

# **Low-Cost Lithium Hydroxide in the USA**

**Corporate Presentation – September 2019** 



ASX: PLL NASDAQ: PLL



# **Low-Cost Lithium Hydroxide in the USA**

EX-CHINA HYDROXIDE	<ul> <li>Integrated spodumene-to-hydroxide business</li> <li>Ex-China market focus</li> </ul>
IDEAL LOCATION	<ul> <li>60+ years of lithium processing in North Carolina</li> <li>Abundant infrastructure and lithium talent pool</li> </ul>
SUPERIOR MINERALOGY	<ul> <li>XRD analysis confirms pure spodumene nature of ore body</li> <li>Absence of petalite &amp; lepidolite leads to strong recoveries</li> </ul>
LARGE AND LOW COST	<ul> <li>22,700tpy LiOH for 25 years – vast upside on TSB</li> <li>US\$1.45B NPV with ~US\$300M steady-state EBITDA</li> </ul>
NEAR-TERM CATALYSTS	<ul> <li>Permitting is well-advanced</li> <li>Offtake and strategic discussions ongoing</li> </ul>
VALUATION UPSIDE	<ul> <li>Trading at 5% of Project NPV</li> <li>Kidman deal implies huge upside for PLL shareholders</li> </ul>



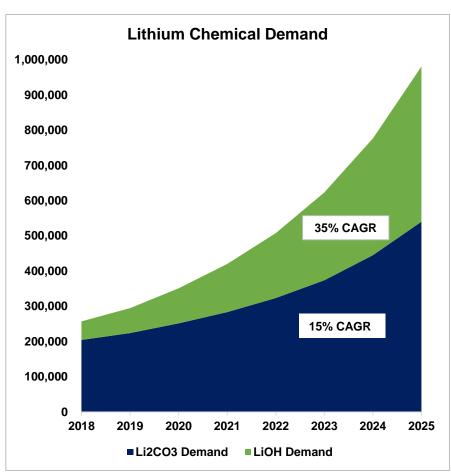
# **Strong Lithium Hydroxide Outlook**

35% CAGR forecast for lithium hydroxide demand

Hydroxide shortages expected by 2023

North Carolina is the leading ex-China LiOH producer

Spodumene the lowcost source for LiOH





Source: Rodney Hooper / RK Equity forecasts.



# 400+ New EV Models Coming to Market by 2025

#### VW all-in on electric vehicles

- \$80bb capital investment
- Focus on LiOH from spodumene
  - "Mining is considered the future-proof solution, both <u>commercially</u> and in terms of <u>sustainability</u>

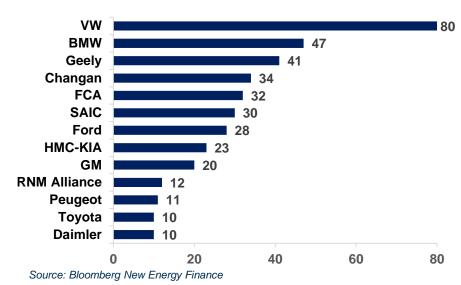
# CO<sub>2</sub> penalties spurring EV production

- US\$39.1B exposure in 2021
- FCA paying Tesla ~\$2B in 2019

#### Mass market vehicles coming for the first time

- Ford to produce electric F-150 "before 2022"
- VW ID.3 launching in 2020
- Renault producing \$9,000 EV for Indian market

#### # of EVs to be launched by 2025







# Lithium Supply Responding to the Price Environment

#### A. Pre-EV LiOH Market

- Prices \$6,000-\$8,000
- Supply from world-class Atacama brines

#### **B. Initial EV Demand Boom**

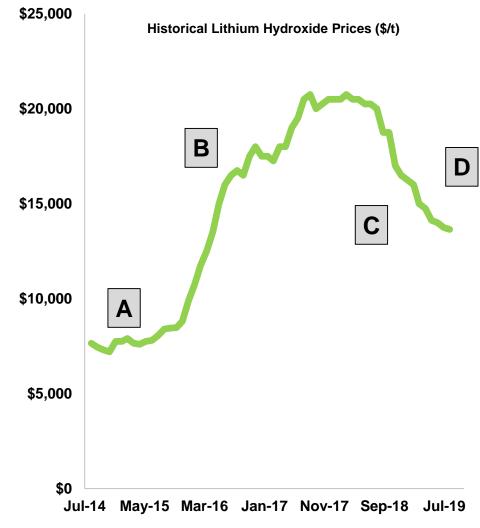
- Prices peak at ~\$22,500
- Higher-cost Australian SC6 and Chinese converters incentivized

#### C. Prices Moderate to Current Levels

- Prices decline to ~\$13,500 currently
- Massive supply curtailments
  - ALB deferring 125,000 tpy
  - Tianqi deferring Kwinana Phase 2
  - Greenbushes Phase 3 delayed
  - SQM Atacama expansions delayed
  - PLS delaying Phases 2 and 3
  - A40 on care & maintenance
  - GXY halted SDV partnership talks
  - BCN and NMX financing challenges

#### D. The Future

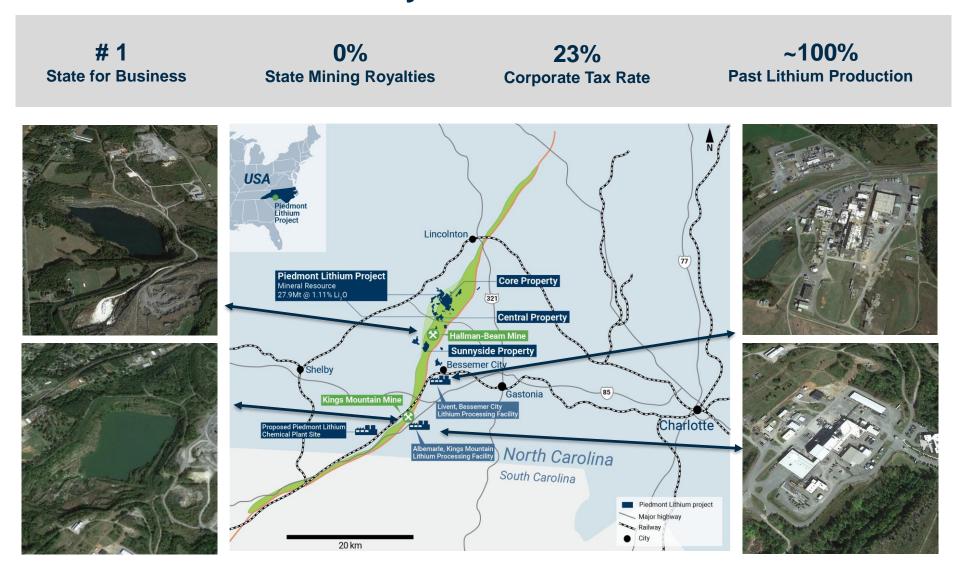
- 35% CAGR for BG LiOH demand
- Massive EU CO2 penalties
- Newer lithium producers higher-cost
- Strong prices required to incentivize supply



Source: Benchmark Minerals Intelligence.



# Piedmont Lithium is Ideally Located in North Carolina





# Lithium is a 'Critical Material' in the USA

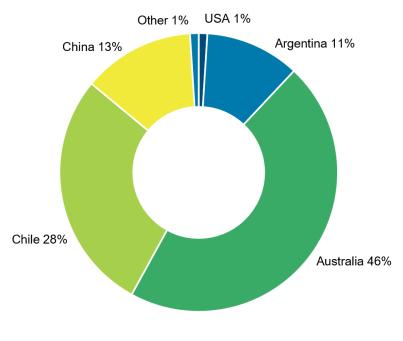
Lithium identified as a 'critical material' in the US

The US produces 1% of the world's lithium raw material

North Carolina a leading hydroxide producer

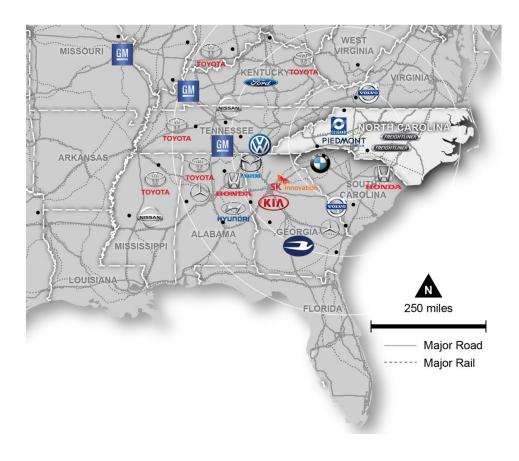
Piedmont is the only US integrated hydroxide project

#### Lithium Raw Mineral Supply in 2018



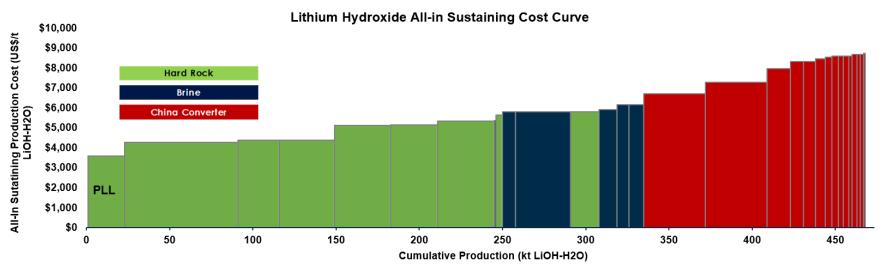
Source: Benchmark Minerals Intelligence

#### Piedmont Located in the Heart of US Auto Production





# **Location Drives Low Projected Costs**



Source - Roskill. AISC includes all direct and indirect operating costs including feedstock costs (internal AISC or external supply), refining, on-site G&S costs

		* *	*
	NORTH CAROLINA	WESTERN AUSTRALIA	CANADA
LABOR	\$42 / Hr	\$72 / Hr	\$96 / Hr
ELECTRICITY	6c / kWh	17c / kWh	4c / kWh
DIESEL	\$0.65 / L	\$1.02 / L	\$0.91 / L
NATURAL GAS	\$4.00 / Gj	\$6.57 / Gj	\$12.54 / Gj
TRANSPORTATION	\$6 / T	\$46 / T	\$50 / T
GOVERNMENT ROYALTIES	0%	5%	0%
EFFECTIVE TAX RATE	23%	30%	33%

Source: Public filings, Primero and Company estimates



# **Updated Scoping Study Highlights Exceptional Economics**

# **Enlarged Mineral Resource Drives Improved Economics**

**25** 

**Year Mine Life** 

US\$298 M (A\$438 M)

**Run-rate EBITDA** 

US\$1.45 B (A\$2.13 B)

**After-tax NPV** 

34%

**After-tax IRR** 

Updated Scoping Study Comparative Results	Unit	2019 Study	2018 Study	% Change
Mineral Resource Estimate		27.9Mt @ 1.11% Li <sub>2</sub> O	16.2Mt @ 1.12% Li <sub>2</sub> 0	72%
Project Life	years	25	13	92%
Life-of-Project Spodumene Concentrate Produced	kt	3,810	1,960	94%
Life-of-Project Lithium Hydroxide Produced	kt	489	216	126%
Average Steady State EBITDA	US\$M/y	\$298	\$235	27%
After-Tax Net Present Value (NPV <sub>8</sub> )	US\$M	\$1,447	\$888	63%
Internal Rate of Return (IRR)	%	34	46	-26%
Initial Capex - Integrated Project	US\$M	512	470	9%
Lithium Hydroxide Cash Costs	US\$/t	3,105	3,112	-

Source: Updated Scoping Study. Refer to the announcement dated August 7, 2019.



# **Exceptional Pure Spodumene Mineralogy**

- XRD analysis confirms pure spodumene nature of Piedmont's ore body
- Absence of petalite and lepidolite in pegmatites expected to lead to high lithium recovery

"The first question an investor should ask of a hard-rock lithium CEO is "how much of the lithium reports to spodumene?" – Jon Hykawy, PhD – President, Stormcrow Capital

Average	Average XRD Analysis Results from 46 Drill Core and Composite Samples of Piedmont Ore								
Mineralogy			Average Wt. (%) of Mineral Types						
			Core Property	Central Property	Sunnyside Property				
		Semi- quantitative Samples (13 Samples)	Quantitative Samples (19 Samples)	Composite Variability Samples (10 Samples)	Quantitative Samples (3 Samples)	Quantitative Sample (1 Sample)			
	Spodumene	17.8	19.9	16.6	15.9	14.8			
m- ng als	Petalite	-	-	-	-	-			
Lithium- bearing minerals	Lepidolite	-	-	-	-	-			
Lit be mi	Zinnwaldite	-	-	-	-	-			
	Holmquistite	-	-	0.5	-	-			
Non-lithiu	ım bearing minerals	82.2	80.1	82.9	84.1	85.2			
Total		100.0	100.0	100.0	100.0	100.0			



# **Kidman an Important Case Study**

## **Wesfarmers Buying Kidman for US\$525mm**

## KDR a lithium success story

- Integrated business model
- SQM as strategic partner
- LiOH offtakes with Tesla, LG, Mitsui
- Premium-priced sale to Wesfarmers

#### **PLL** compares favorably

- Same strategy and production profile
- Lower operating costs
- Higher EBITDA, NPV and IRR
- Unique and strategic US location

## **Major valuation disconnect**

KDR selling for ~9x PLL valuation

Project	KIDMAN	PIEDMONT
Location	Western Australia	North Carolina
Business Model	SC6-to-LiOH	SC6-to-LiOH
Annual Production <sup>1</sup>	22,670 t	22,700 t
Cash Production Cost <sup>2</sup>	US\$4,885 / t	US\$3,105 / t
Project Life	47 Years	25 Years
Average Annual EBITDA <sup>1</sup>	US\$226 M	US298 M
Net Present Value <sup>1</sup>	US\$1.10 B	US\$1.45 B
Internal Rate of Return	27%	34%
Strategic Partner	SQM	tbd
Market Cap	US\$525 M	US\$59 M

<sup>1.</sup> Represents KDR's 50% interest in Covalent Lithium.



<sup>2.</sup> Includes estimated royalties.

# **Corporate Snapshot**

# **Dual-Listed on ASX and Nasdaq to Maximize Liquidity**

# Piedmont Lithium Limited Shares / ADRs (1 ADR = 100 Shares) 1 815.4 mm 8.15 mm Price (@ 9/11/19) A\$0.10 US\$7.25 Market Cap (@ 9/11/19) A\$82 mm US\$56 mm Cash (@ 6/30/19) A\$27.3 mm US\$18.4 mm

Key Shareholders	
Australian Super	13.2%
Fidelity	9.1%
Officers and Directors	9.7%

# **Research Coverage**











#### **Share Price 50% Below Pre-Resource Highs**



#### **Board of Directors** Ian Middlemas Australia Chairman Keith D. Phillips USA **CEO Anastasios Arima** USA **Executive Director Jeff Armstrong** USA Director USA Jorge Beristain Director Levi Mochkin Australia Director



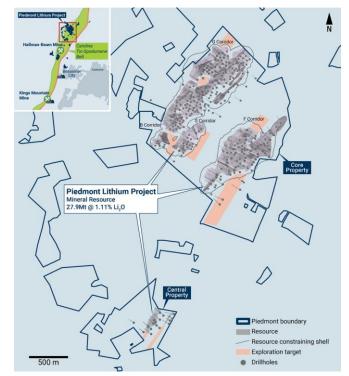


# **High-Grade Mineral Resource**

## One of North America's Largest Hard-Rock Lithium Resources

# 27.9 Mt @ 1.11% Li<sub>2</sub>O

- 764,000 tonnes of contained LCE
- 100% of the lithium is attributable to spodumene mineralization
- Shallow open pits 74% of resource within 100m of surface and 97% within 150m
- Open along strike and at depth Phase 4 drilling ongoing



Project Wide	Project Wide Mineral Resource Estimate for the Piedmont Lithium Project (0.4% cut-off)							
Resource	Core property		Central property		Total			
Category	Tonnes (Mt)	Grade (Li <sub>2</sub> 0%)	Tonnes (Mt)	Grade (Li <sub>2</sub> 0%)	Tonnes (Mt)	Grade (Li <sub>2</sub> 0%)	Li <sub>2</sub> 0 (t)	LCE (t)
Indicated	12.5	1.13	1.41	1.38	13.9	1.16	161,000	398,000
Inferred	12.6	1.04	1.39	1.29	14.0	1.06	148,000	366,000
Total	25.1	1.09	2.80	1.34	27.9	1.11	309,000	764,000



# **Vast Exploration Upside**

# Large Areas of the Carolina Tin-Spodumene Belt Remain Unexplored

"The pegmatite deposit in the Kings Mountain district in North Carolina is considered one of the three largest lithium bearing pegmatite deposits in the world together with the Manono deposit in the Democratic Republic of Congo and Greenbushes in Australia." – Minerals Engineering – January 2019 Issue



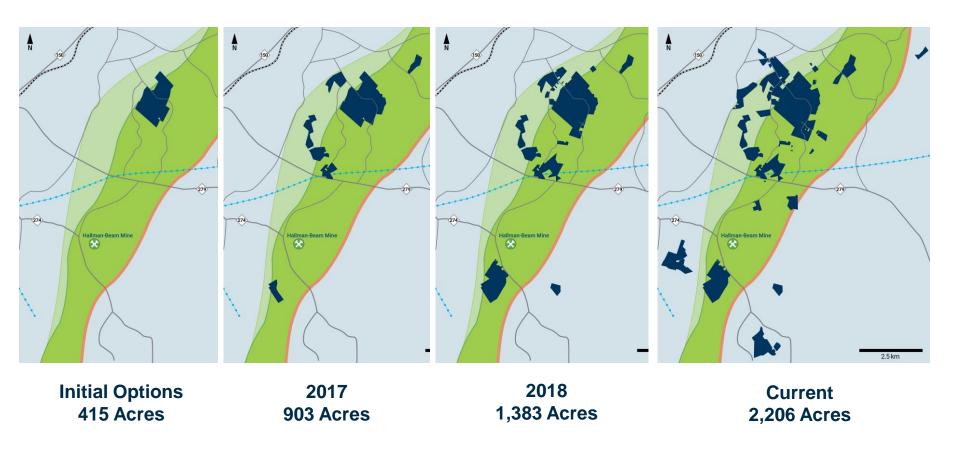
Project Wide Exploration Target for the Piedmont Lithium Project							
	Core P	roperty	Central I	Property	Total		
Exploration Target	Tonnes (Mt)	Grade (Li <sub>2</sub> 0%)	Tonnes (Mt)	Grade (Li <sub>2</sub> 0%)	Tonnes (Mt)	Grade (Li <sub>2</sub> 0%)	
Exploration Target*	4.0-4.5	1.0-1.2	2.0-2.5	1.1-1.3	6.0-7.0	1.0-1.3	

<sup>\*</sup>The potential quantity and grade of the Exploration Targets is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.



# **Aggressive Land Consolidation Strategy**

# **Numerous Prospective Targets to Drive Resource and Mine Life**





# **Strong Metallurgical Recoveries**

# **Pure Spodumene Mineralogy Supports Strong Recoveries**

## **Competitive Resource Grade...**

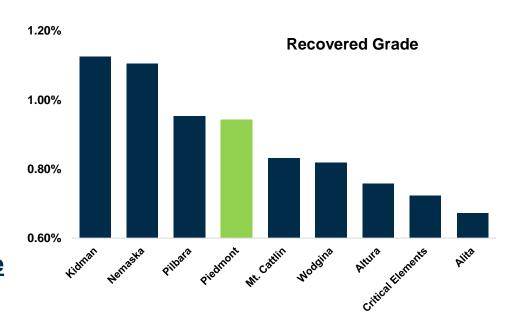
1.11% Resource Grade

#### ...and Positive Met Recoveries...

85% recoveries...based on testing at SGS and North Carolina precedent...and supported by pure spodumene mineralogy

# ...Lead to Strong Recovered Grade

Driving exceptional project economics



Results of Dense Medium Separation + Locked Cycle Flotation Test Results							
Sample	Feed Grade Li <sub>2</sub> O (%)	Concentrate Grade Li₂O (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	Na <sub>2</sub> O (%)	K₂O (%)	CaO+ MgO + MnO (%)	P <sub>2</sub> O <sub>5</sub> (%)
Piedmont Composite Sample 1	1.11	6.35	0.93	0.63	0.49	0.96	0.32
Australian Producer 1	NR	6.00	1.20	NR	NR	NR	NR
Australian Producer 2	NR	5.90	1.50	NR	NR	NR	NR
Australian Producer 3	NR	6.10	0.61	0.80	0.76	0.79	0.30



# By-Product Credits Reduce LiOH Costs By ~\$750/t

By-products were a large business for past lithium producers in NC

Strong local markets for quartz, feldspar and mica

Imports represent large market share due to US mine depletions

Initial offtake conversations underway with leading market participants







By-product	Annual Volume (tpy)	Assumed Sales Price (US\$/t)	Markets
Quartz	86,000	\$100	Low-iron glass including solar panel cover glass, industrial ceramics
Feldspar	125,000	<b>\$75</b>	Glass, frit, and industrial ceramics
Mica	13,000	\$50	Specialty paints including automotive, filler uses, joint-compound



# **Highly-Experienced Project Team**

#### **Management Team**

#### **Keith Phillips**

#### **Managing Director & CEO**

30+ Years Wall Street experience with JPMorgan, Merrill Lynch and Dahlman Rose

#### **Patrick Brindle**

#### **VP – Project Management**

20+ Years US & Global Engineering, Procurement and Construction Expert

#### **Anastasios Arima**

#### **Executive Director & Co-founder**

10+ Years Mining Company Executive, Founder of multiple mining companies

#### **David Buckley**

#### **VP – Process Engineering**

25+ Years Lithium Extraction and Conversion Expert, Ex-FMC and Albemarle

#### **Lamont Leatherman**

#### VP - Geology & Co-founder

25+ Years Exploration Geologist, Ex-senior Positions in BHP & Noranda in the Carolinas

#### Tim McKenna

#### **Advisor – Government Relations**

30+ Years Government & Investor Relations, including with Rockwood Lithium

#### **Technical Consultants**



**Scoping Study Lead** 

(Australia & Canada)



Resource Geology
(Australia & Canada)

SGS

Metallurgy (Canada)



Permitting (North Carolina)



Mine Planning (Virginia)



Analytical Testwork
(North Carolina)



Analytical Test Work
(Colorado)

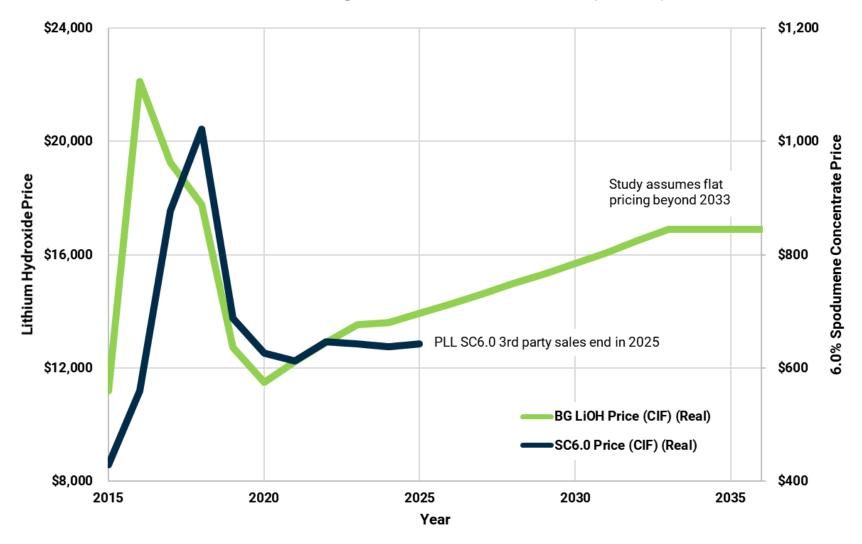


Blast Studies
(North Carolina)



# Lithium Price Projections Used in Scoping Study

## Product Pricing Real Terms 2015-2033+ (Roskill)





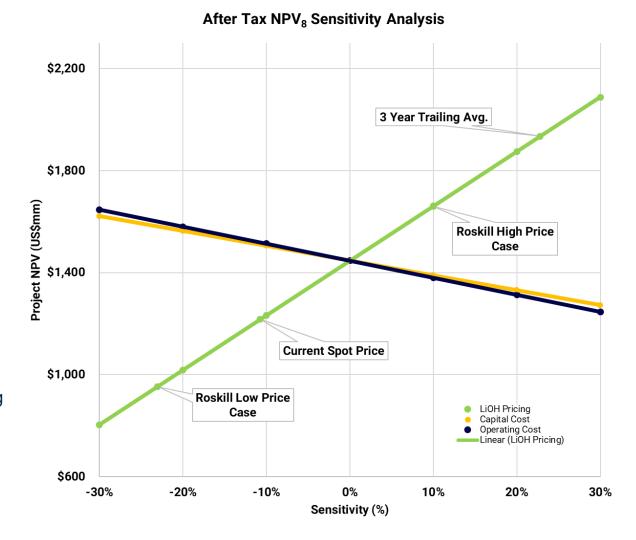
# Robust Economics in Varying Price / Cost Environments

# NPV > US\$1B in Most Scenarios

- US\$1.45B in base case
- US\$1.93B at 3-yr trailing prices
- US\$932M at low case prices
- Capex and Opex have modest NPV impact

# Strong Internal Rates of Return

- 34% IRR using base case pricing
- 28% IRR using low case prices







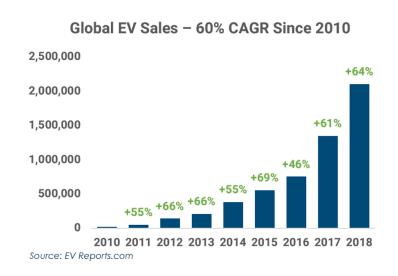
# **Outstanding Lithium Demand Fundamentals**

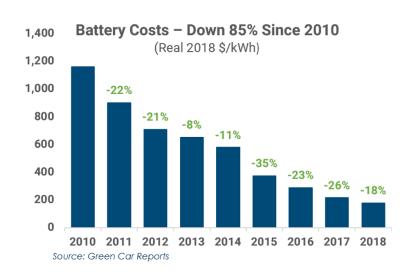
EV Sales Up 60% per year since 2010

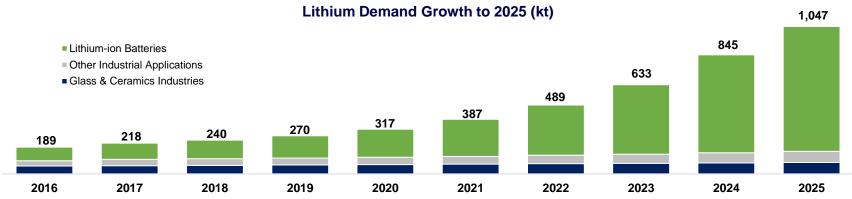
Battery costs down 85% since 2010

**EU CO<sub>2</sub> penalties forcing OEM transition** 

100s of new EV models coming to market



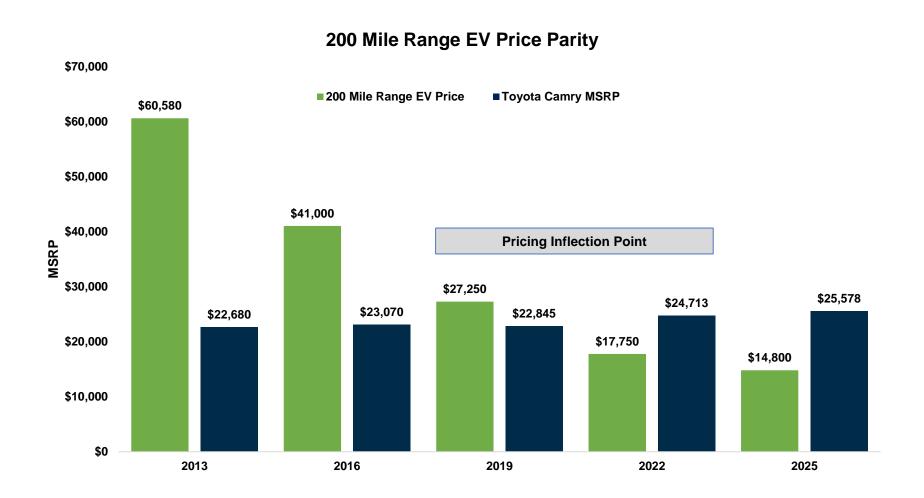




Source: UBS Research



# **Purchase Price Parity Rapidly Approaching**



Source: ARK Invest

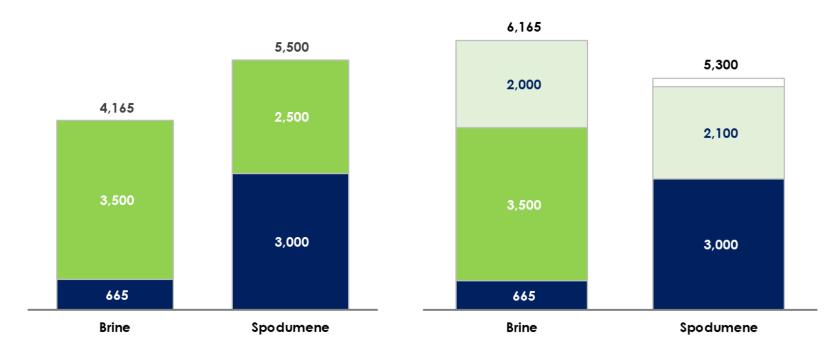


# **Spodumene's Hydroxide Cost Advantage**

"Spodumene is ~15% more cost-effective to produce lithium hydroxide than salt brine" – McKinsey & Co.

# Brine is typically lower cost for carbonate...

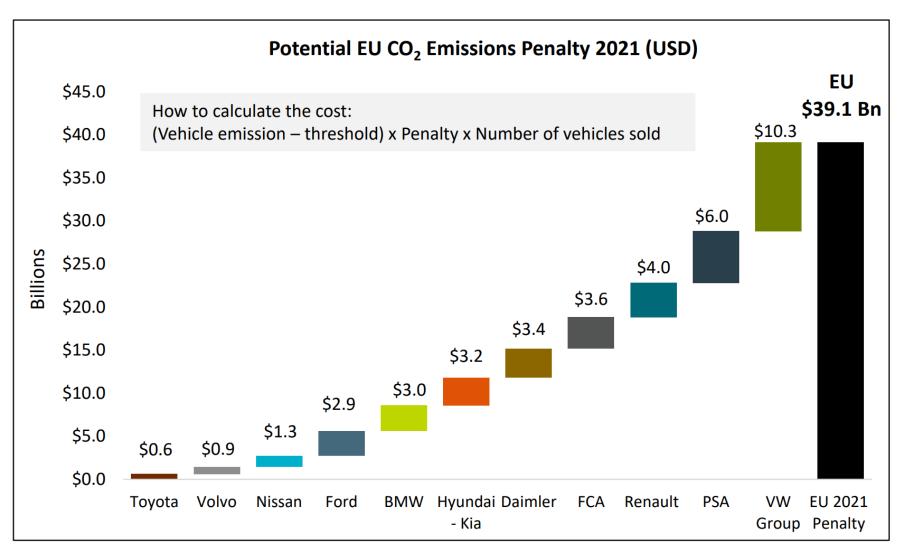
# ...but spodumene is typically lower cost for hydroxide



Source: McKinsey & Co., costs represent indicative 2025 costs for typical South American brine operations and typical Western Australian spodumene operations.



# **EU CO<sub>2</sub> Emissions Penalties Spurring EV Development**



Source: Orocobre



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#### **Cautionary Statements and Important Information**

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This presentation contains forward-looking statements within the meaning of securities legislation in Australia and the United States, including statements regarding exploration and development activities; plans for Piedmont's mineral projects; projections of market demand and lithium prices; statements about the timing and amount of resource declarations; and statements about the timing and ability to complete scoping studies and feasibility studies.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause actual events, results, performance or achievements to be materially different from events, results, performance or achievements expressed or implied by the forward-looking statements. Such factors include, among others, the risk that we will be unable to commercially extract mineral deposits, that our properties may not contain expected reserves, risks and hazards inherent in the mining business (including risks inherent in developing mining projects, environmental hazards, industrial accidents, weather or geologically related conditions), uncertainty about our ability to obtain required capital to execute our business plan, our ability to hire and retain required personnel, changes in the market prices of lithium, changes in technology or the development of substitute products, the uncertainties inherent in exploratory, developmental and production activities, including risks relating to permitting and regulatory delays, uncertainties inherent in the estimation of uncertainties and risk factors set out in filings made from time to time with the Australian Stock Exchange and the U.S. Securities and Exchange Commission, including our most recent Form 20-F. Actual events, results, performance and achievements could vary significantly from the estimates presented in this presentation. Readers are cautioned not to put undue reliance on forward-looking statements. We disclaim any intent or obligation to update publicly such forward-looking statements, whether as a result of new information, future events or otherwise. Additionally, we undertake no obligation to comment on analyses, expectations or statements made by third parties in respect of Piedmont, its financial or operating results or its securities.

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The information contained in this presentation has been prepared in accordance with the requirements of the securities laws in effect in Australia, which differ from the requirements of U.S. securities laws. The terms "mineral resource", "ineasured mineral resource", "indicated mineral resource" and "inferred mineral resource" are Australian terms defined in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the "JORC Code"). However, these terms are not defined in Industry Guide 7 ("SEC Industry Guide 7") under the U.S. Securities Act 1933, as amended (the "U.S. Securities Act"), and are normally not permitted to be used in reports and fillings with the U.S. Securities and Exchange Commission ("SEC"). Accordingly, information contained herein that describes Piedmont's mineral deposits may not be comparable to similar information made public by U.S. companies subject to reporting and disclosure requirements under the U.S. federal securities laws and the rules and regulations thereunder. U.S. investors are urged to consider closely the disclosure in Piedmont's Form 20-F, a copy of which may be obtained from Piedmont or from the EDGAR system on the SEC's website at <a href="http://www.sec.gov/">http://www.sec.gov/</a>.

#### **Competent Persons Statements**

The information in this presentation that relates to Exploration Results is extracted from the Company's ASX announcements dated August 7, 2019, August 1, 2019, June 25, 2019, June 18, 2019, May 29, 2019, April 24, 2019, March 14, 2019, February 13, 2019, October 17, 2018, August 23, 2018, July 19, 2018, June 14, 2018, June 7, 2018, May 10, 2018, April 9, 2018, 4 April 2018, 15 March 2018, 1 December 2017, 2 November 2017, 27 September 2017, 23 May 2017, 3 April 2017, and 18 October 2016 which are available to view on the Company's website at <a href="https://www.piedmontlithium.com">www.piedmontlithium.com</a>. The information in this presentation that relates to Exploration Targets and Mineral Resources is extracted from the Company's ASX announcements dated August 1, 2019, June 25, 2019 and April 24, 2019 which are available to view on the Company's website at <a href="https://www.piedmontlithium.com">www.piedmontlithium.com</a>. The information in this presentation that relates to Metallurgical Testwork Results is extracted from the Company's ASX announcement dated August 7, 2019, July 17, 2019,

Piedmont 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 and technical parameters underpinning Mineral Resources, Exploration Targets, Production Targets, and related forecast financial information derived from Production Targets 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 modified from the original ASX announcements.

#### **Exploration Target**

The Exploration Target is based on the actual results of Piedmont's previous drill programs. To determine potential tonnage and grade ranges at the deposit,  $\text{Li}_2\text{O}$  assay values and density values from drilling have been applied to the volume estimates. A density value of 2.71 g/cm³ is applied to derive tonnage values. Using this methodology an Exploration Target of between 4.0 to 4.5 million tonnes at a grade of between 1.10% and 1.20%  $\text{Li}_2\text{O}$  is approximated for the Core property and an Exploration Target of between 2.0 to 2.5 million tonnes at a grade of between 1.1% and 1.3%  $\text{Li}_2\text{O}$  is approximated for the Central property. The potential quantity and grade of this Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.



# **Piedmont Lithium Limited**

# **Low-Cost Lithium Hydroxide in the USA**

Corporate Presentation – September 2019

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