

# Lithium Economics and Reserves

SPEE Technical Lunch | 19-Nov-2024



# Forward Looking Statements

This presentation contains forward-looking statements and forward-looking information within the meaning of applicable Canadian securities laws regarding E3 Lithium Ltd. (“E3 Lithium” or the “Company”). Forward-looking statements can be identified by the use of forward-looking language such as “plans”, “expects”, “budgets”, “schedules”, “estimates”, “objectives”, “intends”, “anticipates”, “believes”, or variations of such words and phrases, and statements that certain events, actions or results “may”, “could”, “would”, “might” or “will” occur, be taken or be achieved. Forward-looking information is based on the current opinions and estimates of E3 Lithium as of the date such statements are made. In particular, this presentation contains forward-looking information relating to: the estimated mineral resources and mineral resources at the Clearwater Project; statements regarding the results of the Company’s Pre-Feasibility Study (the “PFS”), as outlined within the June 20, 2024 Technical Report “Clearwater Project NI 43-101 Technical Report on Pre-Feasibility Study, Bashaw District Mineral Property, Central Alberta, Canada”, and interpretations thereof; expectations concerning the Clearwater Project, including extraction, production, pretreatment, purification, volume reduction and conversion process and features, and the expected outcomes thereof; the expected economic performance of the Clearwater Project, including capital costs, operating costs, water usage, land use and carbon emissions; statements regarding the Company’s strategy for minimizing environmental impact and liquid waste and maximizing water reuse and plans and objectives of management for the Company’s operations and the Clearwater Project. The forward-looking information contained in this news release also includes financial outlooks and other forward-looking metrics relating the Company and the Clear Water Project, including references to financial and business prospects, future results of operations, performance and cash flows. Such information, which may be considered future oriented financial information (“FOFI”) or financial outlooks within the meaning of applicable Canadian securities laws, has been approved by management of the Company as of the date hereof. Such FOFI is based on assumptions which management believes is reasonable as of the date hereof, having regard to the industry, business, financial conditions, plans and prospects of the Company, including the PFS. These projections are provided to describe the prospective performance of the Clearwater Project and readers are cautioned that such information may not be appropriate for other purposes. Further, such information is highly subjective and should not be relied on as necessarily indicative of future results and actual results may differ significantly from such projections. FOFI constitutes forward-looking information and is subject to the same assumptions, uncertainties, risk factors and qualifications as set forth below.

Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the actual results, levels of activity, performance or achievements of E3 Lithium to be materially different from those expressed or implied thereby, including, but not limited to, risks related to: the speculative nature of mineral exploration and development, fluctuating commodity prices, the

effectiveness and feasibility of emerging lithium extraction technologies which have not yet been tested or proven on a commercial scale or on the Company’s brine, risks related to the availability of financing on commercially reasonable terms and the expected use of proceeds; operations and contractual obligations; changes in estimated mineral reserves or mineral resources; future prices of lithium and other metals; availability of third party contractors; availability of equipment; failure of equipment to operate as anticipated; accidents, effects of weather and other natural phenomena and other risks associated with the mineral exploration industry; the Company’s lack of operating revenues; currency fluctuations; risks related to dependence on key personnel; estimates used in financial statements proving to be incorrect; competitive risks and the availability of financing, as described in more detail in our recent securities filings available at [www.sedarplus.ca](http://www.sedarplus.ca).

Although E3 Lithium has attempted to identify important factors that could cause actual results to differ materially from those contained in the forward-looking statements in this presentation, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements contained in this presentation. E3 Lithium does not undertake to update any forward-looking statements except in accordance with applicable securities laws.

A technical report in respect of the PFS (the “Technical Report”) will be completed in accordance with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* (NI 43-101) and will be filed on the Company’s profile on SEDAR+ within 45 days of the date of the News Release. The persons who will author the Technical Report include: Daron Abbey, M.Sc., P. Geo of Matrix Solutions Inc; Alex Haluszka, M. Sc., P. Geo of Matrix Solutions Inc; Meghan Klein, P. Eng, of Sproule Associates Limited; Antoine Lefaiivre, P. Eng, of Sedgman Canada Limited; and Keith Wilson, P. Eng., of Stantec Inc, each of whom is a “qualified person” as defined under NI 43-101 (collectively, the Qualified Persons). Each of the Qualified Persons prepared or supervised the preparation of the information that forms the basis of the PFS that is included in this presentation. Each of the Qualified Persons has reviewed and approved the technical information in this this presentation within their area of expertise and is independent of E3 Lithium.

Unless otherwise indicated, Kevin Carroll, P. Eng., Chief Development Officer and a Qualified Person under National Instrument 43-101, has reviewed and is responsible for the technical information contained in this presentation.

# About Lithium

Lithium is a soft, silvery-white metal and the lightest metal known, with the atomic number 3.

## What's in a battery?

A lithium-ion battery contains a variety of chemical components to allow lithium ions to move back and forth between the cathode & anode

### LMO Lithium Manganese Oxide

- Shorter lifespan and usually blended with NMC chemistries or aluminum to enhance the performance
- LMO-NMC blends were utilized in Nissan Leaf EV models

### NMC Lithium Nickel Manganese Oxide

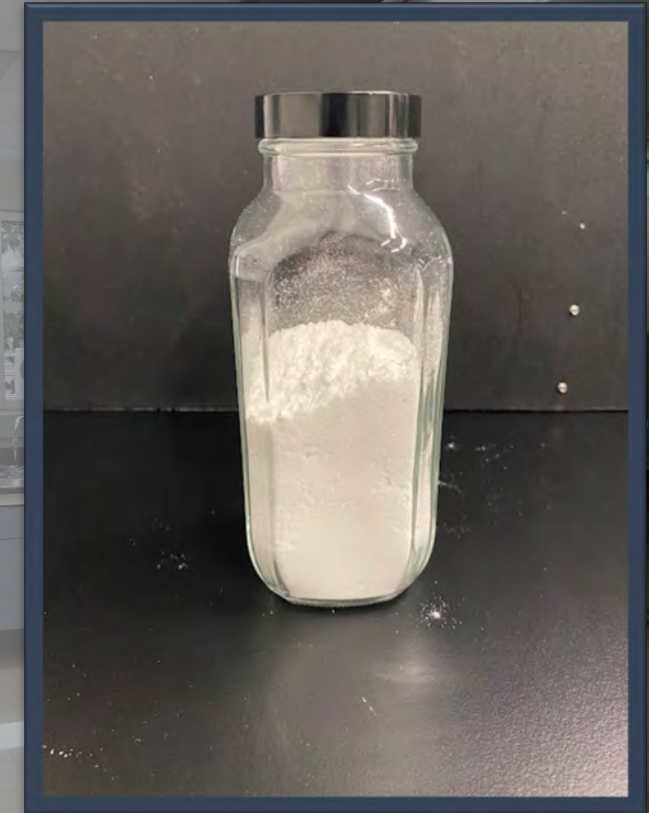
- Increased nickel content provides better battery density while at the same time becoming more unstable

### NCA Lithium Nickel Cobalt Aluminum Oxide

- High energy and power densities with longer life span
- Used in Tesla/Panasonic batteries

### LFP Lithium Iron Phosphate

- Longer cycle life and more stable than most other lithium-ion batteries
- Does not contain nickel or cobalt



**Lithium Carbonate vs. Lithium Hydroxide**

Lithium carbonate has historically been cheaper and is widely used in lithium-ion battery production. However, demand is shifting toward lithium hydroxide, which is more efficient for producing battery cathode material, with some types requiring it. Lithium hydroxide is often derived from lithium carbonate but can also be produced electrochemically from lithium sulfate or chloride solutions.

# Lithium Overview: Sources



Lithium Mining:  
Hardrock



Lithium Mining: Salars



Lithium Mining: Direct  
Lithium Extraction

Overview of the Lithium  
Industry

Brine-Hosted Lithium  
Development

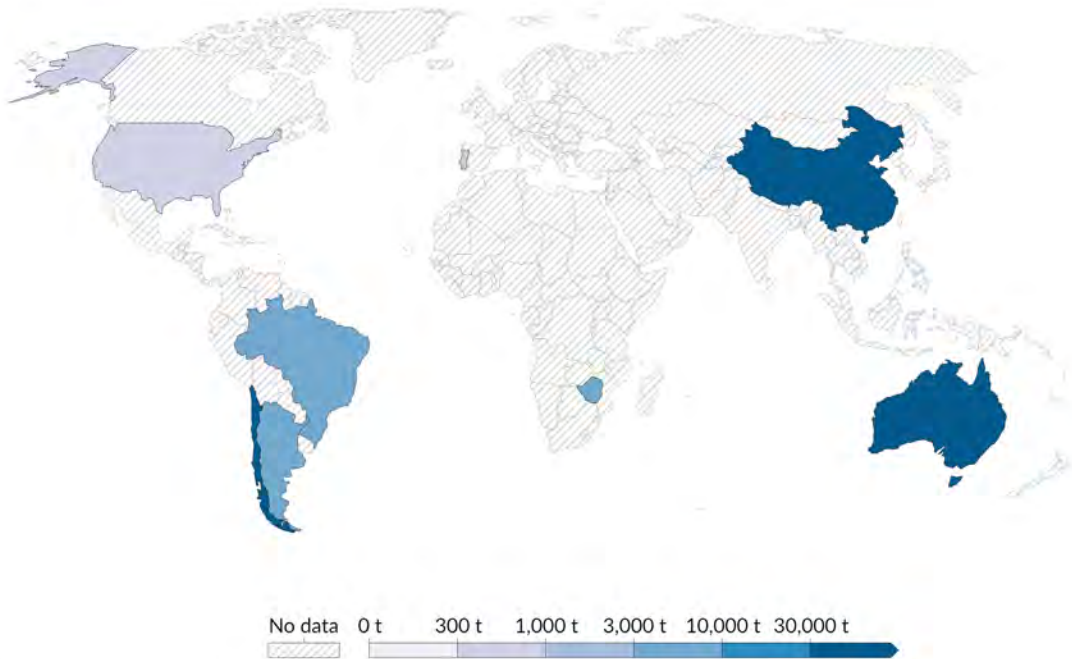
Operational Learnings from  
E3's Field Pilots

Lithium Economic Evaluation  
and Reserve Estimation

# Lithium Overview: Production

## Lithium production, 2023

Lithium production is measured in tonnes.



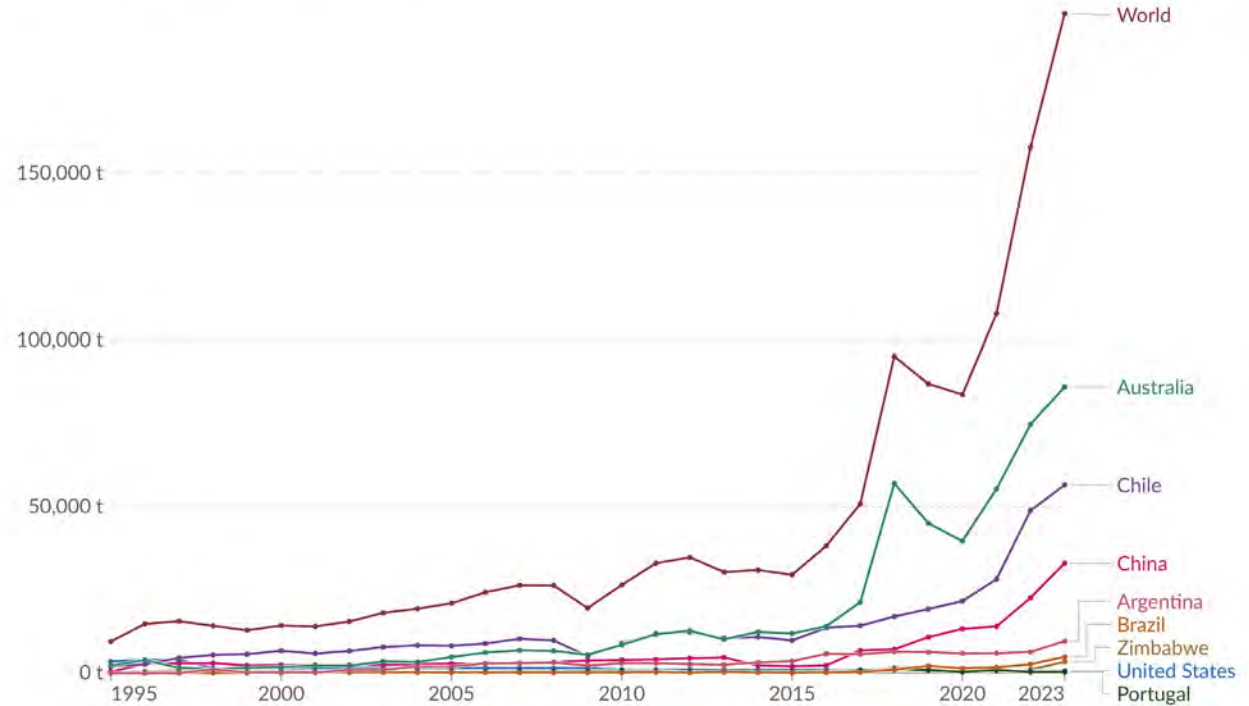
Data source: Energy Institute - Statistical Review of World Energy (2024)

OurWorldinData.org/fossil-fuels | CC BY

Our World in Data

## Lithium production, 1995 to 2023

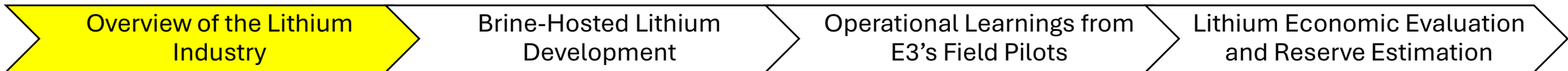
Lithium production is measured in tonnes.



Data source: Energy Institute - Statistical Review of World Energy (2024)

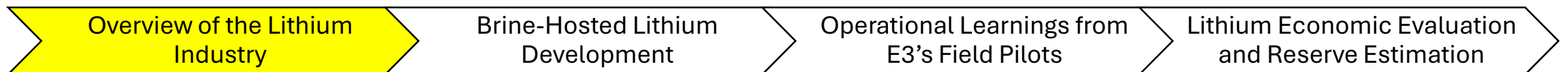
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Our World in Data

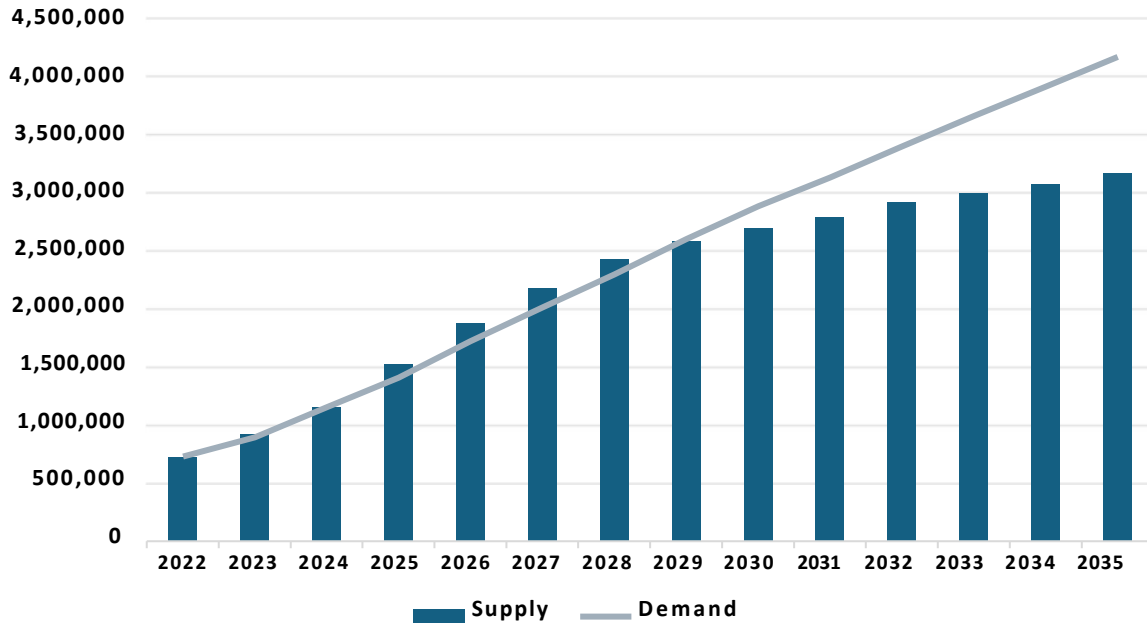


## Comparison of Conventional Methods

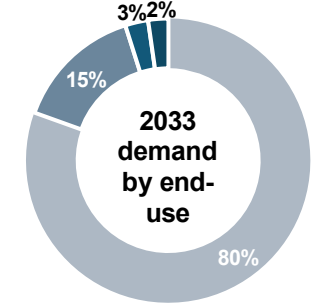
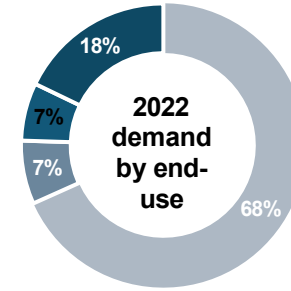
	<b>DLE</b>	<b>Evaporator Ponds</b>	<b>Hard Rock Mining</b>
<b>Recovery Rate</b>	90% from Brine	40-60%	50-70%
<b>Water Usage</b>	Has potential to recycle 90% of water extracted from Brine	Up to 2 million litres per tonne of lithium	Averages around 500,000 liters per tonne of Lithium
<b>Time efficiency</b>	Hours	18-24 months	12-18 Months
<b>Land Use</b>	4%	Several Square Kilometres	30%
<b>Carbon Footprint</b>	Low	Low	15 tonnes of CO2 per tonne of lithium produced



**Demand Supply Balance, MT LCE**



Note: Figure prepared by Benchmark Markets Intelligence, 2024.

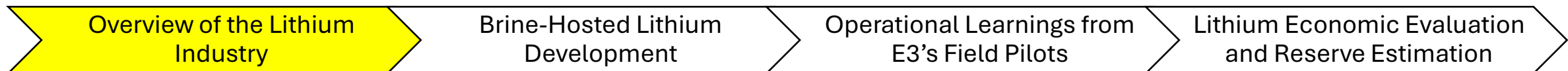


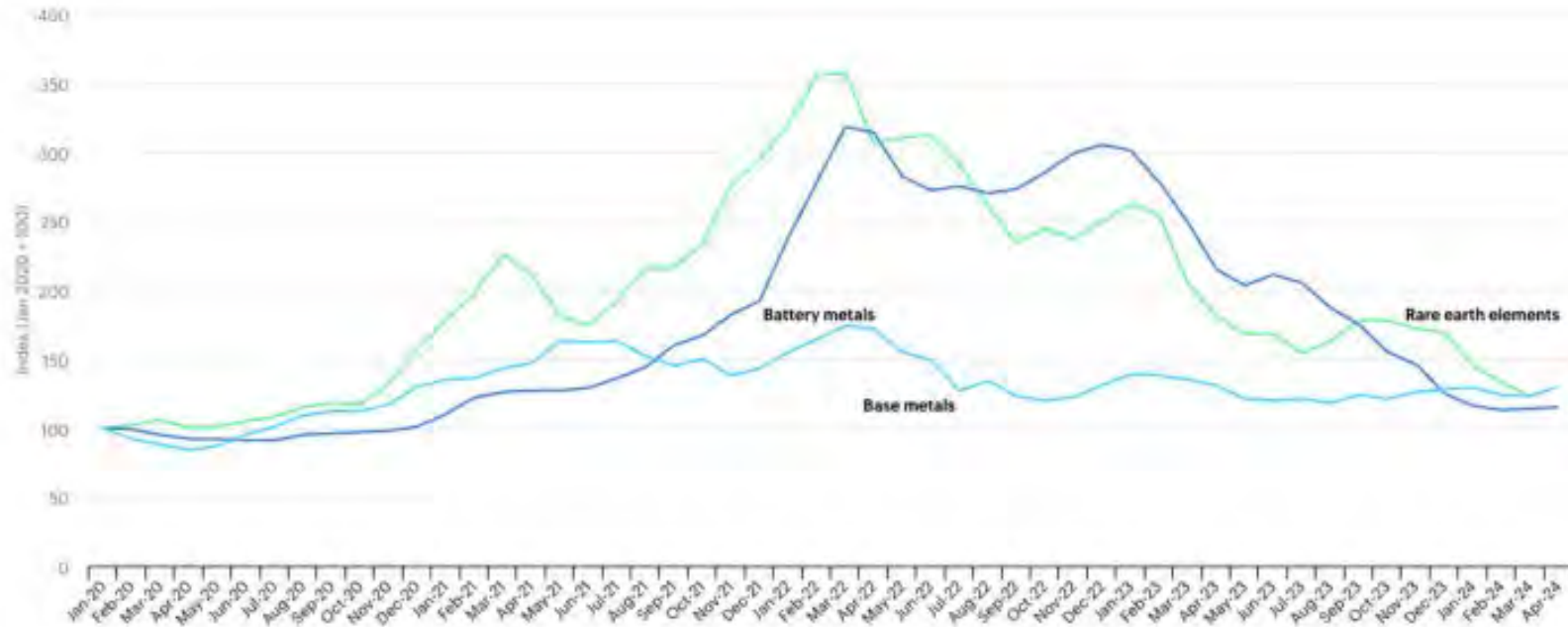
- Emobility
- ESS
- CE Batteries
- Traditional uses

Note: Figure prepared by Fastmarkets, 2024. EV = electric vehicle; ESS = grid-scale energy storage; CE = consumer electronics. Emobility refers to all transportation by battery such as electric vehicles and bikes.



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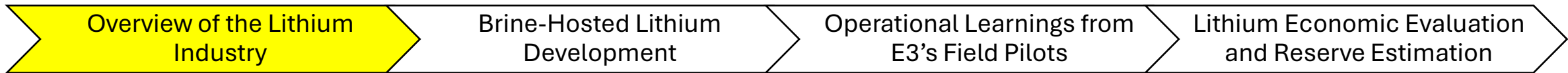




IEA License: CC BY 4.0

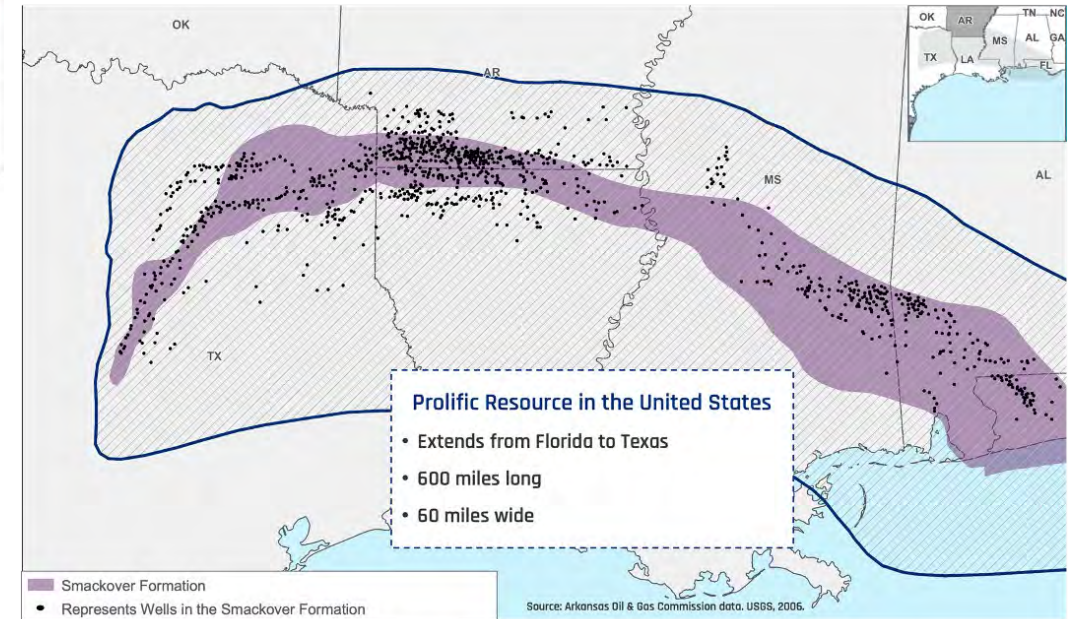
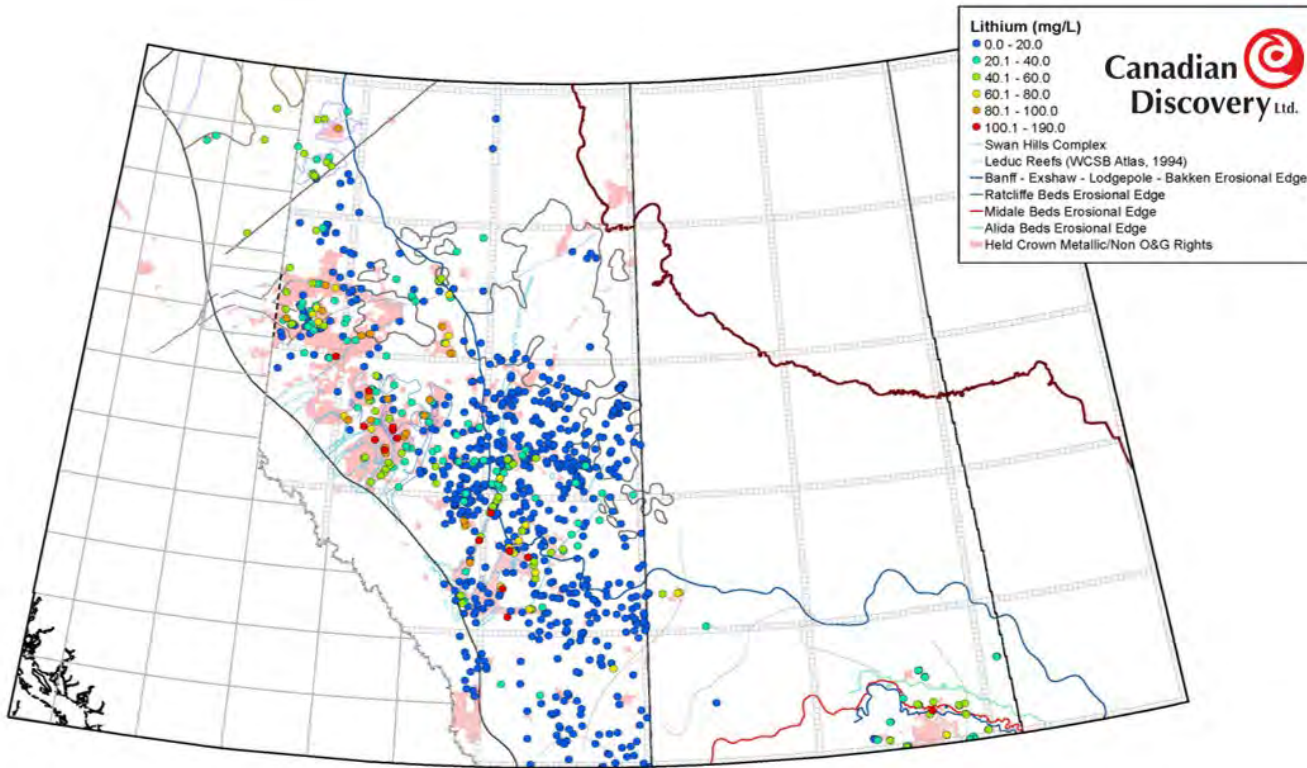
● Base metals ● Battery metals ● Rare earth elements

Source: IEA, 2024 (<https://www.iea.org/data-and-statistics/charts/price-developments-of-minerals-and-metals-by-category-january-2020-april-2024>)





# Brine-Hosted Lithium: Resource Potential



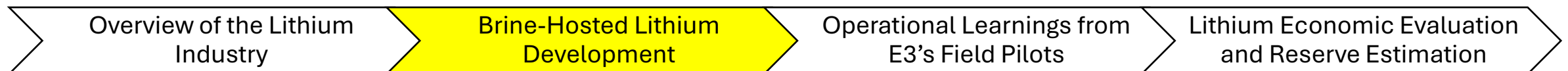
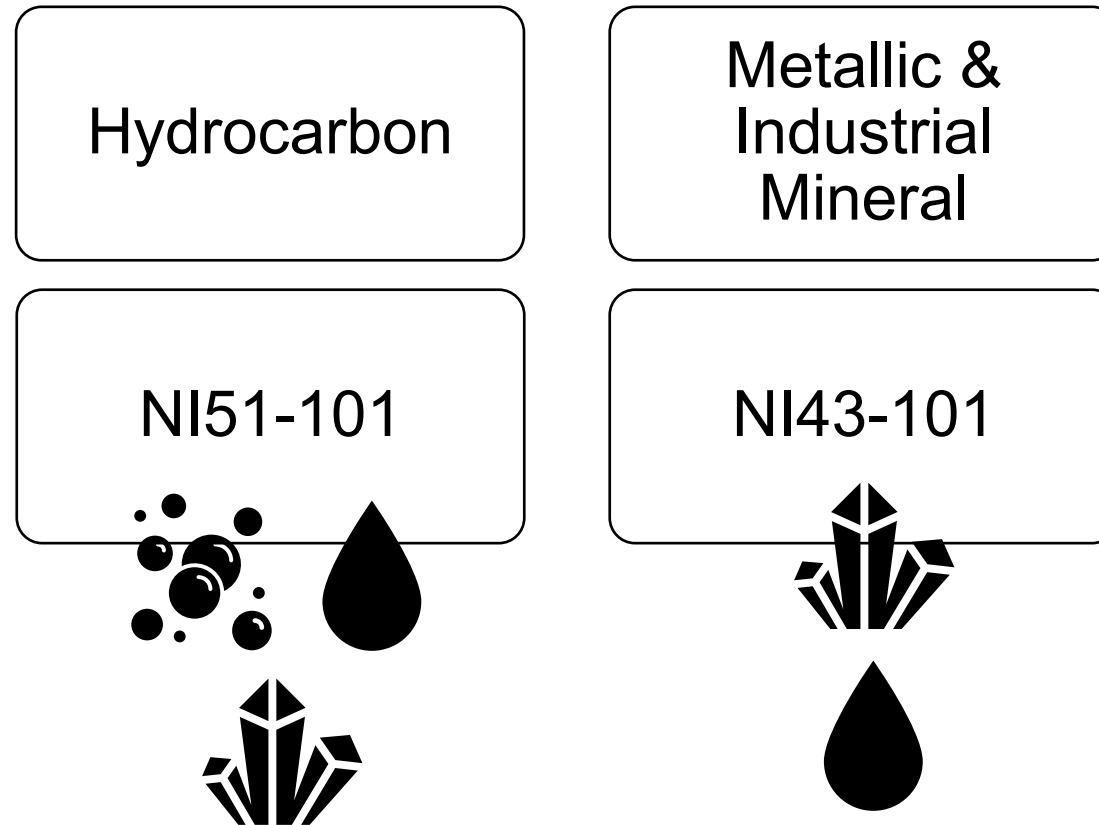
Overview of the Lithium Industry

Brine-Hosted Lithium Development

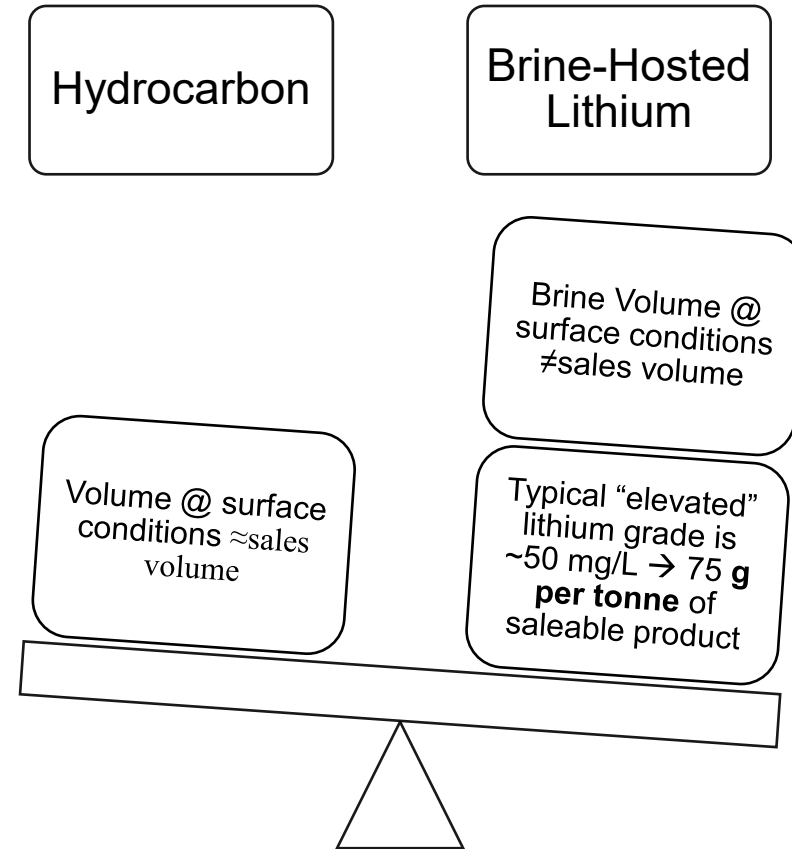
Operational Learnings from E3's Field Pilots

Lithium Economic Evaluation and Reserve Estimation

# Brine-Hosted Lithium: Governance Framework



# Brine-Hosted Lithium: Grade matters



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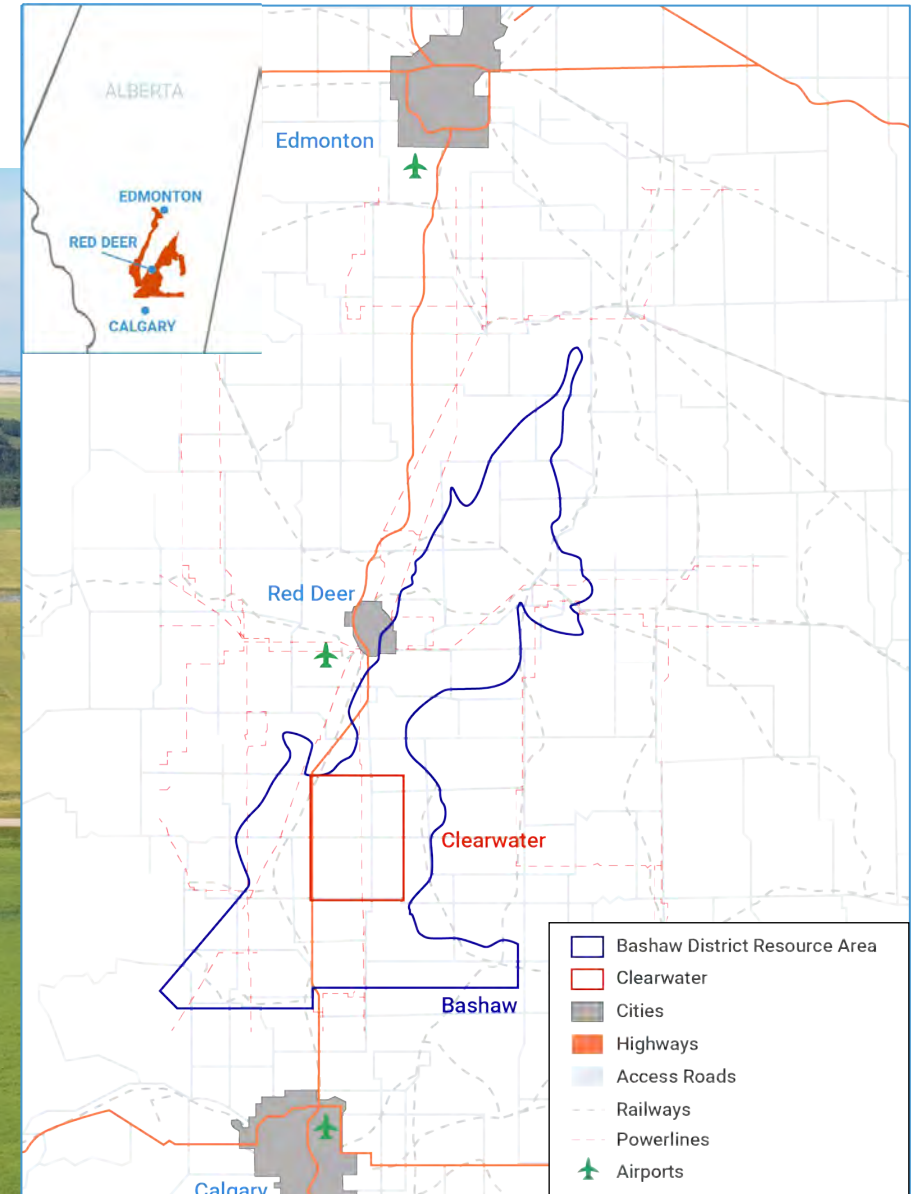
# Clearwater Project: Overview



Capacity: Initial production of 32,250 tonnes of LHM

Mineral reserves: 1.29 Mt LHM (Proven & Probable)

Land use: Industry leading low land disturbance



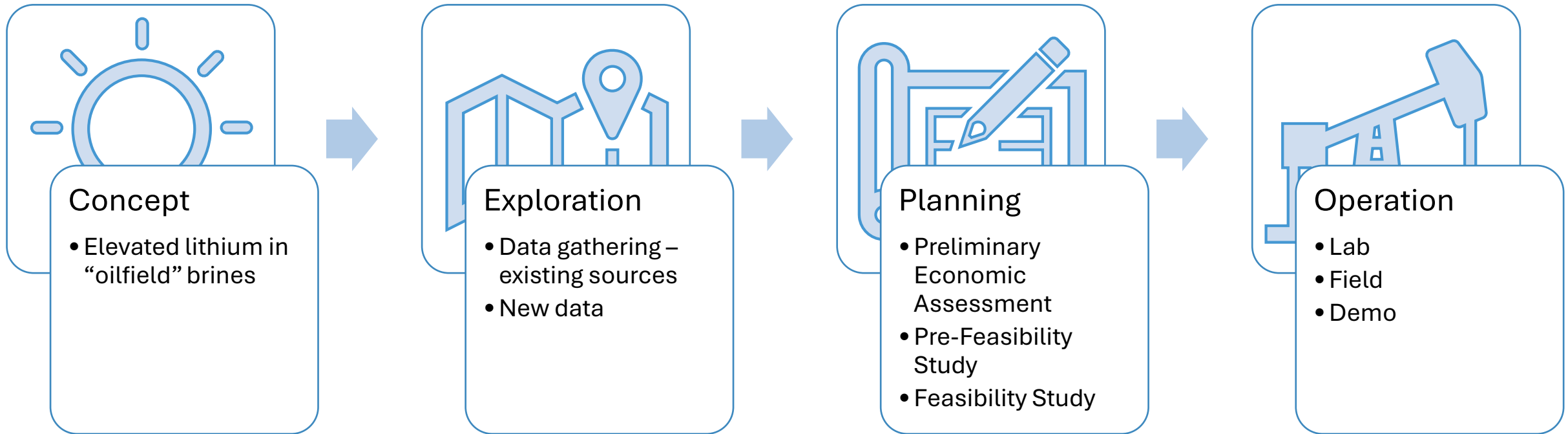
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# Development Stages



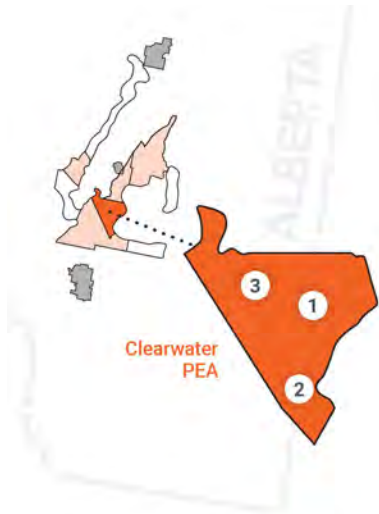
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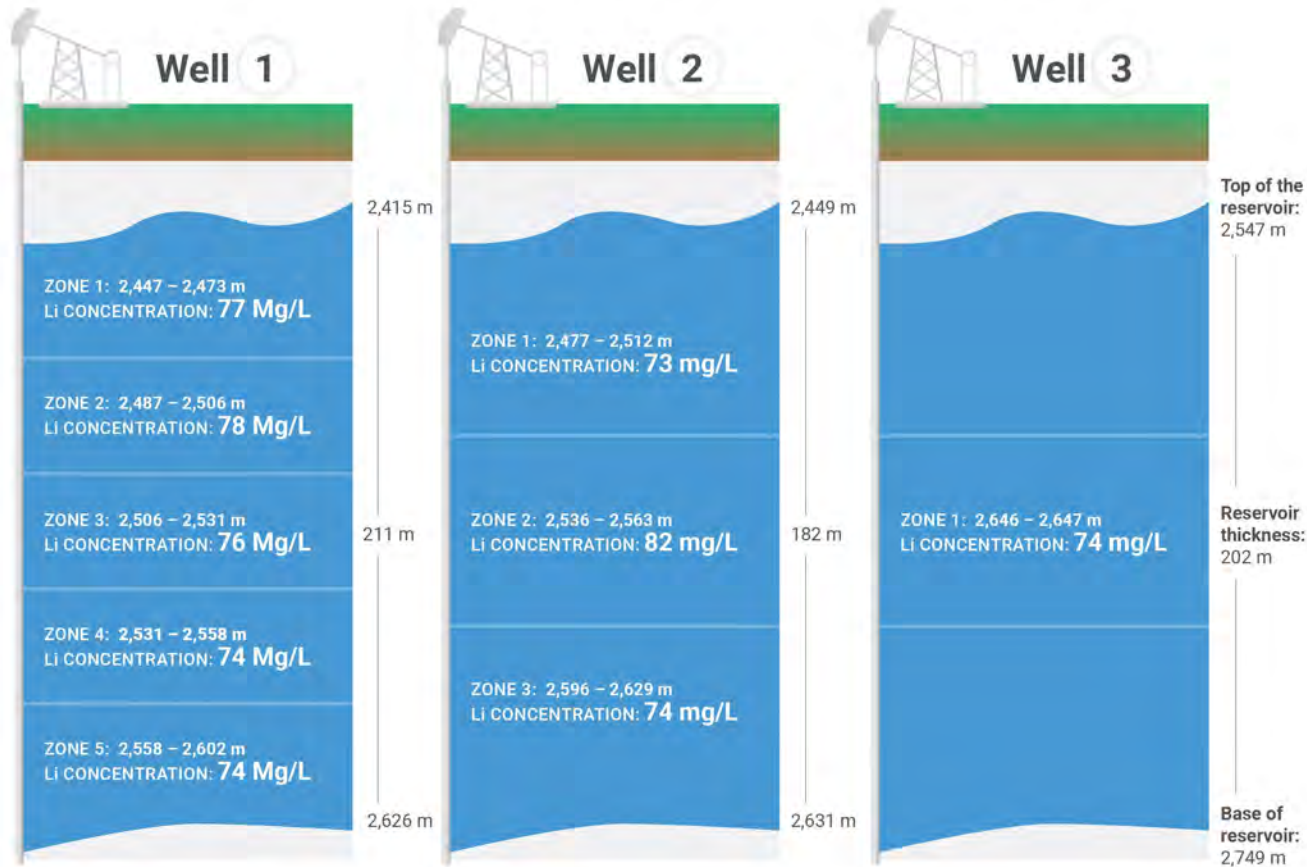
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# Clearwater Project: Development Stages

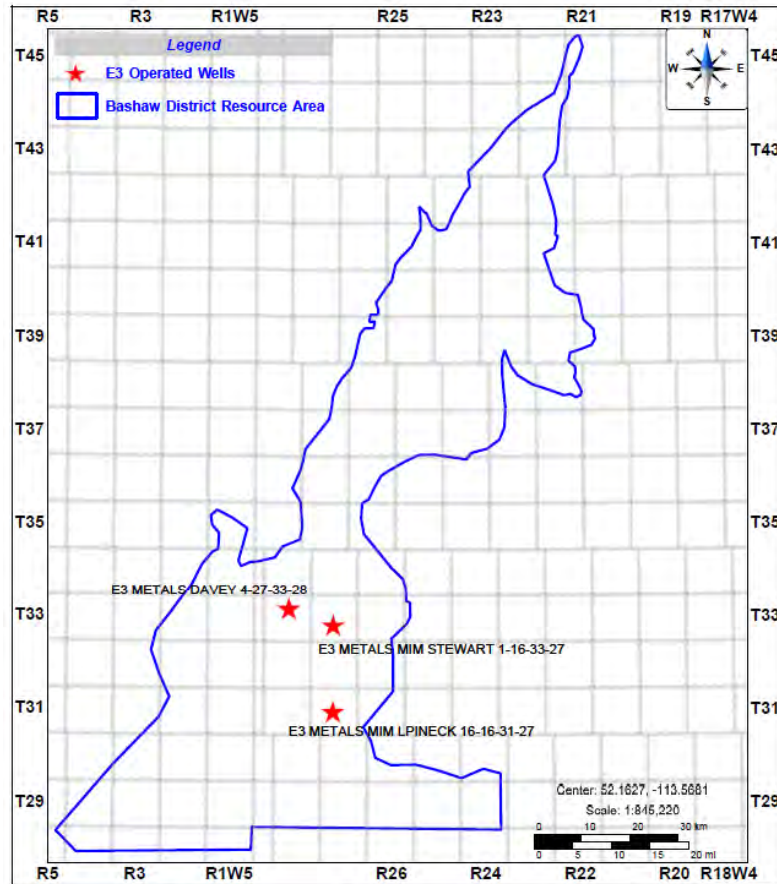


## Sampling Zones and Lithium Concentrations

- Clearwater PEA
- Resource Areas
- E3's Existing Permit Area



# Development Stages



Production Test at Alberta First Lithium Evaluation Well



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# Completed Pilot Plant

<b>Lithium Recovery</b>	<b>Lithium Grade in the Lithium Product Stream</b>	<b>Flow Rate Ratio</b>
94%	909.0 mg/L	9.0

**Lithium Concentration in Bashaw District:**  
75 mg/L ± 3 mg/L

**DLE Technology:**  
Lithium Recovery: 90.0%–95.0%

**Lithium Concentration in Eluate:**  
6,000 mg/L

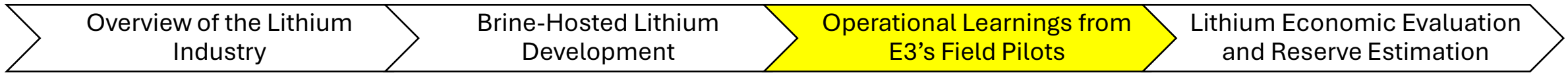
**Lithium Recovery Consistency:**  
95.04% ± 0.79%

E3 Lithium’s Field Pilot Plant in central Alberta was constructed and operated in 2023.



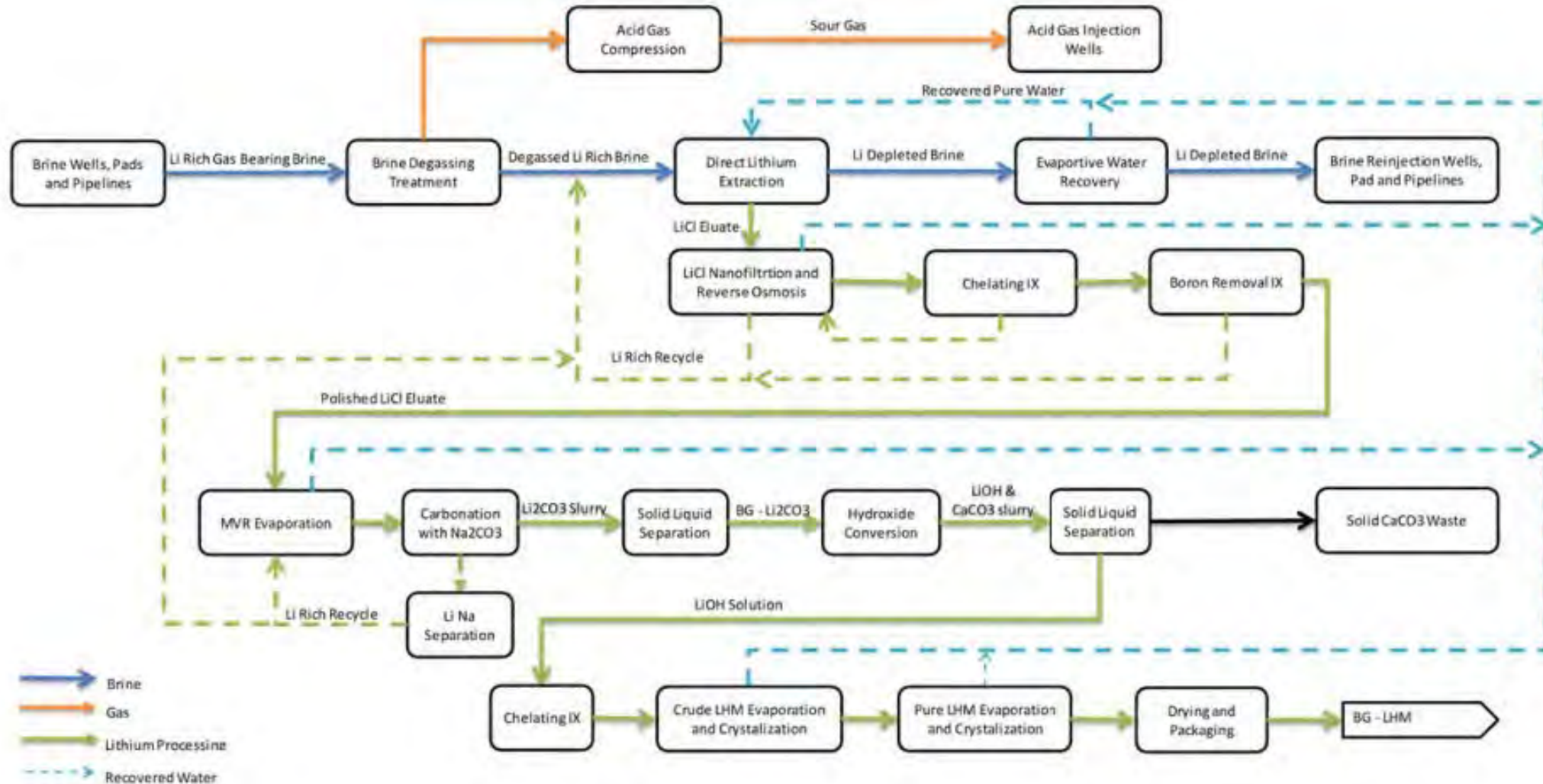
All KPIs, fulsome results and descriptions can be found on [www.e3lithium.ca/Lithium1](http://www.e3lithium.ca/Lithium1)

E3 Lithium continues to develop the engineering and cost estimates required to demonstrate the commerciality of the process.





# Lithium Production Flowsheet



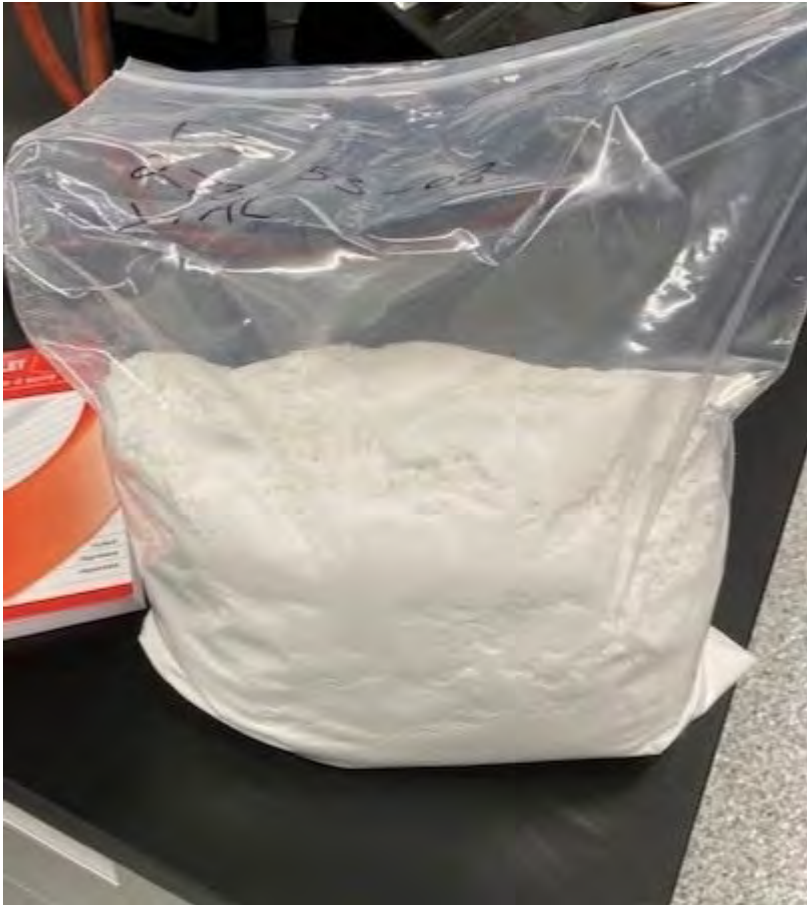
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# We made high-purity lithium hydroxide from Alberta brine!



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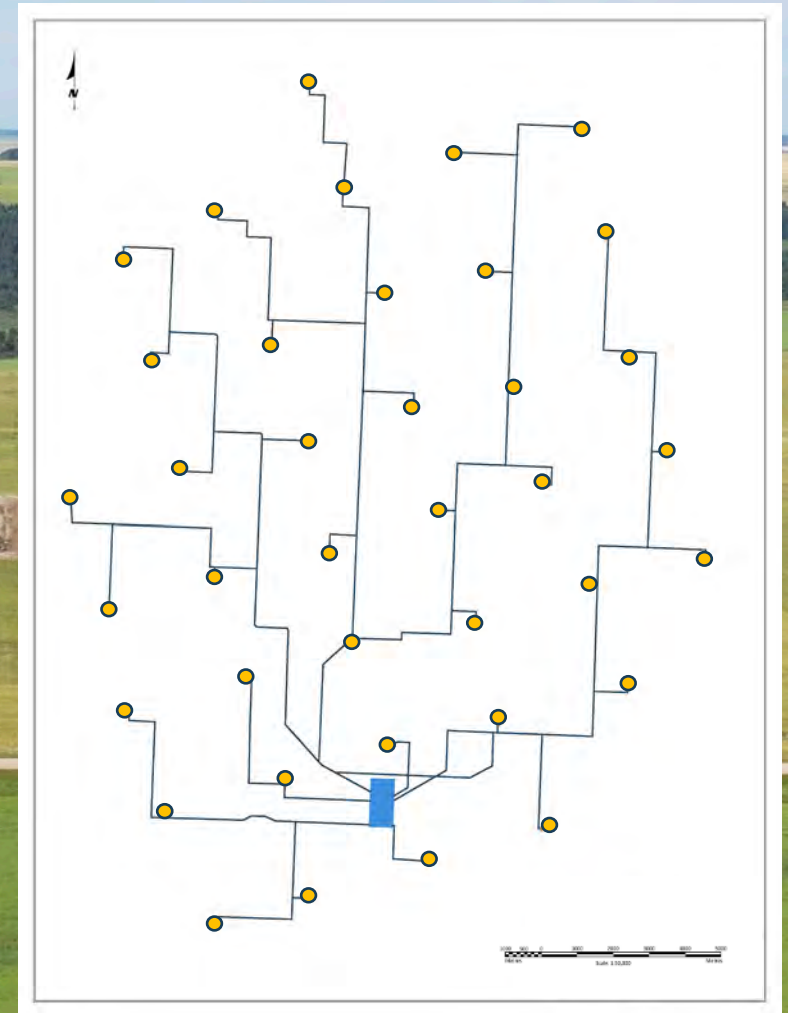
# Mineral Resources & Reserves

<b>Bashaw District Resources Original Lithium in Place (OLIP)</b>	<b>Li (tonnes)</b>	<b>LCE (tonnes)</b>	<b>LHM (tonnes)</b>
<b>TOTAL</b>	<b>3,046,800</b>	<b>16,218,100</b>	<b>18,421,000</b>
<b>Indicated Mineral Resource</b>	1,790,500	9,530,900	10,825,450
<b>Measured Mineral Resource</b>	1,256,300	6,687,200	7,595,500

<b>Clearwater Project Reserves</b>	<b>Li (tonnes)</b>	<b>LCE (tonnes)</b>	<b>LHM (tonnes)</b>
<b>TOTAL</b>	<b>213,750</b>	<b>1,137,850</b>	<b>1,292,400</b>
<b>Proven Mineral Reserves – Initial 5 Years</b>	26,500	141,200	160,350
<b>Probable Mineral Reserves – 6 to 50 Years</b>	187,250	996,650	1,132,050

All details presented on this slide are part of E3 Lithium’s Clearwater Pre-Feasibility Study, outlined within the June 26, 2024 news release titled “E3 Lithium Outlines Clearwater Project Pre-Feasibility Study and Confirms Lithium Reserves”

Brine Production: Well and Pipeline Network



- Well Pad
- Central Processing Facility
- Pipeline

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Brine-Hosted Lithium Development

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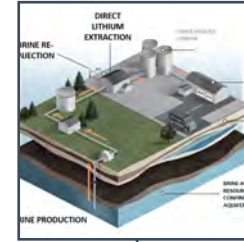
Lithium Economic Evaluation and Reserve Estimation

# Brine-Hosted Lithium: Deposit Types



Salar-type

- Unconfined
- Gravity-controlled pressure regime



Confined saline  
aquifer type

- Confined
- Mass balance-controlled pressure regime

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# Mineral Resources & Reserves: Whitepaper Proposal

## Original Lithium In Place

$$OLIP = (\text{Pore Volume}) (S_w) \left(\frac{1}{B_w}\right) (1 - S_{w_{irr}}) (Li_{conc})$$

Where:

Pore Volume = (area)(thickness)(porosity)

$S_w$  = water saturation

$B_w$  = water formation volume factor

$S_{w_{irr}}$  = irreducible water saturation

$Li_{conc}$  = lithium concentration

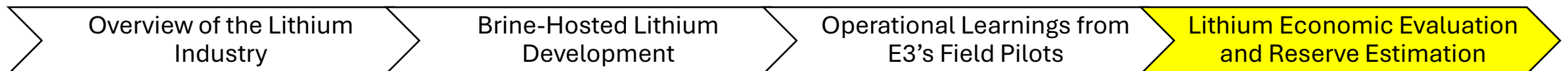
## Producible Lithium In Place

$$PLIP = (OLIP)(RF)$$

Where:

OLIP = Original Lithium In Place

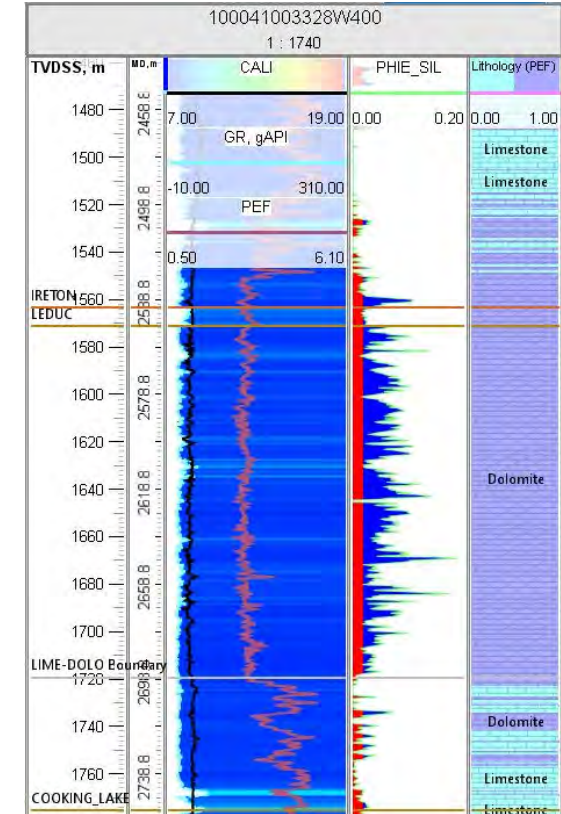
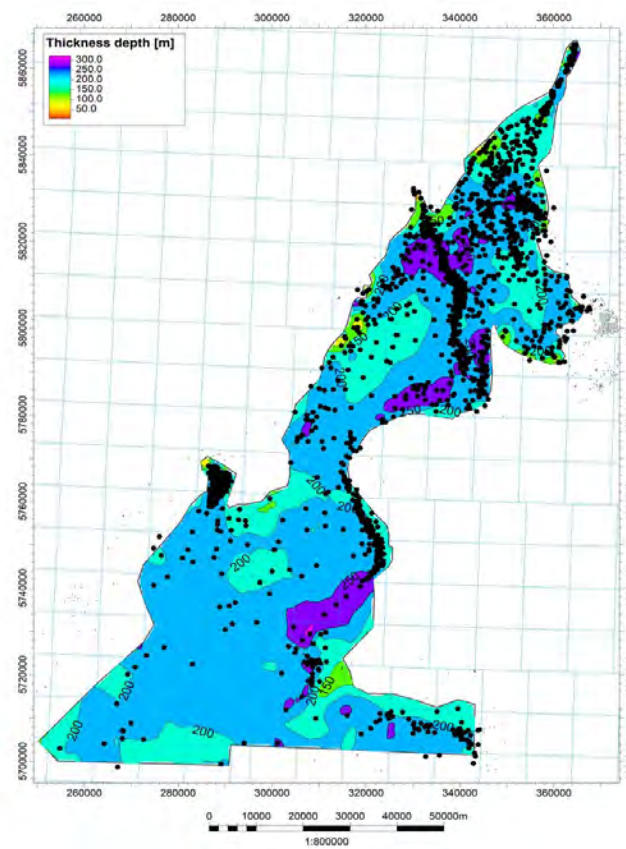
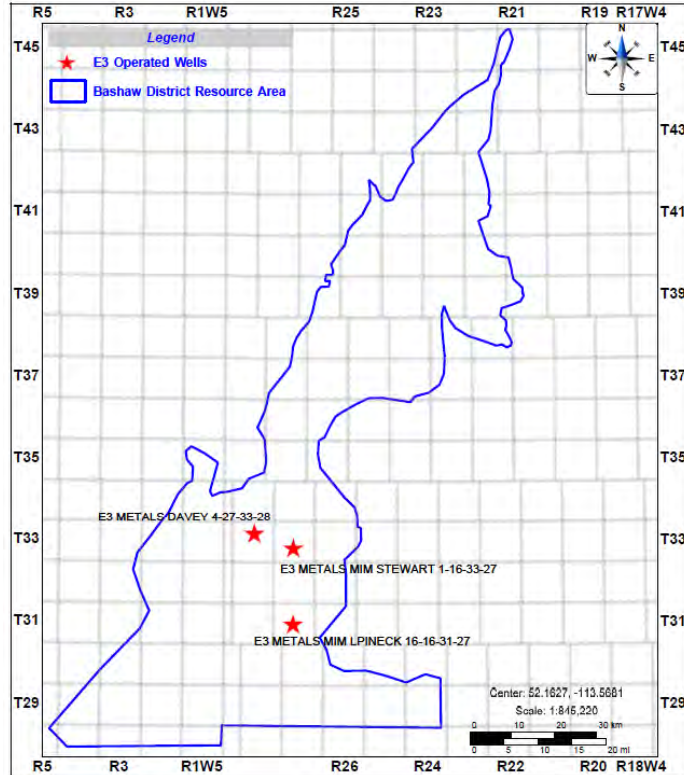
RF = Recovery Factor



# Mineral Resources & Reserves: Applied Methodology

Original Lithium In Place

$$OLIP = (\text{Pore Volume}) \left( S_w \right) \left( \frac{1}{B_w} \right) (1 - S_{w_{irr}}) (Li_{conc})$$



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Brine-Hosted Lithium Development

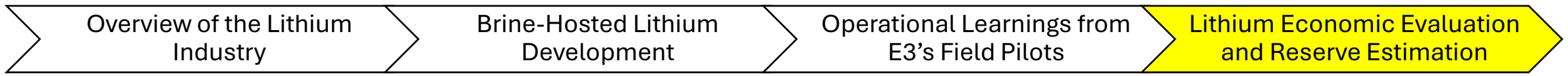
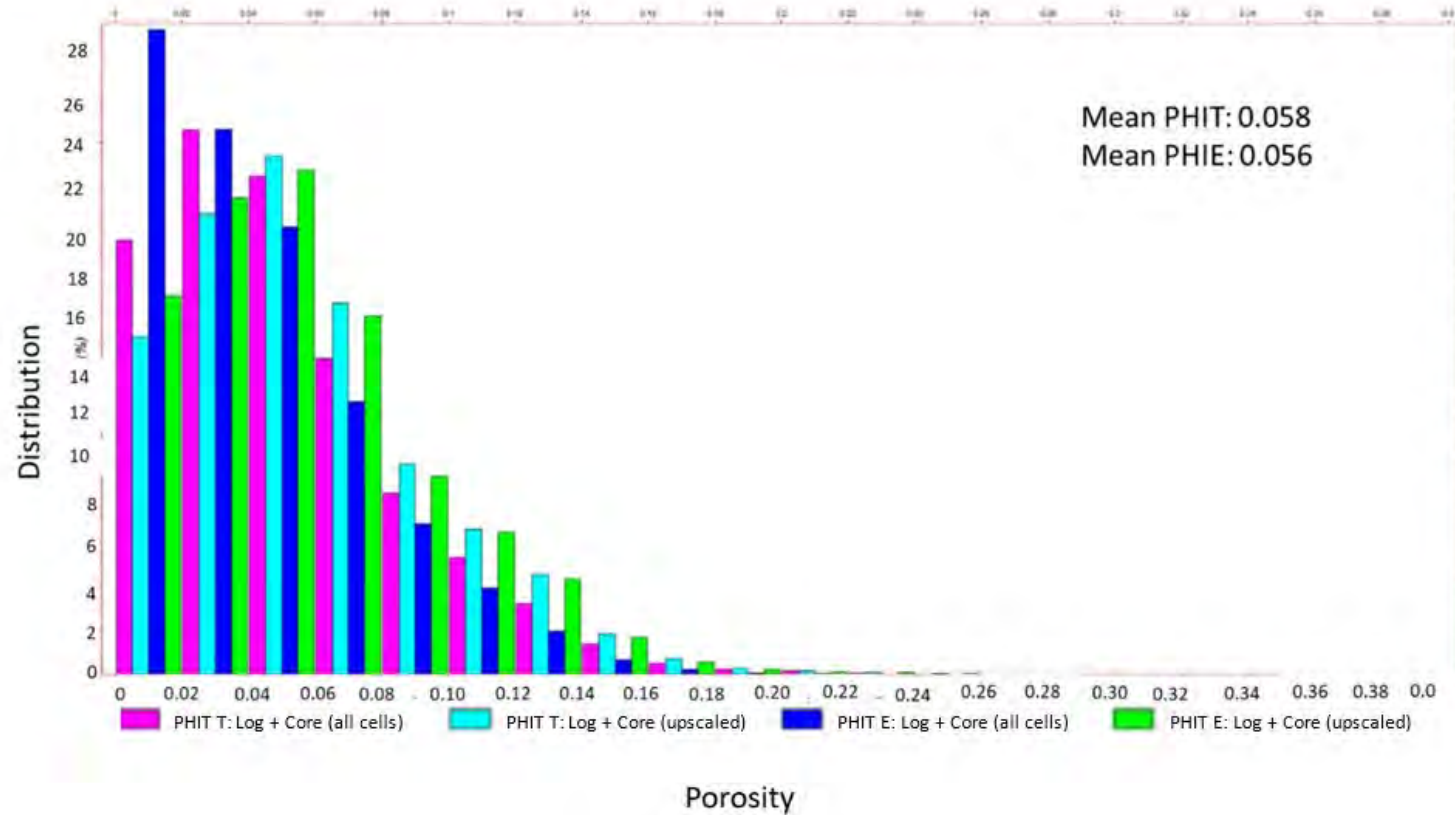
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# Mineral Resources & Reserves: Applied Methodology

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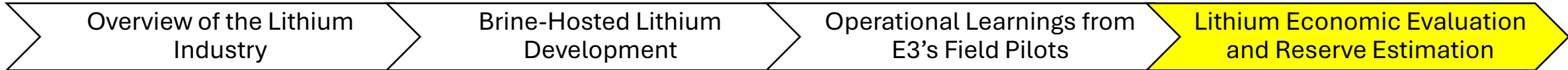
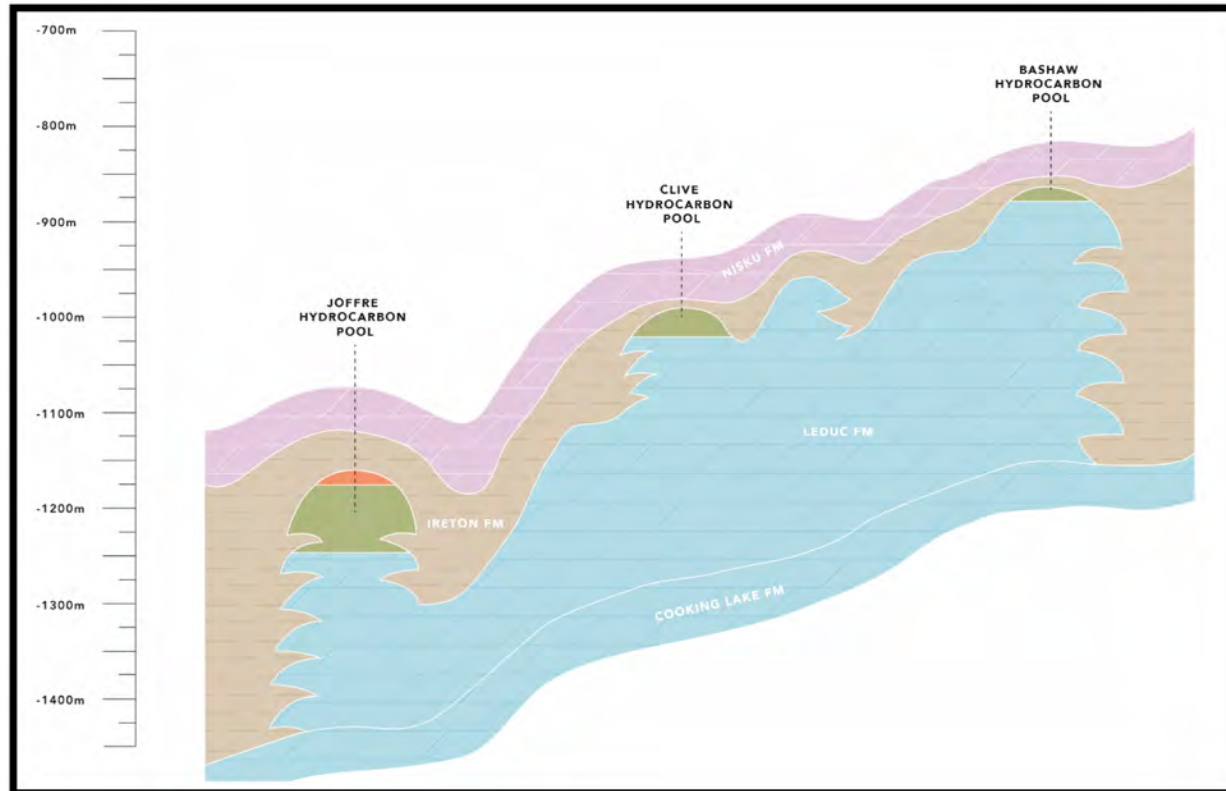
$$OLIP = (\text{Pore Volume}) \left( \frac{1}{S_w} \right) (1 - S_{wirr}) (Li_{conc})$$



# Mineral Resources & Reserves: Applied Methodology

Original Lithium In Place

$$OLIP = (\text{Pore Volume})(S_w) \left(\frac{1}{B_w}\right) (1 - S_{w\text{irr}})(Li_{\text{conc}})$$

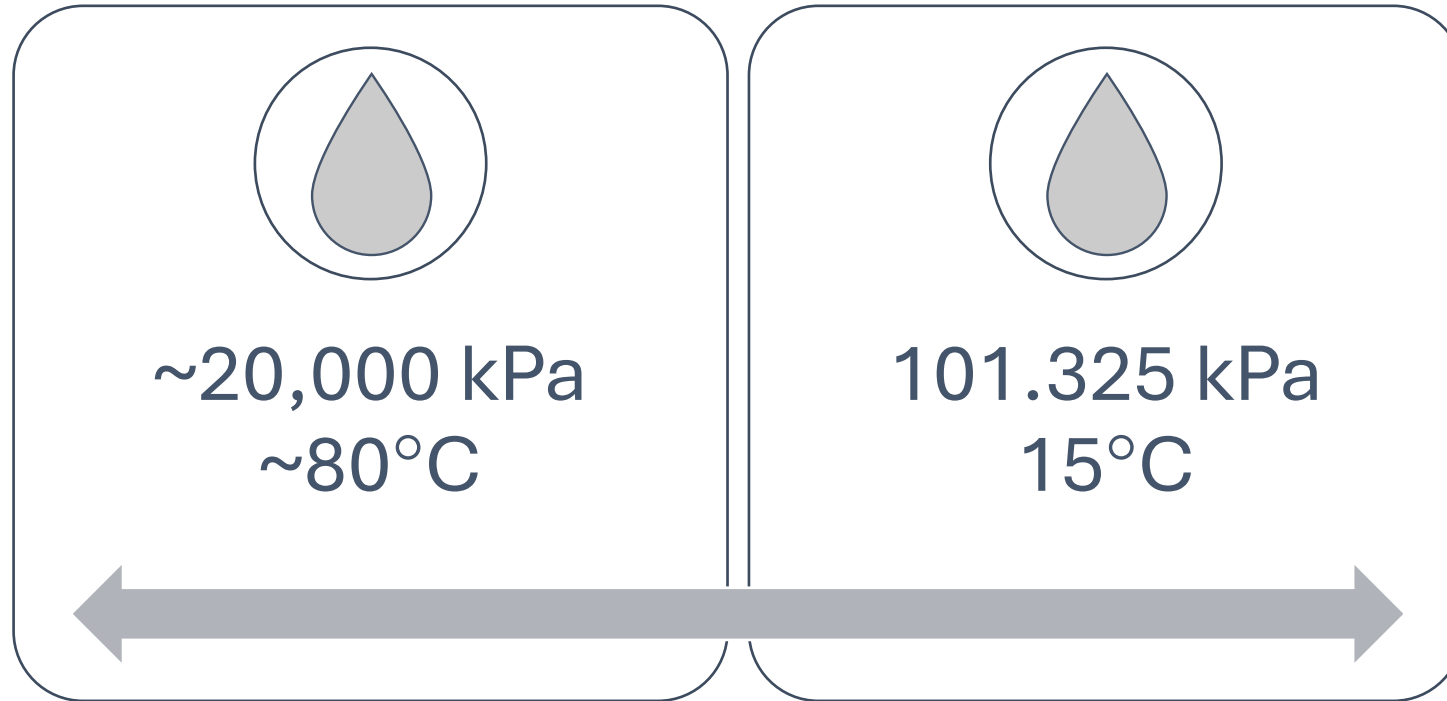




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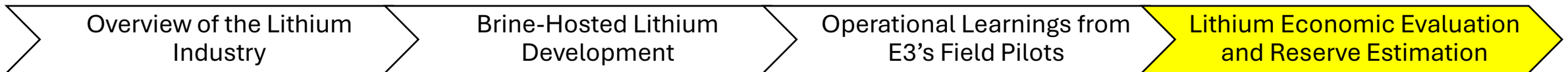
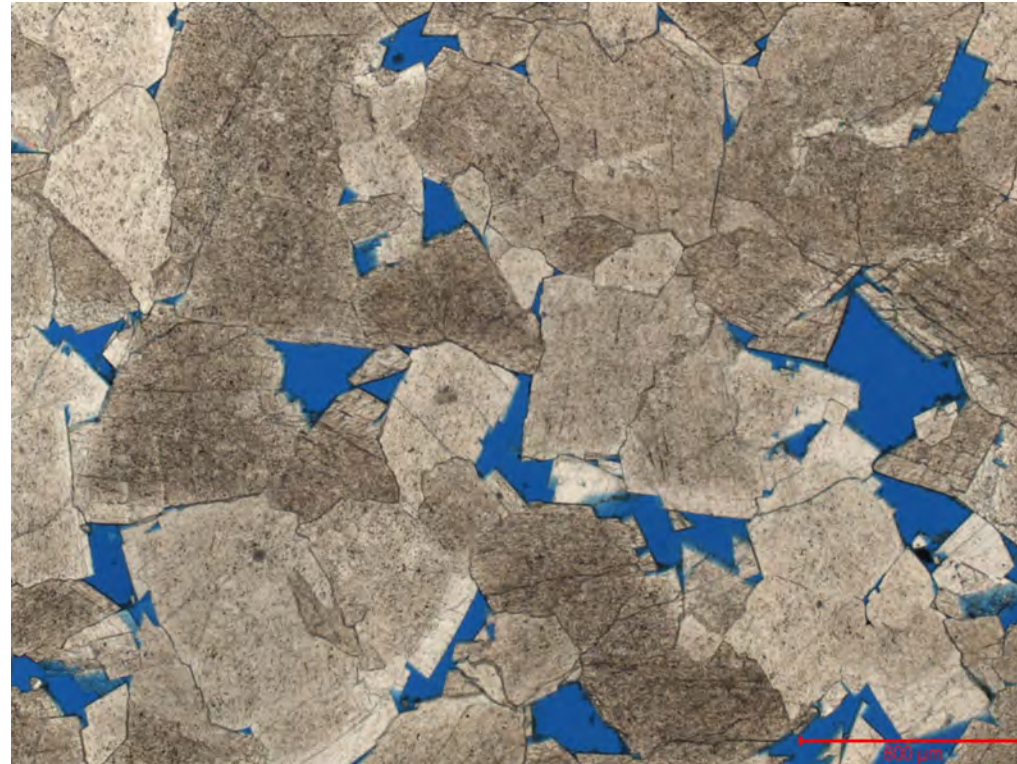
$$OLIP = (\text{Pore Volume})(S_w)\left(\frac{1}{BW}\right)(1 - S_{wirr})(Li_{\text{conc}})$$



# Mineral Resources & Reserves: Applied Methodology

Original Lithium In Place

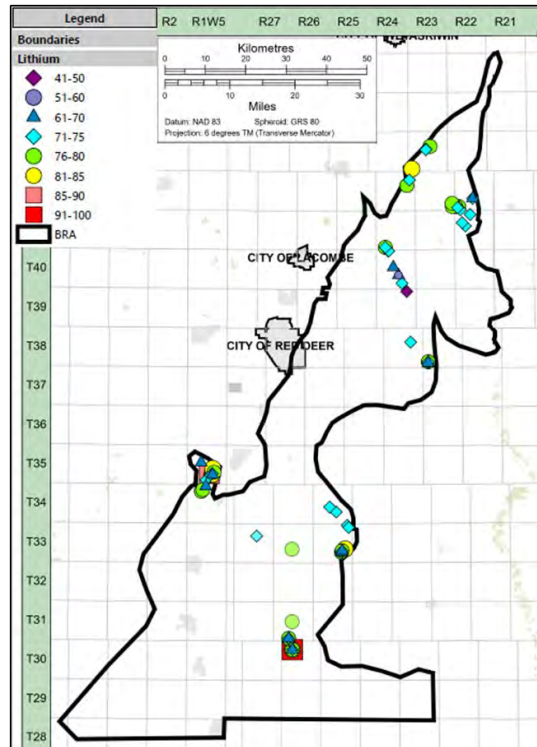
$$OLIP = (\text{Pore Volume})(S_w)\left(\frac{1}{B_w}\right)(1 - S_{w,irr})(Li_{conc})$$



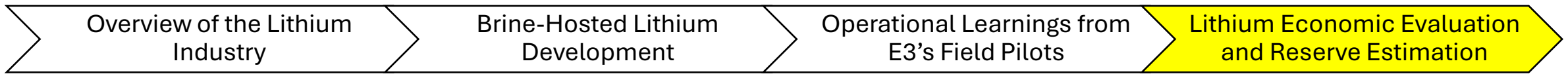
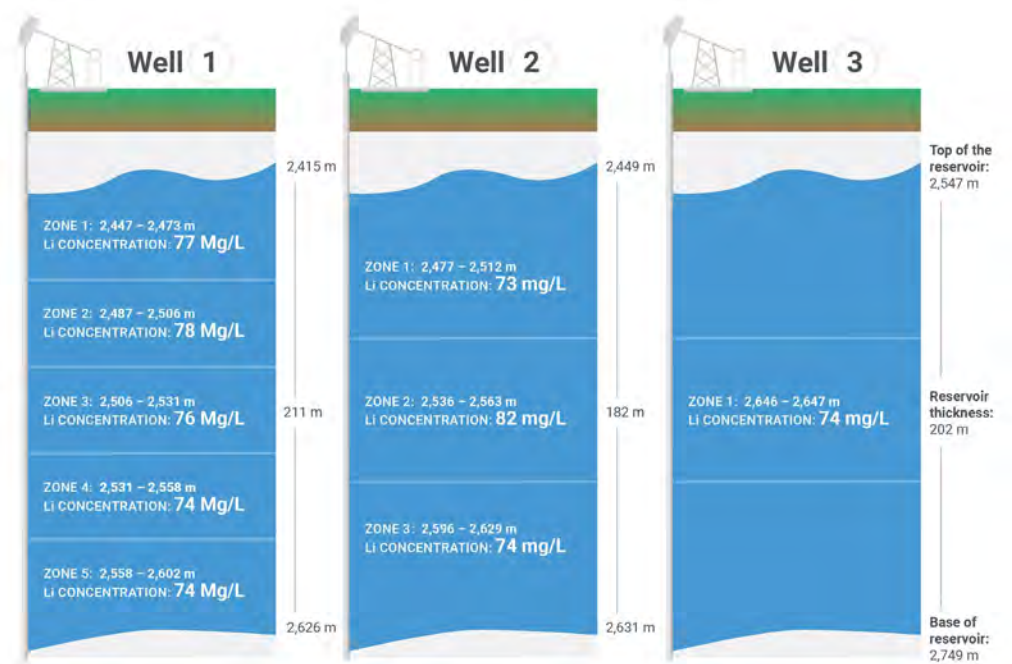
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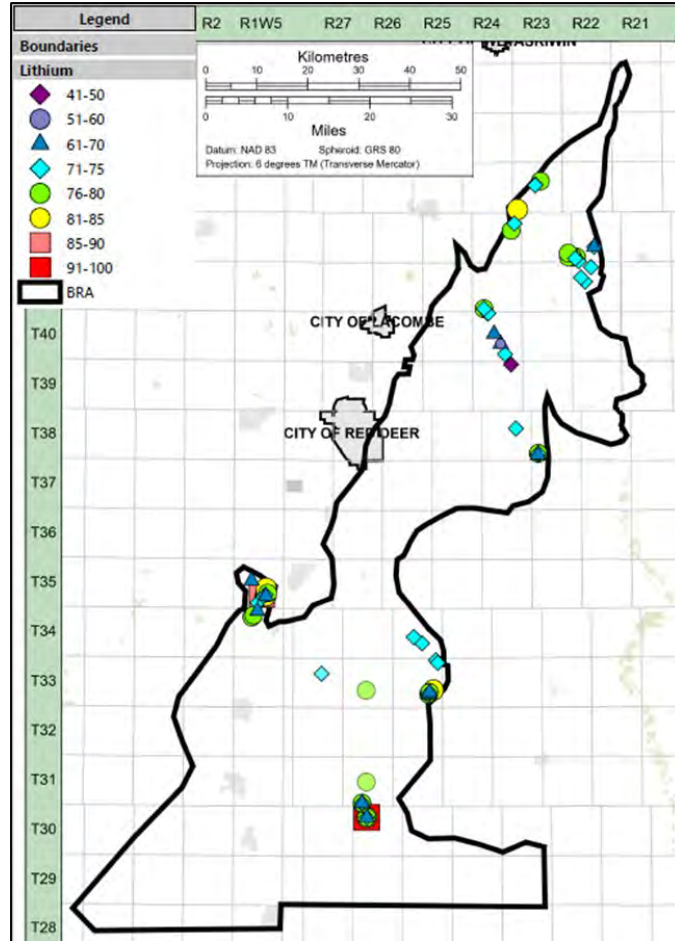
Sampling Zones and Lithium Concentrations



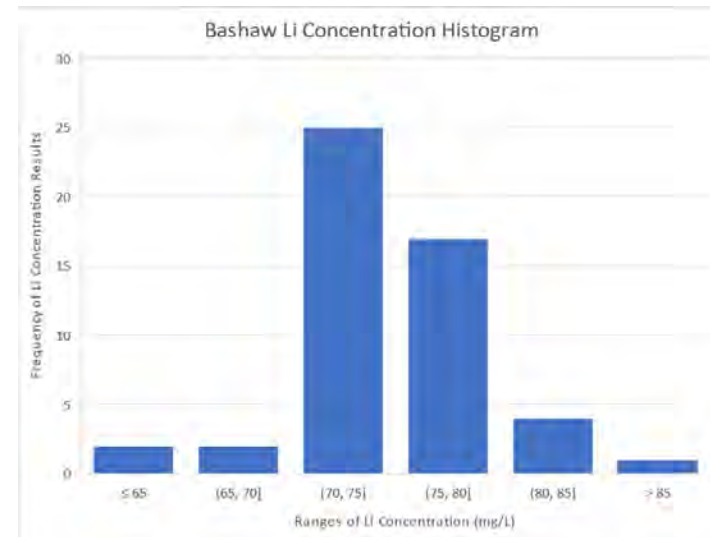
# Mineral Resources & Reserves: Applied Methodology

Original Lithium In Place

$$OLIP = (\text{Pore Volume})(S_w)\left(\frac{1}{B_w}\right)(1 - S_{w\text{irr}})(Li_{\text{conc}})$$



Resource Area	Min Li [mg/L]	P50 Li [mg/L]	Max Li [mg/L]
Bashaw	58	74.5	86.4



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# Mineral Resources & Reserves: Applied Methodology

Producible Lithium In Place

PLIP=(OLIP)(RF)

Darcy's Law

$$Q = -\frac{kA}{\mu\Delta L} \Delta P$$

Where:

$Q$  = flow rate [m/s] [cc/s] [bbs/d]

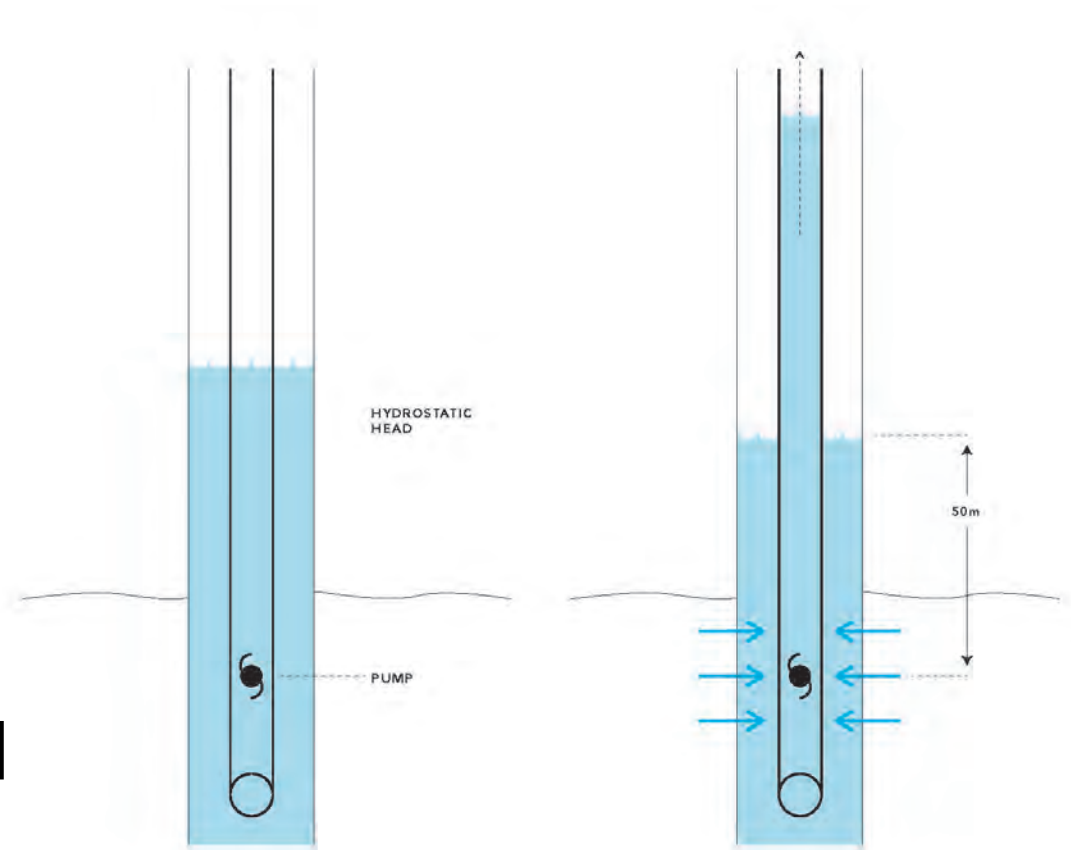
$k$  = permeability [m<sup>2</sup>] [Darcy] [mD]

$\mu$  = viscosity [kg/m s] [cp] [cp]

$\Delta P$  = change in pressure [Pa] [atm] [psia]

$\Delta L$  = change in length [m] [cm] [ft]

$A$  = cross-sectional area [m<sup>2</sup>] [cm<sup>2</sup>] [sq ft]



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Operational Learnings from E3's Field Pilots

Lithium Economic Evaluation and Reserve Estimation

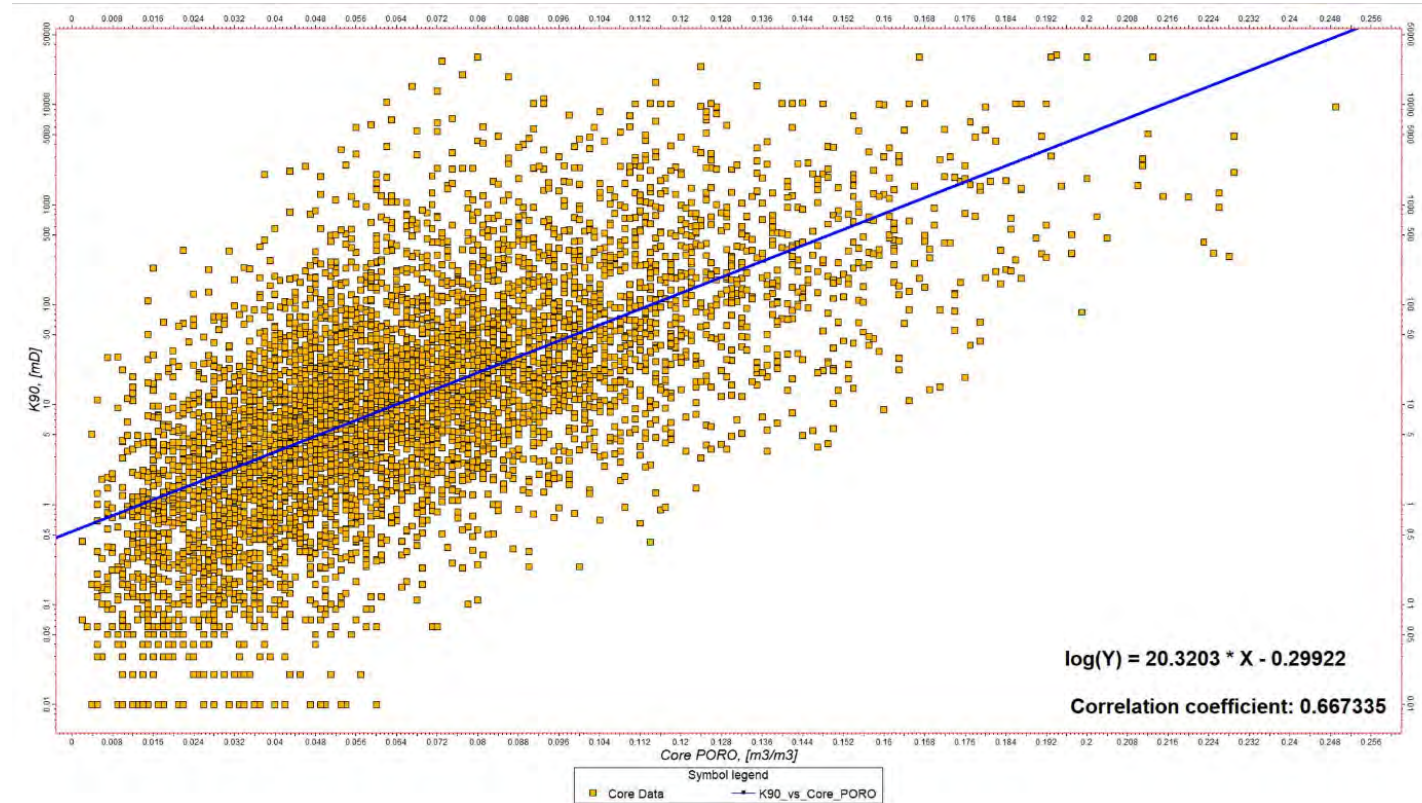
# Mineral Resources & Reserves: Applied Methodology

Producible Lithium In Place

PLIP=(OLIP)(RF)

Darcy's Law

$$Q = -\frac{kA}{\mu\Delta L} \Delta P$$



Overview of the Lithium Industry

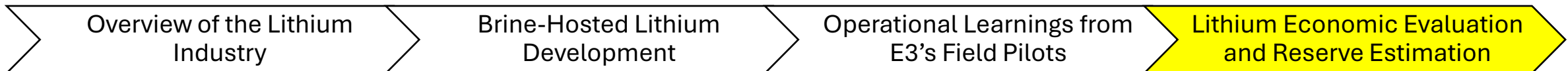
Brine-Hosted Lithium Development

Operational Learnings from E3's Field Pilots

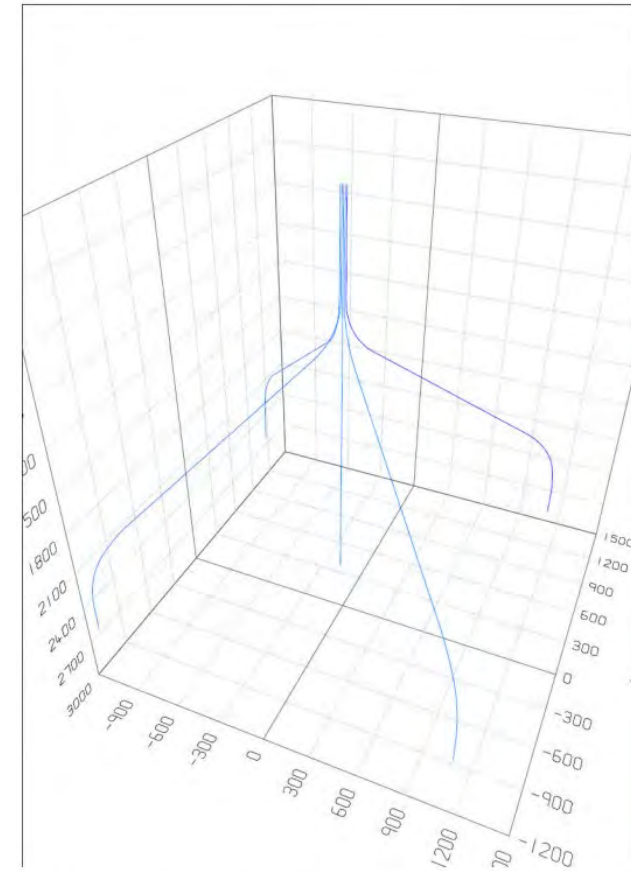
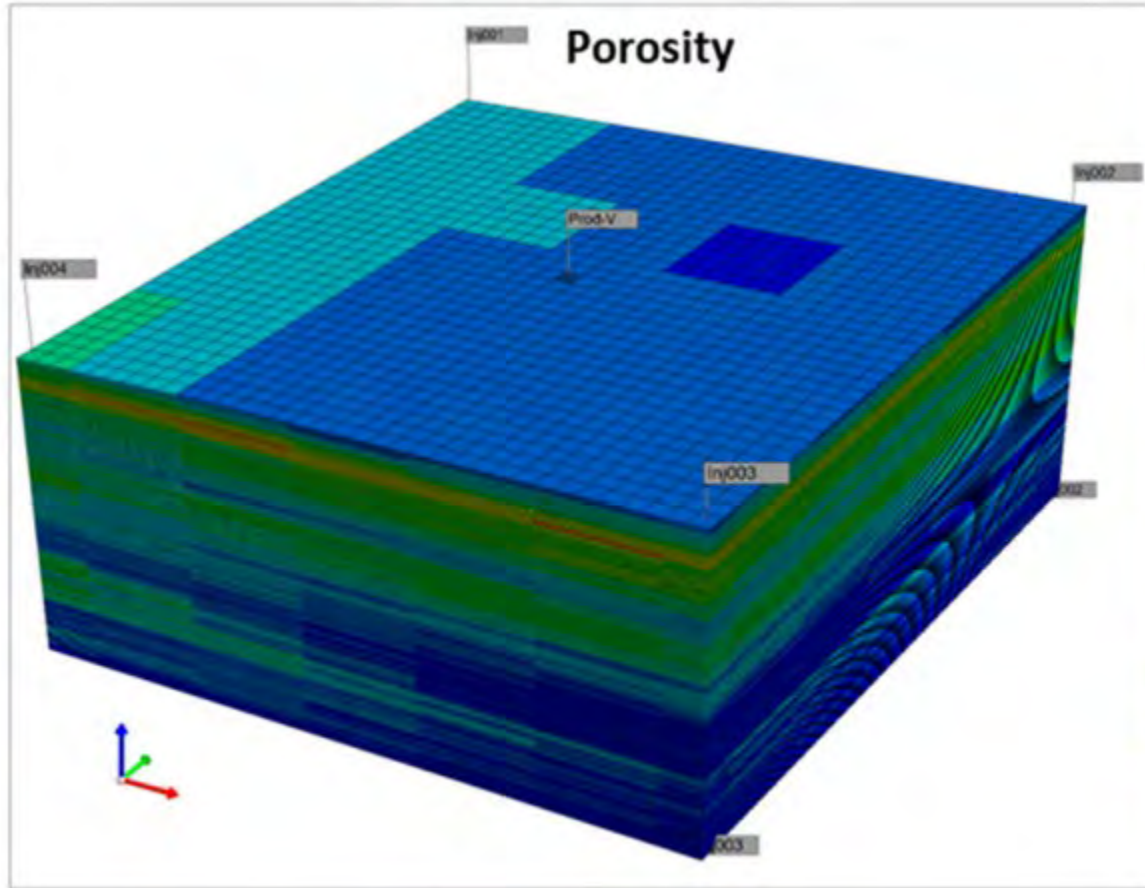
Lithium Economic Evaluation and Reserve Estimation

# Mineral Resources & Reserves: Applied Methodology

	Original Lithium In Place					Producible Lithium In Place		
Equation	$OLIP = (Pore\ Volume)(S_w)\left(\frac{1}{B_w}\right)(1 - S_{w_{irr}})(Li_{conc})$					$PLIP = (OLIP)(RF)$		
Variable	<i>(Pore Volume)</i>	$S_w$	$B_w$	$S_{w_{irr}}$	$Li_{conc}$	<i>PLIP</i>	<i>OLIP</i>	<i>RF</i>
Inferred	$(Area)(Thickness)(Porosity) = (5,931,155,000m^2)(205m)(0.0663) = 74,732,322,306\ m^3$	0.99	1	0	74.5 mg/L	n/a	23.4 million tonnes LCE	n/a
Indicated and Measured	55,853,000,000 m <sup>3</sup>	0.99	1.03	0	74.5 mg/L	n/a	16.0 million tonnes LCE	n/a



# Mineral Resources & Reserves: Applied Methodology



Note: Figure prepared by Phoenix Technology Services, 2024.

Overview of the Lithium Industry

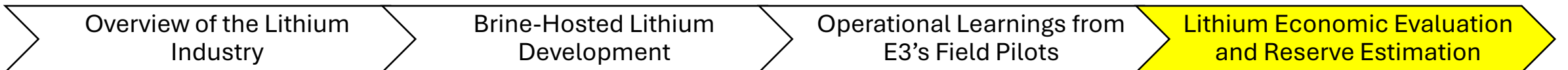
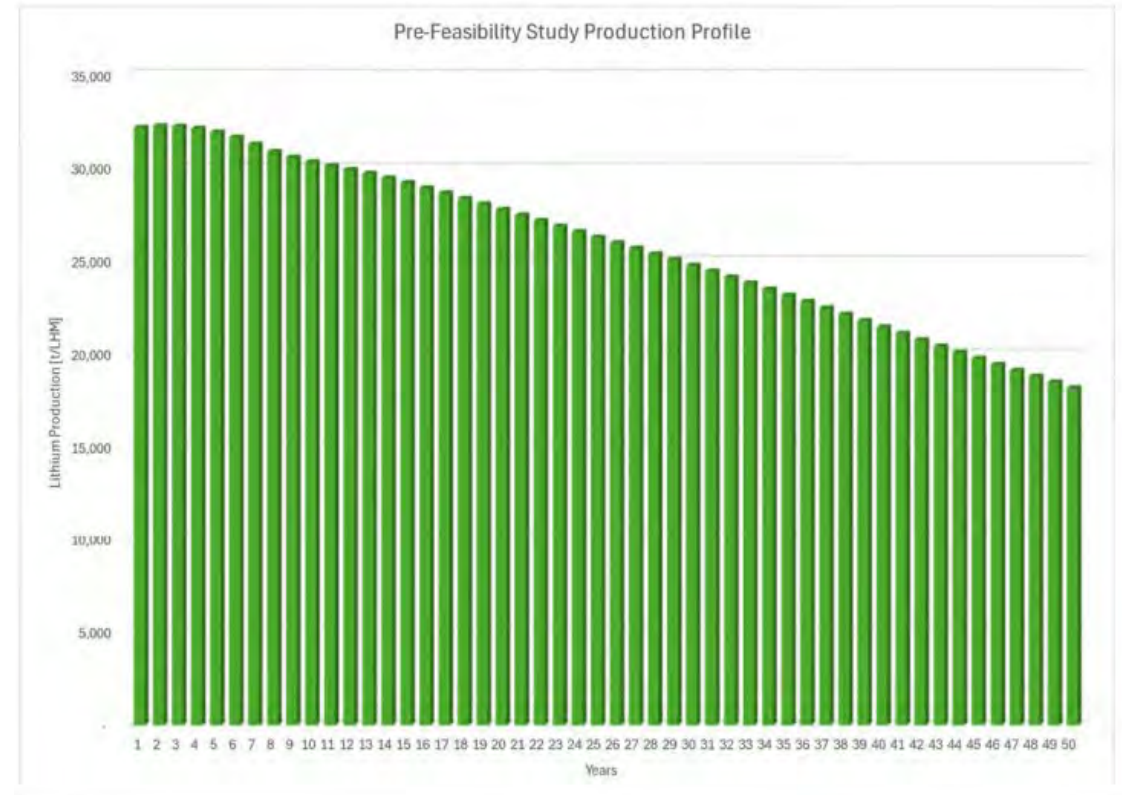
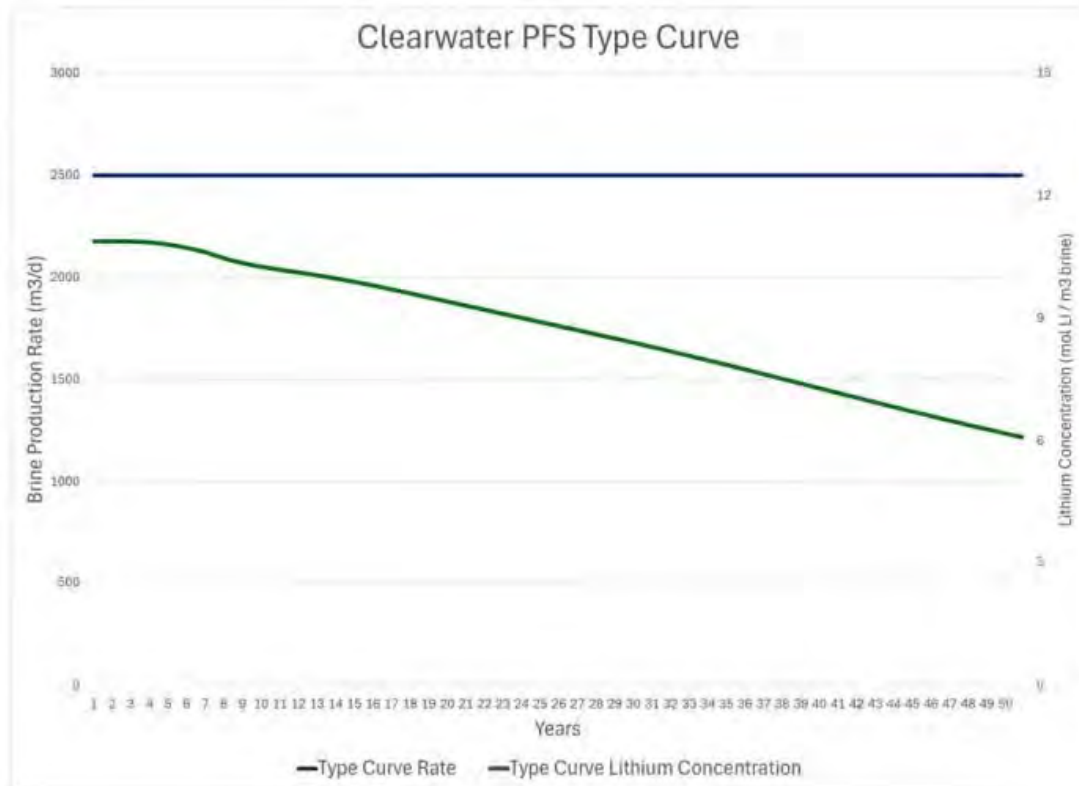
Brine-Hosted Lithium Development

Operational Learnings from E3's Field Pilots

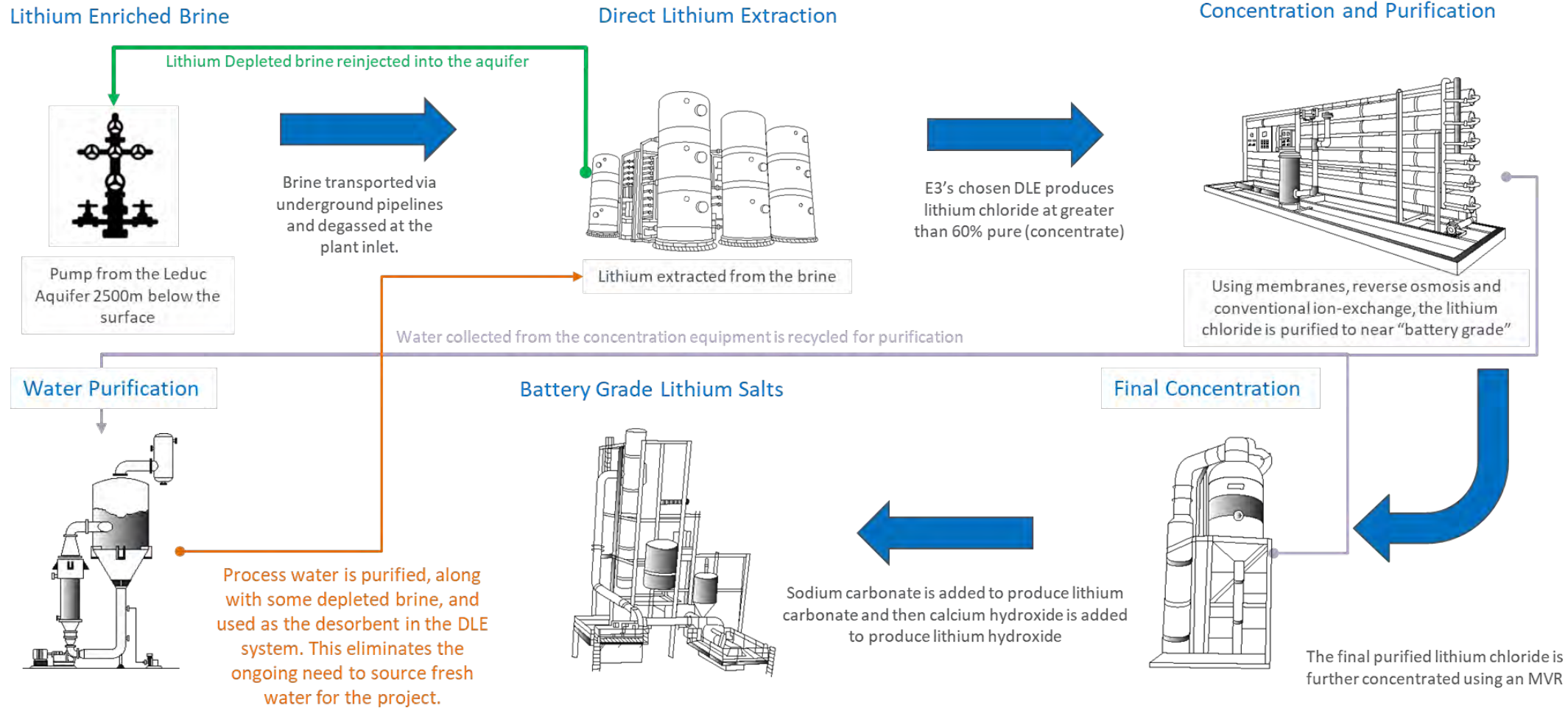
Lithium Economic Evaluation and Reserve Estimation



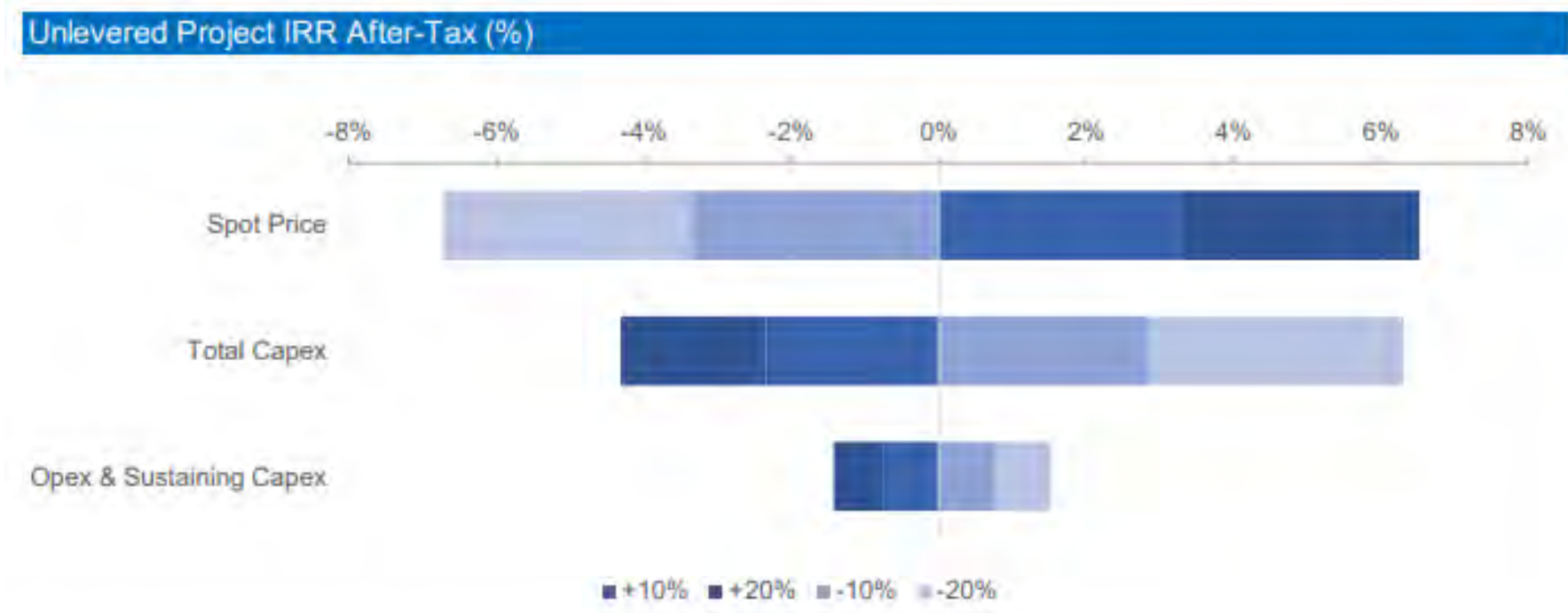
# Mineral Resources & Reserves: Applied Methodology



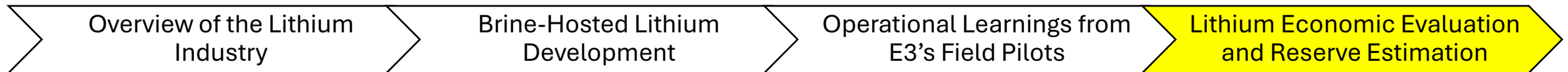
# Lithium Production Flowsheet



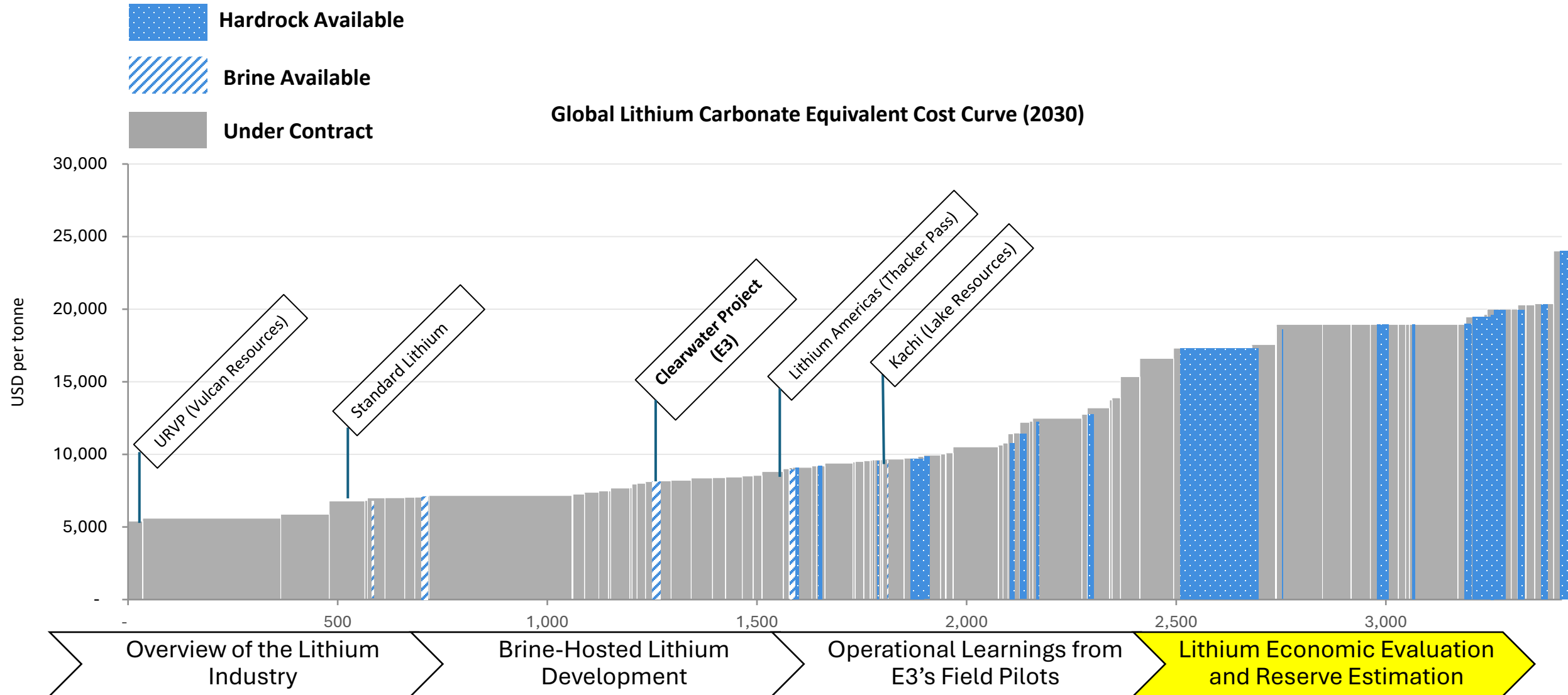
# Economic Analysis & Sensitivities



Note: Figure prepared by E3, 2024. Capex = capital cost estimate. Opex = operating cost estimate. Chart shows change in IRR versus base case.



# Peer Comparison: Industry-Leading Position on the Cost Curve



# Lithium Demonstration Facility

## Objectives

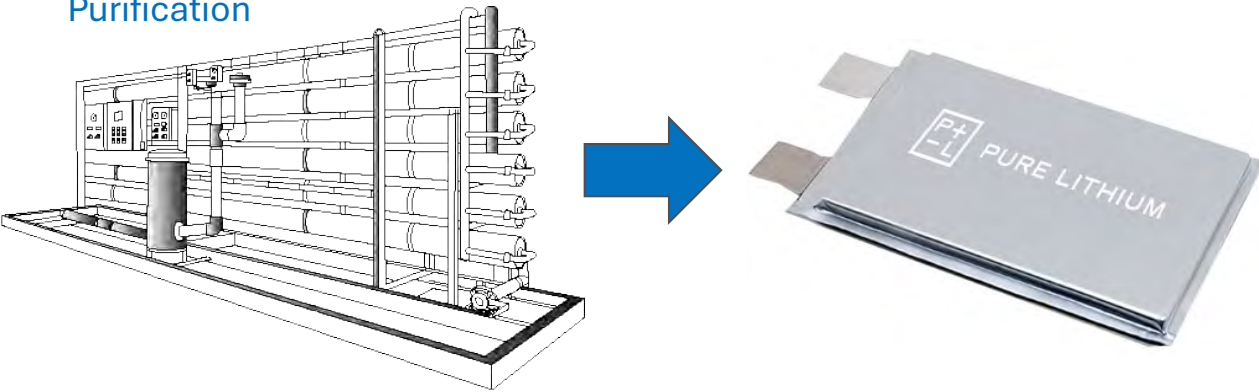
- Demonstrate DLE at a larger scale utilizing a design that will operate very close to commercial
  - Confirm the operation of an integrated system operating all processes from brine production to lithium carbonate (mimicking PFS flowsheet)
  - Produce battery grade lithium carbonate at a scale that will enable customer discovery
- 
- Design Basis for the facility was completed by E3
  - Equipment order complete, delivery expected Q2
- 
- Designing and building the carbonation reactors in house.
- 
- Estimated start up in July 2025



# Pure Lithium Joint Development Agreement

**Why Pure Lithium and E3 Lithium:** The Potential for Low-Cost, High-Performance Batteries

Concentration and Purification



Purified E3 lithium concentrate electrodeposited directly as lithium metal

The majority of the battery produced in this step could eliminate the CAM step in battery manufacturing and eliminates the need for E3 to produce a battery salt





Thank you!

