



# ENERGYX

POWERING THE FUTURE

OVERVIEW

DECEMBER 2020

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# ENERGYX

ENERGY EXPLORATION TECHNOLOGIES, INC.

EnergyX is positioned to be a worldwide leader in the global transition to sustainable energy.

EnergyX is working to modernize two key things:

- 1) More efficient access to sustainable lithium production using direct extraction technologies.
- 2) Technology enabling solid-state battery electrolytes.

Founded in 2018, we are focused on accelerating and enabling affordability for the broader use of lithium-ion energy storage in everyday life, fundamentally changing the way humanity is powering our world.



OLD APPROACH



INNOVATIVE SOLUTION

1. Modernizing lithium (Li) extraction, recovery, and refinery technology from high concentrated Li brine with lower OpEx to support 5X increase in Li demand by 2025.
2. EnergyX has a portfolio of global patents\* and exclusive rights to the extraction of Li using membrane nanotechnology (LiTAS™).
3. LiTAS™ is a multi-stage, synthetic ion separation technique that increases recovery rates from 30% to ~90%, and decreases production time with the ultimate goal of future generations of technology to potentially a few days from 18 months.
4. Substantial economic return for EnergyX customers with +30% IRR returns possible to miners / producers on incremental production.

\*Patents and patent applications



## LiTAS™ GREATLY SCALES BACK EMISSIONS OF CO<sub>2</sub>

For every **(1)** metric ton of Lithium utilized in batteries, it annually displaces:

Passenger Vehicle: **134,432** tons

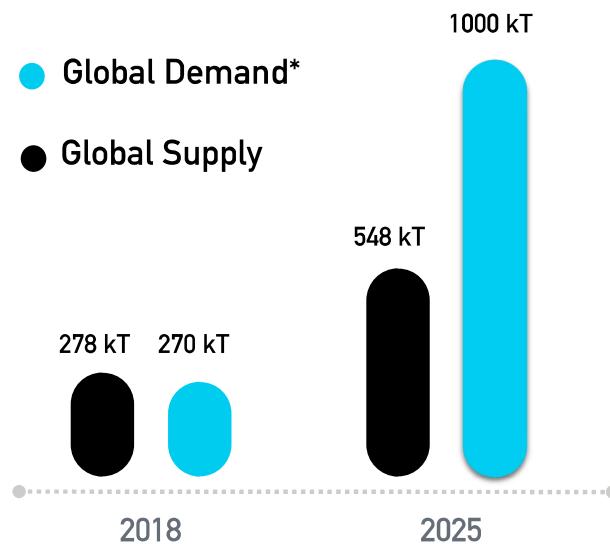
of CO<sub>2</sub> reduction

Electricity: **55,924** tons

of CO<sub>2</sub> reduction

To eliminate **500,000,000** metric tons of CO<sub>2</sub> emissions into our atmosphere it only requires an additional 3,720 tons of lithium utilized in Electric Vehicles.

Demands for lithium will increase by over 270% in the 7 years from 2018 to 2025 with energy storage driving the need.



## Electric Vehicle Pipeline



Plans 3 million EV's & 50 EV models by 2025. Total spend – EUR €78bn. Reports of EUR €10bn battery factory with Northvolt and SK Innovation.



EUR €1bn EV program headquartered in Stuttgart & factory in Leipzig. First EV production in 2019. 50% of all vehicles to be EV by 2023.



EUR €10bn investment with target to bring 10 EV models to the market by 2025, making up 15-25% of global sales. Currently building 2<sup>nd</sup> battery factory



Plans to introduce electric Mini and BMW X3 SUV to range of EV's. Mass production of EV's by 2020 – 12 EV models by 2025



USD \$20bn investment by 2025 to bring 20 EV models to market under all 4 brands – Chevy, Cadillac, GMC, Buick. Building \$2.3bn battery factory with LG Chem in Ohio and retrofitting \$2.2bn factory for production in Detroit.



Introducing 6 new EV models by 2025; building \$1.2bn EV factory in China aiming to produce 5.5m units by 2025.



Plans to invest USD \$11bn dollars by 2022 with target to bring 40 EV and hybrid models to market including the F-150

\*Deutsche Bank AG / Sydney

## ENERGYX INTRODUCES A COMPLIMENTARY TECHNOLOGY THAT WORKS IN ASSOCIATION WITH EXISTING METHODS OF PRODUCTION.

LiTAS™ TECHNOLOGY GEN 1 IS A “BOLT-ON” UNIT FOR PRODUCERS MEANING ITS LOW EXPENSES AND EASILY ADAPTABLE FOR A LOW BARRIER GO-TO MARKET.

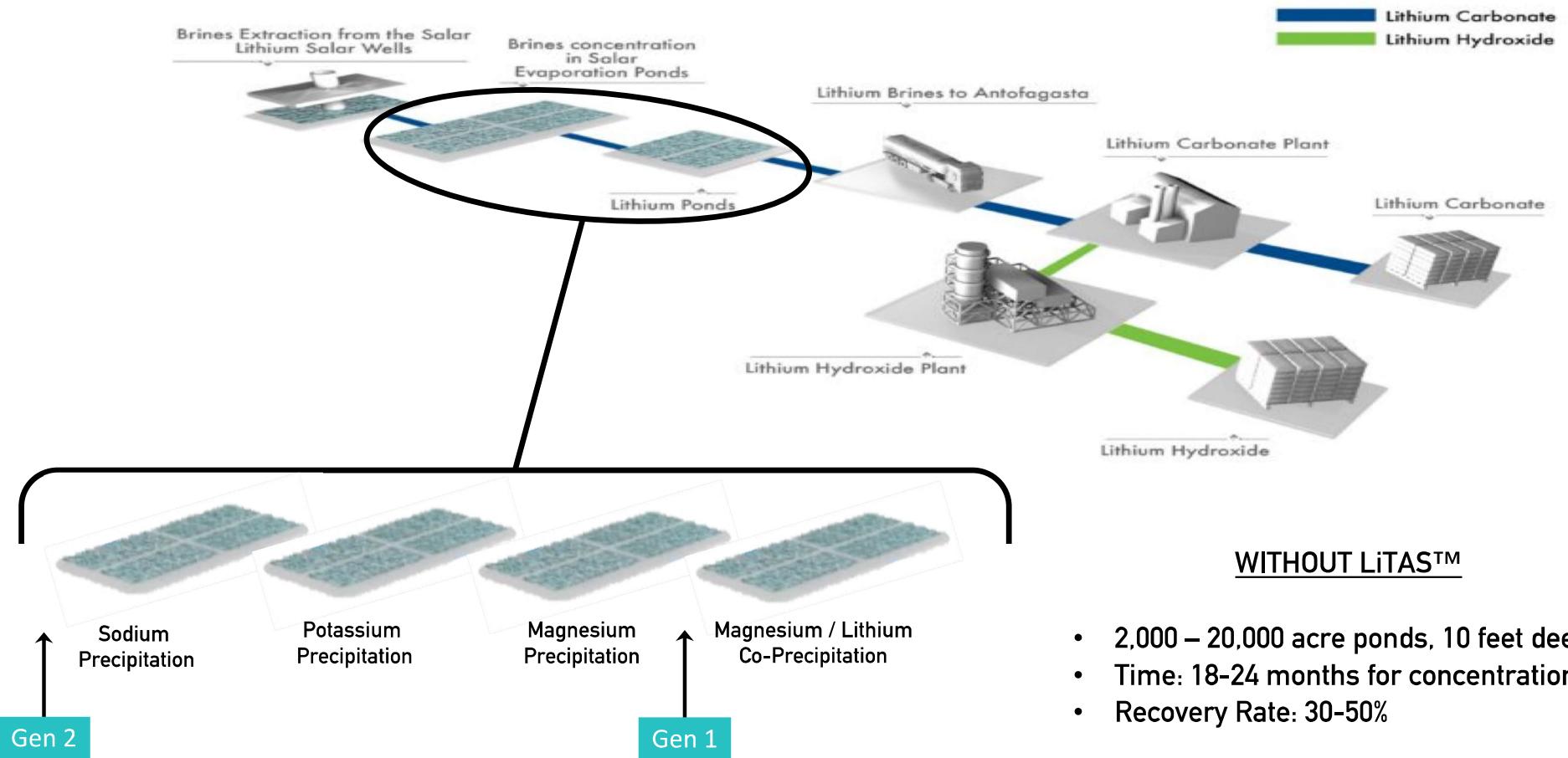
- GENERATION 1
- Complimentary to the ponds; suited for brownfield operation
- Inserted after the Carnallite pond just before Li:Mg co-precipitation
- Treat 1/30 the amount of feed brine; need far less membrane surface area
- Still achieve ~90% recovery rate
- Very advantageous to existing producers

- GENERATION 2
- Replace all the ponds
- Suitable for greenfield operations in situations where ponds are unviable
- Process brine directed from feed well
- Need to treat substantially more brine; more membrane surface area required
- Achieve ~90% recovery rate

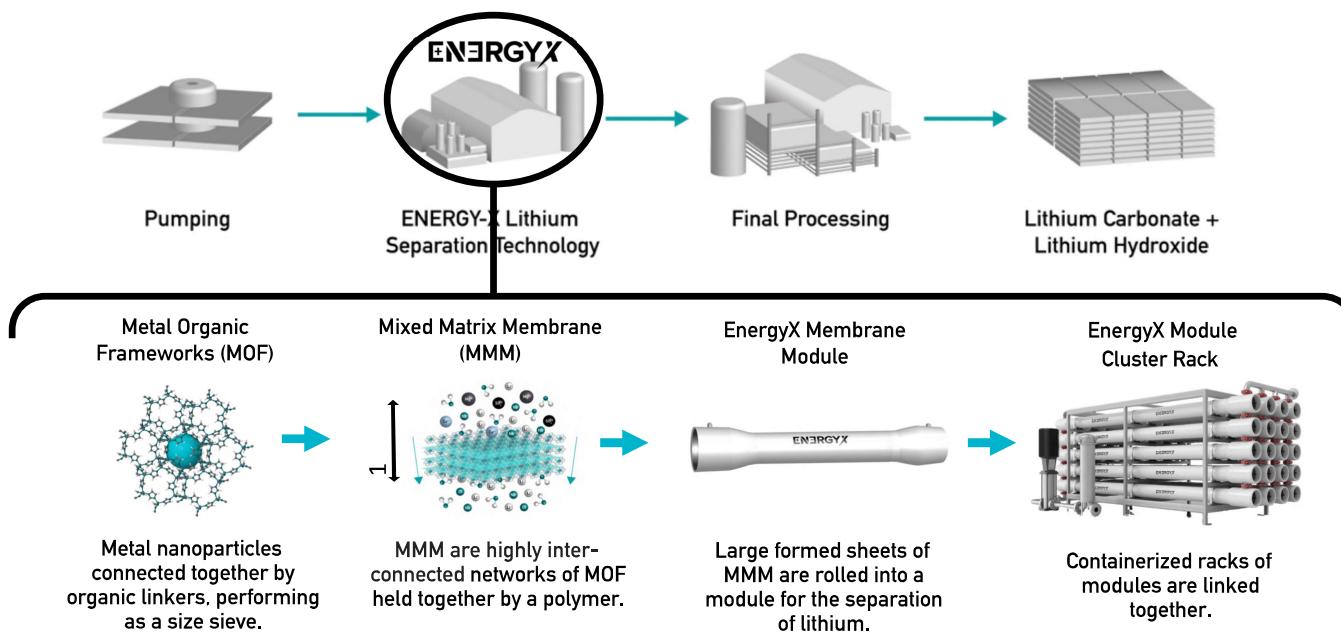


## CURRENT PRODUCTION PROCESS

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## DIRECT EXTRACTION LITHIUM TECHNOLOGY



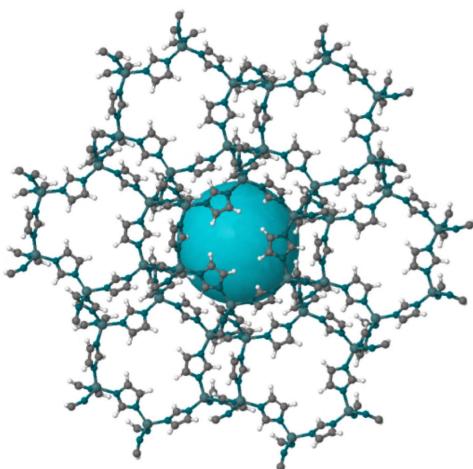
### PRIOR CONVENTIONAL METHODS

- Brine evaporation can use up to 400K gallons of water per ton of lithium in areas already dealing with water scarcity.
- Fresh water usage of 17,000 gallons per tons of processing.

### ENERGYX LITHIUM EXTRACTION NANOTECHNOLOGY

- Reduces the local water consumption compared to other emerging brine technologies, and does not utilize harsh chemicals
- EnergyX provides a transformative step change and greener solution for recovering lithium.

Metal Organic Frameworks are metal nodes connected by organic ligands. The organic units are ditopic or polytopic organic carboxylates (and other similar negatively charged molecules). When linked to metal-containing units they yield architecturally robust crystalline MOF structures with a typical porosity of greater than 50% of the MOF crystal volume.



#### Advantages

- Tunable pore size and functionality
- Sub-nanometer pore diameters (~4-6 Angstrom)
- Highly Crystalline
- Large internal surface area - 1000 to 10,000 m<sup>2</sup>/g,

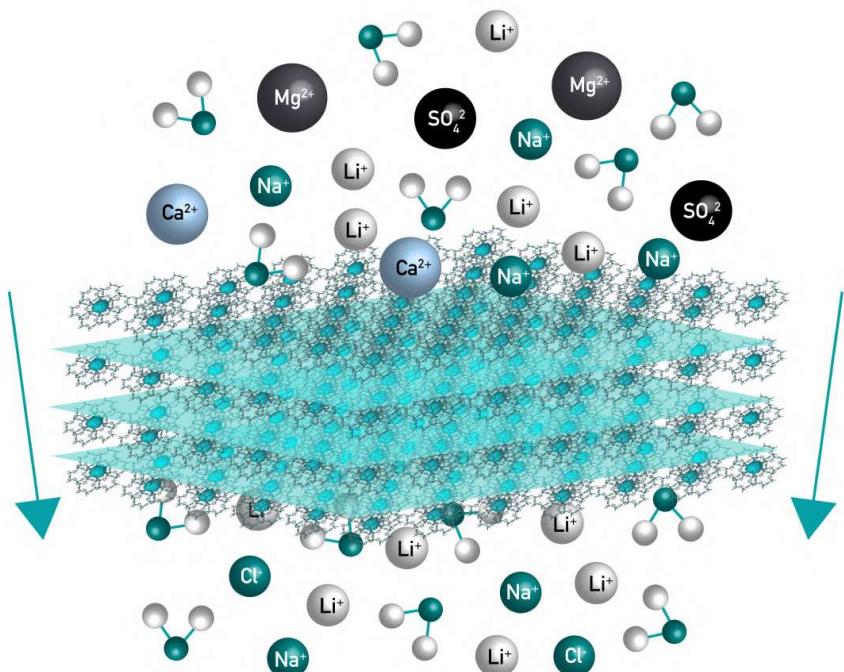
#### Disadvantages

- Difficult processing (powder)

#### Solution: Mixed Matrix Membranes

- Blend Metal Organic Frameworks into a suitable, stable polymer

1. Highly interconnected network of MOF nanoparticles
2. Held together by a chemically, thermally, and mechanically resistant polymer.
3. Size sieving ability of the MOFs in aqueous solution and electrochemical field transporting ions of interest
4. Exhibits unprecedented monovalent vs divalent selectivity at high concentrations
5. Removes Mg, Ca, SO<sub>4</sub>, and larger ions



1. Increases lithium recovery in brines from 30% to ~90%
2. Membrane surface area depends on how much brine is treated
3. Modular system is containerized for transport
4. Potential to 2-3X Li output with only \$7-15 million additional CapEx for 10K LCE plant
5. Makes unusable lithium sources now economically viable
6. Environmentally friendly: Low water consumption, no chemicals, small footprint



MEMBRANE MODULE CLUSTER



CLUSTER RACK SYSTEM



## LiTAS provides a complete affordable solution for fast lithium recovery

	Selectivity Li vs. Na	Selectivity Li vs. Mg <sup>2+</sup>	Operates at High Salinity <sup>1</sup>	Continuous Process	Adaptable Platform	Environmentally Neutral	Low Power Consumption	Non-Regenerative	Minimal Fresh Water Required
<b>ENERGYX</b> LiTAS Membranes	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ion Sorption	✓	✓	✓		✓				
Ion Exchange	✓	✓			✓				
Nanofiltration		✓		✓		✓		✓	✓
Reverse Osmosis				✓		✓		✓	✓
Forward Osmosis			✓	✓		✓	✓		✓

# ENERGYX AIMS TO GENERATE REVENUE FROM EVERY TON OF LITHIUM ITS TECHNOLOGY HELPS PRODUCE, EITHER THROUGH TECHNOLOGY ROYALTIES, A “TOLLING FEE” OR SOME COMBINATION THEREOF.

1

All producers want to pay lower OpEx per metric ton of Li produced. At the end of the day, the economics here are overwhelming. EnergyX can increase lithium recovery by more than double.

That's worth thousands of dollars per ton, or ~\$2-2.5 billion over the 25 year life of a 10K metric ton / year plant. If EnergyX is paid even 10 or 20% of what we save a company, that market is \$1-2B / year by 2030.

2

Millions of square meters of membrane will need to be manufactured to separate lithium from brine. EnergyX will make a profit margin off the actual membranes sold to Lithium Producers.

SUEZ will manufacture the membranes and split the profit margin from sale with EnergyX, which the companies will see every few years when the membranes needs replacement



- SIGNED BRINE TRANSFER AGREEMENT
- Largest lithium producer in the world
- Brine production in Salar de Atacama, Chile and Nevada, USA



- SIGNED BRINE TESTING AGREEMENT
- Fourth largest lithium producer in the world
- Produces from brine exclusively in Argentina



- SIGNED LETTER OF INTENT
- Third biggest producer of lithium in South America behind SQM and ALB
- Operates brine in Argentina



- PILOT PLANT UNDER CONSTRUCTION
- One of the top European and global energy companies.
- Owns SAFT batteries; has lithium enriched produced water in Texas



- Owns world's largest known lithium reserve
- Infrastructure is under development; great time to implement technology

### RESEARCH & DEVELOPMENT PARTNERS

A highly funded tri-institutional effort with thousands of man hours and \$10+ million DOE grant to UT has unpinned technology development since inception.



The University of Texas at Austin  
McKetta Department  
of Chemical Engineering  
*Cockrell School of Engineering*



ProfMOF



The Australian  
National Laboratory



U.S. DEPARTMENT OF  
**ENERGY**

### TECH COMMERCIALIZATION PARTNERS



EnergyX has partnered with MTR, a world leading membrane technology development firm, for the initial stages of commercial scaling and development.

With dedicated lab space in their greater facility located in San Francisco Bay area, EnergyX and MTR will execute a Technology Roadmap to commercialization.

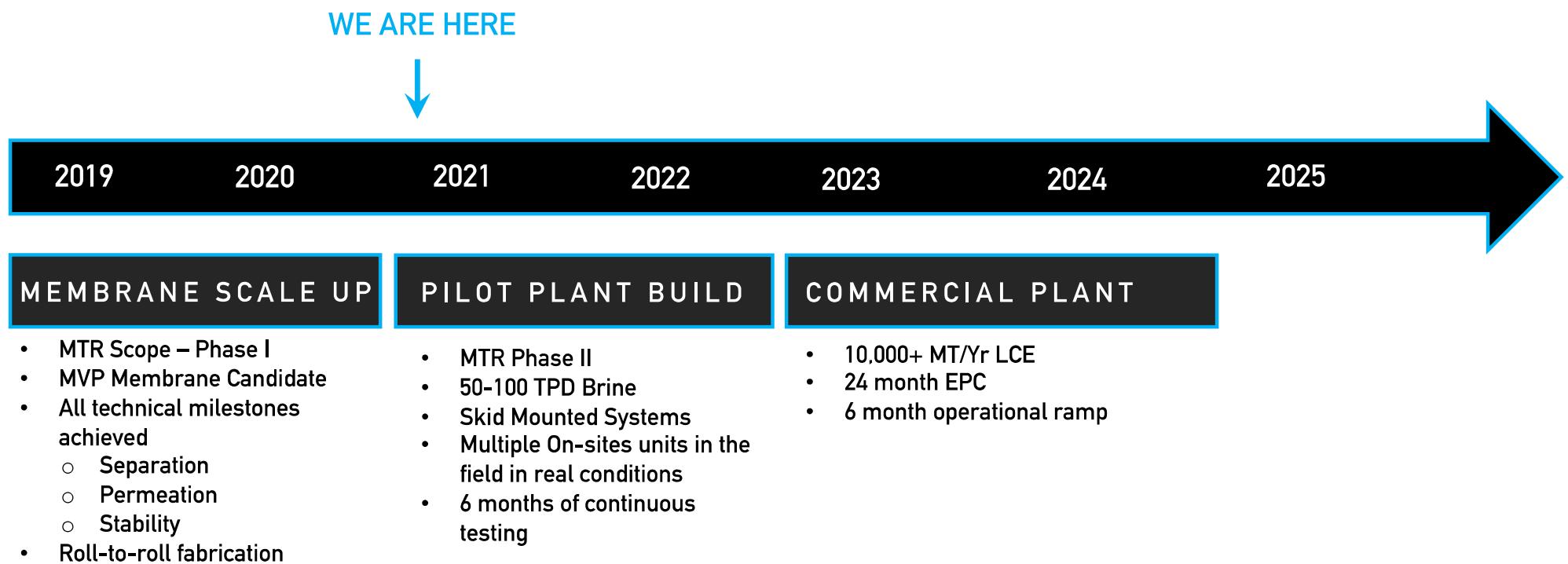


SUEZ is a \$20B global water and resource recovery company based in Paris, France, providing solutions and services around the world leveraging expertise in innovative water treatment systems and processes.

EnergyX has signed a Term Sheet with SUEZ to provide commercial manufacturing and development of unique membranes to enable the efficient recovery and production of lithium resources.

## COMMERCIALIZATION TIMELINE

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### MEMBRANE SCALE UP

- MTR Scope – Phase I
- MVP Membrane Candidate
- Technical Milestones Achieved
  - Separation
  - Permeation
  - Stability
- Roll-to-roll fabrication

**COMPLETE**

TO MITIGATE RISK, WE HAVE MOVE FORWARD  
WITH PURCHASING EXPENSIVE PILOT  
EQUIPMENT TO FIELD TEST LiTAS  
TECHNOLOGY.

THIS WILL BRING US TO TRL 7

### PILOT PLANT BUILD

- MTR Phase II
- 50-100 TPD Brine
- Skid Mounted Systems
- Multiple On-sites units in the field in real conditions
- 6 months of continuous testing

#### Membrane Pilot Caster



#### LiTAS™ Pilot Plants



## RENEWABLE ENERGY IS A MARKET WHERE MULTI-BILLION-DOLLAR PLAYERS ARE DESPERATE TO SECURE LITHIUM SUPPLY, AND WILL ONLY GROW MORE DESPERATE AS TIME GOES ON.

### POENTIAL EXITS INCLUDE:

1. A large battery company (CATL, Panasonic, or LG)
2. A large lithium miner (Orocobre or Albemarle)
3. A large water technologist (SUEZ or Veolia)
4. A private equity firm.
5. An IPO

As precedent, in 2014 [Elon Musk and Tesla offered \\$325 million for early-stage lithium startup Simbol.](#)

Auto OEM's are also prime potential acquirers for EnergyX.

1. BMW just [signed a 540 million Euro deal with Ganfeng](#) to secure lithium supplies.
2. Audi, Jaguar, and Mercedes have all [had to halt EV production](#) as they struggled to secure sufficient lithium demand.
3. VW and Daimler had [commissioned lithium exploration projects in Chile](#) as they struggle to keep up their own supply.



## TEAGUE EGAN Chief Executive Officer

- Investor in public sector energy assets and sustainable technologies since 2013. Inventor of energyDNA – patented multi-component graphene textile fiber technology.
- Multiple time startup founder and entrepreneur in entertainment, technology, and venture capital.
- Founder of Innovation Factory VC – micro venture capital fund focused on tech, real estate, life sciences, and consumer with \$11M+ assets under management.



## BOB WOWN Chief Financial Officer

- Former CFO of Linde Group North America, a German based engineering and technology company (\$14 billion in revenue) operating in 70 countries with 50,000 employees. Overall 29+ years of experience in renewable sector including solar, wind, waste-to-energy, H2 and desalination at Linde.
- Former CFO of Fluence Corp LTD, \$100m publicly traded (Australia) global decentralized water desalination and wastewater solutions provider. Alumnus of University of Pennsylvania, Wharton School (MBA, Finance), and Lafayette College (BS, Civil Engineering).



## DR. AMIT PATWARDHAN VP of Technology

- 12 years as Director of Global Research at Rio Tinto, a global Fortune 500 company with over \$40 billion in revenue. As part of Industrial Minerals group, co-invented innovative lithium recovery process from very large new mineral discovery in Serbia. Managed multi-international teams across 4 continents and \$40m R&D budget. Led process development, piloting, and development of a lithium byproduct recovery project in Southern California.
- Published over 50 articles in peer-reviewed journals and conferences; served on National Committees of the Society of Mining Engineers. Received his BS degree in Chemical Engineering from the Indian Institute of Technology and his MS, PhD and MBA degrees from the Southern Illinois University.



## DR. BENNY FREEMAN Chairman of Science Advisory Board

- 30+ years of experience with small molecule sorption, diffusion, and transport in polymers. President of the North American Membrane Society. Chair of the Polymeric Materials: Science and Engineering Division of the American Chemical Society (ACS).
- Director of the Center for Materials for Water and Energy Systems, managing more than \$10 million with a focus on extracting valuable resources from water. Centennial Chair in Engineering at UT with appointments in the McKetta Department of Chemical Engineering.

1. IP - Worldwide exclusive rights covering 11 critical patents and patent applications in resource recover and energy storage systems using metal organic frameworks.
2. PARTNERS - Detailed technology development partnership with Membrane Technology & Research (MTR) and commercialization / manufacturing partnership with SUEZ.
3. LABS - 1000 sqft laboratory based at MTR for scientific research
4. TEAM - 15 contributing team members including from MTR and contractors
5. CUSTOMERS - Engaged with several Tier 1 lithium producers (customers) and several Tier 1 battery manufacturers, as well as two major oil, gas & energy conglomerate.
6. ECONOMICS - Technology economics validated with feasibility analysis study from independent engineering/consulting firm
7. NEXT STEPS - Target multiple pilot plants by 2021
8. FUNDING – Closed ~\$3M Convertible Note into Series A. Timeline for Series A estimated at Q4 2020. Initiated DOE funding request for \$3M (non-dilutive)
9. RESEARCH - 3-year Sponsored Research Agreement (SRA) with University of Texas. 2-Year R&D Agreement with ProfMOF

Numerous commercial extensions of core Metal Organic Framework (MOF) technology and novel membrane production process creates additional enterprise option value.

Targets for technology extension:

1. Solid State Batteries

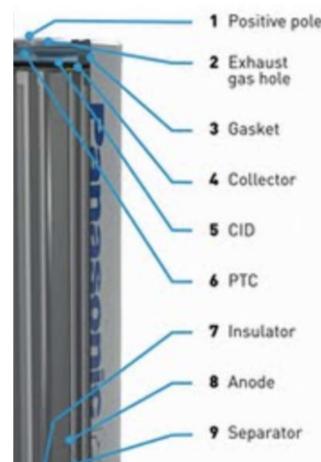
- Minimizes flammability risks in lithium or sodium battery
- Dramatically improves energy density characteristics
- Addressable market in 2025 is \$6.2 billion
- Sponsoring further R&D at UT to confirm feasibility

2. Nonsolvent Induced Film Deposition (NIFD)

- Potential to dramatically lower cost of creating thin film membranes for variety of applications beyond Li extraction
- Included as part of MTR scope of work
- Short development time frame - ~12 months

3. Produced Water / Waste Water

- Ability extract lithium from produced waste water in fracking operations (one of oil & gas biggest expense is waste water)
- Potential to separate chlorine from fluorine and produce clean water in highly contaminated areas



Battery Example provided by Panasonic

### THE GOODENOUGH GROUP



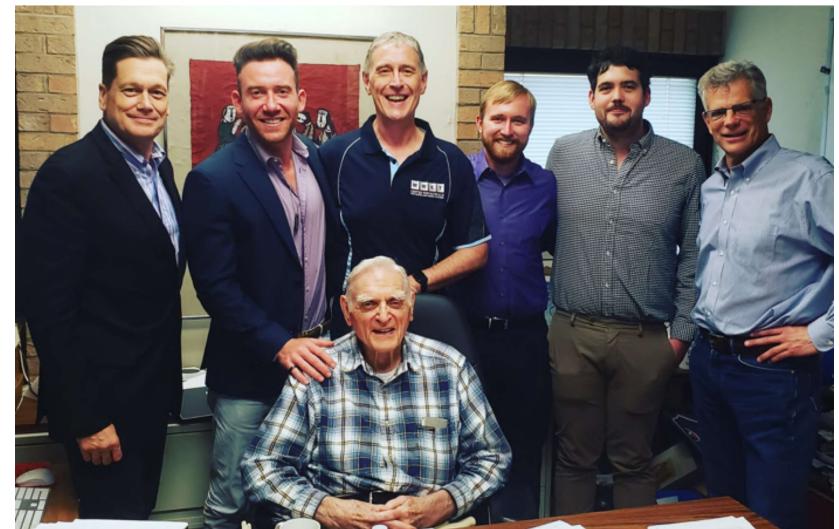
The University of Texas at Austin  
McKetta Department  
of Chemical Engineering  
*Cockrell School of Engineering*

At the University of Texas, Dr. John Goodenough is a world renown physicist and electrochemist responsible for inventing the lithium-ion battery. He won the 2019 Nobel Prize in chemistry for this work.

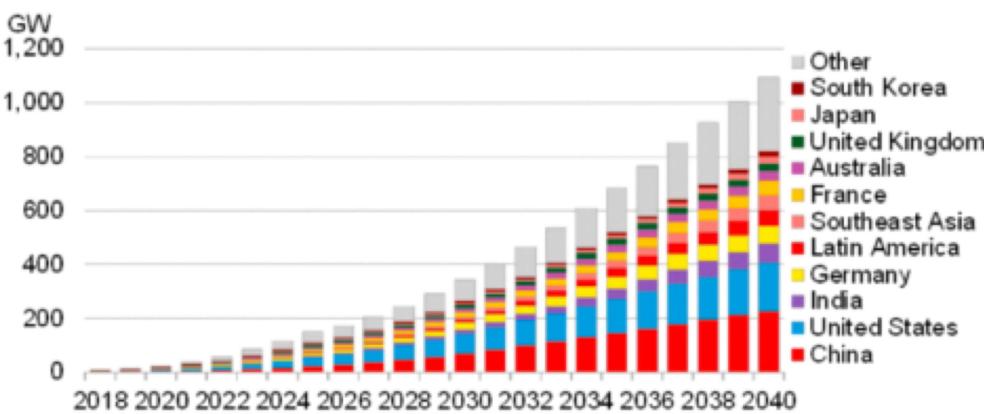
EnergyX has entered into a research collaboration with The Goodenough Group exploring how metal organic frameworks act as solid state electrolytes.

Looking to test coin cylindrical and pouch cells using solid-state MOF MMM electrolyte in battery types, such as Lithium-ion, Lithium-Sulphur, and Sodium-ion for Battery Metrics including:

- Longevity of cells through repeated charge/discharge cycles.
- Proclivity for dendrite formation during cycling.
- Rate capability
- Improvement in energy density over current technology.



# Bloomberg NEW ENERGY FINANCE



- Energy to storage increase **122x by 2040**
- Total demand for batteries from the stationary storage and electric transport sectors is forecast to be **4,584GWh by 2040**
- Industry will require **\$662 Billion** of investment over next 20 years to meet demands.

## EnergyX is Developing Solid-State Battery Electrolyte Technology

Pouch Cells



Cylindrical Cells



Producer Economics Per Ton			
\$/Ton LCE	Conventional	Gen1 LiTAS	Gen2 LiTAS
LiOH Price	13,000	13,000	13,000
Govt. Royalty (20%)	(2,600)	(2,600)	(2,600)
Opex (1)	(4,530)	(3,703)	(3,254)
Depreciation (2)	(2,606)	(1,783)	(1,537)
<b>Operating Margin</b>	<b>3,264</b>	<b>4,913</b>	<b>5,609</b>

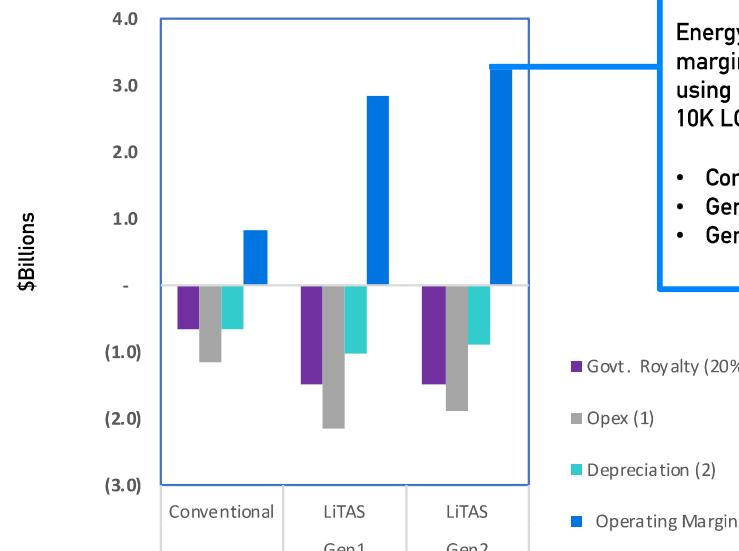
  

Annual Economics			
\$000	Conventional	Gen1 LiTAS	Gen2 LiTAS
Production (Kton/Yr)	10,091	23,101	23,101
Revenues	131,177	300,308	300,308
Govt. Royalty (20%)	(26,235)	(60,062)	(60,062)
Opex (1)	(45,706)	(85,551)	(75,160)
Depreciation(2)	(26,300)	(41,191)	(35,510)
<b>Operating Margin</b>	<b>32,935</b>	<b>113,504</b>	<b>129,576</b>

(1) Includes Maintenance Capex & LiOH Facility

(2) 10 Yr Depreciation

### Margin Comparison \$ Billions Over 25 Years



EnergyX provides a dramatic profit margin for its customers when using LiTAS technology. In a typical 10K LCE plant over 25 Year:

- Conventional - \$800 Million
- Generation 1 - \$2.8 Billion
- Generation 2 - \$3.2 Billion

## SUMMARY FINANCIALS

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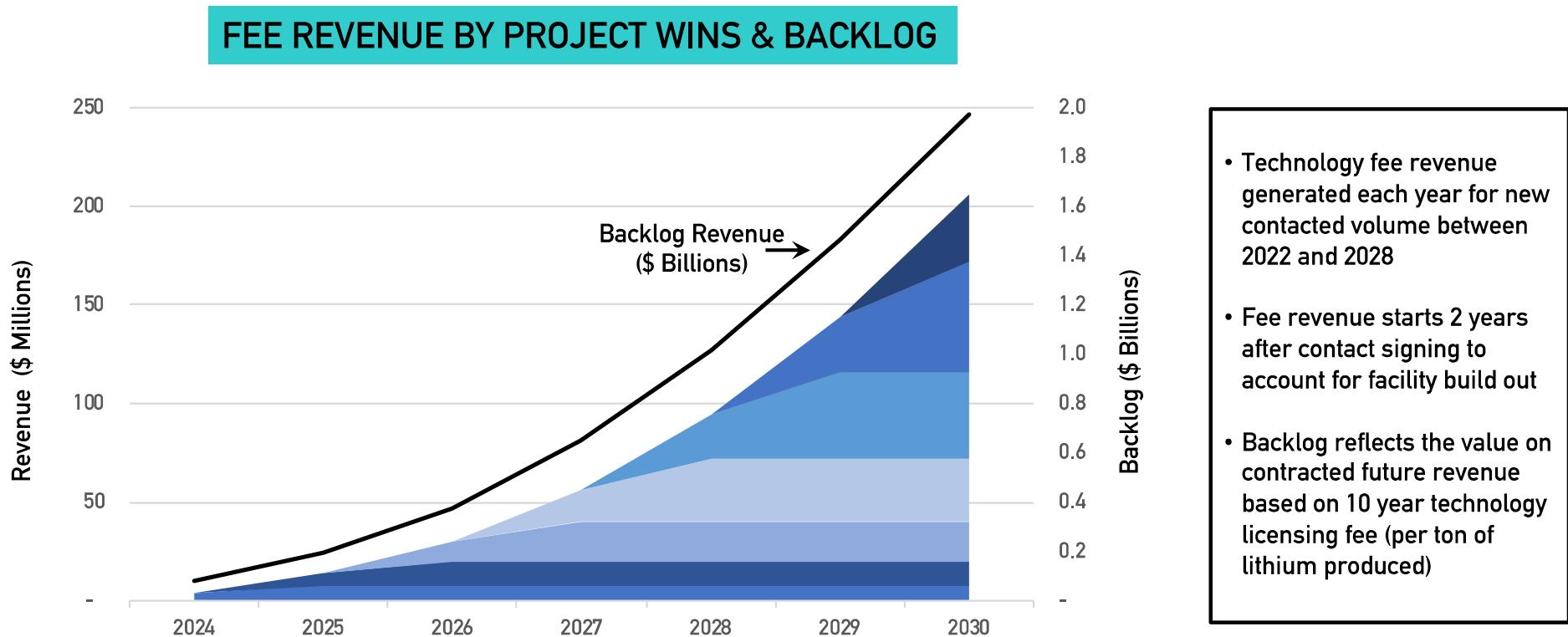
\$ in Thousands	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Global Lithium Demand</b>										
Metric Tons (Thousands)	486	608	759	949	1,187	1,424	1,709	2,050	2,460	2,952
EnergyX Cumulative Volume*		10	25	50	90	145	215	300	400	520
<b>Total Revenues</b>	<b>210</b>	<b>315</b>	<b>4,525</b>	<b>14,840</b>	<b>31,155</b>	<b>57,470</b>	<b>95,785</b>	<b>146,100</b>	<b>208,520</b>	
% Growth			1337%	228%	110%	84%	67%	53%	43%	
Pilot/Demo Plant - Opex/Capex	(1,050)	(600)	(300)							
Univ of Texas Royalty Payments			(9)	(136)	(445)	(935)	(1,724)	(2,874)	(4,383)	(6,256)
Opex/Cash Expenses	(6,274)	(7,241)	(7,603)	(8,364)	(9,618)	(11,061)	(13,273)	(15,928)	(19,114)	(22,936)
<b>EBITDA</b>	<b>(7,324)</b>	<b>(7,631)</b>	<b>(7,598)</b>	<b>(3,975)</b>	<b>4,776</b>	<b>19,159</b>	<b>42,473</b>	<b>76,983</b>	<b>122,603</b>	<b>179,328</b>
EBITDA Margin				32%		61%	74%	80%	84%	86%
Total Cash Raise & Sources	13,750	1,250	12,250							
<b>Cash Balance (EoY) **</b>	<b>6,671</b>	<b>289</b>	<b>4,941</b>	<b>967</b>	<b>5,743</b>	<b>24,902</b>	<b>63,128</b>	<b>132,413</b>	<b>242,756</b>	<b>404,151</b>
10 Year Backlog			80,000	192,000	372,000	652,000	1,020,000	1,464,000	1,972,000	
<b>Revenue + Backlog</b>	<b>84,525</b>	<b>206,840</b>	<b>403,155</b>	<b>709,470</b>	<b>1,115,785</b>	<b>1,610,100</b>	<b>2,180,520</b>			
			145%		95%	76%	57%	44%	35%	

\* Contracted volume won under 10 years technology licensing fee structure

\*\* Includes taxes payments starting in 2027

520,000 Tons of Lithium represents 18% of global production in 2030

- Revenues based on \$800 per metric ton of lithium carbonate equivalent (LCE) generated through 10 year technology fee with produce
- High EBITDA margins reflects EnergyX's unique direct lithium extraction technology with low cost business model leveraging royalty licensing fee
- Revenue figures delayed 2 years to incorporate facility build out timeline for each contract won.
- Revenues and Backlog excludes upside of solid state battery development and other LiTAS applications

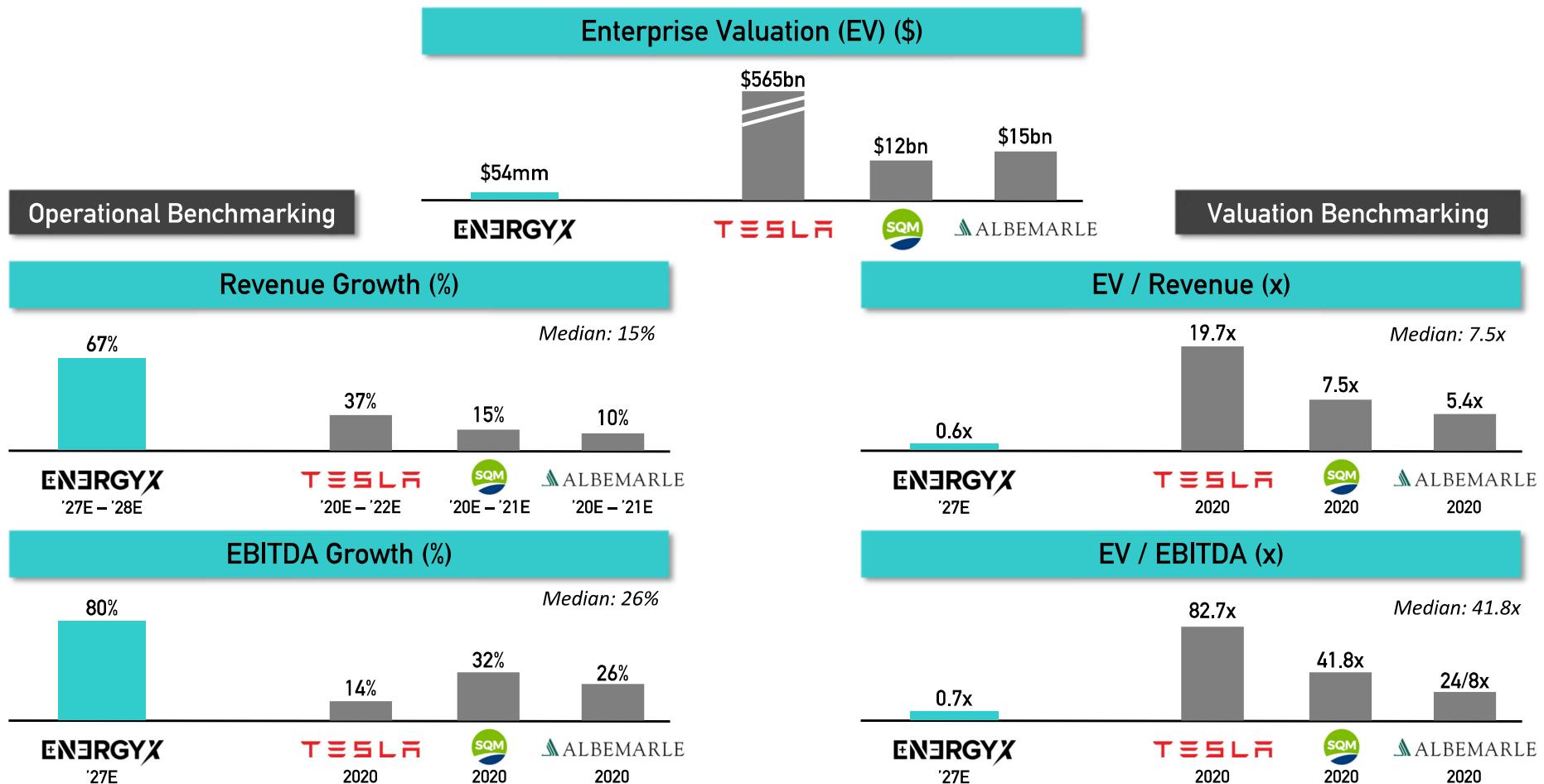


## Pre Money Valuation

Share Price	\$4.90
Total Shares Outstanding	11,043,800
<b>Equity Value</b>	<b>\$54,114,620</b>
Convertible Notes	\$2,070,330
Pro Forma Cash ( Jan 1, 2021)	-\$300,000
<b>Enterprise Value</b>	<b>\$55,884,950</b>

## Uses

<b>Total Raised</b>	<b>\$3,069,997</b>
Pilot Plants	\$1,540,000
Intellectual Property	\$340,000
Battery Design	\$350,000
Technology Team Staffing	\$550,000
Business Development/Marketing	\$319,997

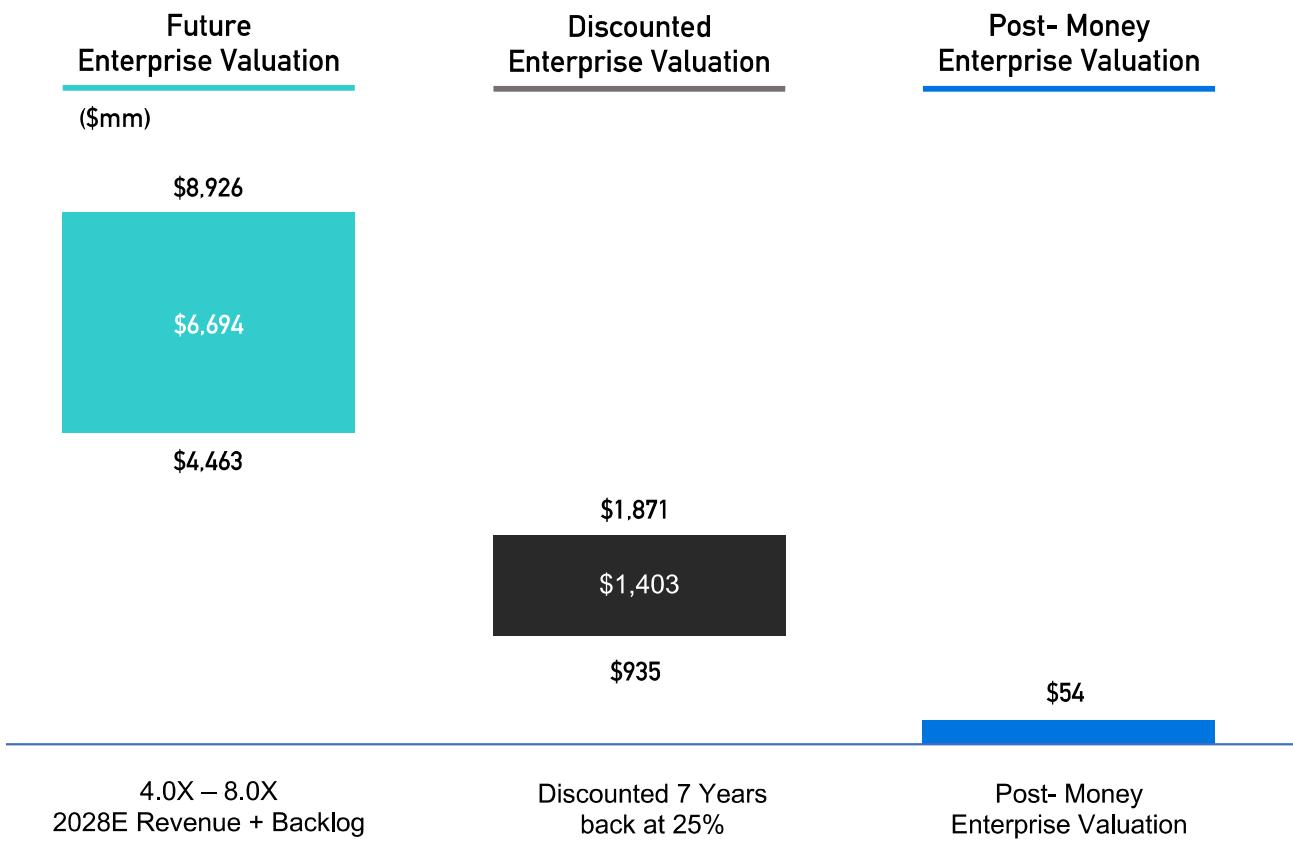


Source: Company information and FactSet as of December 1, 2020  
 Note: Metrics reflect non-GAAP financial measures

DECEMBER 2020

## Summary of Approach

- Applies a range of 4.0x – 8.0x EV / Revenue + Backlog multiple to EnergyX's 2028E revenue to arrive at an Implied Future Enterprise Value range. Future Enterprise Value range is discounted 7 years at 25% to arrive at an Implied Discounted Enterprise Value range
- The applied range of multiples is centered around +/- 2x forward EV / Revenue median of EnergyX's peer group



THANK YOU

