TSXV: FCLI; OTCQB: FCLIF fullcirclethium.com

**JANUARY 2024** 



## CORPORATE PRESENTATION

Focused on Lithium & Battery Materials Reintegration

"The Home of Lithium Science"



#### CONFIDENTIALITY AND FORWARD-LOOKING STATEMENTS

By accepting and reviewing this confidential presentation, you agree to maintain it confidential. The Company is a new start-up company with an unproven business plan, and any investors accept the high risks involved in a start-up including losing all of their investment. This presentation is not an offering document or memorandum and any investment will be accepted by the Company only pursuant to a binding subscription agreement that complies with applicable legislation.

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Forward-looking statements involve inherent risks and uncertainties, most of which are difficult to predict and many of which are beyond the control of the Company, and are not guarantees of future performance. The Company believes that these risks and uncertainties include, but are not limited to, the following: inability to economically and efficiently source, recover and recycle lithium-ion batteries and lithium-ion battery manufacturing scrap, as well as third party lithium feedstock, and to meet the market demand for an environmentally sound, closed-loop solution for manufacturing waste and end-of-life lithium-ion batteries and other lithium feedstock; inability to successfully implement the growth strategy, on a timely basis or at all; inability to manage future growth effectively; inability to refurbish and scale up the Company's processing plant and other future projects in a timely manner or on budget or that those projects will not meet expectations with respect to their productivity or the specifications of their end products; failure to materially increase recycling capacity and efficiency; failure of thirdparty technology that is part of the Company's processing plant's workings; the Company may engage in strategic transactions, including acquisitions, that could disrupt its business, cause dilution to its shareholders, reduce its financial resources, result in incurrence of debt, or prove not to be successful; one or more of its current or future facilities becoming inoperative, capacity constrained or if its operations are disrupted; additional funds required to meet capital requirements in the future not being available to the Company on commercially reasonable terms or at all when it needs them; the Company expects to incur significant expenses and may not achieve or sustain profitability; problems with the handling of lithium-ion battery cells that result in less usage of lithium-ion batteries or affect operations; inability to maintain and increase feedstock supply commitments as well as securing new customers and offtake agreements; a decline in the adoption rate of electric batteries particularly in electric vehicles, or a decline in the support by governments for "green" energy technologies; decreases in benchmark prices for the metals contained in the Company's products; changes in the volume or composition of feedstock materials processed at the Company's processing plant or future plants (if any); the development of an alternative chemical make-up of lithium-ion batteries or battery alternatives; the Company requires customers and other sources of lithium feedstock; insurance may not cover all liabilities and damages; the Company is reliant on the experience and expertise of its management and technical team; reliance on third-party consultants for its regulatory compliance; inability to complete its recycling processes as quickly as future customers may require; inability to compete successfully against already established battery recycling companies; increases in income tax rates, changes in income tax laws or disagreements with tax authorities; significant variance in operating and financial results from period to period due to fluctuations in its operating costs and other factors; fluctuations in foreign currency exchange rates which could result in declines in future sales and net earnings (if any); unfavourable economic conditions, such as consequences of the global COVID-19 pandemic; natural disasters, unusually adverse weather, epidemic or pandemic outbreaks, boycotts and geo-political events; failure to protect its intellectual property and knowhow; the Company may be subject to intellectual property rights claims by third parties; failure to effectively remediate the material weaknesses in its internal control over financial reporting that it may identify or if it fails to develop and maintain a proper and effective internal control over financial reporting. 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These forward-looking statements should not be relied upon as representing the Company's assessments as of any date subsequent to the date of this presentation. The Company's forward-looking statements are expressly gualified in their entirety by this cautionary statement.

## OUR TEAM – SIGNIFICANT LITHIUM INDUSTRY EXPERTISE





Carlos Vicens

## CEO, Director & Founder

- Over 25 years of years of global experience in capital markets, corporate development, strategy and investment banking.
- Vice-President of a Canadian investment banking mining team with over \$10B of M&A transactions and well over \$5B in equity and debt issuances.
- Founding member and CFO of Neo Lithium



Tom Currin

- Over 40 years of lithium chemical production and process engineering experience, including Dupont and Livent.
- Has strong relationships with the US Federal Laboratories that place him at the forefront of developing innovative process technology in the renewable energy and lithium battery industry.



## Paul Fornazzari

## **Non-Executive Chairman**

- Over 30 years of global law experience focusing on capital markets and merger and acquisitions practice.
- Founding Chairman of Lithium Americas and founding director of Neo Lithium
- Partner at a Canadian law firm.

## WHY FULL CIRCLE LITHIUM?



## US Based Operations and Fully Operational Plant

- Permitted downstream 2ktpa capacity lithium carbonate (LC) processing plant in Georgia, USA 20yr production track record
- Diversified feedstock with LIB recycling (including Fire Suppressant Solution ("FSS")), midstream feedstock recycling and lithium refinery
- Deployed modular plant to client site for midstream recycling and produced battery grade LC from spent lithium-ion batteries (LIB)
- Plant has excellent infrastructure and room for expansion to 10ktpa LC

### Proven Processing and Green Footprint

- Conventional technologies being used throughout recycling/refinery process to recover lithium compounds and other battery materials for a complete recycling solution with carbon neutrality
- Proprietary modular front-end lithium extraction process (LEP) processing plant completed and shipped to client's plant for feedstock recycling
- Starting larger scale demonstration of process utilizing a range of spent LIB types (40k lbs) building our battery processing and FSS unit
- Lithium refinery business line complements the business model and provides significant diversification and growth potential
- Patent pending portfolio of lithium related technologies 1 already filed (Fire Suppressant Solution)

## **Outstanding Market Dynamics**

- · Significant interest from midstream feedstock providers and refinery business for recycling and processing solutions
- Massive battery build-out worldwide and in North America (LIBs & scrap) with Electric Vehicle (EV) LIBs at the forefront needing end-of-life solutions, >5EV and LIB giga-factories builds with >US\$70B in EV/LIB investment regionally
- · Critical battery materials are in short supply and at high price due to high demand

### Proven Team & Support

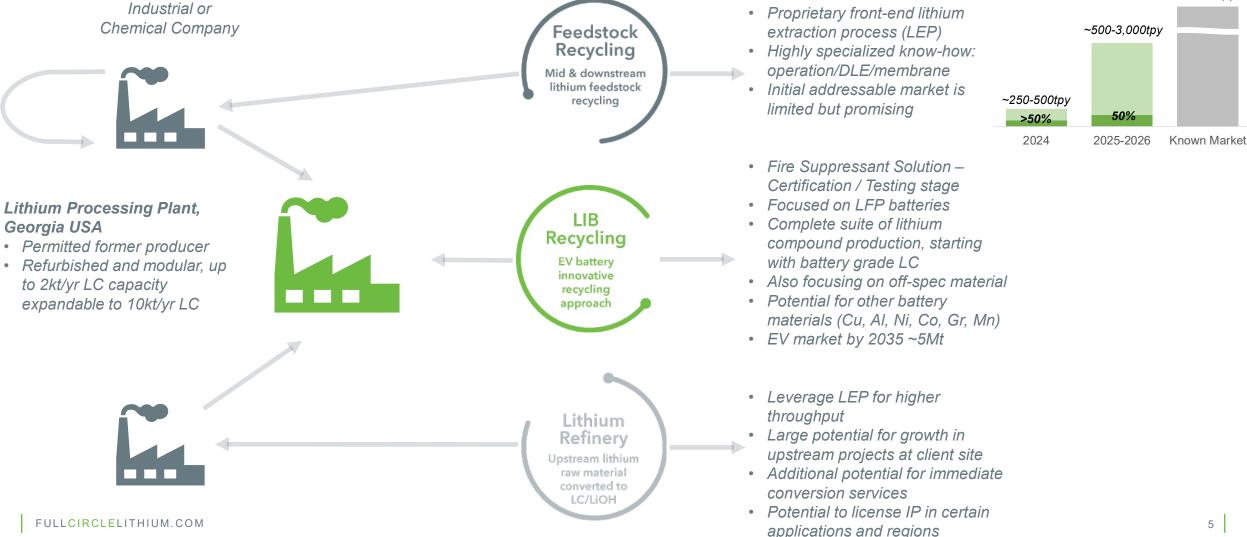
- · Leading technical expertise with +70yrs of combined experience in lithium operation and processing
- Proven lithium industry and capital markets experience
- Strong government support in Georgia with >100GWh of gigafactory build-out in the region
- Final stage of application on a ~US\$6M US grant application

## FULL CIRCLE LITHIUM - OVERVIEW

"DOWNSTREAM"

LITHIUM PROCESSING PLANT





## FULL CIRCLE – SCALABLE OPERATIONS

## **Georgia Processing Lithium Carbonate Plant**

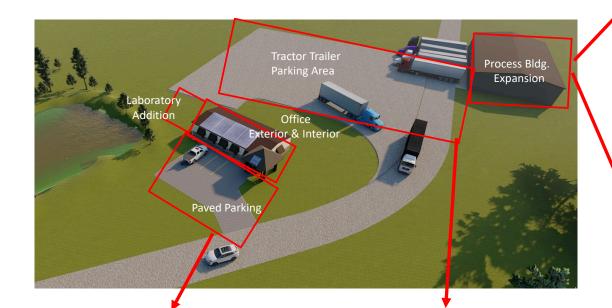
- Plant has up to 2,000 t/yr LC capacity with ability to expand to up to 10,000 t/yr LC
  - Capacity to process lithium sulphate/lithium chloride streams and can also process multiple 3rd party industrial/mining streams
  - Portfolio of patent pending lithium technology

## Feedstock Sourcing – Three Diversified Business Lines

- Midstream Feedstock Recycling no longer a science experiment
  - Instal proprietary modular plants at clients' site to extract lithium
  - First demo processing plant proved >99% lithium recovery and strict impurity levels
  - Analyzing and pilot testing other lithium streams,
- LIB Recycling
  - Focused on LFP batteries, but also looking at other battery types and off-spec material
  - Team has pre-processed and disassembled spent LIBs and successfully produced LC
  - Larger scale demonstration and automation work ongoing to demonstrate processing and economics, as well as optimize/automate methods for final lithium extraction process
  - Developed a liquid FSS for the safe disassembly of battery cells demonstrated over 500 times without incident, quickly and cost effectively; FSS had broader safety applications for all LIB fires and began internal/external testing with significant success
- Lithium Refinery numerous discussion on-going for processing
  - Currently in initial stages of development work with Argentine brine
  - Initial discussion refining precursor lithium compound into LC (technical/battery)



## PLANT REFURBISHMENT PHASE 1











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# SELECTED BUSINESS OVERVIEW

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Lithium 6.941

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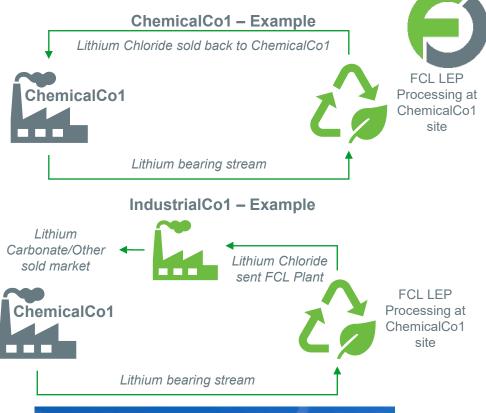
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## MIDSTREAM FEEDSTOCK RECYCLING

- Business is focused on chemical and manufacturing companies that utilize lithium compounds in their primary processes and have a residual lithium bearing streams
- FCL deployed of a modular demo plant to initial client
  - Successfully extracted >99% of the lithium from ChemicalCo1's lithium effluent in multiple cycles and also met impurity removal targets in final product
  - Subject to final agreement, will lead to proprietary modular commercial production plant buildout by Q1 2024
- Currently in discussion with a number of other specialty chemical companies









## FCL'S FIRE SUPPRESSANT SOLUTION – POTENTIAL GAME CHANGER

- In January 2023, the FCL technical team, based on its deep understanding of lithium chemistry, developed a liquid fire suppressant solution for the safe recycling of LIB cells
  - The process has been demonstrated over 500 times without incident, quickly and cost effectively 0



Battery cell opened in FSS

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## LITHIUM-ION BATTERY POTENTIAL FIRE SAFETY RISK



## LIB fires are becoming more common in EVs, Scooters, Airplanes, Homes, etc.













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## LITHIUM-ION BATTERY POTENTIAL FIRE SAFETY RISK



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## LIB fires are becoming more common in EVs, Scooters, Airplanes, Homes, etc.

Lithium-Ion Battery Fires ... X SMF

Tim Butters · 21h · 🖪 https://gcaptain.com/thermal-runaway-oflithium-ion-battery-destroys-tankersbridge/? subscriber=true&goal=0\_f50174ef03-6bd

d51c476-170562835&mc cid=6bdd51c47 6&mc eid=7eaf2ad576



Thermal Runaway of Lithium-Ion Battery **Destroys Tanker's Bridge** 

Lithium-ion battery fires are up. Are firefighters ready?

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47K views 5 months ago #lithiumbattery #electricvehicle #news

Alarming incidents involving

f 😏 🔤 🛷

CBS News Ø

Photo: Hillsborough Township Station 37

By Wall Street Journal

November 13, 2023 ④ 6:42

lithium-ion batteries on planes

American Firefighters Community · Join Bunker Bunn · 5d · 🖓 As with all equipment, please maintain your Solar Panel systems

Be aware of leaf litter accumulating on your roof & autters In this case the DC Isolator caught fire and then set fire to leaf litter under the Solar Panels Be safe! 🚝 - 11/2018



Crew and passengers on a JetBlue flight extinguished a backpack fire that was ignited by a lithium-ion battery as passenge

Share

were still boarding. The FAA has reported that as of early October, there have been 60 on-board incidents

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batteries NBC News' Tom Costello has more

Lithium-Ion battery fires pose unique challenges to firefighters. CBS News' Ash-har Quraishi reports few firefighters know how to effectively

Firefighters vs. EVs: Why EV Fires Are Harder to Put Out

Firefighters are finding out that fires caused by electric vehicles last longer and are more difficult to put out. WSJ reporter John Keilman joins host Julie Chang to explain why EV fires are trickier than those caused by their gas-powered counterparts and what's being done in respons

47,841 views - Aug 14, 2023 - #lithiumbattery #el

## Why do EV and e-bike batteries keep catching on fire?

Manufacturer defects can cause a process called 'thermal runaway' Zacharie Landry, National Post Staff

Published Jan 03, 2024 • Last updated Jan 10, 2024 • 4 minute read

#### Best Way to Extinguish a Flaming Electric Vehicle? Let It Burn Fire departments across America are wrestling with fires in EV cars that lasi longer and are harder to extinguish

New York City Fire Department 26,141 followers  $\odot$ 2mo · 🕤

There have been 239 fires caused by lithium-ion batteries this year. The fires are intense and can best be described as an inferno. Today, the FDNY joined the U.S. Fire Administration, U.S. Consumer Product Safety Commission, Fire Safety Research Institute, Bureau of Alcohol Tobacco and Firearms, and UL Solutions to launch a national safety camp Toronto apartment complex bans

devices. electric vehicles, citing fire risk

> Ban applies to electric bikes, motorbikes, unicycles, hoverboards, mopeds, Segways, skateboards and scooters National Post Staff

Published Sep 18, 2023 • Last updated Sep 18, 2023 • 3 minute read

#### Toronto sees 72% jump in lithium-ion battery fires, ↓ <sub>Download</sub> but what's being done to address safety?



in mobility devices, but what's being done to address the safety concerns? Nick Westoll report

## Burning questions remain on EVs and ship fires: Insurers

NorthStandard experts advise the industry to learn hefore overacting on EV shipping risks. Interview is part of a preview of next week's World Maritime Merchants Forum hosted by China Merchants Group

15 Nov 2023 INTERVIEWS



firerescue1.com

**Tesla fire** 

:04

Ala. FFs use 36,000 gallons of water on



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## ortune.cor 50 PM · Dec 30, 2023 · 15.2K Views

FORTUNE 🤣

shore.

A load of lithium-ion batteries has been

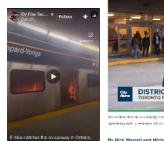
burning for 5 days aboard a cargo ship

now being kept 2 miles from Alaska's

Firefighters battle blaze at Tesla lithium battery storage unit near Rockhampton

Fire crews near Rockhampton work to prevent blaze a Toronto subway e-bike fire highlights dangers of Added Sep 26th 2023 incidents involving lithium-ion batteries

2 comments 1 share





By Nick Westoll and Michelle Mackey Posted January 1, 2024 3:38 pm, Lost Hadated January 1, 2024 8:04 pm

#### Lithium-ion battery fires are happening more often. Here's how to prevent them

By Samantha Murphy Kelly, CNN Business By Samantha Murphy Keny, Chen Board .....
 O S minute read - Updated 11:40 AM EST, Thu March 9, 2023

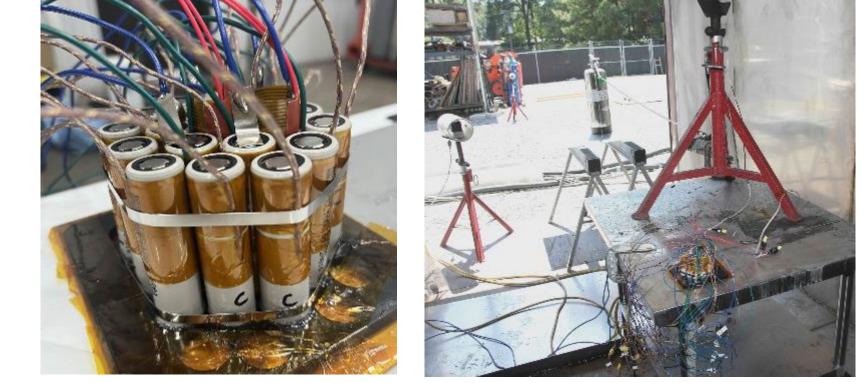
Number of battery fires nearly doubled since 2022: Toronto Fire Services

#### By Nick Westoll Posted October 24, 2023 7:02 nm. Last Undated October 24, 2023 9:54 nm

## THIRD PARTY TESTING – POTENTIAL GAME CHANGER



- FCL's technical team is now having an authorized and credible third party testing facility validate internal results and compare with water and one main competitor's product
- Two test have been completed (19 small cylindrical batteries and 1 e-bike battery) with the electric vehicle battery test upcoming















- Proven and tested and fully operational processing plant in Nahunta, Georgia
- Over a period of 18 years had >15 engineering contracts and produced more than 20t of battery grade LC
- Mothballed in 2012 due to deteriorating market conditions

 Proof of concept on battery recycling completed in 2019/20, ongoing process optimization on different types of LiBs

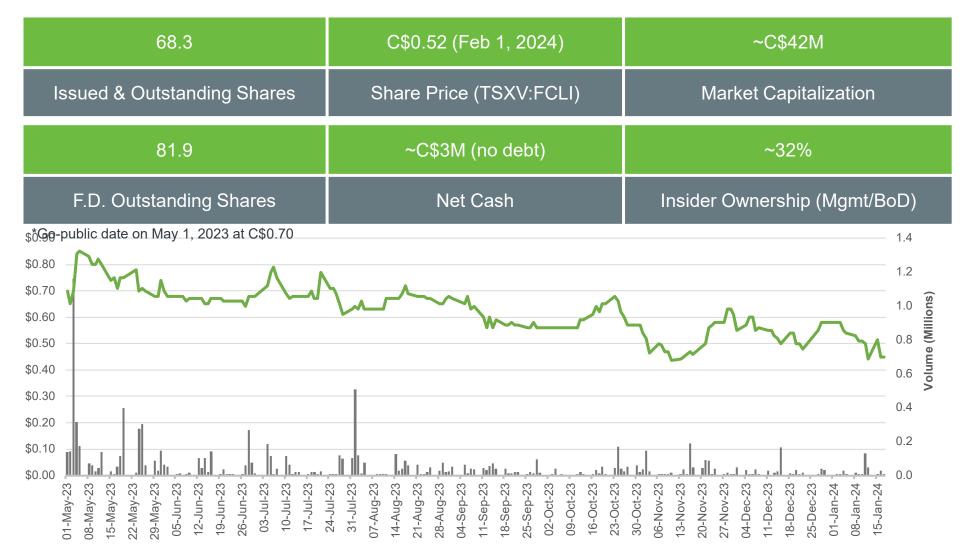
- Modified plant process flow sheet completed for quick restart
- Discussions with a number of companies with respect to midstream feedstock recycling business
- LEP technology in place IP development ongoing
- Developed new products FSS

(Sourced 40k lbs of LIBs)



- C\$10M funding concurrently with TSXV gopublic transaction
- No additional funds expected to be needed for initial revenue generation – for midstream feedstock recycling business and LIB recycling
- Continued focus on spend LIB sourcing for recycling and lithium refinery business
- Additional growth not funded, expected to come from: (a) plant expansion: up to10kt LCE, (b) additional midstream feedstock recycling and lithium refinery deals,(c) Fire Suppressant Solution and (c) selective and strategic JV/M&A





# ADDITIONAL INFORMATION

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## SELECTED MARKET COMPARABLES



Company	Market Cap. (US\$M)	<b>EV</b> (US\$M)	Locations	Business Segments				EBITDA	EV/EBITDA		
				Battery	Other Lithium	Lithium	Upstream/	2025E	2025E	Notes	
	(03\$111)			Recycling	Recycling	Refinery	DLE/Other	(US\$M)	(X)		
🕑 Li-Cycle <sup>®</sup>	\$72	-\$175		x				\$160	-1.1x	Solely focuses on LIB recycling, typical shred/blackmass/hydro. Many partnerships. Large investments with large negative EBITDA.	
	\$125	\$112		x			X (mining asset)	na	na	Selective dissassembly/hydro; also owns a clay mining assets Tonopah in Nevada.	
Nm Neometals	\$60	\$18		X (JV wth Primobious)	X (Vanadium JV)	X (JV with MinRes)		-\$6	nmf	Diversifed business through JV strategy.	
battery metals	\$180	\$170					x	na	na	Solely focused on DLE extraction for upstream assets. Building demo plants in USA/Latam.	
AQUA METALS	\$65	\$71		x				na	na	Solely focused on black mass proprietary modified hydro technology, business through equipment, royalty, and service agreements.	
	\$42	\$27	•	x				na	na		
comstock	\$56	\$55		x				na	na		
<b>Electra</b> Battery Materials	\$20	\$66		x		X (cobalt)	X (cobalt)	\$44	1.5x	Mostly focused on the cobalt market, recently announced blackmass recycling business. In debt problems, strategic review on-going.	
e	\$27	\$20		x	x	x	x	\$24	0.8x	Diversified business focused on lithium recycling in LIB and midstream operations, with a 2ktpa LC facility. Also working on lithium extraction from upstream assets, fire suppressant solution and lithium refinery.	

• Only a few comparables to FCL trade publicly or have estimated valuations

 There are many other companies in the recycling business (Redwood, Cirba Solutions, Neometals, Lithion, Ascend) and other lithium processing (GEO40, Lilac, Summit Nanotech), each with its own processing differentiator (mostly not proven at scale); some mining companies are also working on DLEs

 Most public comparables are focused on recycling of long lead time end of life LIBs, no other public or private company has the strategy of recycling both LIBs and midstream feedstock, as well as pursuing lithium refinery



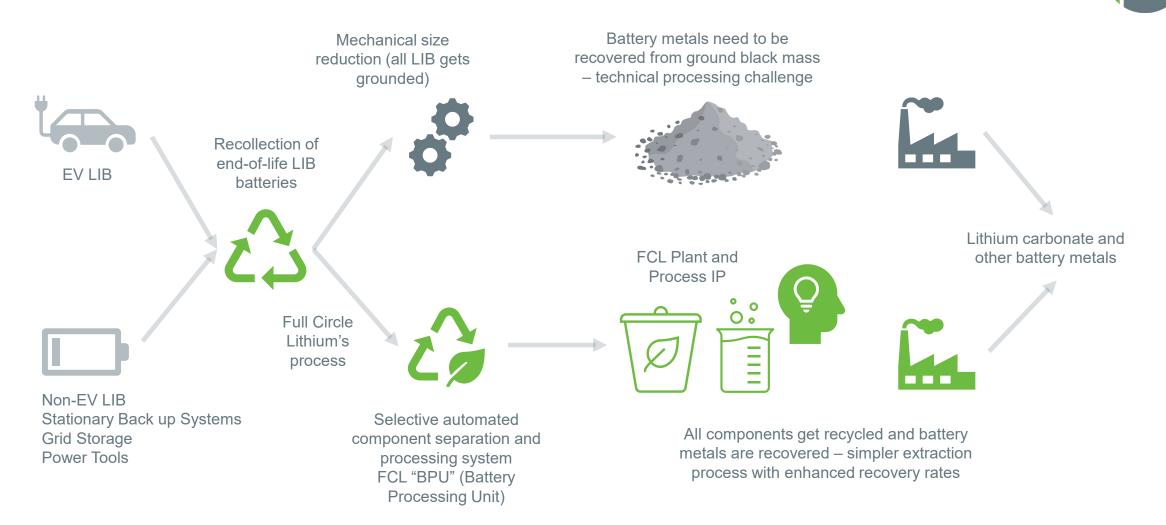
industry.

19

companies.

director since 2010.

## END OF LIFE BATTERY RECYCLING (LFP FOCUSED)



Focused on mitigating the three process safety risks of LIB recycling: discharge of batteries, hydrogen/heat generation and fluoride process/recovery

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- FCL can offer lithium extraction and lithium carbonate production expertise
  - The FCL team has produced lithium precursor from brines, clays, hard-rock and petro-brines and saleable lithium chemicals for over four decades
  - FCL's plant can act as a pilot and/or full commercial processing plant for US based projects that want to tap into FCL's expertise and save significant time and money in developing their own such plants and expertise
- Significant interest in lithium chemical extraction and processing expertise
  - Most upstream development stage mining companies (brines, clays, hard-rock, geo-brines and petro-brines) lack lithium processing expertise and/or do not have a pilot plant or commercial plant or the knowhow to build one.
- Extraction and processing of the lithium is highly complex and very particular to the chemistry of each project, however once lithium sulfate or lithium chloride is produced the process is well understood
- Few lithium refineries in the USA and capacity is limited, prices of lithium products have generally increased over the past two years and are harder to secure from USA producers Albemarle and Livent
- There is a need for new, nimble and adaptive lithium chemical processing companies that can meet the growing need for processing various feedstock and/or precursor raw lithium concentrates and supply the market with battery grade lithium

## GEORGIA, USA – PRIME LITHIUM PROCESSING REAL ESTATE

- Electric Mobility Manufacturing
  - In Georgia alone EV-related projects have surpassed US\$20B with OEM's such as Hyundai Motor Group & Rivian, battery suppliers such as SK Battery and Freyr, as well as other supply chain enablers which include battery recyclers Ascend Elements and SungEel Recycling
  - Other include:, Aspen Aerogels, Aurubis, Caterpillar, Club Car, Cimbar Performance Minerals, Denkai, Dongwon Tech, Duckyang America, EnChem Ltd., EcoPro, Energy Assurance GEDIA, JCB, Kirchoff, Heliox, Plug Power, TEKLAS, Textron, Wonbang Tech, Yamaha Motor Manufacturing



- Strong Workforce
  - State-sponsored training facilities, high-end education programs, and nationally ranked colleges provide Georgia businesses with talent to achieve success
- Supportive consumer adoption of EVs and electrification
  - Public and private entities are offering incentives and suggesting policies to support continued growth of the electric mobility sector (Electric Vehicle Supply Equipment Tax Credit & \$250 Georgia Power rebate program)
  - Georgia is 6th in the nation for public EV charging stations, offering more than 1,500 individual outlets, equating to more outlets per capita than anywhere in the Southeast
  - The State of Georgia is focused on the future of electrification



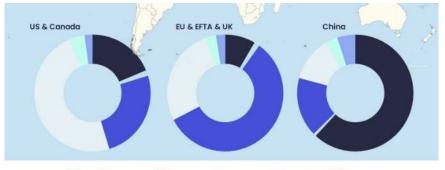
## THE MARKET – LFP BATTERIES

## LFP Expected to Dominate the Electric Battery Market

- LFP share continues to increase across all regions so far this year, reaching ~40% in the first quarter compared to 30% in Q1 2022, driven by an increasing number of vehicles being sold with LFP packs and the growing BESS market
- LFP market share is to be in the mid 50% through the end of the decade, but the market ex-China may rise to 20-30% by 2030
- The US LFP market is small but growing, and several announced large projects are underway in the EV (Ford/Tesla) and BESS market
- LFP batteries are expected to become a more viable option to power a greater portion of vehicle models, especially medium-sized vehicles
- LFP now is the dominant option for the BESS market

## Market Examples

- Dedicated BESS cells are increasingly larger format prismatic cells (LFP) with cycle life reported up to 12,000 cycles (~30 year life when cycled once per day)
- Lower energy density for LFP results in greater battery system weight and size, however Gotion has produced an LMFP batteries with an impressive energy density of 240 Wh/kg or 525 Wh/L



📕 LFP 🔝 Low-Nickel 📕 Mid-Nickel 📃 High-Nickel 📃 Other Li-ion 📃 Non Li-ion

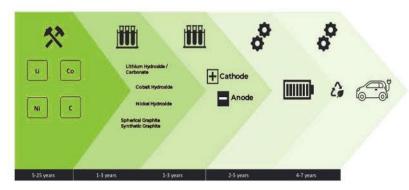
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027 3		31		3 4			5	0		5		
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## THE MARKET THE CASE FOR RECYCLING

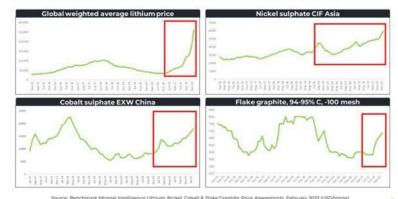


- Insufficient investment in raw materials to meet demand, expected to last for the foreseeable future
- Raw material prices are currently at all time highs due to supply/demand fundamentals
- The LIB supply chain is complicated and long
- Battery prices are starting to reflect higher raw material prices
- Additional supply, i.e. recycling, will not fix the problem but it can alleviate and be profitable

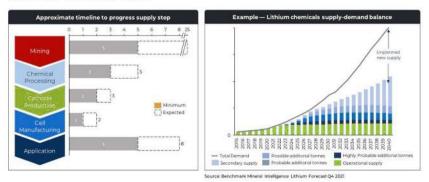
## THE LITHIUM ION BATTERY AND ELECTRIC VEHICLE SUPPLY CHAIN IS A **LONG ROAD**



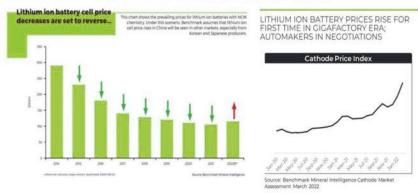
#### SUPPLY CHAIN IMPACT: RISING RAW MATERIAL PRICES...



#### THE GREAT RAW MATERIAL DISCONNECT: IT TAKES MUCH LONGER TO BUILD A RAW MATERIAL PROJECT THAN A BATTERY OR CAR PLANT



#### SUPPLY CHAIN IMPACT: ... MEAN RISING BATTERY COSTS



TSXV: FCLI fullcirclethium.com



## CARLOS VICENS

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