



# SUSTAINABLE CRITICAL MINERALS FOR ADVANCED U.S. INDUSTRIES

FEBRUARY 2021

ASX: TAO

# Disclaimers

## Forward Looking Statements

Information included in this release constitutes forward-looking statements. Often, but not always, forward looking statements can generally be identified by the use of forward looking words such as “may”, “will”, “expect”, “intend”, “plan”, “estimate”, “anticipate”, “continue”, and “guidance”, or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company’s actual results, performance, and achievements to differ materially from any future results, performance or achievements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licenses and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

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Although the Company attempts and has attempted to identify factors that would cause actual actions, events or results to differ materially from those disclosed in forward looking statements, there may be other factors that could cause actual results, performance, achievements or events not to be as anticipated, estimated or intended, and many events are beyond the reasonable control of the Company. Accordingly, readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in these materials speak only at the date of issue. Subject to any continuing obligations under applicable law or any relevant stock exchange listing rules, in providing this information the company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in events, conditions or circumstances on which any such statement is based.

## Cautionary Statements and Important Information

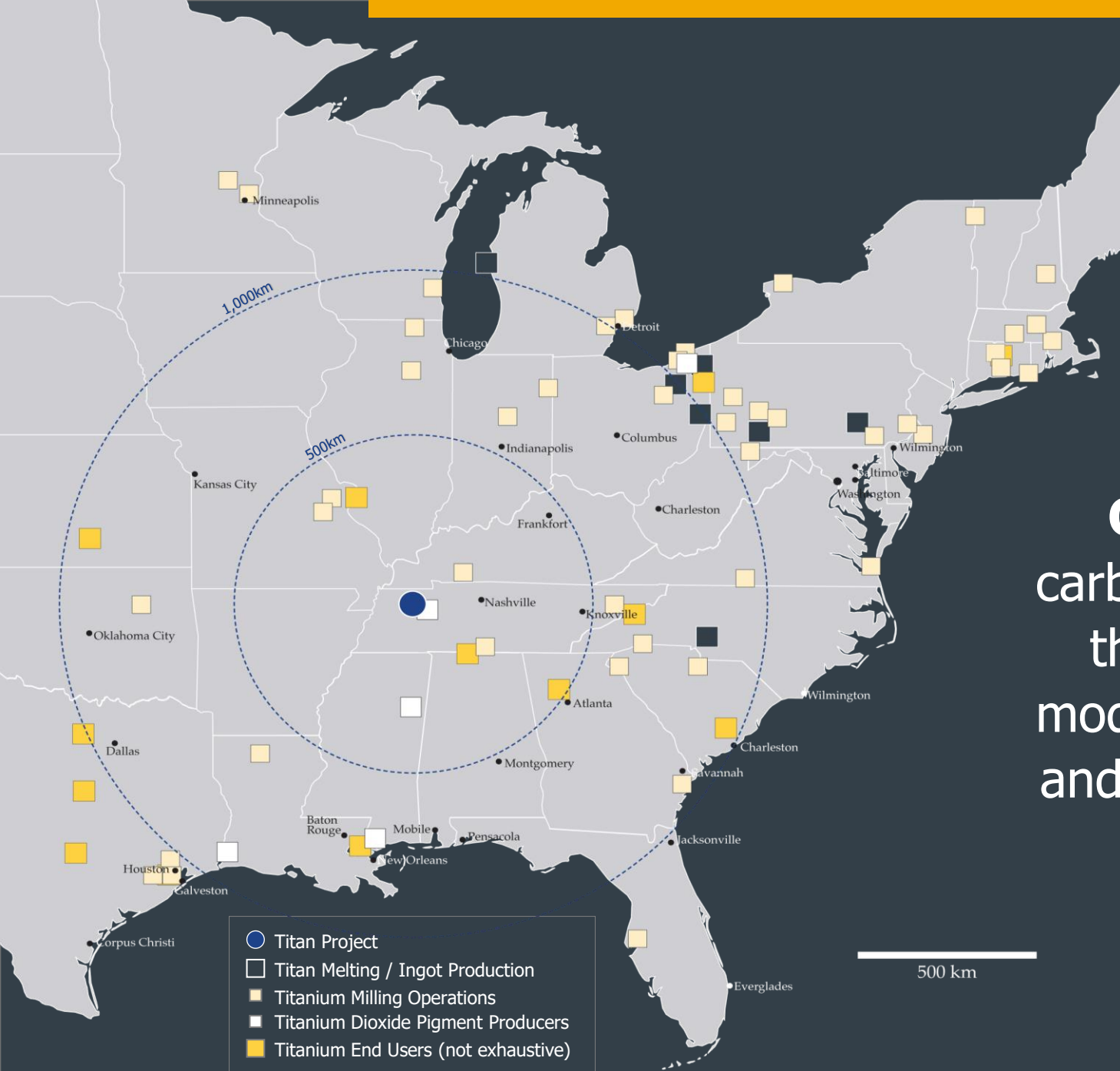
This presentation has been prepared by the Company as a summary only and does not contain all information about assets and liabilities, financial position and performance, profits and losses, prospects, and the rights and liabilities attaching to securities. Any investment in the Company should be considered speculative and there is no guarantee that they will make a return on capital invested, that dividends would be paid, or that there will be an increase in the value of the investment in the future.

The Company does not purport to give financial or investment advice. No account has been taken of the objectives, financial situation or needs of any recipient of this presentation. Recipients of this presentation should carefully consider whether the securities issued by the Company are an appropriate investment for them in light of their personal circumstances, including their financial and taxation position.

## Competent Persons Statements

The information in this presentation that relates to Exploration Results is extracted from the Company’s ASX Announcements titled “Maiden Drill Results Confirm Potential For A Thick, High Grade U.S. Titanium & Zircon Deposit’ dated 7 January 2021 and ‘Phase 2 Sampling Results Extend Prospect Areas At Milford’ dated 3 November 2020 (“Original ASX Announcements”) which are available to view at the Company’s website at [taocommodities.com.au](http://taocommodities.com.au).

The Company confirms that a) it is not aware of any new information or data that materially affects the information included in the Original ASX Announcements; b) all material assumptions included in the Original ASX Announcements continue to apply and have not materially changed; and c) the form and context in which the relevant Competent Persons’ findings are presented in this report have not been materially changed from the Original ASX Announcements.



TAO COMMODITIES

**Our Mission** is to develop zero carbon, sustainable critical minerals in the U.S. for industries driving our modern world, from space exploration and electric vehicles through to glass, paints and pigments.





**Tennessee's McNairy Sand** is a potential massive source of critical minerals for the USA industries and TAO's Titan Project has the potential to be the first and leading producer in the area.



# U.S. CRITICAL MINERAL SUPPLY CHAIN

**Titan Project** can solve at least 3 of the USA's critical mineral supply chain challenges.

## **Titanium Metal (Ti)**

**100% Import Reliant**

USA is the largest global consumer of titanium metal for space, aerospace and defense applications.

## **Rare Earth Elements (REEs)**

**80% Reliant on Chinese Imports**

USA has undergone fast paced growth in its EV and renewable sectors which requires REEs for magnets in motors and generators.

## **Titanium Mineral (TiO<sub>2</sub>)**

**94% Import Reliant**

USA is the 2nd largest consumer of titanium minerals globally which is used in everything from production of paints and pigments through solar panels.



**Titanium metal** is critical to the development of high-tech U.S. industries including the aerospace and defense sectors, but also plays a crucial role in light weighting mobility sectors and for corrosion resistance in chemical sectors.



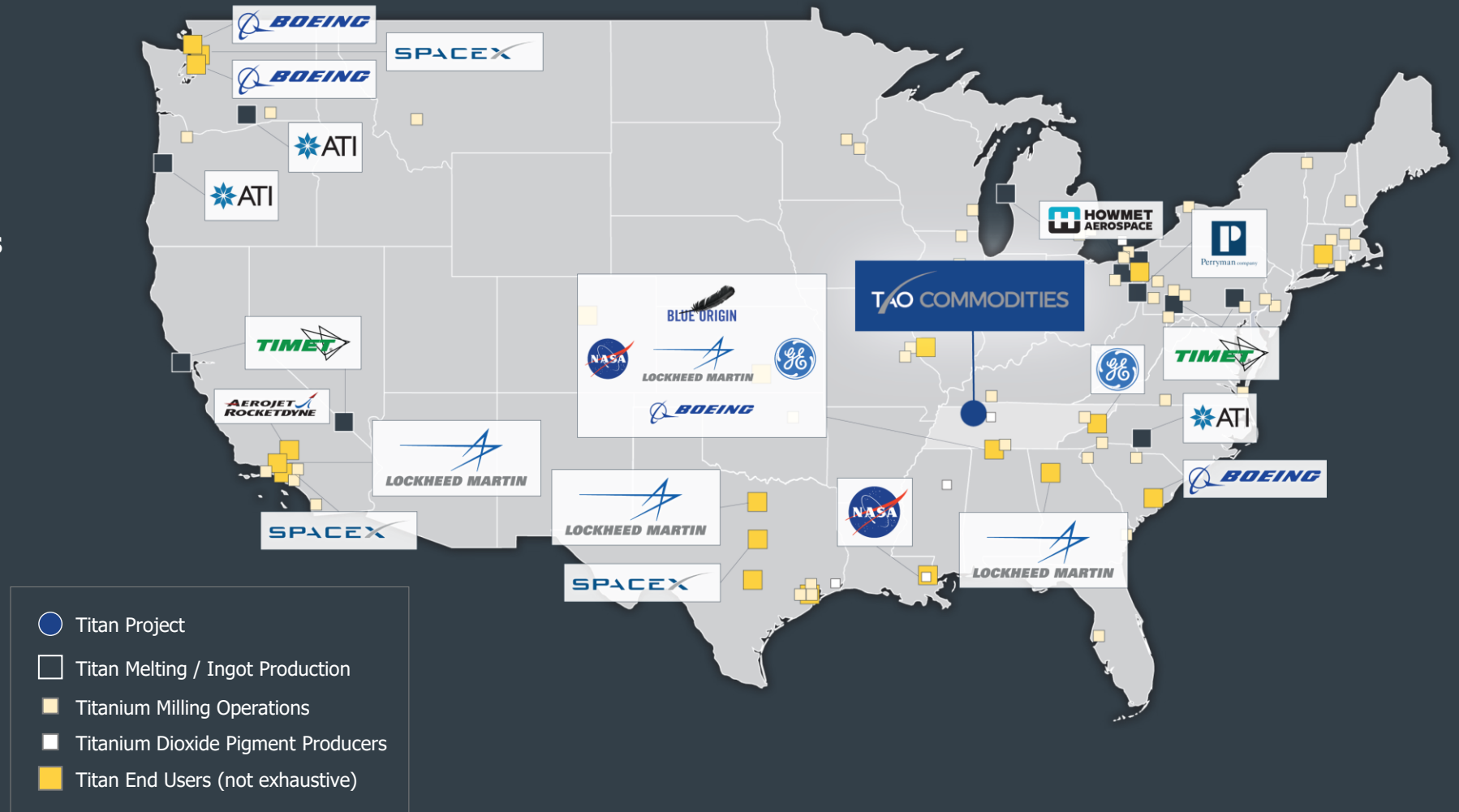
# USA IS THE #1 GLOBAL CONSUMER FOR AEROSPACE AND DEFENSE...

## Large & Established Tier 1 Titanium Consumers

### 2019 Consumption Statistics

- Titanium melt products: 82 ktpa
- Titanium mill products: 44 ktpa

Source: Roskill



# ...YET THE USA IS 100% RELIANT ON TITANIUM SPONGE AND RAW METAL IMPORTS

**22x Growth in  
Chinese Sponge  
Capacity from  
2000 to 2020**

**Chinese Sponge Capacity  
Statistics**

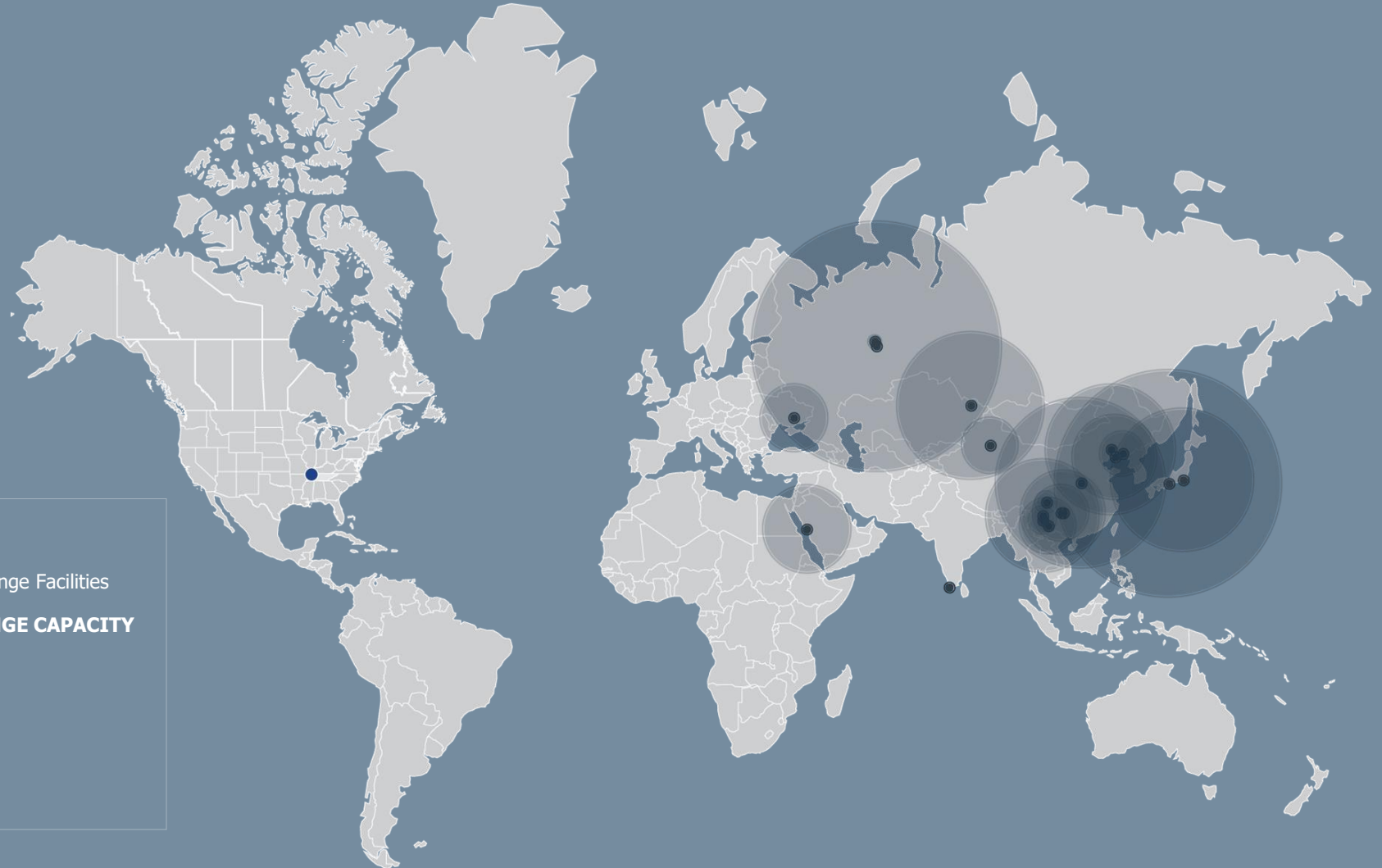
2000: 7,000 tpa

2020: 158,000 tpa

Source: USGS

-  Titan Project
-  Titanium Sponge Facilities

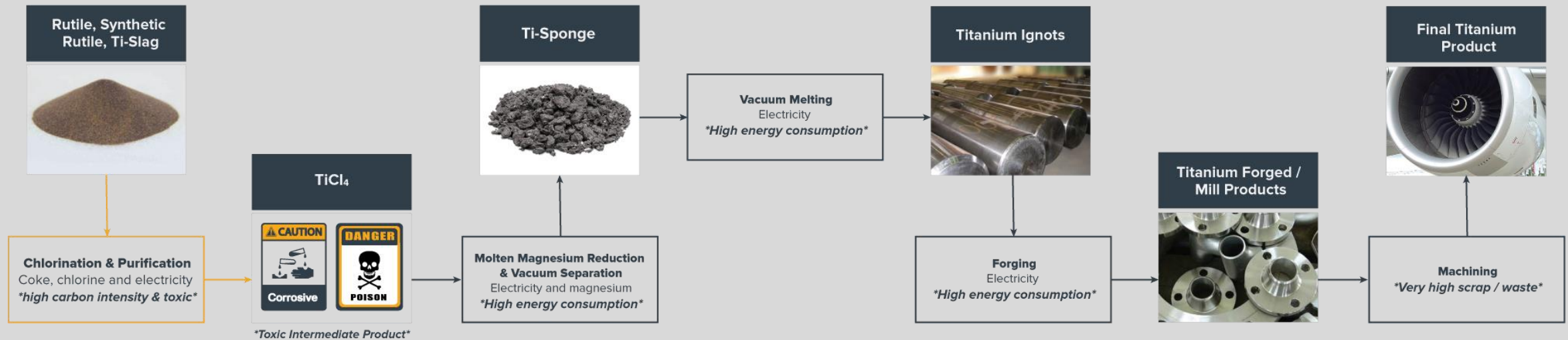
**TITANIUM SPONGE CAPACITY**  
*tons per annum*





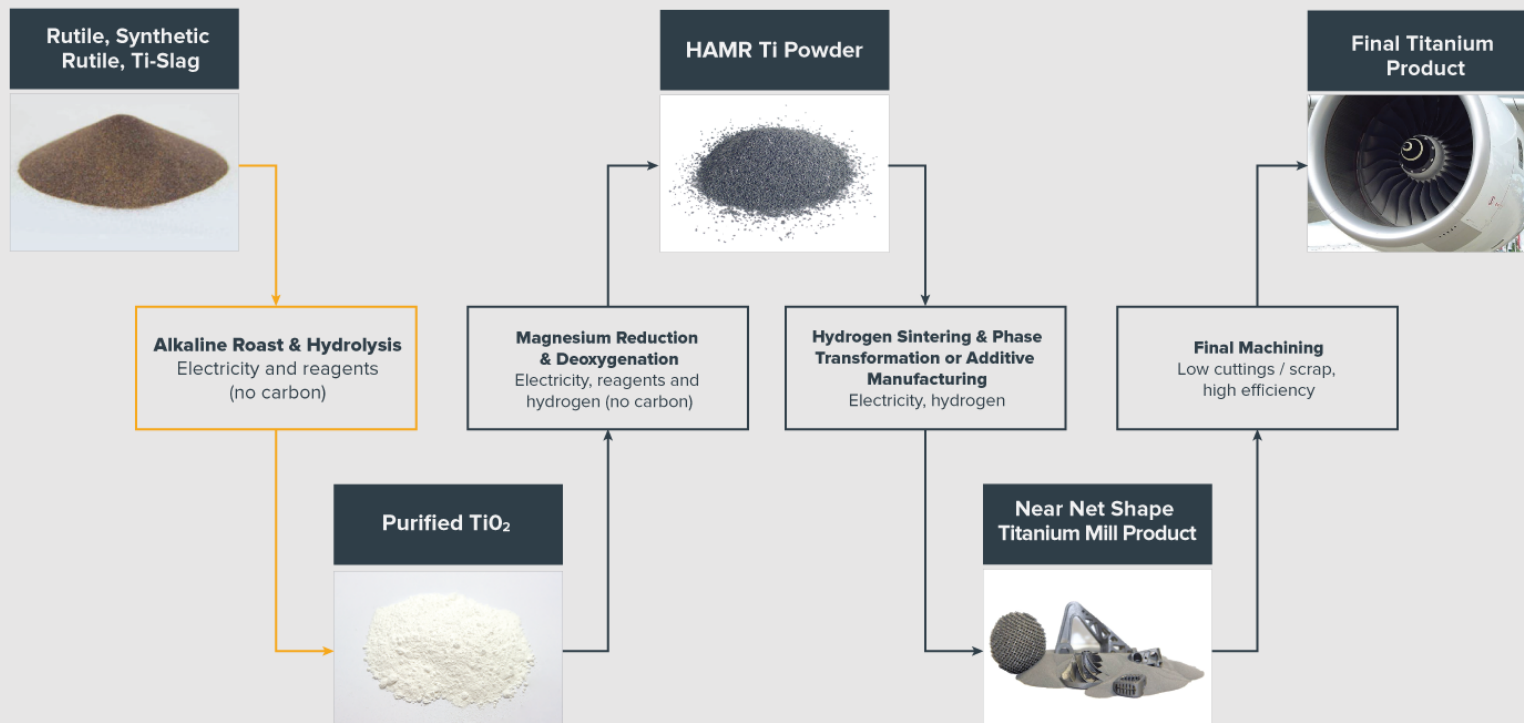
# ...FROM COUNTRIES WHICH RELY MOSTLY ON COAL FOR ENERGY AND UTILIZE A CARBON INTENSIVE PROCESS

## Existing Kroll Process Titanium mineral through titanium metal part flowsheet



# ZERO CARBON TITANIUM – DEVELOPING TECHNOLOGY TO ACHIEVE A STEP CHANGE IN THE TITANIUM SECTOR

## Breakthrough *HAMR Process* Titanium Mineral Through Titanium Metal Part Flowsheet



Invented by  
Dr. Zak Fang



Funded By ARPA-E, a DOE Agency



Industrial Partners



53% Lower Energy  
Consumption



Zero Carbon  
Operations



Reduced Cost



3D Printing  
Powder



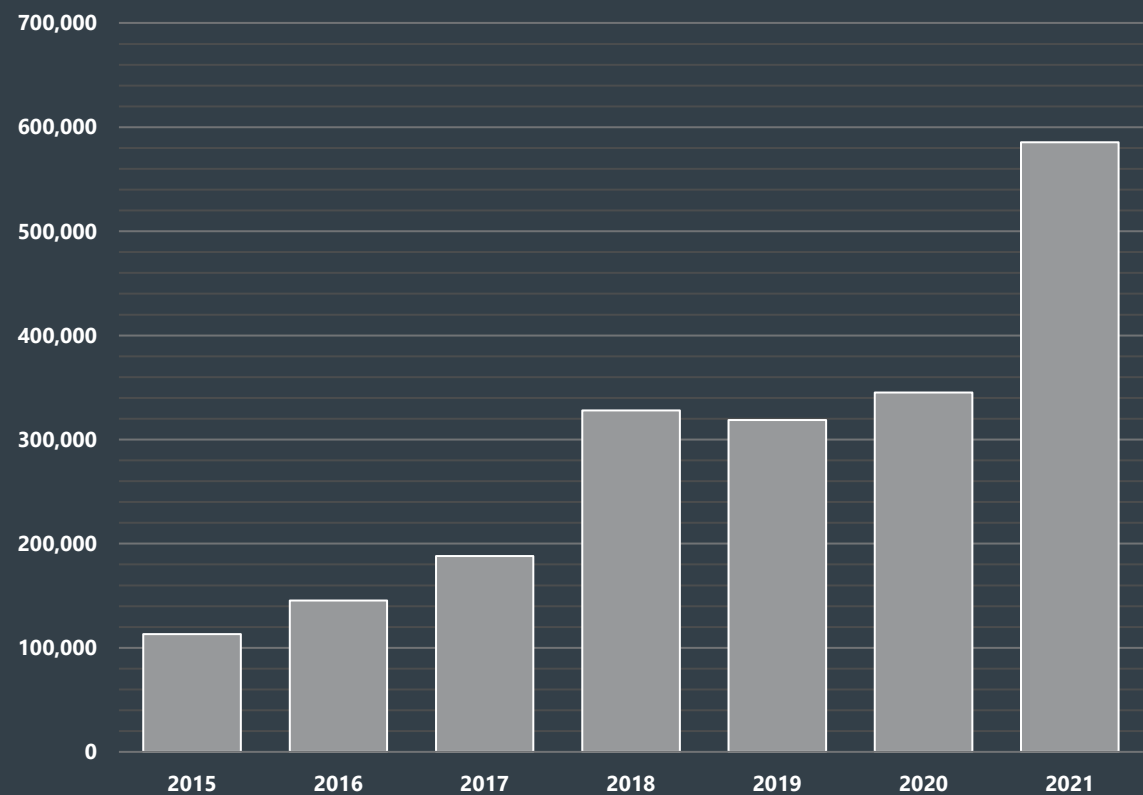


**Rare earth elements** are critical to the U.S. transition to a cleaner future and power our electric vehicles and renewable energy sources.



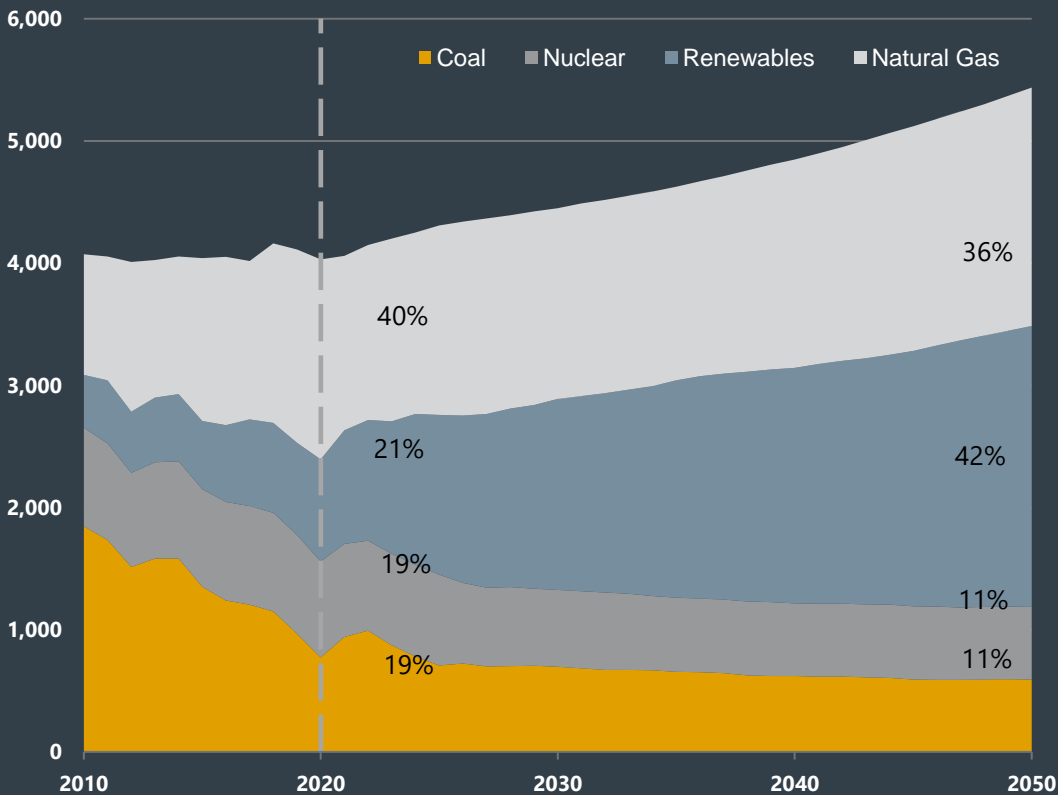
# ENORMOUS RENEWABLE AND EV GROWTH IS FORECAST IN THE USA

U.S. EV YoY Sales  
# vehicles



Source: Auto manufacturers Alliance / IHS Markit

U.S. Electricity Generation from Selected Fuels  
Billion KWh

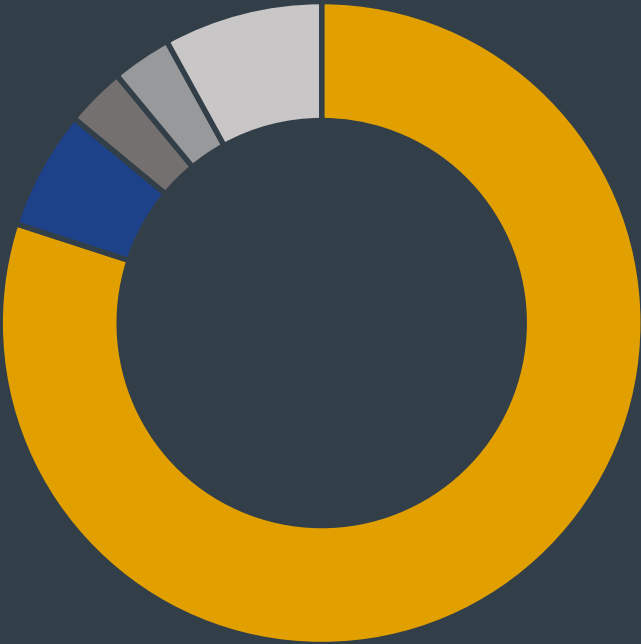


Source: EIA



# OVER 80% OF REEs ARE IMPORTED FROM CHINA, WITH ESG STANDARDS BELOW CUSTOMER REQUIREMENTS

U.S. REE Imports



■ China ■ Estonia ■ Japan ■ Malaysia ■ Other

Source: USGS

Chinese ESG Standards

67%  
Coal Fired Power Generation

Source: International Energy Agency

Customer Commitments



*"Apple plans to become carbon neutral across its entire business, manufacturing supply chain, and product life cycle by 2030."*



*"By 2030 Microsoft will be carbon negative, and by 2050 Microsoft will remove from the environment all the carbon the company has emitted either directly or by electrical consumption since it was founded in 1975."*



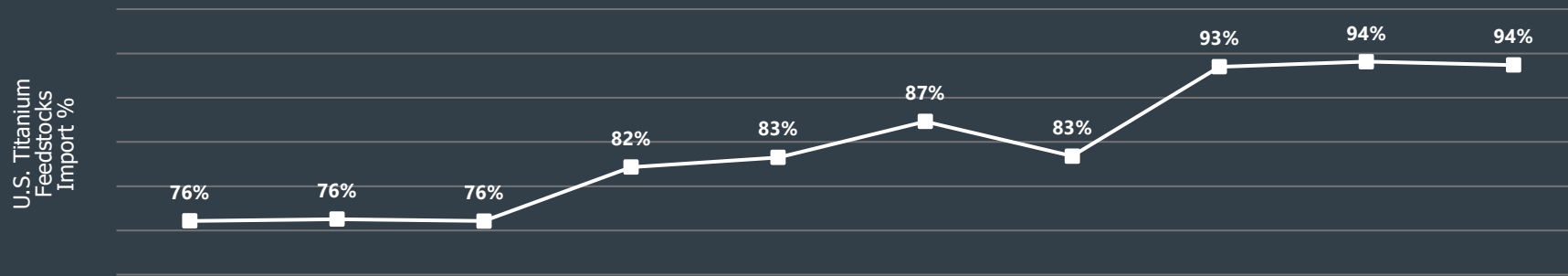
*"We are committed to ensuring that partners around the world in our supply chain are treated with fundamental dignity and respect."*

 TAO COMMODITIES

**Titanium minerals** are critical to the production of our paints and pigments and are used in everything from automotive sector to coatings for bridges.

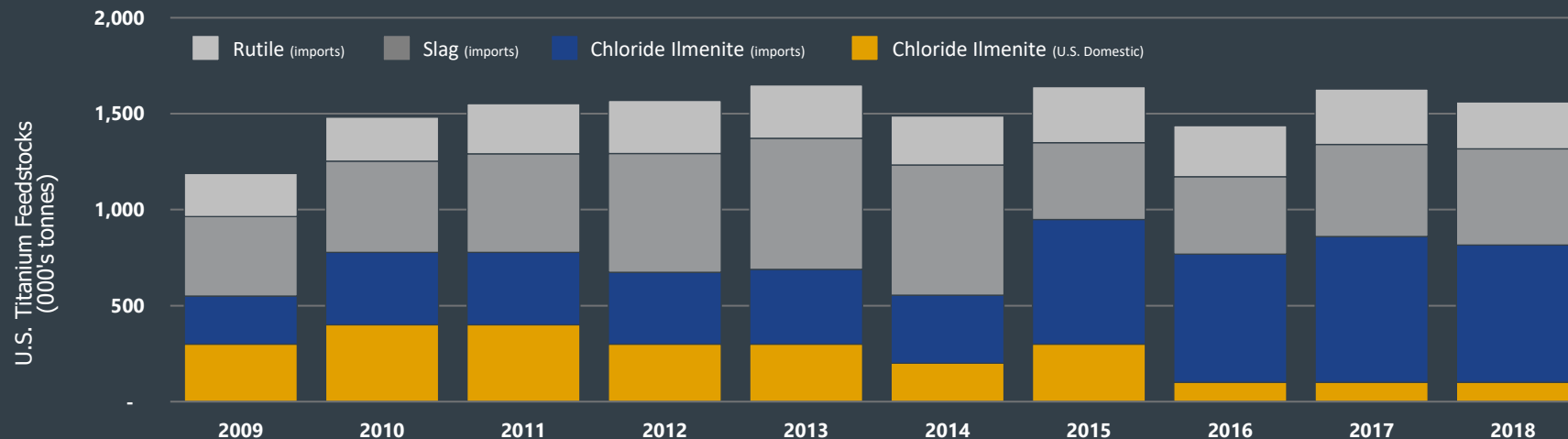
# TITANIUM FEEDSTOCKS IN THE USA ARE ALSO ALMOST EXCLUSIVELY RELIANT ON IMPORTS

U.S. TITANIUM FEEDSTOCK: IMPORT % OF REQUIREMENTS & VALUE BREAKDOWN



**94%**

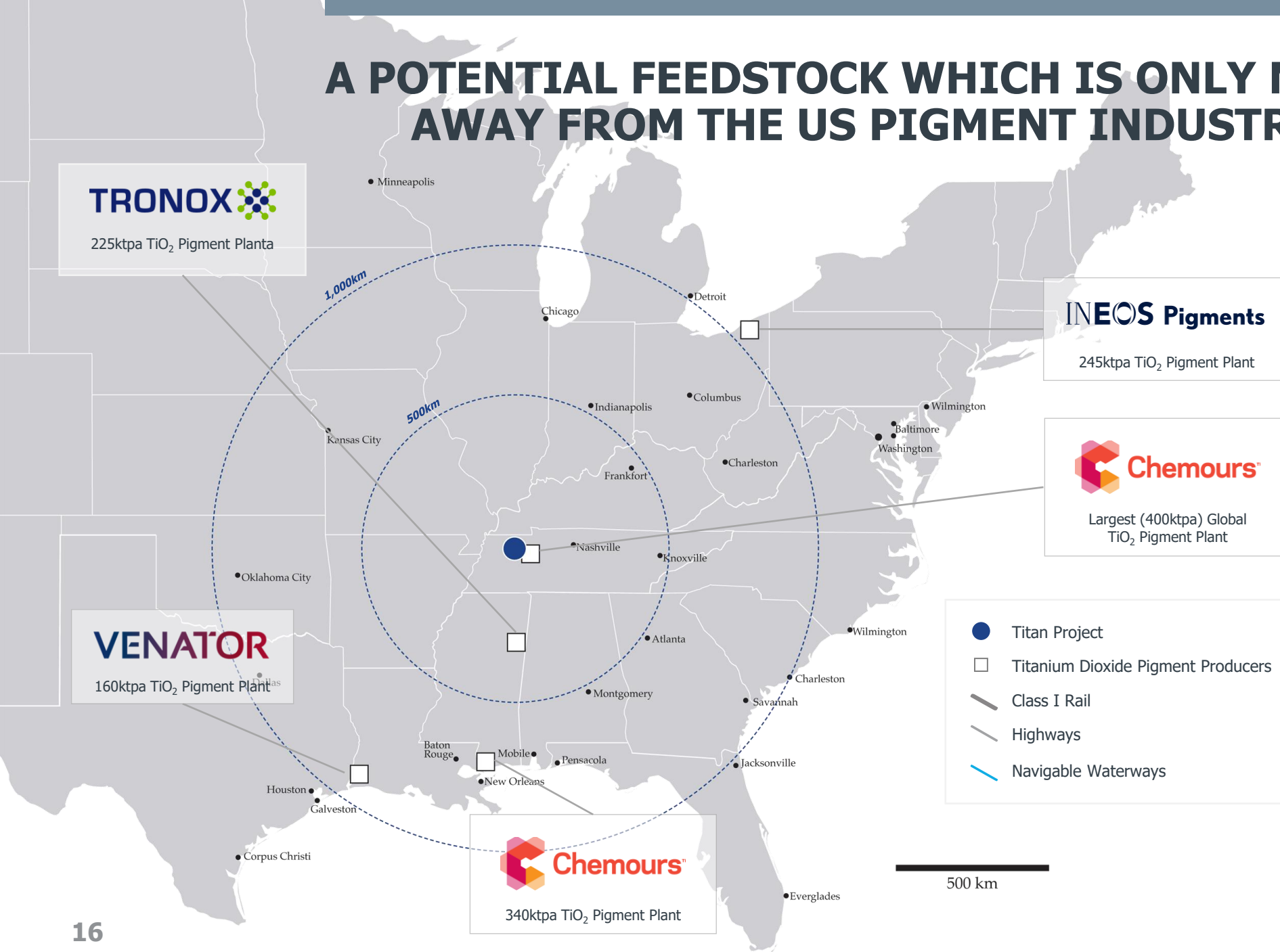
U.S. import dependence  
on titanium feedstock



**A\$1.2B**

U.S. titanium feedstock value  
breakdown  
(1.5mtpa in 2019)

# A POTENTIAL FEEDSTOCK WHICH IS ONLY MILES AWAY FROM THE US PIGMENT INDUSTRY





# ATTRACTIVE MARKET OPPORTUNITY

It is not only critical that U.S. develops the ability to supply these industries sustainably and domestically, but it is a **compelling global market opportunity.**

## Titanium Metal

**\$23.7 Billion**

2026 total addressable market (TAM)  
based on 10% share of the lightweight  
materials sector

Source: Polaris Market Research

## Rare Earth Elements (REEs)

**\$19.8 Billion**

2026 TAM global market for rare earth  
elements

Source: GM Insights

## Titanium Minerals (TiO<sub>2</sub>)

**\$7.8 Billion**

2026 TAM global market for titanium  
mineral ores

Source: Marketwatch.com

# U.S. STRATEGIC PARTNERS & PEER COMPARISONS

Capital markets are rewarding companies looking to make a **material change** in the supply chains needed in rapidly growing industries.

## Potential U.S. Strategic / Offtake Partners



**Boeing**

Aerospace

NYSE:BA | US\$163b



**GE**

Aerospace

NYSE:GE | US\$152b



**SpaceX**

Space

Private | ~US\$74b



**Chemours Company**

Chemicals (incl. Ti)

NYSE:CC | US\$7.5b



**Tronox**

Chemicals (incl. Ti)

NYSE:TROX | US\$5.5b



**ATI**  
Allegheni Technologies

Metals (incl. aerospace)

NYSE:ATI | US\$3.4b



**ARCONIC**

Arconic

Metals (incl. aerospace)

NYSE:ARNC | US\$3.5b



**Proto Labs**

Components (3D printing)

NYSE:PRLB | \$5.1B



**Relativity**

Space

Private | \$2.3B

## Listed Metals Tech. / Resource Companies



**MP Materials**

Rare Earths

NYSE:MP | US\$5.6b



**Australian Strategic Materials**

REE & other

ASX:ASM | A\$0.6b



**Syrah Resources**

Graphite / Anodes

ASX:SYR | A\$0.5b



**Piedmont Lithium**

Lithium / LiOH

ASX:PLL | A\$1.1b



**Pensana**

Rare Earths

ASX:PM8 | A\$0.3b



**Vulcan Energy**

Lithium / LiOH

ASX:VUL | A\$0.8b



**American Pacific Borates**

Boron

ASX:ABR | A\$0.6b



**Novonix**

Cathodes / Anodes

ASX:NVX | A\$0.9b

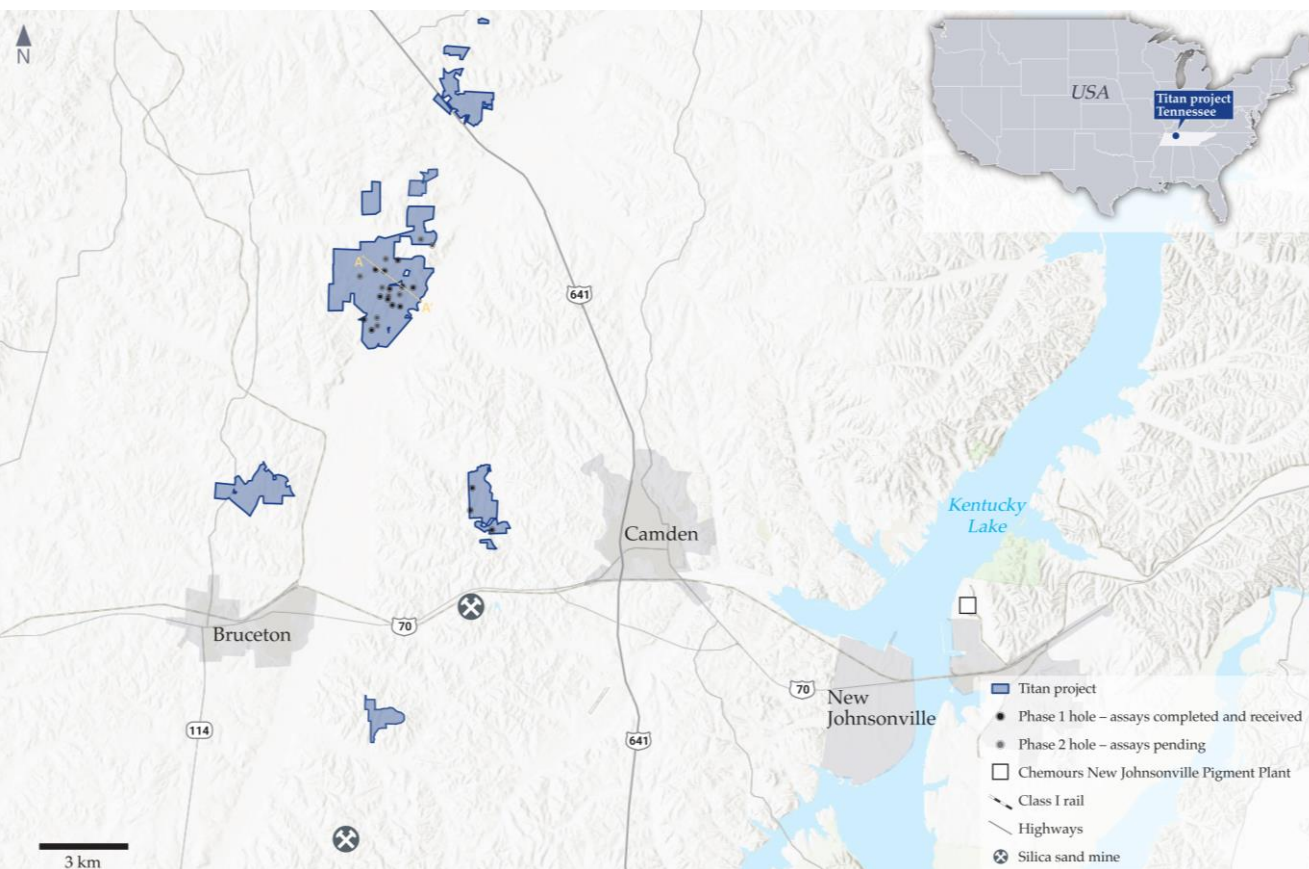


**Standard Lithium**

Lithium

TSXV:SLL | C\$0.5b

# TAO HAS SECURED THE LARGEST LAND POSITION COVERING THE MCNAIRY SAND, AND IS RAPIDLY PROGRESSING DEVELOPMENT



# THE COMPANY IS AIMING TO BRING LEADING PRACTICES IN ESG PRINCIPLES TO THE DEVELOPMENT



## **Measure & Disclose Carbon Emissions**

Maintain annual operational net zero carbon emissions balance based on metered data



## **Improve Verification and Rigor**

Upgrade to other zero carbon options for other processes, including water and waste



## **Reduce Energy Demand**

Energy efficiency will be prioritized through our HAMR process



## **Community Engagement**

Working closely with local and regional communities



## **Generate Balance from Renewable Energy**

Supply remaining energy demand from renewable energy sources



## **Diversity**

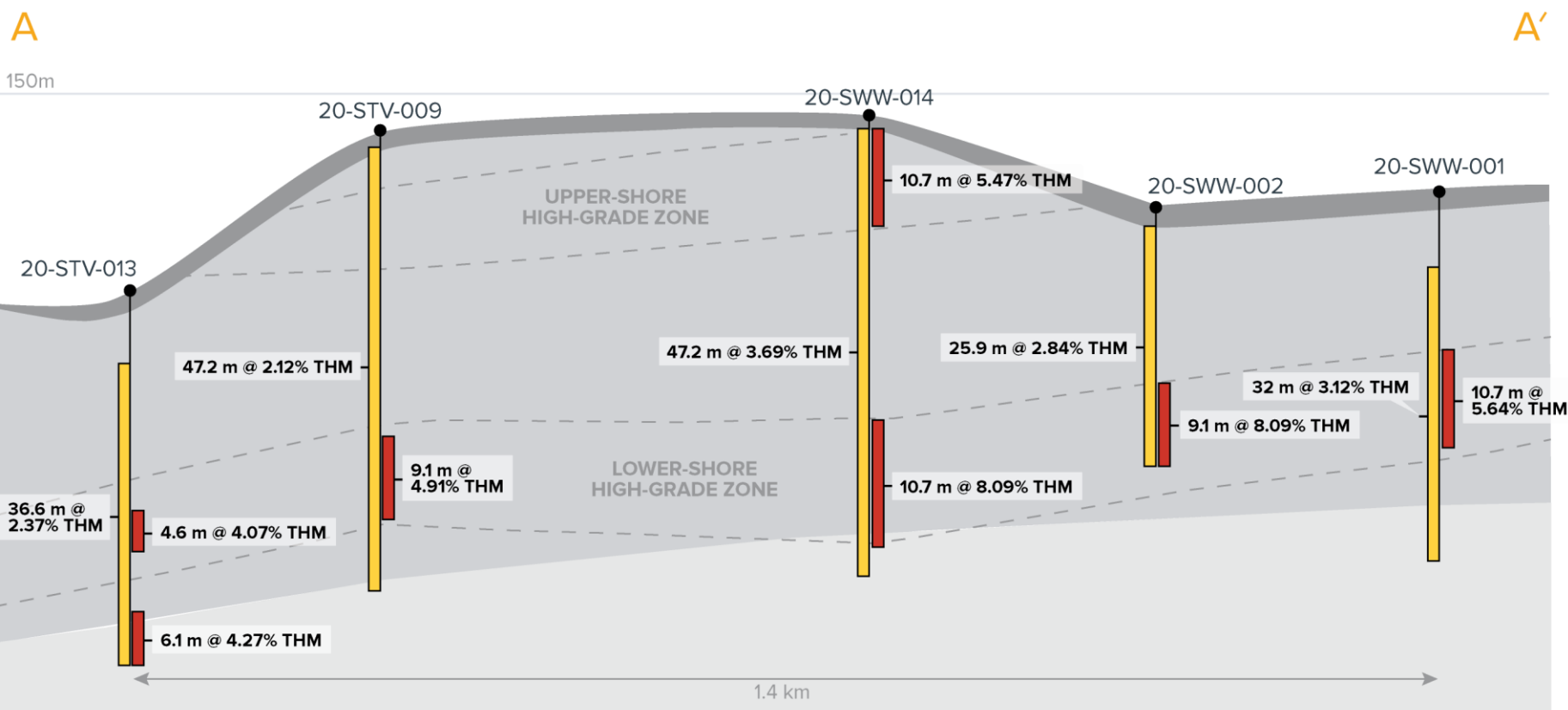
Attract, develop, and advance the most talented individuals regardless of race, sexual orientation, religion, age, gender or disability status



**LOCATED IN THE HEARTLAND OF AMERICA WITH EXCEPTIONAL  
INFRASTRUCTURE, LOW COSTS & SKILLED LABOR— BUILD BACK BETTER!**

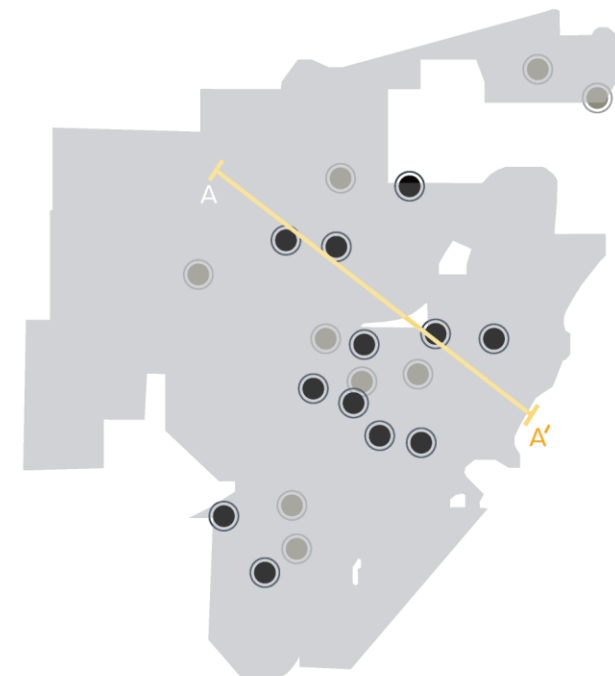


# OUTSTANDING POTENTIAL WITH INITIAL THE RESULTS SHOWING HIGH GRADES OF HEAVY MINERALS IN THE MCNAIRY SAND



Vertical Exaggerated section 1:10

- Overburden - Brown Clay
- McNairy Sand
- Cocoon Creek
- High-Grade Intercept
- Significant Intercept

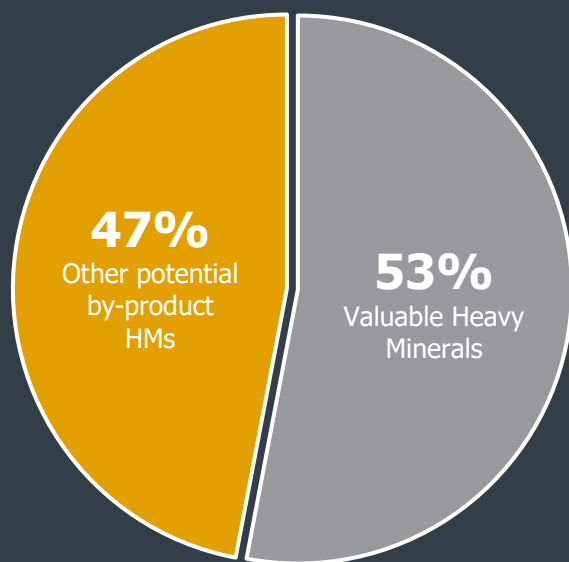


- Phase 1 hole - assays completed and received
- Phase 2 hold - assays pending



# THE PRODUCT SUITE IS RICH IN THESE CRITICAL MINERALS AND OTHER HIGH VALUE MINERALS

**Total THM Breakdown**



**VHM Assemblage**

% VHM	MINERAL DESCRIPTION		PRICING
16.9%	<b>Rutile</b>	Naturally occurring very high grade titanium dioxide feedstock, typically with TiO2 content of 92-95%	+\$1,200 / tonne
14.5%	<b>Zircon</b>	High value mineral used in many industrial and chemical applications	+\$1,500 / tonne
21.6%	<b>Leucoxene</b>	Naturally occurring altered ilmenite titanium dioxide feedstock, typically with TiO2 content up to 90%	+\$700 / tonne
43.4%	<b>Hi-Ti Ilmenite</b>	Naturally occurring titanium dioxide feedstock, typically with TiO2 content of 58-62%	+\$200 / tonne
1.8%	<b>Monazite</b>	High value mineral with rare earth elements including Neodymium and Praseodymium	+\$4,000 / tonne
1.7%	<b>Other minerals</b>	Other valuable Ti minerals, primarily titanomagnetite	\$180 / tonne

Source: Roskill, UBS, Deutsche Bank and TZMI

# TARGET MILESTONES TO EXECUTE THE COMPANY'S STRATEGY

<input checked="" type="checkbox"/> Secure Opportunity in USA critical mineral supply chain	✓ 4 <sup>th</sup> Quarter 2020
<input checked="" type="checkbox"/> Build team	✓ 4 <sup>th</sup> Quarter 2020
<input checked="" type="checkbox"/> 1 <sup>st</sup> Phase drill program results	✓ 1 <sup>st</sup> Quarter 2021
<input checked="" type="checkbox"/> Secure HAMR technology for zero carbon titanium metal production	✓ 1 <sup>st</sup> Quarter 2021
<input type="checkbox"/> 2 <sup>nd</sup> Phase drill program results	1 <sup>st</sup> Quarter 2021
<input type="checkbox"/> Produce mineral product samples from bulk test work program	1 <sup>st</sup> Quarter 2021
<input type="checkbox"/> Begin offtake discussions for mineral products (titanium minerals / zircon / monazite)	2 <sup>nd</sup> Quarter 2021
<input type="checkbox"/> 3 <sup>rd</sup> Phase drill program results	2 <sup>nd</sup> Quarter 2021
<input type="checkbox"/> JORC compliant maiden resource	2 <sup>nd</sup> Quarter 2021
<input type="checkbox"/> Produce titanium metal powder samples & begin strategic customer / partner outreach	3 <sup>rd</sup> Quarter 2021
<input type="checkbox"/> Scoping study on mine and mineral process plant	3 <sup>rd</sup> Quarter 2021



# WE HAVE THE TEAM WITH THE EXPERIENCE AND TRACK RECORD TO ACHIEVE OUR MISSION

## Management Team

### **ANASTASIOS ARIMA**

*Managing Director*

- Co-founder Piedmont Lithium Ltd
- 12 years Apollo Group

### **LAMONT LEATHERMAN**

*Chief Geologist*

- Co-founder Piedmont Lithium Ltd
- Ex-BHP (USA & Australia)

### **ADAM KARST**

*Geologist / Competent Person*

- Ex-Iluka (Head of America's Geology)

### **JONATHAN LORD**

*Geologist*

- Ex-Chemours & Oceana Gold

### **DOMINIC ALLEN**

*Corporate Development*

- 5 years Apollo Group
- Ex-Rio Tinto & Oyu Tolgoi

### **GREG SWAN**

*Company Secretary*

- Company Secretary Piedmont Lithium Ltd
- 14 years Apollo Group

**PIEDMONT**  
LITHIUM

NASDAQ / ASX: PLL

**APOLLO GROUP**

Portfolio Company

## Scientific & Technology Advisors

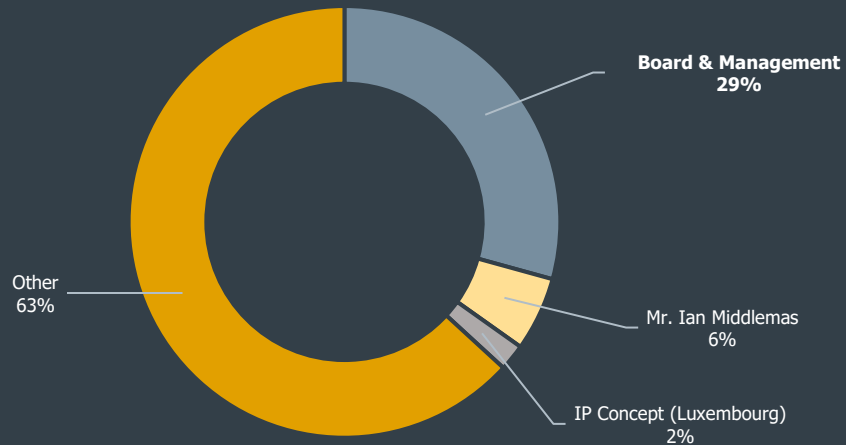
### **DR. ZAK FANG**

*Scientific & Technology Advisory Board*

- Professor Metallurgical Engineering, University of Utah
- Distinguished metallurgist

# CAPITAL STRUCTURE AND CORPORATE

## COMPANY OWNERSHIP



## BOARD OF DIRECTORS

Todd Hannigan	Australia	Chairman
Anastasios Arima	USA	Managing Director
Alastair Smith	USA	Director
Patric Glovac	Australia	Director

## 12 MONTH SHARE PRICE & VOLUME



## CAPITAL STRUCTURE

TAO shares on issue	98,686,667
Price (16 February 2021)	A\$0.78
<b>Market capitalisation</b>	<b>A\$77.0M</b>
Cash (approx. post placement)	A\$6.0M
<b>Enterprise value</b>	<b>A\$71.0M</b>
Listed options	15,693,667
Unlisted options (pro-forma post shareholder approval)	26,750,000
Performance rights / shares	41,600,000