electronics and energy storage.
- Key Components are the anode (- electrode), cathode (+ electrode), separator, electrolyte
- Electric Vehicles are driving demand for LiBs and battery materials
- There are different battery chemistries suited for various technological applications
- Trends in battery technology effect the demand for battery materials
- Availability of battery materials will be a major bottleneck for rapid mass adoption

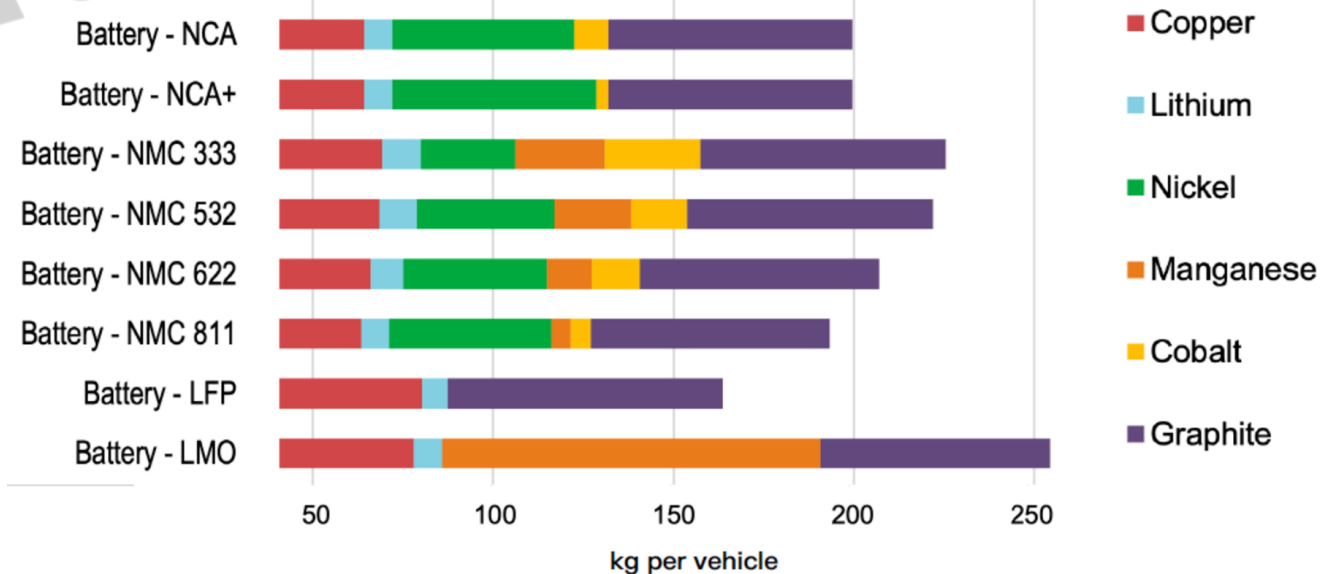


PARTS OF A LITHIUM-ION BATTERY



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Typical use of minerals in a battery electric vehicle



Source: IEA, The Role of Critical Minerals in Clean Energy Transitions March 2022

INVESTMENTS NEEDED TO MEET

FUTURE**BATTERY DEMAND**Total capex required (USD bn)
for base case scenario*

2040P

UPSTREAM

Raw Materials

\$188B Lithium

\$157B Recycling

\$119B Nickel

\$82B Copper

\$19B Aluminium

\$13B Cobalt

\$9B Graphite

\$3B Manganese

MIDSTREAM

Battery components

\$157B Cathode

\$92B Separator

\$43B Anode

\$7B Electrolyte

Largest %
increase ▶

2030P

\$94B

\$26B

\$56B

\$43B

\$9B

\$11B

\$5B

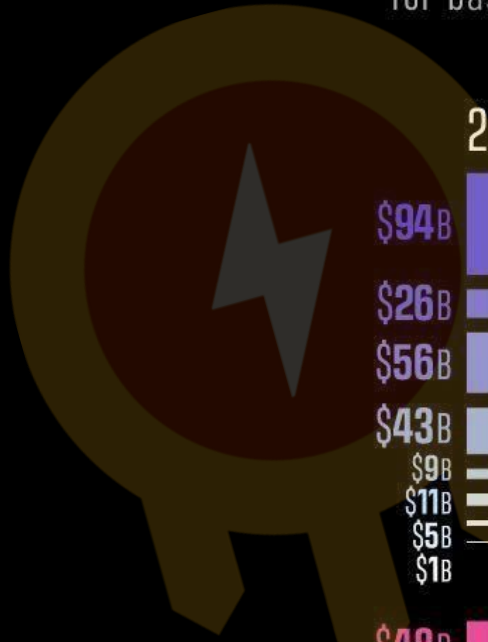
\$1B

\$48B

\$39B

\$14B

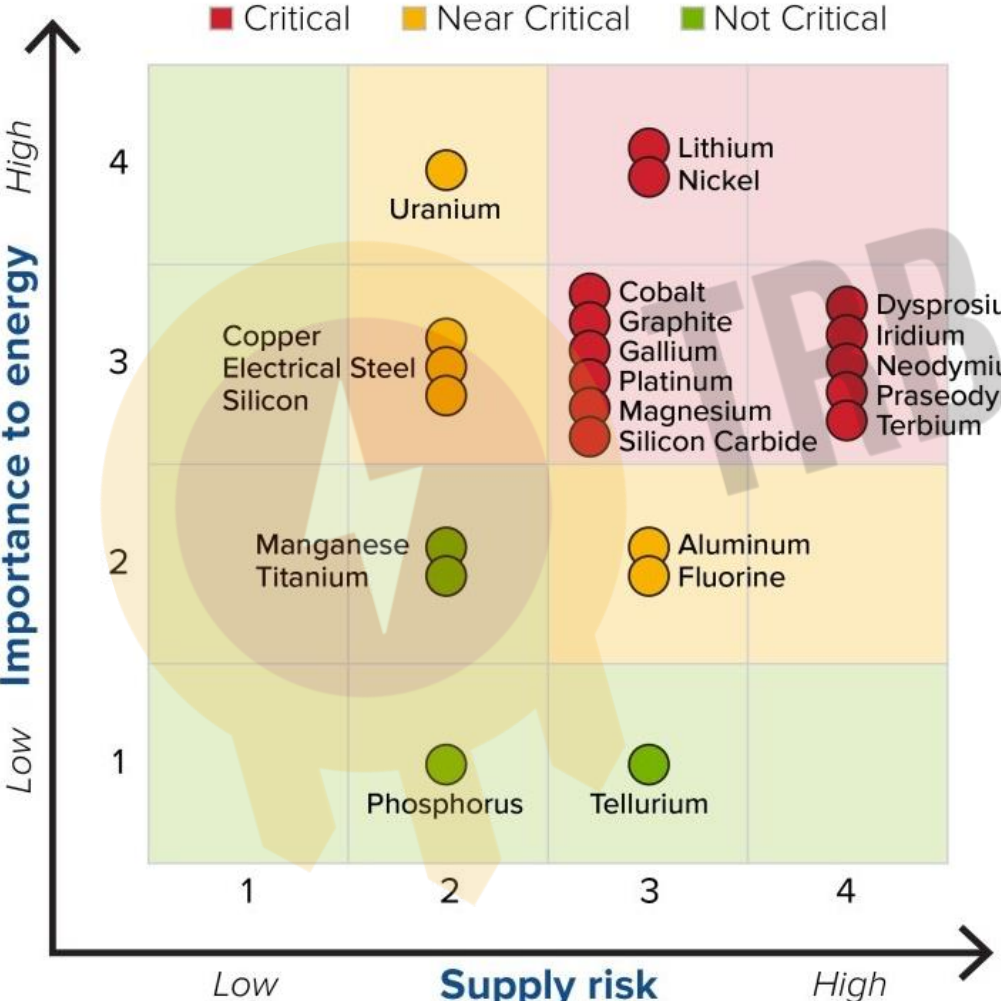
\$3B



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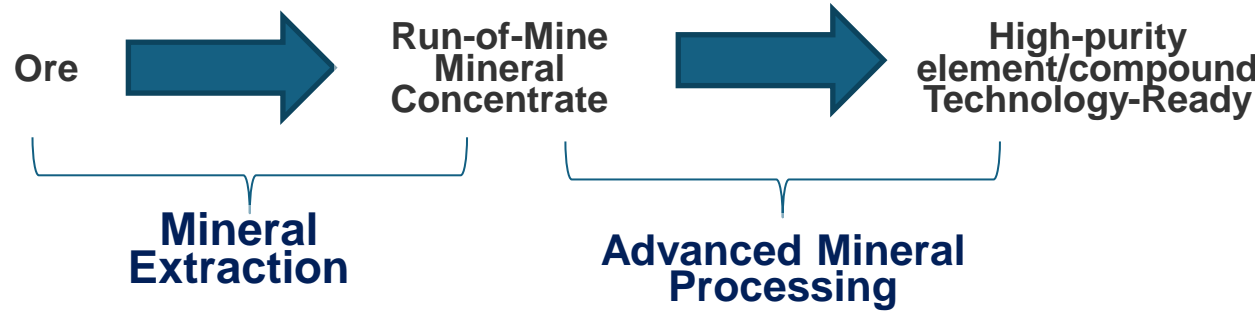
Lithium: Critical Mineral

MEDIUM TERM 2025-2035



What is a critical mineral?

1. Essential to the economic and national security of the United States
2. A supply chain vulnerable to disruption
3. Serves an essential function manufacturing a product we cannot live without



Source: U.S. Department of Energy

Spodumene Example

~\$0-50/t
1% Li₂O



Excavation

~\$1,000-3,000/t
6% Li₂O



Beneficiation



Concentration

~\$15,000-25,000/t
> 99.3% LiOH



Chemical Conversion
and Purification



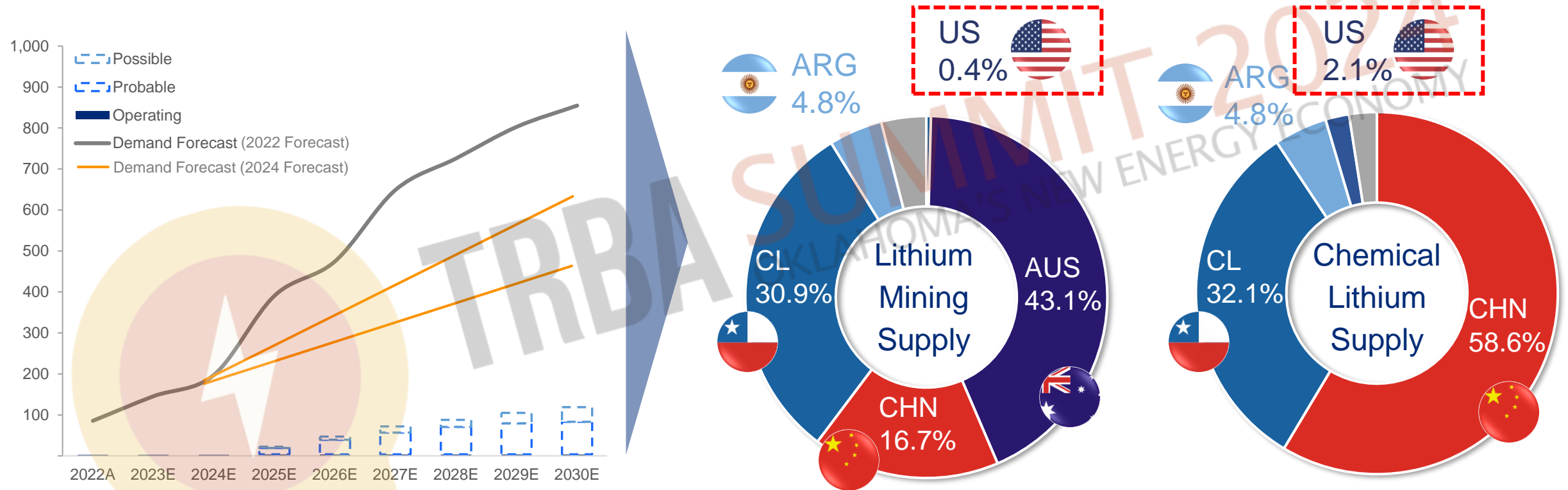
Advanced
Material

Mining

Advanced Material
Manufacturing

SLI | Leading the Charge to Address America's Lithium Supply Shortfall

Less Than 1% of Global Lithium Extraction in the U.S.



U.S. Lithium Supply & Demand Estimates⁽²⁾

(kt LCE)

- ✗ U.S. projects struggle to scale due to permitting, social license to operate and limited access to water

Lack of Local Supply ^(2022A)⁽¹⁾

- ✗ Today's lithium travels ~20,000 miles from resource to end user
- ✓ The new **Standard** will travel < 1,000 miles to end user
- ✓ Onshoring of domestic lithium extraction

Source: Benchmark Minerals Q2 2023 Lithium Forecast. Demand estimates based on Benchmark Minerals Intelligence US Gigafactory Capacity assuming 800 tonnes LCE / GWh.

(1) Grey shading represents "Other".
 (2) Weighted supply estimates based on Benchmark Minerals classification and a 5% yield loss and 5% disruption allowance.

Bringing Lithium to Market in an Environmentally Sustainable Manner

Environmental Benefits of SLI's DLE vs Other Processes

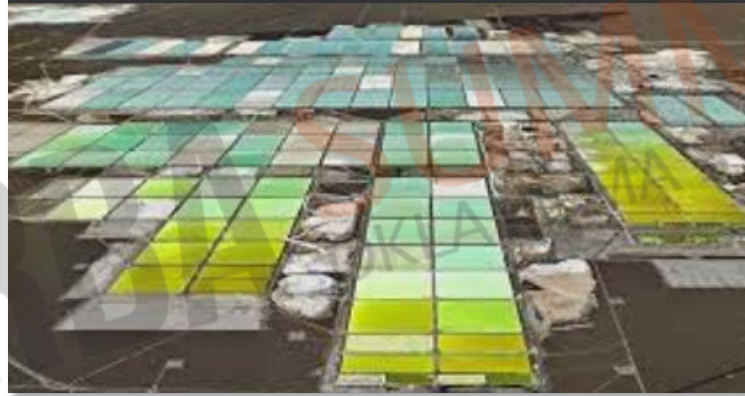
Standard Lithium DLE



Pros

- ✓ Environmentally friendly – no large mining pits or evaporation ponds
- ✓ Quick processing to end products
- ✓ More efficient process
- ✓ Independent of weather
- ✓ Leverages existing infrastructure

Evaporation Ponds



Cons

- ✗ Resource intensive
- ✗ Weather dependent
- ✗ Typically found in remote, fragile ecosystems
- ✗ Large project footprint
- ✗ Lengthy development time, up to 10 years

Hard Rock Mining



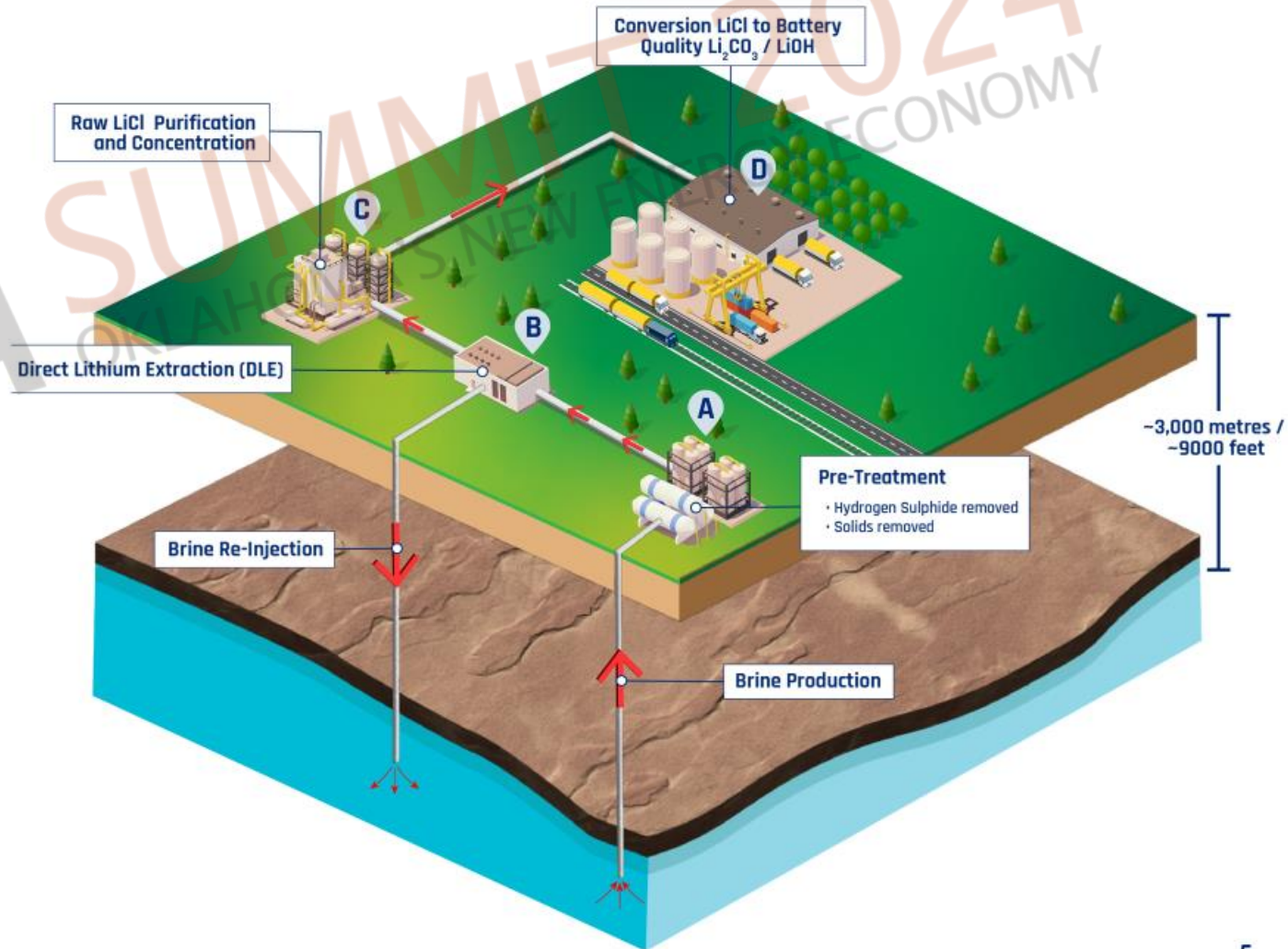
Cons

- ✗ Environmental pollution from dust and noise
- ✗ Large project footprint
- ✗ Significant quantities of overburden requiring disposal
- ✗ Large (often diesel-powered) mining equipment
- ✗ Tailings

Direct Lithium Extraction | The Right Technology for the Job

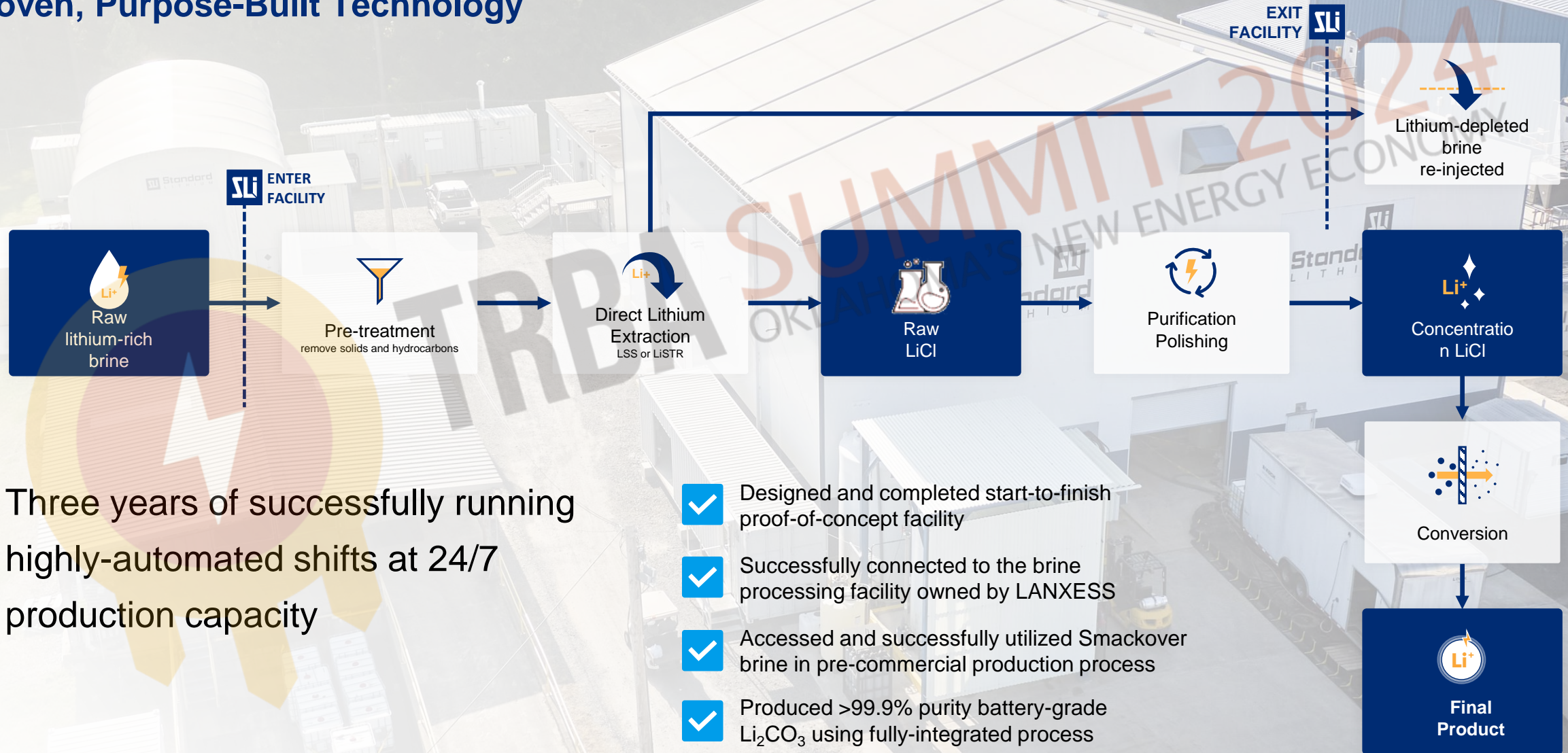
From Brine to Battery – Unlocking North America’s Lithium Opportunity with DLE

- DLE process tailored to the project with pretreatment, extraction, polishing, concentration, and conversion, with continuous optimization to consistently deliver battery-grade lithium products
- Enables scalable production and process adaptability for rapid response to market dynamics, offering advantages over traditional lithium extraction methods
- Smaller footprint and efficient closed-loop system ensure sustainability, while higher recovery rates drive robust economic viability
- Ideal for projects with favorable brine characteristics, including grade, temperature, volume, access to water, power and reagents



Direct Lithium Extraction | Technology Overview

Proven, Purpose-Built Technology



Three years of successfully running highly-automated shifts at 24/7 production capacity

- ✓ Designed and completed start-to-finish proof-of-concept facility
- ✓ Successfully connected to the brine processing facility owned by LANXESS
- ✓ Accessed and successfully utilized Smackover brine in pre-commercial production process
- ✓ Produced >99.9% purity battery-grade Li_2CO_3 using fully-integrated process

Resource Advantage: Transforming the Global Lithium Landscape

Smackover Formation: The Future of Responsible Lithium Development Starts Here

- **Highest-Grade Brine Advantage:** North America's highest-grade lithium brines, comparable to select South American resources.
- **Proven Brine Success:** Arkansas' track record in brine extraction provides a foundation for DLE development
- **A Century of Energy Development:** In depth reservoir and geological understanding, specialized drilling contractors, and expertise in brine operations
- **Proactive Business Environment:** A secure, supportive region with strong stakeholder support and a solid social license

Smackover Key Attributes

High-Grade Resource

Smackover brine has elevated lithium concentrations, typically ranging from 150-800+mg/L

Geological Insights

Data from thousands of wells highlights zones with optimal brine potential and formation characteristics

Proven Reservoir Performance

60+ years of sustainable brine production and reinjection for commercial bromine operations in Arkansas, handling billions of gallons annually

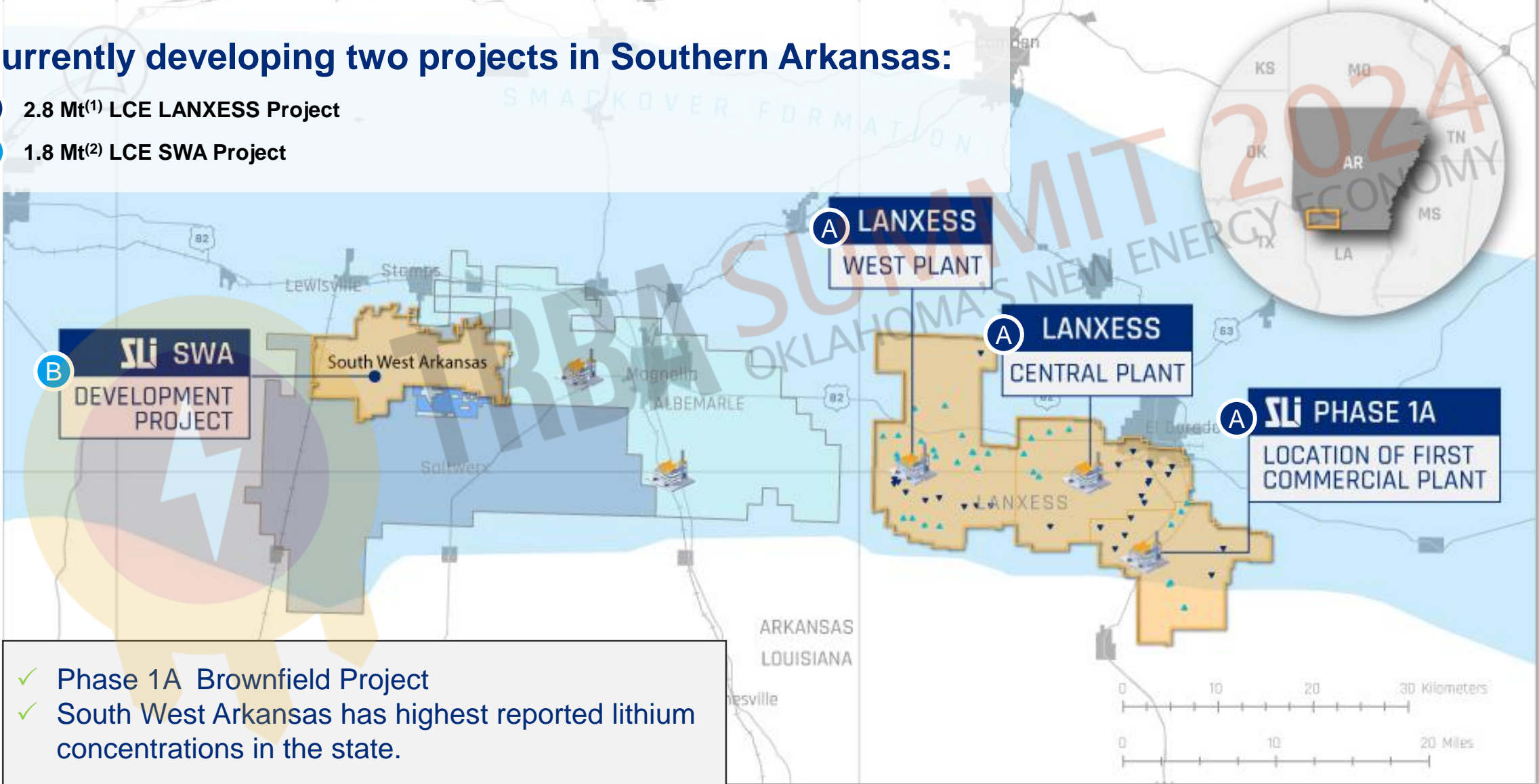
600 mi/ 1000 km

Arkansas Projects Asset Map

Currently developing two projects in Southern Arkansas:

A 2.8 Mt⁽¹⁾ LCE LANXESS Project

B 1.8 Mt⁽²⁾ LCE SWA Project



✓ Phase 1A Brownfield Project
✓ South West Arkansas has highest reported lithium concentrations in the state.

(1) Definitive Feasibility Study October 18, 2023, LANXESS Lease Holding: 2.8Mt Measured and Indicated LCE; Phase 1A Resource: 208Kt Proven and Probable Reserve LCE.

(2) SWA Preliminary Feasibility Study, September 18, 2023. 1.4Mt LCE Indicated Resource 0.4Mt LCE Inferred Resource.



Proven DLE Technology at Commercial-Scale

- Standard Lithium successfully installed and commissioned the Li-Pro™ Lithium Selective Sorption (LSS) commercial scale unit supplied by KTS
- Column has been operating continuously since the beginning of April 2024 exceeding design parameters
 - Avg. lithium **recovery of 97.3%**
 - Avg. key **contaminant rejection of +99%**
 - Avg. boron rejection of +95%
- Over **8,500 operational cycles** using Li-Pro™ LSS technology at the demonstration plant
- Over **18 million gallons** of Smackover brine processed
- No drop off in performance of sorbent seen to-date
- Demo Plant has been continuously processing Smackover brine since May 2020
- Only commercial scale DLE column in operation in North America

Note: Results are from a representative 2-week period in April 2024 as disclosed in the Company's press release dated April 24, 2024



Landmark Partnership at South West Arkansas and Texas

Equinor acquires 45% interest in the South West Arkansas (SWA) Project and East Texas Properties

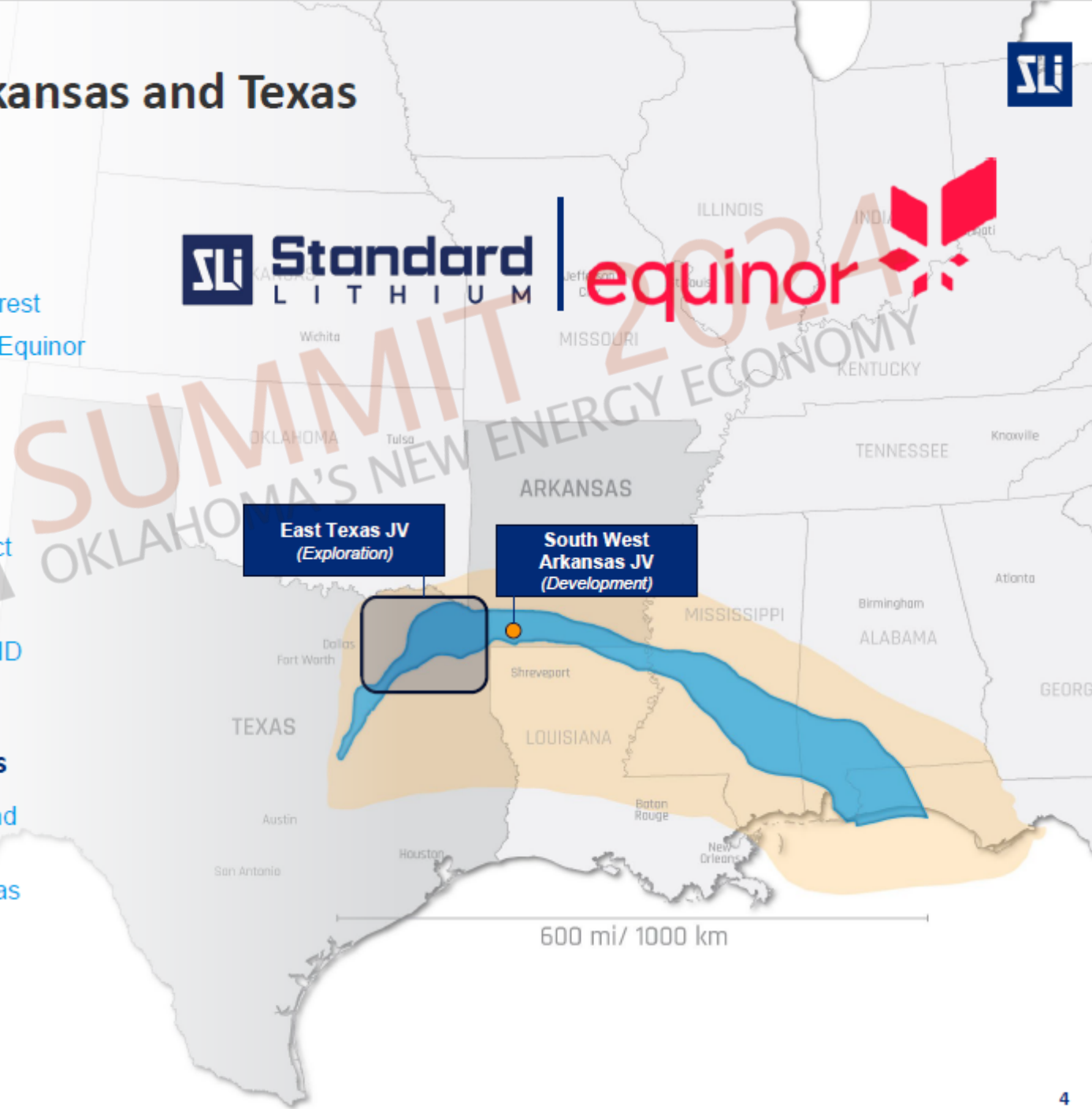
- ▶ Standard Lithium remains majority owner and operator with 55% interest
- ▶ Partners fund their *pro rata* share of expenditures post cost-carry by Equinor

Equinor commits to contribute up to US\$160 million

- ▶ Upfront Payment: US\$30 million to Standard Lithium
- ▶ Sole Funded Workplan: Equinor to spend US\$60 million (SWA Project and East Texas)
- ▶ Milestone Payments: Up to US\$70 million subject to positive Final Investment Decisions (FID); significant contribution to our equity at FID

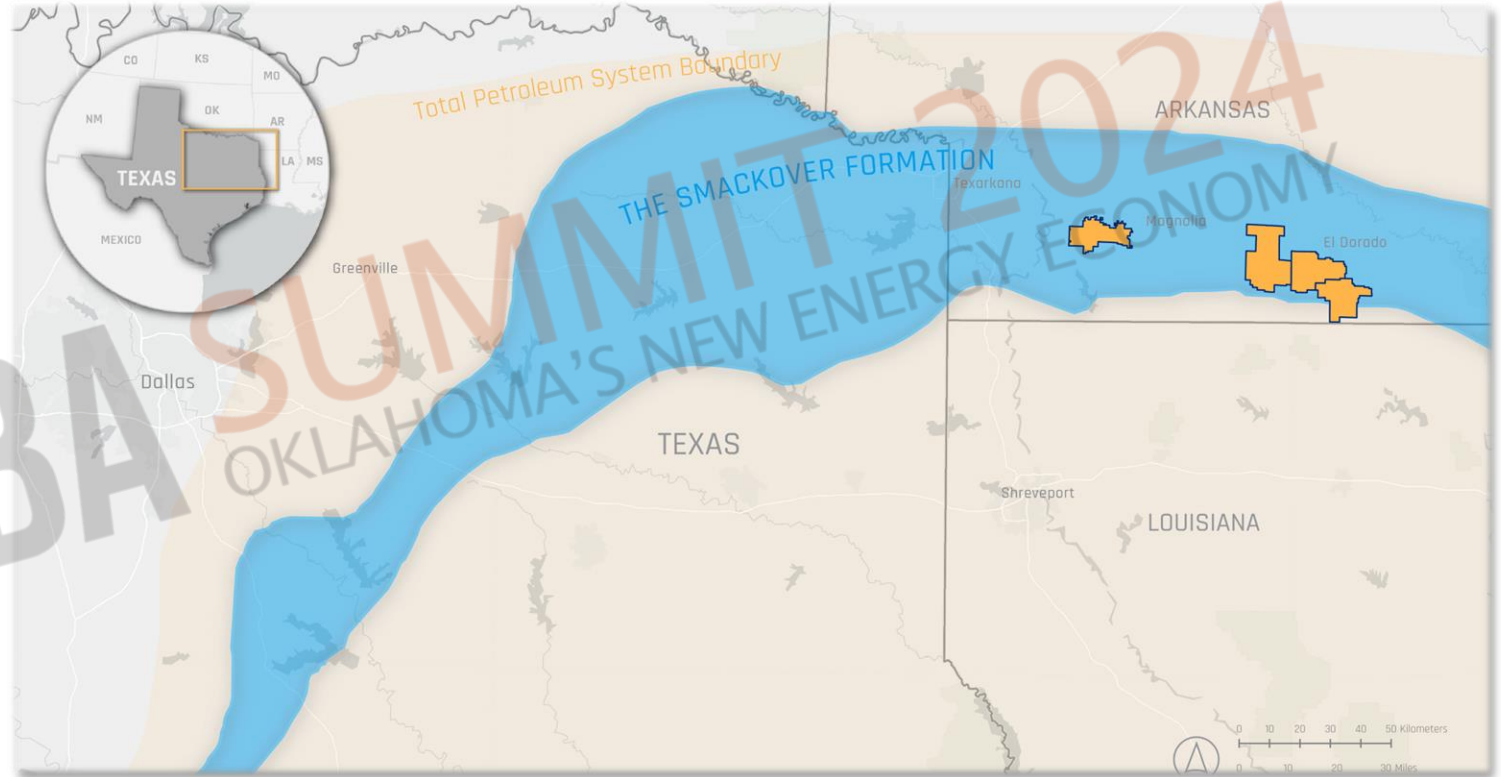
Partners will utilize core competencies to advance projects

- ▶ Both partners will contribute to project execution, decision-making and governance of JVs
- ▶ Progressing SWA Project to Final Investment Decision and East Texas to initial resource
- ▶ Equinor partnership is additive to existing strategic partnerships with Koch and Lanxess



Smackover Expansion Opportunity | East Texas

- Secured land, drilled and sampled lithium brine showing significant potential
- Nearly four years spent securing geological data, analyzing brine samples and reviewing mineral ownership
- Defined areas of the Smackover Formation with optimal brine conditions
- Collaborating with state authorities
- Clear vision for the future
- Significant Potash and Bromine Opportunity



Sampled the
highest confirmed
grade lithium brine
in North America

644 mg/L
Average
Concentration⁽¹⁾

3.5+
years
Of Work Completed to Date

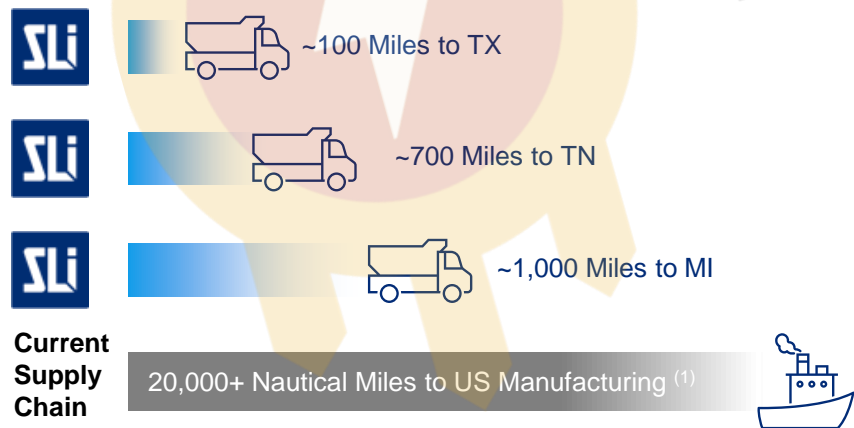
(1) Recent drilling has shown a range of lithium concentrations; October 25, 2023 news release.

Most Advantaged Lithium Projects in the US

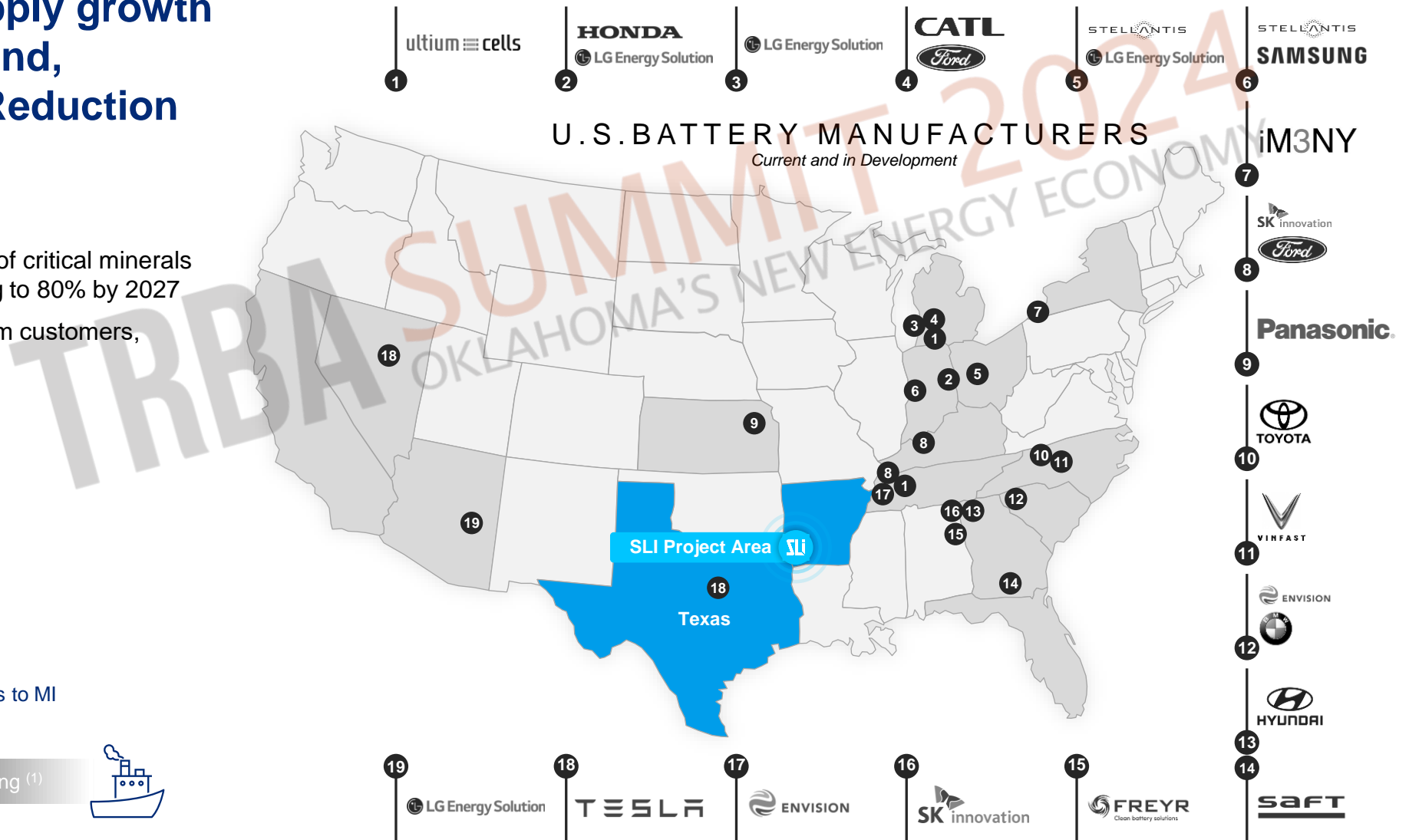
US needs significant supply growth to meet forecasted demand, augmented by Inflation Reduction Act (“IRA”)

- **IRA Requirements:** >40% of the value of critical minerals must be regionally sourced⁽¹⁾, increasing to 80% by 2027
- SLI’s assets are adjacent to target lithium customers, simplifying logistics and reducing costs

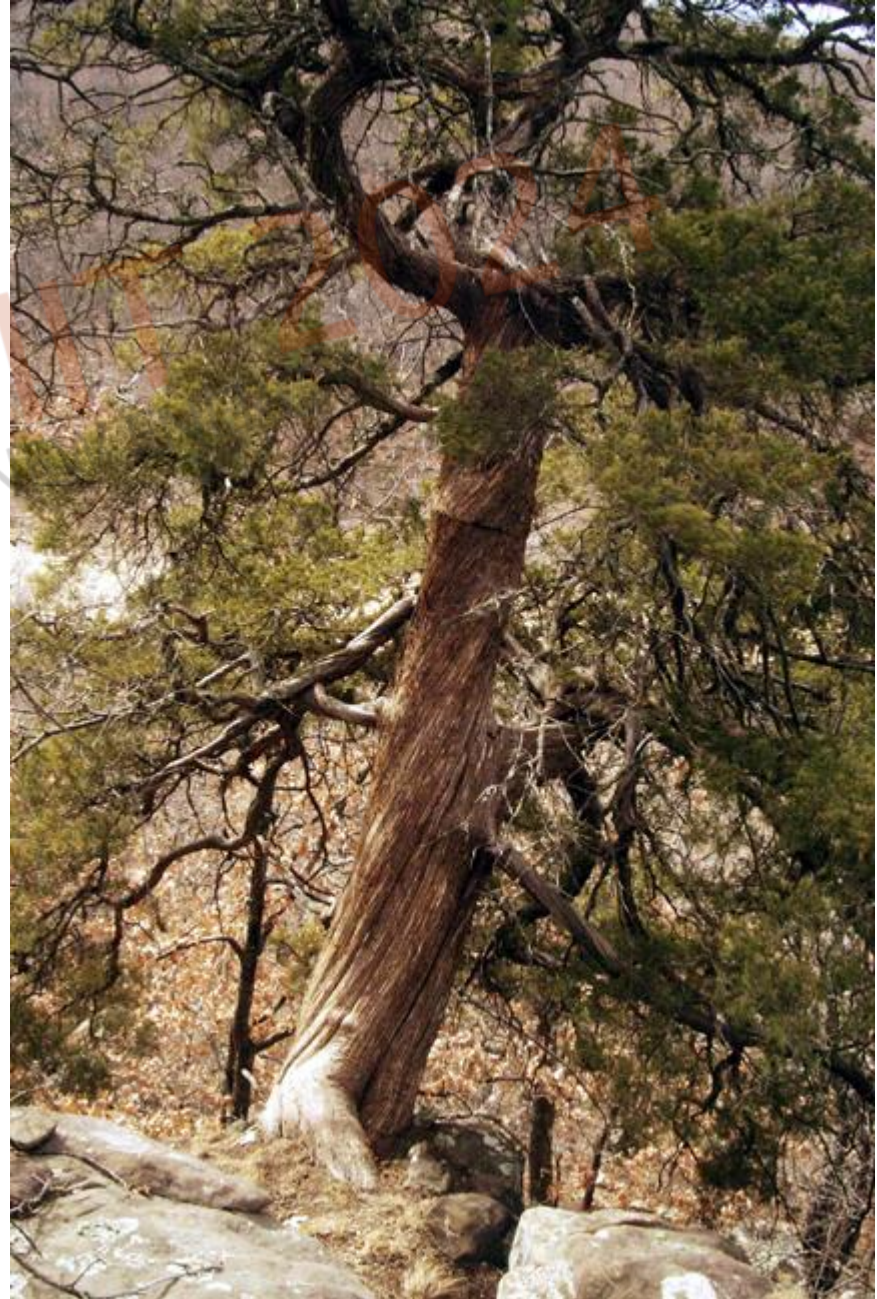
SLI Assets Near End Market



(1) Extracted or processed in any country with which the US has a free trade agreement in effect, or to be recycled in North America.
 (2) Assumes mining location in western South America or Australia, refining in China, cathode production in Korea, and OEM destination in the US.



What about Oklahoma?





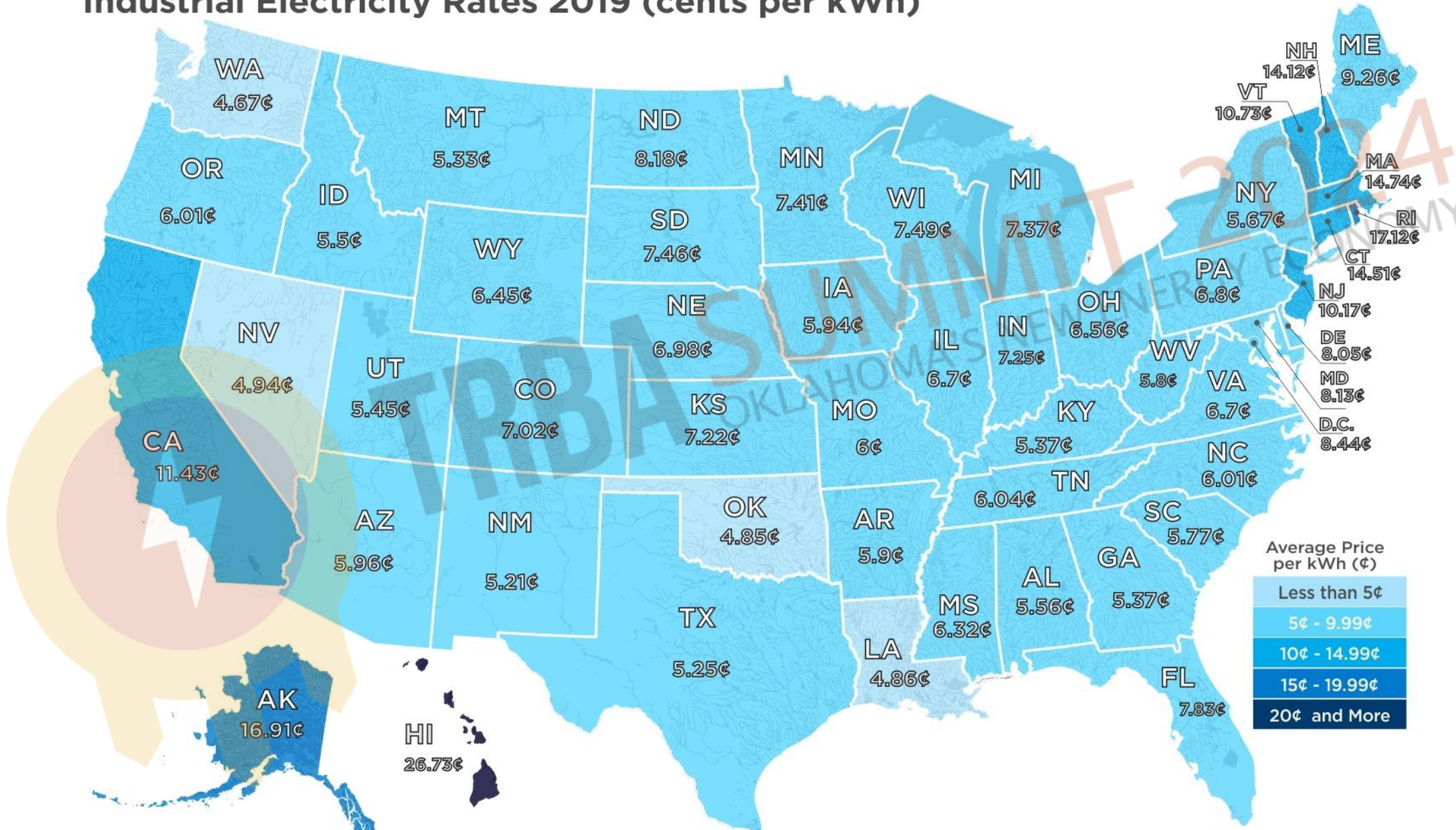
Attracting the Industry to Oklahoma

The top factors for site selection for this industry:

- Mega Sites are Necessary for Mega Projects
- Cost of Energy
- Carbon Footprint of Grid Mix
- Access to Infrastructure
- Predictable Permitting
- Proximity to upstream and downstream partners

How Much Americans Pay In Electricity Rates in Each State

Industrial Electricity Rates 2019 (cents per kWh)



Article & Sources:

<https://howmuch.net/articles/how-much-americans-pay-in-electricity-rates-in-each-state-2019>
U.S. Energy Information Administration - <https://www.eia.gov/>

NYSE: SLI | TSX.V: SLI | FSE: S5I

Leading a new era of responsible lithium production in America

SCIENCE • SCALE • SPEED

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