



Albemarle Investor Day

Making the World Safe & Sustainable by Powering the Potential of People

December 12, 2019



Dave Ryan

Vice President, Corporate
Strategy & Investor Relations

Welcome & Opening Remarks

Forward-Looking Statements

Some of the information presented in this presentation, the investor day remarks, and discussions that follow, including, without limitation, information related to outlook and guidance, conversion capacity, production volumes, joint ventures, market trends, pricing, expected growth, earnings and demand for our products, tax rates, dividends, cash flow generation, capital projects, electric vehicle demand, economic trends and all other information relating to matters that are not historical facts may constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Actual results could differ materially from the views expressed.

Factors that could cause actual results to differ materially from the outlook expressed or implied in any forward-looking statement include, without limitation: changes in economic and business conditions; changes in financial and operating performance of our major customers and industries and markets served by us; the timing of orders received from customers; the gain or loss of significant customers; competition from other manufacturers; changes in the demand for our products or the end-user markets in which our products are sold; limitations or prohibitions on the manufacture and sale of our products; availability of raw materials; increases in the cost of raw materials and energy, and our ability to pass through such increases to our customers; changes in our markets in general; fluctuations in foreign currencies; changes in laws and government regulation impacting our operations or our products; the occurrence of regulatory actions, proceedings, claims or litigation; the occurrence of cyber-security breaches, terrorist attacks, industrial accidents, natural disasters or climate change; the inability to maintain current levels of product or premises liability insurance or the denial of such coverage; regulatory approvals and the satisfaction of other closing conditions with respect to pending acquisitions; political unrest affecting the global economy, including adverse effects from terrorism or hostilities; political instability affecting our manufacturing operations or joint ventures; changes in accounting standards; the inability to achieve results from our global manufacturing cost reduction initiatives as well as our ongoing continuous improvement and rationalization programs; changes in the jurisdictional mix of our earnings and changes in tax laws and rates; changes in monetary policies, inflation or interest rates that may impact our ability to raise capital or increase our cost of funds, impact the performance of our pension fund investments and increase our pension expense and funding obligations; volatility and uncertainties in the debt and equity markets; technology or intellectual property infringement, including cyber-security breaches, and other innovation risks; decisions we may make in the future; the ability to successfully execute, operate and integrate acquisitions and divestitures; and the other factors detailed from time to time in the reports we file with the SEC, including those described under “Risk Factors” in our Annual Report on Form 10-K and our Quarterly Reports on Form 10-Q. These forward-looking statements speak only as of the date of this presentation. We assume no obligation to provide any revisions to any forward-looking statements should circumstances change, except as otherwise required by securities and other applicable laws.

Non-GAAP Financial Measures

It should be noted that Adj. net income attributable to Albemarle Corporation ("Adj. earnings"), Adj. diluted earnings per share attributable to Albemarle Corporation, Adj. effective income tax rates, segment operating profit, segment income, pro-forma net sales, net sales excluding the impact of foreign exchange translation ("ex FX"), EBITDA, Adj. EBITDA, Adj. EBITDA by operating segment, EBITDA margin, Adj. EBITDA margin, pro-forma Adj. EBITDA, pro-forma Adj. EBITDA margin, Adj. EBITDA excluding the impact of foreign exchange translation ("ex FX"), Adj. EBITDA margin excluding the impact of foreign exchange translation ("ex FX"), net debt to Adj. EBITDA, gross debt to Adj. EBITDA, free cash flow, and Adj. free cash flow are financial measures that are not required by, or presented in accordance with, accounting principles generally accepted in the United States, or GAAP. These measures are presented here to provide additional useful measurements to review our operations, provide transparency to investors and enable period-to-period comparability of financial performance. The Company's chief operating decision maker uses these measures to assess the ongoing performance of the Company and its segments, as well as for business and enterprise planning purposes.

A description of these and other non-GAAP financial measures that we use to evaluate our operations and financial performance, and reconciliation of these non-GAAP financial measures to the most directly comparable financial measures calculated and reported in accordance with GAAP, can be found in the Appendix to this presentation. The Company does not provide a reconciliation of forward-looking non-GAAP financial measures to the most directly comparable financial measures calculated and reported in accordance with GAAP, as the Company is unable to estimate significant non-recurring or unusual items without unreasonable effort. The amounts and timing of these items are uncertain and could be material to the Company's results calculated in accordance with GAAP.

Agenda

08:30 am Welcome & Opening Remarks

Dave Ryan, VP, Corporate Strategy & IR

08:35 am Update on Our Journey & Strategic Overview

Luke Kissam, CEO

09:10 am Bromine Specialties: Strong Cash Generation with Diverse, Stable End Markets

Netha Johnson, President

09:35 am Catalysts: Moderate Long-term Growth Driven by Large and Evolving Transportation Fuels End Market

Raphael Crawford, President

10:00 am Q&A

Kissam, Tozier, Johnson, Crawford

10:20 am BREAK

10:30 am Lithium: Significant Long-term Growth Supported by Increasing Adoption of Electric Vehicles

Eric Norris, President | Dr. Glen Merfeld, CTO

11:15 am Maintaining Our Financial Flexibility

Scott Tozier, EVP & CFO

11:40 am Closing Remarks

Luke Kissam, Chairman & CEO

11:45 am Q&A

All

12:30 pm Leadership Luncheon



Luke Kissam

Chairman, President & CEO

Update on Our Journey & Strategic Overview

An Industry Leader with Significant Opportunity Ahead

01 Industry-leading, competitively advantaged positions across our portfolio, which will expand in the future

02 Strong secular trends support long-term growth to annual Adj. EBITDA of \$1.5B - \$1.8B and annual FCF of ~\$1B by 2024

03 Focus on product quality, talent, low-cost operations, and effective management of our resources and assets

04 Product offerings are key enablers to a more sustainable world, and we are embedding sustainability into strategic decision making

05 Financial flexibility and balance sheet strength with significant free cash flow generation on the horizon

Diversified Portfolio with Above-Market Margin

KEY STATS

Founded	1887 132 years
Global Employees ¹	~5,600
Countries	~100
Dividend Payout Ratio ²	25%

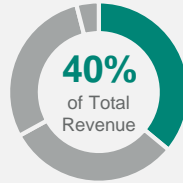
FINANCIAL HIGHLIGHTS³

Net Sales	\$3.2B
Net Income ⁴	\$608M
Adj. EBITDA	\$951M
Adj. EBITDA Margin	30%

BUSINESS OVERVIEW⁵

Making the World Safe and Sustainable by Powering the Potential of People

Lithium



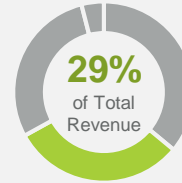
41%

Adj. EBITDA Margin⁶

~20%

Industry Growth⁷

Catalysts



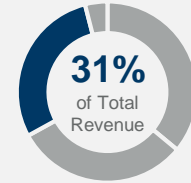
27%

Adj. EBITDA Margin⁶

~3%

Industry Growth⁷

Bromine Specialties



32%

Adj. EBITDA Margin⁶

~2%

Industry Growth⁷

REVENUE BY GEOGRAPHY



Agile, Long-term Strategy that Responds to Changing Market Conditions

Grow	Invest in growth and focus on cash generation in Lithium
Maximize	Optimize the earnings and cash of Bromine and Catalysts
	Build on manufacturing excellence and optimized cost structure
Assess	Actively and continuously assess our portfolio
Invest	Maintain a disciplined approach to capital allocation while preserving financial flexibility

- Demand outlook remains robust for Lithium
- Continue to strengthen balance sheet to provide capacity for future options for lithium conversion assets needed to meet customer demand (build vs. buy)
- Generate cash, maintain Adj. EBITDA margin and levels; invest moderately in high-return opportunities
- ERP provides catalyst for more effective and efficient operations
- Reduce overall spend by \$100M+ by 2021 in a sustainable manner
- Continue to actively evaluate portfolio
- Look to acquire existing lithium conversion assets if the economics make sense and it creates higher ROIC than building
- Maintain Investment Grade credit rating and support continued dividend growth
- Invest to accelerate productivity improvements and to build or buy lithium conversion assets; current board authorization to repurchase up to 7M shares

Diverse and Dedicated Leadership Team Focused on Delivering Shareholder Value through All Economic Scenarios



Luke Kissam

Chairman & CEO
Industry Experience: 30 years



Scott Tozier

EVP & CFO
31 years



Karen Narwold

EVP & CAO
29 years



Eric Norris

President, Lithium
28 years



Netha Johnson

President, Bromine
27 years



Raphael Crawford

President, Catalysts
22 years



DeeAnne Marlow

Chief Human Resources Officer
32 years



Dave Ryan

VP, Corporate Strategy & IR
28 years



Jac Fourie

VP, Engineering & Project Execution
21 years



Tom Thomas

VP, Integrated Business Operations
37 years



Michael Brown

VP, Global HSE &
Operational Excellence
22 years



Engaged, Diverse, and Accountable Board of Directors



Luke Kissam
Chairman

New directors bring targeted and valuable expertise and experience

- Mining and natural resources
- Automotive, electric grid, and chemical operations
- Strategic, financial, and operational responsibility



Laurie Brlas
Former EVP & CFO,
Newmont Mining



Kent Masters
Former CEO,
Foster Wheeler



Diarmuid O'Connell
Former VP, Corporate &
Business Development,
Tesla Motors



Harriett "Tee" Taggart
Consultant; Former Partner,
Wellington Management



Bill Hernandez
Former SVP, Finance & CFO,
PPG Industries



Glenda Minor
CEO & Principal,
Silket Advisory Services
Former SVP & CFO,
Evraz North America



Dean Seavers
President,
National Grid U.S.



Holly Van Deursen
Former Group President,
Petrochemicals, BP



Doug Maine
Former CFO,
IBM and MCI



James O'Brien
Former Chairman & CEO,
Ashland Inc.



Gerald Steiner
CEO & Member of Board of
Managers, CoverCress Inc.
Former EVP, Sustainability &
Corporate Affairs, Monsanto Co.



Alejandro Wolff
Former U.S. Ambassador
to Chile

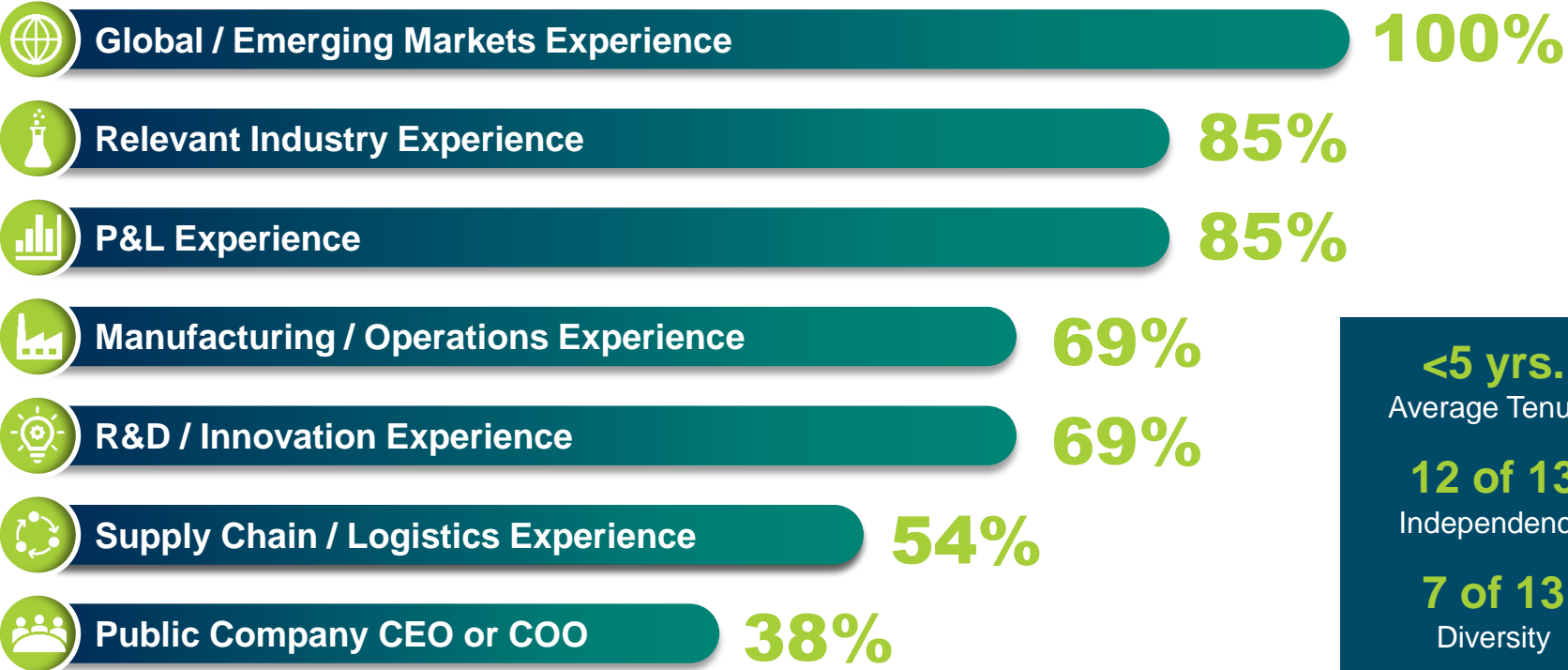


New Board Member since 2017



Retiring in May 2020

Director Capabilities and Experience Support Our Long-term Vision



<5 yrs.
Average Tenure

12 of 13
Independence

7 of 13
Diversity

Our Legacy: Executing Long-term Strategy to Build Industry-leading Company with Growth-oriented Portfolio

1998 - 2004

Formed Jordan Bromine Co. JV ('98)

Established global leadership position

Acquired Akzo Nobel N.V.'s refinery catalyst business ('04)

Expanded catalyst business into refining

Bold and Deliberate Steps Taken to Architect Current Portfolio

2012 - 2016

Acquired Rockwood ('15)

Entered high growth lithium market

Acquired Jiangxi Jiangli New Materials ('16)

Chinese lithium conversion capacity

Finalized pumping permit and quota amendment in Chile ('16)

Advanced lithium growth strategy

Exited Phosphorous ('12) business and divested AOX ('14)

Non-core businesses

Divested Minerals, Metal Sulfides and Chemetall Surface Treatment ('16)

Used proceeds to reduce debt, strengthen balance sheet and invest in Lithium assets

2017 - 2019

Developed new technology to increase the yield of Lithium from brine in Chile ('17)

NEW Launched Granite™ ('17)

A new technology for catalyst market

NEW Broke ground in Lithium Carbonate Conversion La Negra III / IV (+40kT) ('17)

NEW Completed Saytex® CP2000 (Tetrabrom) expansion at JBC ('18)

NEW Divested Polyolefin Catalysts and Components ('18)

Non-core businesses

NEW Completed Lithium Hydroxide Expansion in China ('19)

+20kT at Xinyu

NEW Broke ground in Lithium Hydroxide Conversion in Australia ('19)

50kT at Kemerton

NEW Introduced Celestia™ ('19)

A new ultra-high activity hydroprocessing catalyst for increased flexibility and profitability









NEW MARBL JV ('19)

Executed advanced lithium growth strategy

NEW Exploring strategic options for fine chemistry services and performance catalyst solutions

NEW Since 2017 Investor Day

On Track to Achieve 2021 Targets Announced at 2017 Investor Day

	2021 TARGETS AT 2017 ID	2019E RESULTS	STATUS
Revenue	\$3.75B (7% - 10% 5-yr CAGR)	\$3.6B - \$3.7B (12% 3-yr CAGR)	
Adj. EBITDA ¹	\$1.2B (10% - 15% CAGR)	\$1.02B - \$1.06B (12% 3-yr CAGR)	
GBU Revenue CAGR			
Lithium	18% -20%	+27%	
Bromine	Down / Flat	+8%	
Catalysts ²	3%	+7%	
Free Cash Flow	\$500M - \$900M	\$(100) - \$(250)	
2021 Li Conversion Capacity	Grow 30kT in 2016 to 165kT by 2021	85kT	
Net Debt / Adj. EBITDA ^{1,3}	2.0x - 2.5x	2.6x	

Building on Our Capabilities to Further Strengthen Our Competitively Advantaged Position





Engaging Employees through a Greater Purpose

Our Purpose

Making the World Safe and Sustainable by Powering the Potential of People

Our Core Values



CARE



CURIOSITY



COURAGE



COLLABORATION



HUMILITY



INTEGRITY & TRANSPARENCY

Culture Survey

- Conducted 4,000+ surveys in January 2019 with 75% response rate
- Incorporating employee engagement surveys with a focus on increasing employee engagement

Identified Strengths

89% Report a safe work environment and can elevate suggestions for action, when necessary

86% Report differing opinions are openly discussed on teams

85% Feel a sense of personal accomplishment and would recommend ALB as a place to work

85% Feel immediate managers care about well being of employees

80% Believe immediate managers are receptive to new ideas

Areas of Opportunity

Pace of change (i.e., too fast)

Individual performance evaluations

Enhanced communication efforts

More efficient processes

Transparency of cross-GBU career opportunities and activities related to promoting and retaining talent



Our Products Form the Foundation and Contribute to Sustainability



LITHIUM ENABLES...

- Growth of “clean miles” driven with electric vehicles
- More efficient use of renewable energy through grid storage
- Batteries for medical devices (pacemaker, defibrillator, etc.)
- Medical imaging including tomography (CT, PET, etc.)

~60% Lithium Revenue from Energy Storage



CATALYSTS ENABLES...

- Reduced SO_x and NO_x emissions through cleaner transportation fuels
- Creates efficiency of natural resources through more usable products from a single barrel of oil
- Safer, greener production of alkylates used to produce more environmentally-friendly fuels

~50% Catalysts Revenue from Reduced SO_x and NO_x



BROMINE ENABLES...

- Prevention of fires starting in electronic equipment and delay in “flashover of fires” to increase escape time
- Greater fuel efficiency from rubber tires
- Reduction of emissions from coal fired power plants
- Reduction of food borne illnesses

>50% Bromine Revenue from Fire Prevention

Strong Sustainability Impact through Customer Value Chain

Case Studies on Sustainability



Our People and Sustainable Approach

Environmental

Social

Governance

Executing the Next Level of Impact

CASE STUDY: Feed Flow Control of VESPA Product Drying Equipment

BACKGROUND

Bayport site-wide productivity improvement effort - VESPA team identified opportunity to improve flash dryers in VESPA unit

ALB SOLUTION

Improved slurry feed systems control through Coriolis meters, allowing process to reduce variability and run more efficiently

RESULTS

- Reduced energy usage by 9% per unit of production and reduced overall energy consumption by 9,900 MMBTU/yr and CO2 production by 530 tons annually
- Recognized by American Chemistry Council for *Energy Efficiency* for this project

CASE STUDY: Salar de Atacama, Chile Lithium Plant - Preservation of Indigenous Communities

BACKGROUND

Salar Lithium plant located in Atacama La Grande Indigenous Development Area and in a Touristic Interest Zone, which are both protected by law

ALB SOLUTION

- **2012:** Formal dialogue begins with CPA¹
- **2014:** ALB creates community relations area and signs dialogue protocol
- **2016:** ALB signs cooperation agreement and participates in monitoring protocol

RESULTS

- Implementation of photovoltaic panels and solar water Heaters in community homes
- Transport water
- Built a community HQ
- Make church repairs
- Purchase ag and industrial machinery
- Provide 350+ scholarships to students

CASE STUDY: ALB Code of Conduct

BACKGROUND

Aug 2019: Launched new Code of Conduct aligned to our Core Values in Action

ALB SOLUTION

Tailored Code of Conduct for different audiences: developed an eCode, an interactive, digital version of ALB's Code of Conduct - for employees and developed a version available for third parties and business partners on our website

RESULTS

Recognized by Convercent's 2019 Innovation Award for eCode - our business vendors, agents or distributors are required to adopt similar values when acting on behalf of ALB

Results of Our Materiality Assessment Led to Our Sustainability Framework



Our People and Sustainable Approach

Sustainable Business Model

Foster a sustainable business model that creates long-term value for all stakeholders

Community Engagement

Actively collaborate and engage in the communities in which we work and live

Our People & Workplace

Promote an inclusive and diverse workplace for all employees with a focus on safety, mutual respect, development and wellbeing

Natural Resource Management

Responsibly manage our use of resources and materials





Portfolio Comprises World-class Resources



SALAR DE ATACAMA, CHILE



GREENBUSHES, AUSTRALIA



JBC, JORDAN



MAGNOLIA, AR, USA



SILVER PEAK, NV, USA



WODGINA, AUSTRALIA




KINGS MOUNTAIN, NC, USA



ANTOFALLA, ARGENTINA

- ✓ Geographically Diverse
- ✓ High Quality
- ✓ Large Scale
- ✓ Low Cost



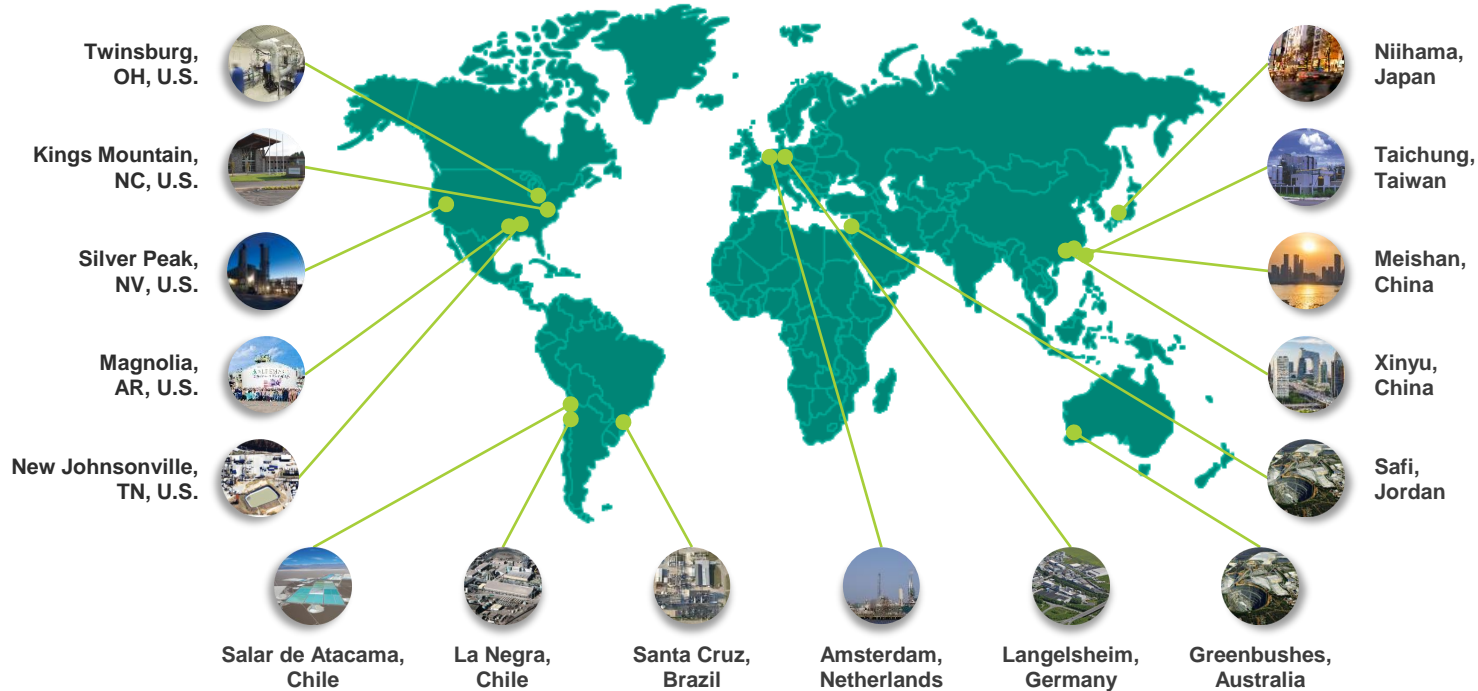


Large-scale Manufacturing Footprint Serving the Globe

✓ World-class Resources with High Concentration Levels

✓ Geographic Diversity

✓ Proximity to Customers





Long-term Growth Capture Supported by Technical Expertise

Extensive Application Know-How and Technical Service

- **Lithium:** Working with customers on next-gen cathode and anode materials
- **Bromine:** Helping customers use our flame retardants in new applications
- **Catalysts:** Helping customers increase yield and produce cleaner fuel through custom solutions

Strong Process Engineering Expertise

- Continuous improvement focus
- Quality and productivity enhancement
- Increased plant reliability and safety while reducing costs
- Reduction of energy and water consumption, reduction of waste, and GHG emissions

Growing External Ecosystem

- Keeping an eye on the future through cooperation with world-leading institutions and start-ups
- Providing innovative industry solutions through customer partnerships that combine the expertise of both parties

Strong Ecosystem of Leading Organizations *(Selected Organizations, not exhaustive)*

National Labs & Start-ups



Universities



Customers





Significant Opportunity to Deliver Value through Low-cost Operational Execution



Operational Execution for
Low-cost


Focusing on Competitive Advantage

 Top talent / high performance culture

 Technical expertise

 High-quality resources


Aggressively Accelerating Operational Excellence


 Lean / low-cost operations


 Efficient capital deployment


 Sustainable processes and technological improvements

Driving Commercial Excellence


 Customer integrated experience


 Local reach and service


 World-class global supply chain


 Applications expertise

Fostering Best-in-Class Customer Experience

 Security of supply

 Deep, long-term relationships

 Product breadth and depth

 "The standard" for quality and reliability

Continuous Improvement in Plants and Business Processes
Relentlessly Drive Customer Value and Experience
Sustainability Driven Mindset

\$100M+ in Cost Savings Identified

Invest with Us

01

Leadership position with unparalleled, geographically diverse, and low-cost resources in Bromine and Lithium

02

Building a stronger organization through talent development and operational excellence

03

World-class process **technology**, chemical engineering **expertise**, and deep **long-term customer relationships**

04

Delivering **product solutions that are essential to performance** but a relatively small percentage of the overall cost of the end product

05

Financial flexibility and balance sheet strength



Netha Johnson

President

Bromine Specialties



What You'll Hear Today...

01

Strong cash flow yield

02

Global Bromine footprint with advantaged resources

03

Leader in industry segments served

04

GDP-type growth with sustainable margins

Bromine Specialties Snapshot

Financials | TTM Q3 2019

\$1.0B

Net Sales

\$319M

Adj. EBITDA¹

32%

Adj. EBITDA Margin¹

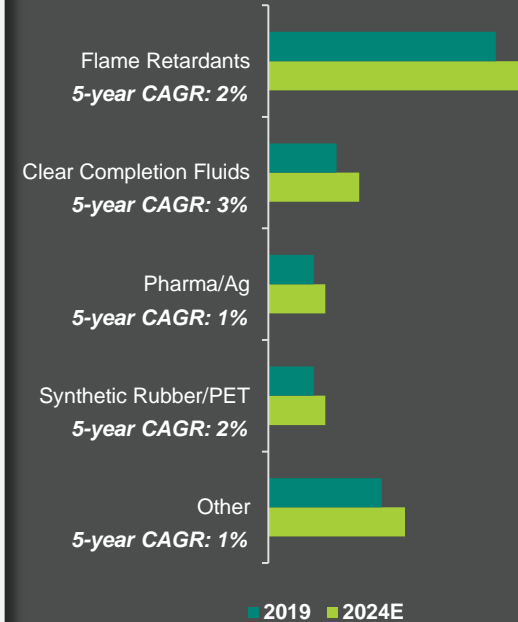
Segment Characteristics

- Mineral extraction and processing
- Low-cost position on global cost curve and access to world-class natural resources
- Vertically integrated
- Consistent and sustainable margins and cash flow
- High initial capital for world-scale plants, requiring strong technical and application expertise

Strong Applications Demand





- Stable flame retardants demand across electronics, construction, and automotive
- Increasing completion fluid demand from oil industry rebound
- Textiles and packaging fuels polyester (PET) growth
- Urbanization in developing countries driving tire demand growth

Business Environment²



Advantaged Position | Stable End Markets | Strong Sustainable Cash Flow

What We Said in 2017 and How We're Doing

	WHAT WE SAID	WHAT WE DID	STATUS
GBU Revenue / Adj. EBITDA¹ Margin	<ul style="list-style-type: none"> Consistent, stable GDP-type growth 	<ul style="list-style-type: none"> >10% EBITDA growth¹ by capturing share of China supply opportunity 	
Maintain Low-cost Leadership Position; Focus on Environmental Sustainability	<ul style="list-style-type: none"> Reduce costs through productivity initiatives 	<ul style="list-style-type: none"> Debottlenecking key assets Water and energy reduction projects at both manufacturing sites 	
Expand to Support Current and Future Market Growth	<ul style="list-style-type: none"> Efficiencies to provide higher yield and security of supply 	<ul style="list-style-type: none"> JBC TBBPA (flame retardant) expansion in 2018 New Bromine well online in 2019 Expansion of isotank fleet 	
China Production Severely Impacted by Ongoing Regulations Starting in 2017	<ul style="list-style-type: none"> China domestic market heavily influences global supply and price 	<ul style="list-style-type: none"> Pivoted portfolio to downstream derivatives to benefit from elevated pricing levels Focused on markets with >GDP growth 	

Transforming the Bromine Molecule to Benefit Society: Estimated Global Market \$2.6B in Revenue

Brine Source



AR, U.S.

Dead Sea, Jordan

Bromine Plant



Derivatives Plant



BROMINE IN OUR WORLD



Appliances

Circuit Boards
Enclosures



Automotive

Tires
Seats
Wiring



Buildings

Insulation
Wiring
Connectors



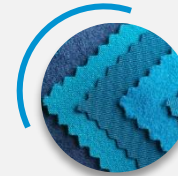
Telecom / 5G / Servers

Wiring
Connectors
Circuit Boards



Oilfield

Completion Fluids



PET Plastic

Textiles
Packaging



Ag / Pharma

Pesticides
Pharmaceuticals

GLOBAL BROMINE BY APPLICATION¹ VOLUME

48%
Flame Retardants

21%
Oilfield

9%
PET

2%
Agriculture

20%
Other

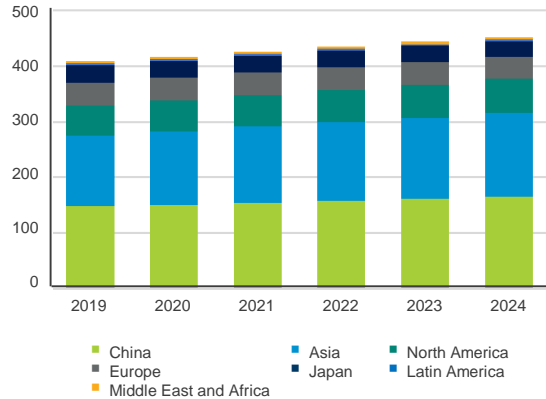
Major Bromine End Markets Support GDP Growth

Brominated Flame Retardants

- Diversified markets drive stable demand
- New technology trends like 5G, EVs, IoT, and autonomous cars drive growth opportunities

Brominated Flame Retardants Growth¹

Volume (kT)

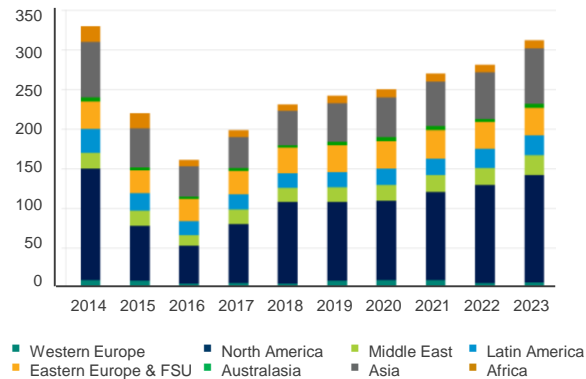


Offshore Oilfield Industry

- Continued offshore investment growth since 2016 lows
- Improved economics (reduced offshore cost) resulting in a greater number of investment projects

Global Offshore Investment 2014 - 2023E²

Expenditure (\$B)

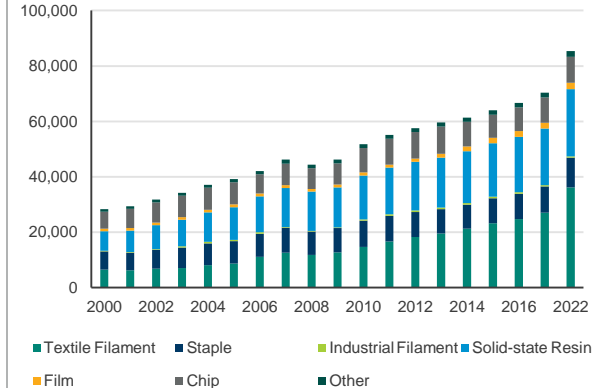


Polyester (PET) Industries

- Textile and packaging market driving PET demand
- PTA catalyst capacity buildout continues to support growth projections

PET CAGR Growth³

PET Volume (kT)



Bromine Strategy: Continue to Generate Cash through Strong Client Value Proposition and Increased Focus on Efficiency

Low-cost Producer

- Manage world-class, sustainable resources
- Integrated manufacturing operations

Customer Intimacy

- Business model focused on the customer
- Achieve more than fair share of growth in growing applications

Profitable Growth and Sustained Cash Generation

- Structurally reduce costs through asset efficiency and productivity
- Maximize value pricing in line with market conditions, but with an emphasis on stability



Access to High Concentration of Bromine is a Low-cost Advantage

1 Jordan Bromine Company (JBC)



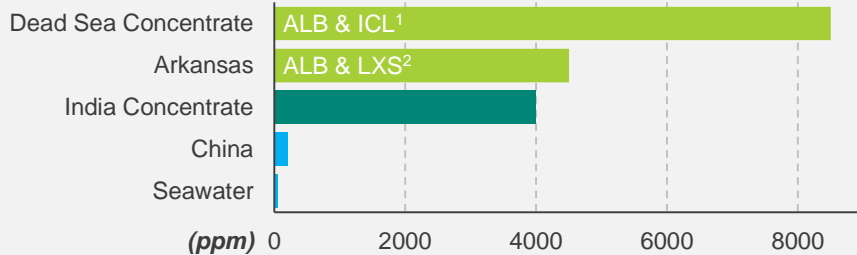
JV with Arab Potash Company (APC) - operated and marketed by Albemarle

2 Arkansas, U.S.

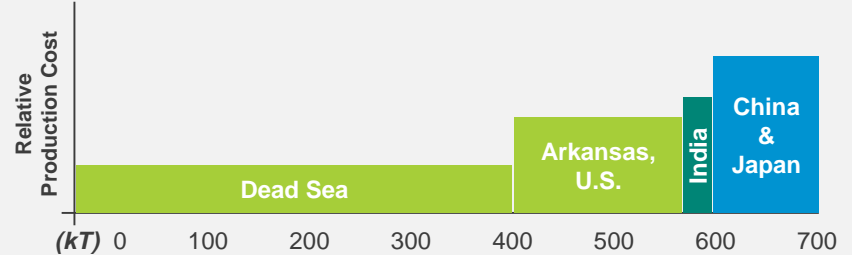


Highly integrated and specialty focused - drives product flexibility and profitability

Bromine Concentration



Industrial Cost Curve for Elemental Bromine



Albemarle Operates from the Two Best Bromine Resources

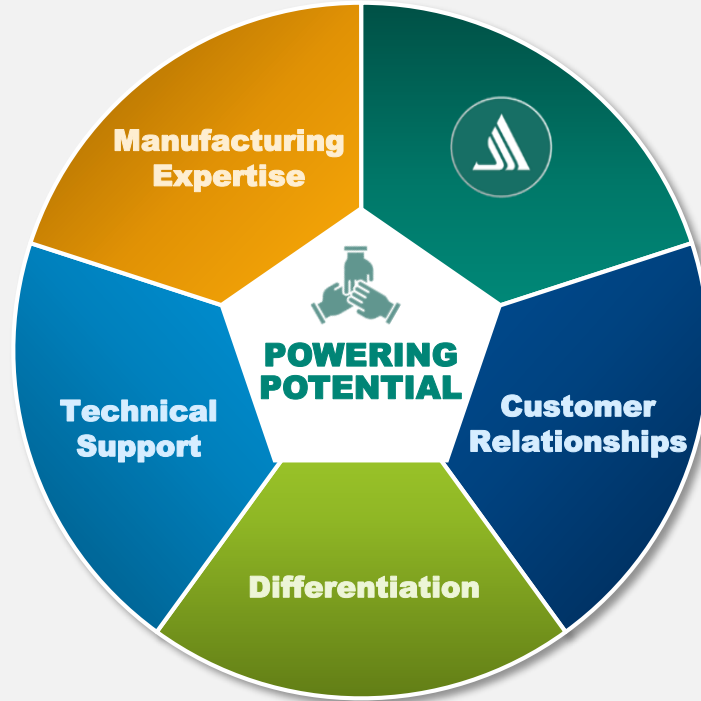
Why Customers Buy from Us

OUR INTEGRATED OPERATION IS A KEY ENABLER

- ✓ Single stream of bromine can generate 16 different products for our customers
- ✓ 45% of production in Magnolia, AR is from recycled or by-product bromides
- ✓ Committed to supply and supply sustainability

MORE THAN HIGH-QUALITY PRODUCTS

- ✓ World-class health, safety, and environmental knowledge base
- ✓ Product stewardship programs demonstrate our commitment to sustainability
- ✓ Highly skilled customer application and technical service teams providing unparalleled support



BROMINE-FOCUSED WITH DEDICATED RESOURCES

- ✓ Recognized market leader
- ✓ Customer focused
- ✓ Investing in the future

PURVEYORS OF INSIGHTS

- ✓ Information sharing as an integral facet of how we develop customer intimacy
- ✓ Our deep understanding of the bromine and derivatives market generates value and credibility with customers
- ✓ We collect, analyze, and respond to customer feedback to enhance strategic partnerships and unlock new opportunities

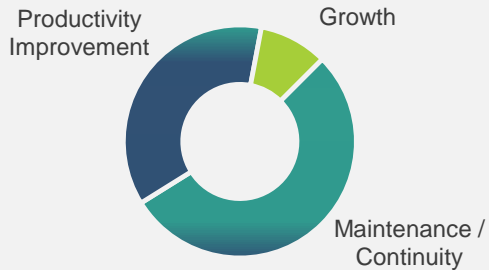
PORTFOLIO DIVERSIFICATION AND ASSET INTEGRATION

allow us to allocate bromine to derivatives as needed to support a broad array of customers and end markets

Profitable Growth and Sustained Strong Cash Generation

Capital Deployment

Industry-leading cost position supported by capital investments in continuous process and plant improvement



- 1% utilization (OEE) improvement generates **>\$1.6M** of EBITDA in 2020
- Anticipate **\$54M** in annualized productivity and cost avoidance by 2023

Digital Solutions Drive Continued Efficiency

Embracing digital solutions to power our business and profitability

- 4-D Reservoir Modeling to **maximize return** on new well locations in Magnolia
- Customized Aspen Linear Programming model to **optimize plant assets** and product mix
- **Increased automation** through advanced process controls
- Implementation of data analytic tools to **support global logistics network** and drive better decisions

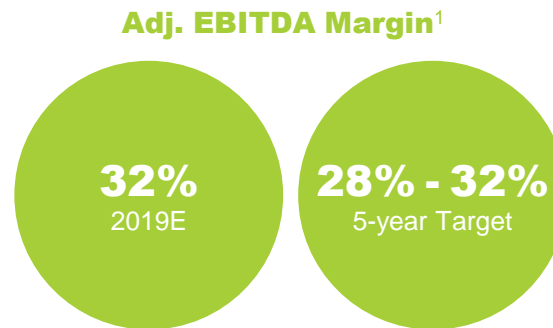
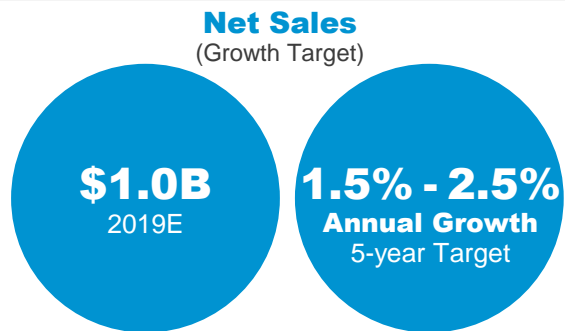
Sustainability

Reducing our environmental footprint at our manufacturing sites

- Commercialized **Bromine Recovery Unit** (AR, U.S.)
- Switched from fuel oil to **natural gas as a primary source of power** in 2017 (Jordan)
- **Material improvement in fresh water and energy utilizations** via unique conservation and water recovery projects (Jordan)
- **Focused R&D efforts** on next gen sustainable chemistry

Stable Outlook for Bromine Specialties

	FLAME RETARDANTS	OILFIELD CLEAR BRINE FLUIDS	OPERATIONAL EFFICIENCIES / LEAN
5-YEAR OUTLOOK			
BUSINESS ENVIRONMENT	Expect mature, stable market that will continue to base load and generate cash for the business	Expect to see incremental growth over the next five years driven by new resource discovery and expansion of the offshore drilling market	Continue to work on efficiencies to provide higher yield and lower cost processes that maintain a constant, superior product



MARKET ASSUMPTIONS	Emerging and GDP-type Growth Economies	Cost Discipline and Selective Investment for Growth
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Key Takeaways

01

Market leader with proven ability to deliver results

- ✓ Access to highest quality Bromine resources in the world
- ✓ Low-cost position with diversified market portfolio to maintain industry-leading margins
- ✓ Operational excellence and superior service

02

Core competencies provide the foundation for **continued growth** by unlocking new opportunities and **solving our customer's most complex challenges**

03

Stable and strong cash flow generating business to power the growth potential of Albemarle

04

Proven record of outperforming competition at any point in the economic cycle



Raphael Crawford

President

Catalysts

What You'll Hear Today...

01

Positioned to benefit from continued growth in demand for transportation fuels and chemicals, enhanced by tightening fuel specifications and growing prosperity in developing geographies

02

Innovation and technical services differentiate our offerings

03

Resilient business through macro cycles and beyond peak gasoline

04

Strong cash flow generation and favorable long-term earnings growth outlook

Catalysts Snapshot

Financials | TTM Q3 2019

\$911M

Net Sales

\$250M

Adj. EBITDA¹

28%

Adj. EBITDA Margin¹

Segment Characteristics

- Strong free cash flow generation with growth
- Leading positions in FCC and HPC catalysts
- High initial capital for world-scale plants, requiring strong technical and application expertise
- Focused on value creation for refiners
- Long-term, collaborative customer relationships

Fluid Cracking Catalysts (FCC)



FCC Catalysts

- Cracks oil feedstock into gasoline and chemicals
- Albemarle is a leader in the FCC market in 1) bottoms cracking; 2) olefins output; and 3) emerging markets

Clean Fuels Technology (CFT)








HPC (Hydroprocessing) Catalysts

- Removes sulfur and contaminants to produce clean diesel and clean oil-feedstock
- Albemarle is a leader in the HPC market in 1) middle distillates; 2) bio-based oil and hydro-cracker oil pretreatment; and 3) deep hydrotreating catalysis

High Margin and Strong Cash Flow Generator for Albemarle

What We Said in 2017 and How We're Doing

	WHAT WE SAID	WHAT WE DID	STATUS
GBU Revenue / Adj. EBITDA¹ Margin	<ul style="list-style-type: none"> • 5-year Revenue CAGR of 3%+ • Adj. EBITDA Margin 28% - 32% 	<ul style="list-style-type: none"> • 7%+ average annual Revenue growth • Lower-end of margin range 	 
Leadership Position	<ul style="list-style-type: none"> • Extend segment leadership position 	<ul style="list-style-type: none"> • Extended position in FCC max-olefin catalysts • Extended position in distillates 	
Presence in Growth Areas	<ul style="list-style-type: none"> • Expand footprint in Southeast Asia 	<ul style="list-style-type: none"> • Expanded position in FCC and maintained position in HPC • New sales offices in growth areas • New business at greenfield refineries 	
Innovation and Partnerships	<ul style="list-style-type: none"> • New products and partnerships 	<ul style="list-style-type: none"> • Improved FCC products including the Granite technology platform • New FCC products • New alliances with ExxonMobil, DuPont • Breakthrough HPC product Celestia 	

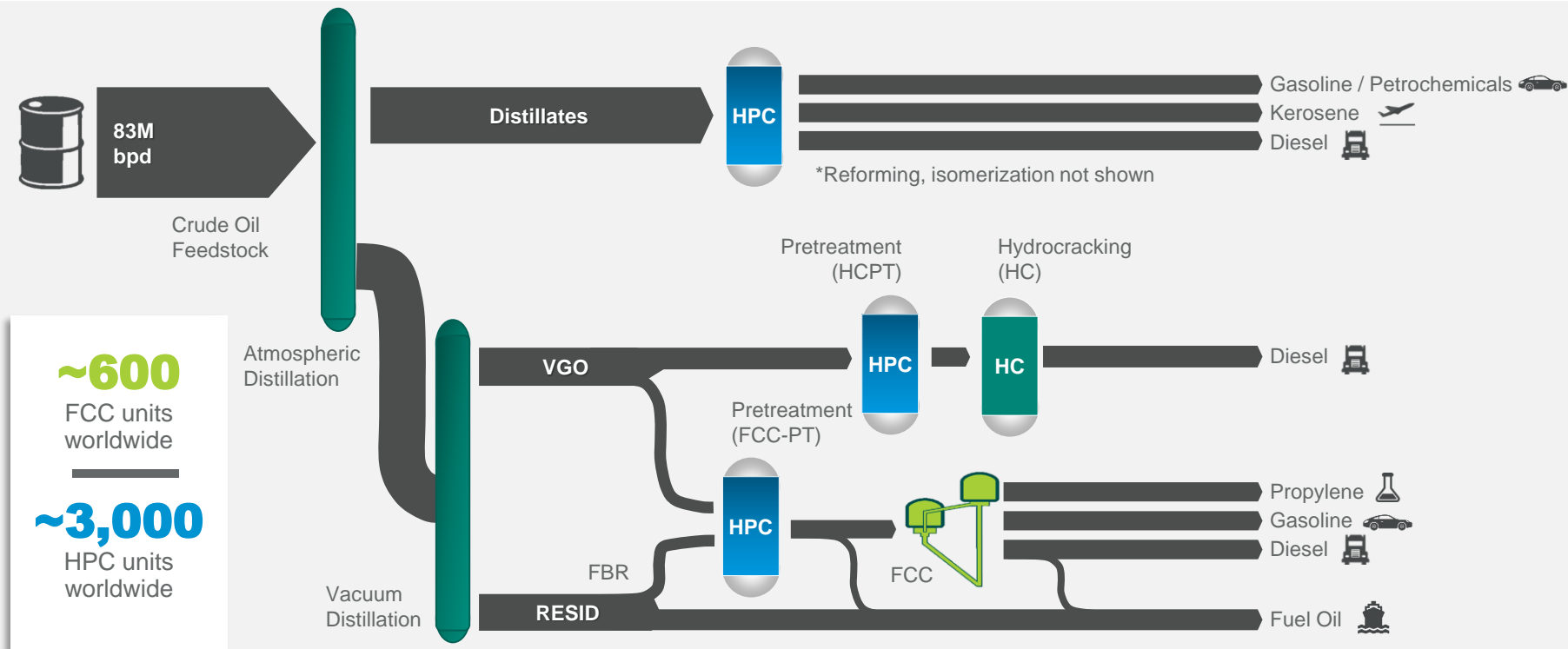
Strategically Positioned Network of Assets Enable Growth

- 2T miles driven per year on clean transportation fuels powered by our catalysts (equivalent to 80M times around the world)
- Two thirds of the 600+ worldwide refineries use our catalysts
- Strong global presence rooted by deep, global partnerships



We Extend Our Reach through JVs and Partnerships

Our Catalysts Are Used to Produce Clean Transportation Fuels and Chemicals, and Are Integral to Refinery Profitability

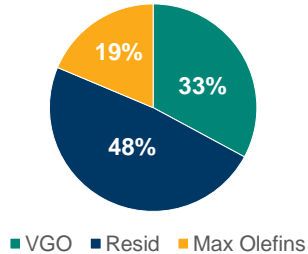


FCC and HPC Catalysts Are Indispensable for Refineries, and We Are a Leader in Both Segments

Deep Dive into Our Catalysts

Fluid Cracking Catalysts (FCC)

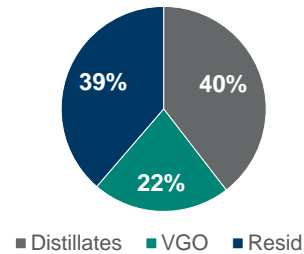
\$2.6B
FCC Market¹



- Mature business with moderate growth outlook
- FCC catalysts are continuously fed into FCC units; consistent and predictable due to multi-year contracts
- FCC catalysts create value for the refiner via higher gasoline or propylene yields
- Players differentiate on basis of catalyst performance and technical service

Hydroprocessing Catalysts (HPC)

\$2.1B
HPC Market¹



- Mature business with moderate growth outlook
- Customers exchange HPC catalysts on an event basis; catalyst lasts 1-7 years depending on the application; difficult to make sequential or YoY comparisons
- HPC catalysts creates value for the refiner by production of in-spec transportation fuels
- Players differentiate on basis of catalyst performance and technical service

Value Drivers for Our Customers

Gasoline Yield



Propylene Yield



Crude Costs



Emissions



Diesel Yield



Cycle Length



Crude Costs



Energy Costs



Macroeconomic Trends in Refineries, Fuels, and Consumerism Drive Growth for Albemarle Catalysts



Growing global car pool of more than 1 billion vehicles, particularly in emerging economies

● FCC ● HPC



Increasing refinery complexity as well as shifting crude slates, requiring enhanced analytics and services from suppliers

● FCC ● HPC



Environmental legislation leading to stricter fuel impurity standards

● HPC



Demand for durable plastics and petrochemicals grows at 1-2x GDP rate

● FCC

Examples of Strategy in Action

New Sales Centers in Vietnam, Thailand, Malaysia, and Indonesia; Nippon Ketjen JV (Japan, Korea, SE Asia); and Fábrica Carioca de Catalisadores JV (Brazil, S. America)

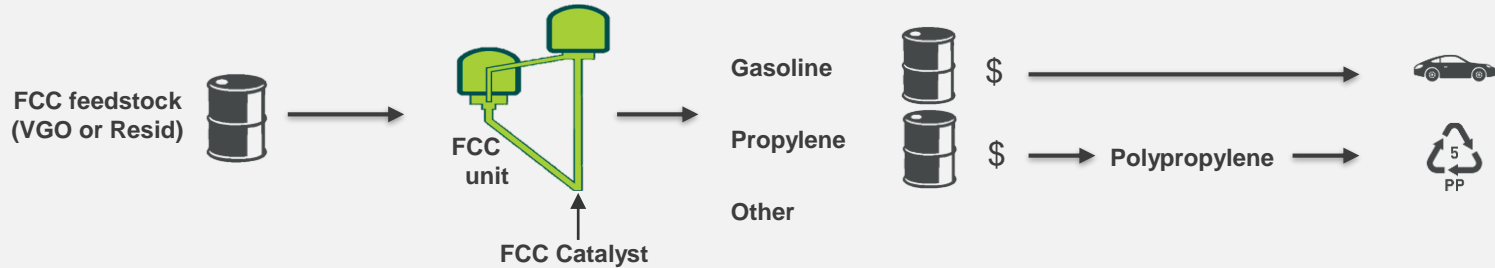
New FCC catalyst development based on customer input, focused on improved bottoms cracking, octane, and metals tolerance on a range of feedstocks

First adoptions of Celestia™, new deep hydrotreating catalyst, in 2019 / 2020, building on the success of technology partnership with ExxonMobil

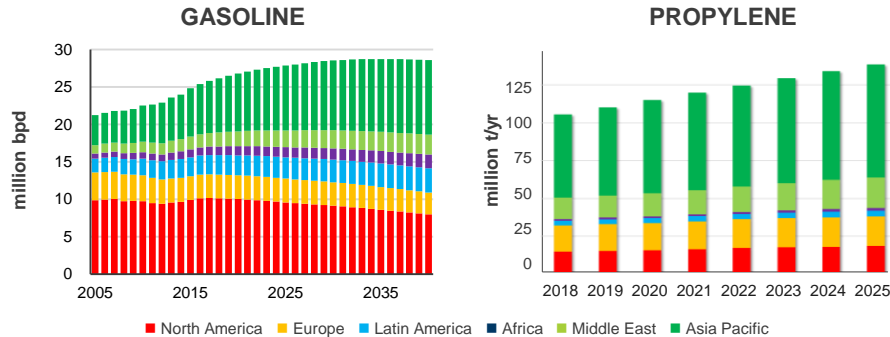
Partnership with licensors and new customers to deliver propylene yields 10% in the geographies with the fastest growing plastics demand

FCC Units Produce More Clean Gasoline and Olefins with Our Catalysts

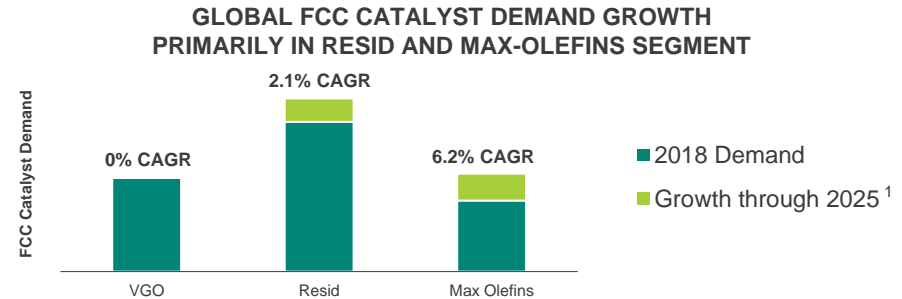
Our FCC Catalysts Create Value for Customers through Higher Product Yields and Lower Feedstock Costs



Gasoline Demand Flattens Off in 2030s Whereas Propylene Demand Keeps Growing



FCC Catalyst Demand Keeps Growing Low Single-Digit % Despite Peak Gasoline



Emerging Oil-to-Chemicals Refineries Use FCC-type Technologies for which Albemarle Leads in Innovation

Petrochemicals Demand & New Crude Oil to Chemicals Technologies Will Drive FCC Industry Growth Beyond “Peak Gasoline”

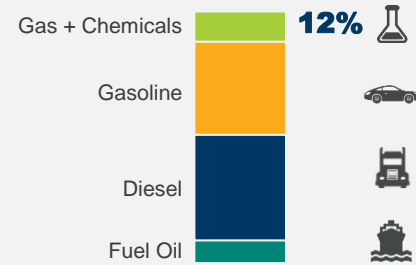


Traditional Oil Refinery



Existing

Traditional Refinery Product Slate

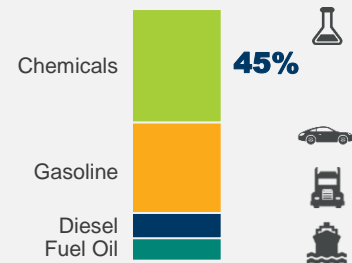


Crude Oil-to-Chemicals Refinery

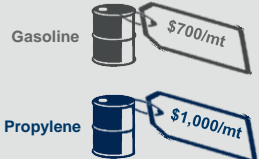


New / Future

Crude Oil-to-Chemicals Refinery product slate

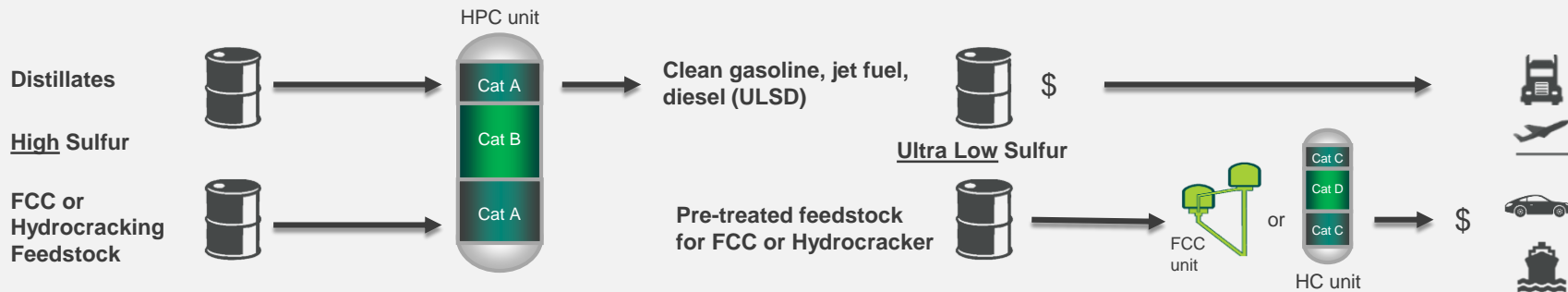


Chemicals Have More Value Than Fuels

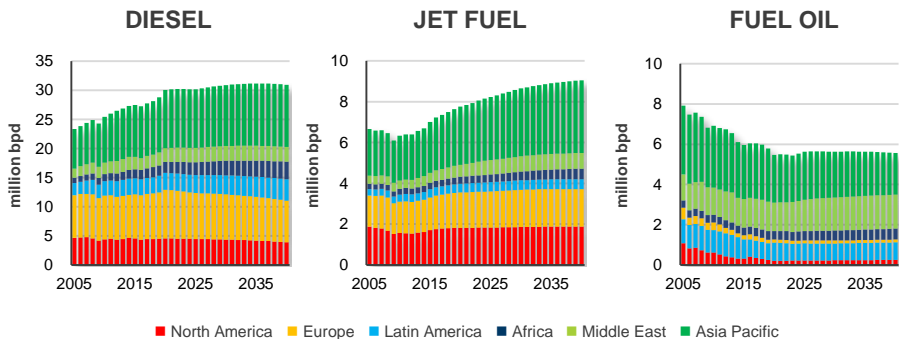


HPC Units Produce Cleaner Transportation Fuels with Our Catalysts, and the Demand for Low-sulfur Fuels in Emerging Markets is Increasing

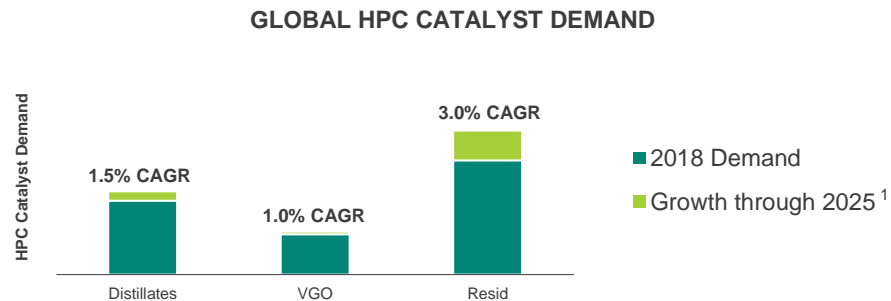
Our HPC Catalysts Create Value for Customers through Better Yields and Lower Cost in Use



Diesel, Jet Fuel, and Fuel Oil Demand



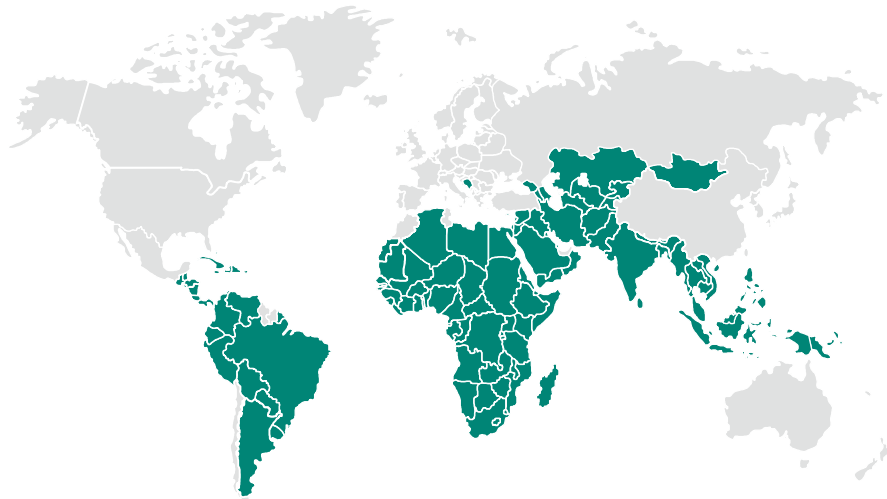
HPC Catalyst Demand Grows Low Single-Digit % Until 2025



Global Fuel Sulfur Standards Drive HPC Catalyst Demand, and We Are Well Positioned to Win in the Markets for Distillates

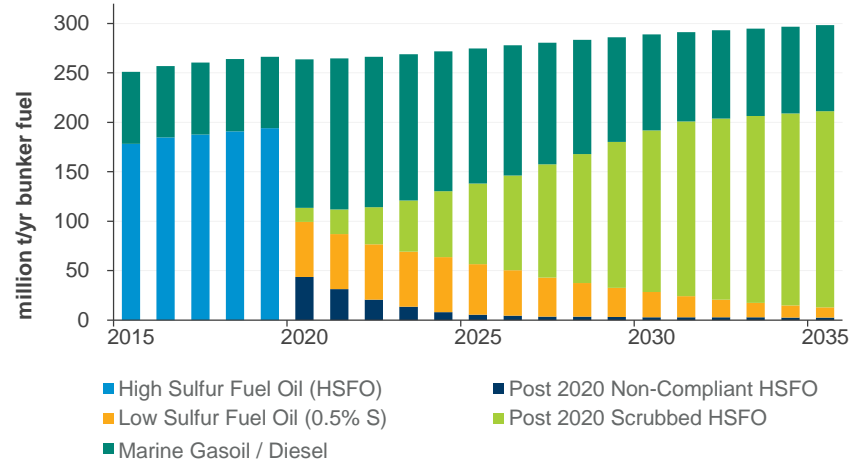
Global Proliferation of ULSD Standards Leads to Higher Distillate HPC Demand¹

Maximum Sulfur Limits in On-road Diesel: 10-15 ppm



■ Does Not Meet ULSD Specifications

Fuel Oil Standards [IMO 2020] Lead to Higher Resid and Distillate HPC Demand²



- ▶ Higher Demand for Marine Gasoil / Diesel post-2020
- ▶ Higher Demand for Desulfurized Bunker Fuel (LSFO)

Global Implementation of Sulfur Standards Drives Mid Single-Digit % Demand Growth in Next Few Years

Catalysts Strategy: Build Upon Technology and Geographic Strengths in Order to Expand Leadership in Growth Markets

Build on Our Strengths

Enhancing Customer Value Proposition

- Improving refinery margins through yield enhancement

Innovating Our Technology

- Strengthening advantages in FCC Max-Olefins and bulk-metal HPC catalysts

Solidifying Western Baseload

- Ensuring high utilization of assets that leverage economies of scale

Expanding Partnerships

- Example: Expanding ExxonMobil partnership for specialty hydrotreating catalysts

Presence in Growth Markets

Expanding Presence in Growth Areas, such as Chemicals and Southeast Asia

- Building in-country, direct selling organization as well as local production and marketing JVs

Strategic Cooperation with Licensors and Oil Companies

- Focusing on chemicals (olefins) output and deep hydrotreating

Local Applications Expertise

- Leveraging in-country, often on-site, technical expertise for customer collaboration to drive value

Best-in-Class Operations

Talent

- Developing and retaining the industry-leading technical sales and support team

Value Selling

- Utilizing advanced refinery modeling coupled with Challenger Sales Process

Targeted Innovation

- Managing R&D portfolio according to disciplined process and using New Product Blueprinting

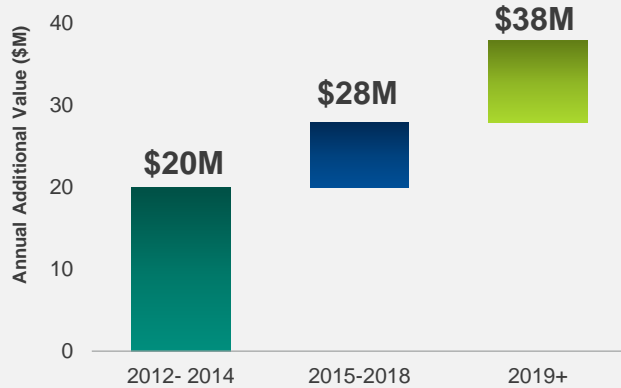
Productivity and Asset Management

- Advancing business-wide capacity and flexibility programs

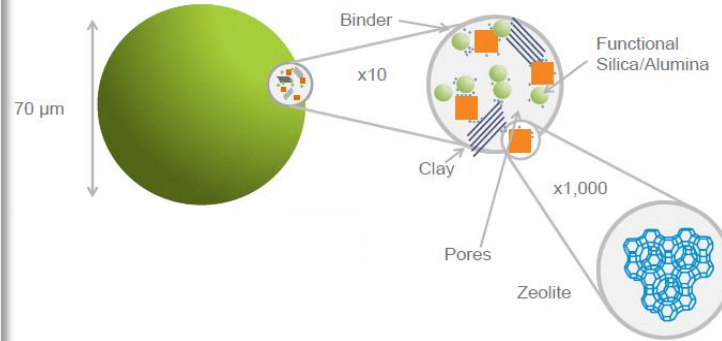
Case Study: Creating Long-term Value for Customers through Collaboration and Continuous Innovation



Additional Value Created by Improved Catalyst Performance at Asian Customer



- Each formulation change in collaboration with the customer resulted in valuable yield improvements for customer
- Enabled by our refinery modeling, technical service, and customer relationships



2011
Initial formulation

2012 - 2014
Formulation adjustments to provide higher propylene yield

2015 - 2018
New FCC Product Reformulations to improve selectivity
Introduction of new additive

2019+
Customer extends contract because of continuous innovation

FCC Catalysts Are Highly Engineered, Customized Products that Drive Differentiation

Alliance with Industry Leaders to Develop Unique, Market-leading Products

ExxonMobil

ALBEMARLE®



Typical Example of Industry Alliance with Albemarle

- Catalyst innovation for 'deep hydrotreating' through Albemarle / ExxonMobil alliance
- Scale-up by Albemarle
- Commercial introduction at ExxonMobil refineries
- Subsequent marketing by Albemarle in other refineries
- Delivering unique performance with unprecedented value generation for customer

Alliance with ExxonMobil Has Delivered Unprecedented Product Innovation in the HPC Industry

ALBEMARLE®



Low-cost Operational Excellence in Albemarle Catalysts Enables Quality Margins



Commercial

- ✓ Best-in-industry technical sales
- ✓ Refinery modeling and value capture
- ✓ Extensive global reach



Supply Chain

- ✓ Continuous improvement model
- ✓ Strategy sourcing expertise
- ✓ Targeted investment for growth and cost improvements



Financial

- ✓ Organizational focus on FCF metrics
- ✓ Strict capital deployment prioritization
- ✓ Disciplined R&D investment

Examples



- Transitioned to direct sales channels in emerging geographies
- Development of proprietary refinery performance databases and models

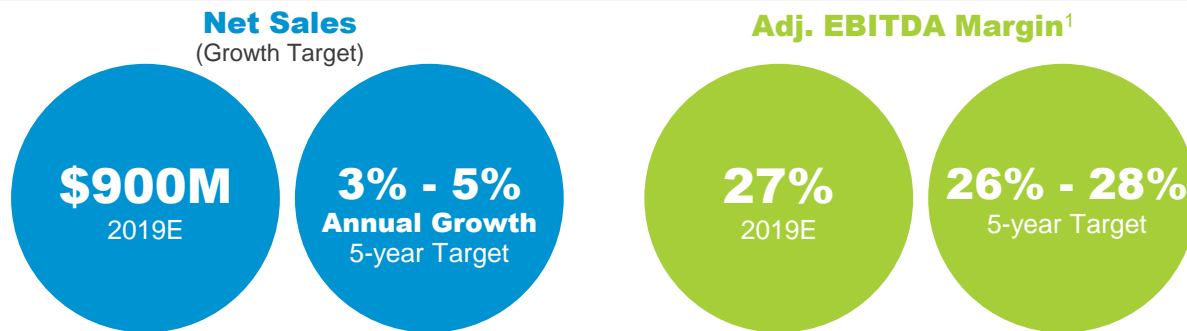
- Bayport manufacturing increased FCC output YoY by 12% in 2018
- Risk management plan executed to address Chinese rare earth supply
- ZSM-5 zeolite crystal and additive expansion

- Albemarle Portfolio Process (APP) prioritizes all capital investments according to growth, risk, and horizon
- Leveraging new enterprise platform to optimize working capital levels

Continuing to Raise the Bar in Operating Discipline and Performance

Continued Growth in Strong Markets for Catalysts

	FCC	HPC
5-YEAR OUTLOOK		
BUSINESS ENVIRONMENT	<ul style="list-style-type: none"> Increasing mobility in non-OECD countries drives gasoline demand Global FCC-sourced propylene demand growth in emerging markets Fuel efficiency standards driving additional needs for higher octane gasoline 	<ul style="list-style-type: none"> Increasing transportation fuels demand in developing areas as well as tightening sulfur regulations around the world Implementation of stronger environmental standards



MARKET ASSUMPTIONS	Continued adoption of lower sulfur fuel standards globally	Shift toward higher chemicals output from refineries	No significant changes catalyst production capacities	Rare earth, energy, and metals pricing stability
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Key Takeaways

01

Our Catalysts business upgrades oils into clean transportation fuels and high-value chemicals via **differentiated services, technologies, and partnerships**

02

Well positioned to benefit from **continued growth in demand for transportation fuels and chemicals**, enhanced by tightening fuel specifications and growing prosperity in developing geographies

03

Core strengths and solid strategy to leverage growth opportunities and to **continue to profitably generate attractive free cash flow**

The background is a composite image. The top portion shows a night cityscape with blurred light trails in shades of blue and cyan, suggesting a long-exposure shot of a city street. The bottom portion shows a road at night with white lane markings and light trails in orange, yellow, and blue, indicating motion. The overall color palette is dominated by blues, greens, and oranges.

Q&A



Break



Eric Norris

President

Lithium

GBU Overview

What You'll Hear Today...

01

Broadest range of resources, manufacturing capabilities, products, and customer relationships in the lithium industry

02

Global lithium industry demand is on track to reach 1 million MT LCE by 2025, a 20%+ CAGR driven by EV penetration of new car sales

03

We anticipate that the current excess supply will diminish in the mid-term as demand increases, particularly for hydroxide

04

Projected growth in lithium demand cannot be met without leveraging the largest and most highly concentrated resources in the world, and we have access to the Top 3

05

Strategy focused on driving low-cost operations and disciplined capital expansion that will provide strong returns throughout the cycle

Lithium Snapshot

Financials | TTM Q3 2019

\$1.3B

Net Sales

\$529M

Adj. EBITDA¹

41%

Adj. EBITDA Margin¹

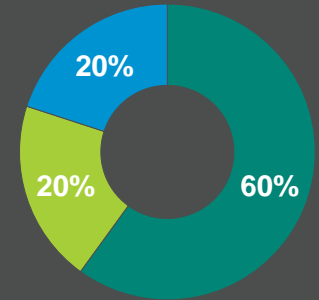
Segment Characteristics

- Leading market positions in Hydroxide, Carbonate, Lithium Metal, and Organometallics
- Mining and specialty chemicals capability
- Vertically integrated from natural resource to specialty performance products
- High-quality product portfolio / low-cost position

Business Environment

- Volume growth driven by energy storage
- Highly dynamic, emerging supply chain
- Public policy accelerating e-mobility / renewables
- Battery cost declining + performance improving = need for higher-quality lithium and innovation
- Security of supply essential to underwrite global auto OEM investment in vehicle electrification

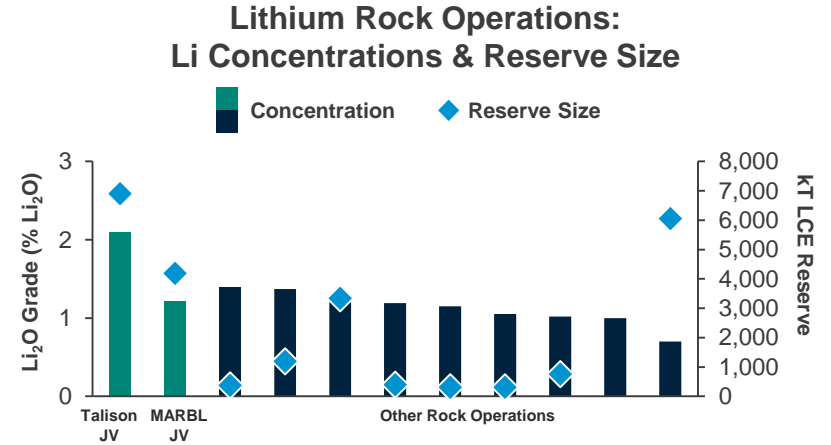
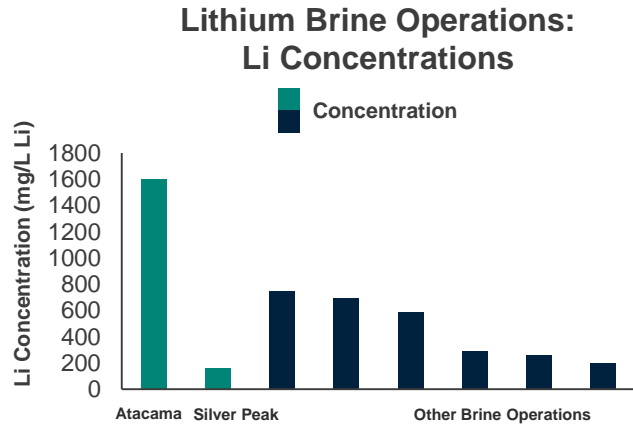
Applications



- Energy Storage**
EVs, Grid, Phones, Wearables
- Industrial**
Glass, Grease, Aerospace
- Specialties**
Synthetic Rubber, Pharma, Ag

Well Positioned to Remain a Market Leader as Growth Continues

Albemarle has Access to the World's Most Highly Concentrated Resources

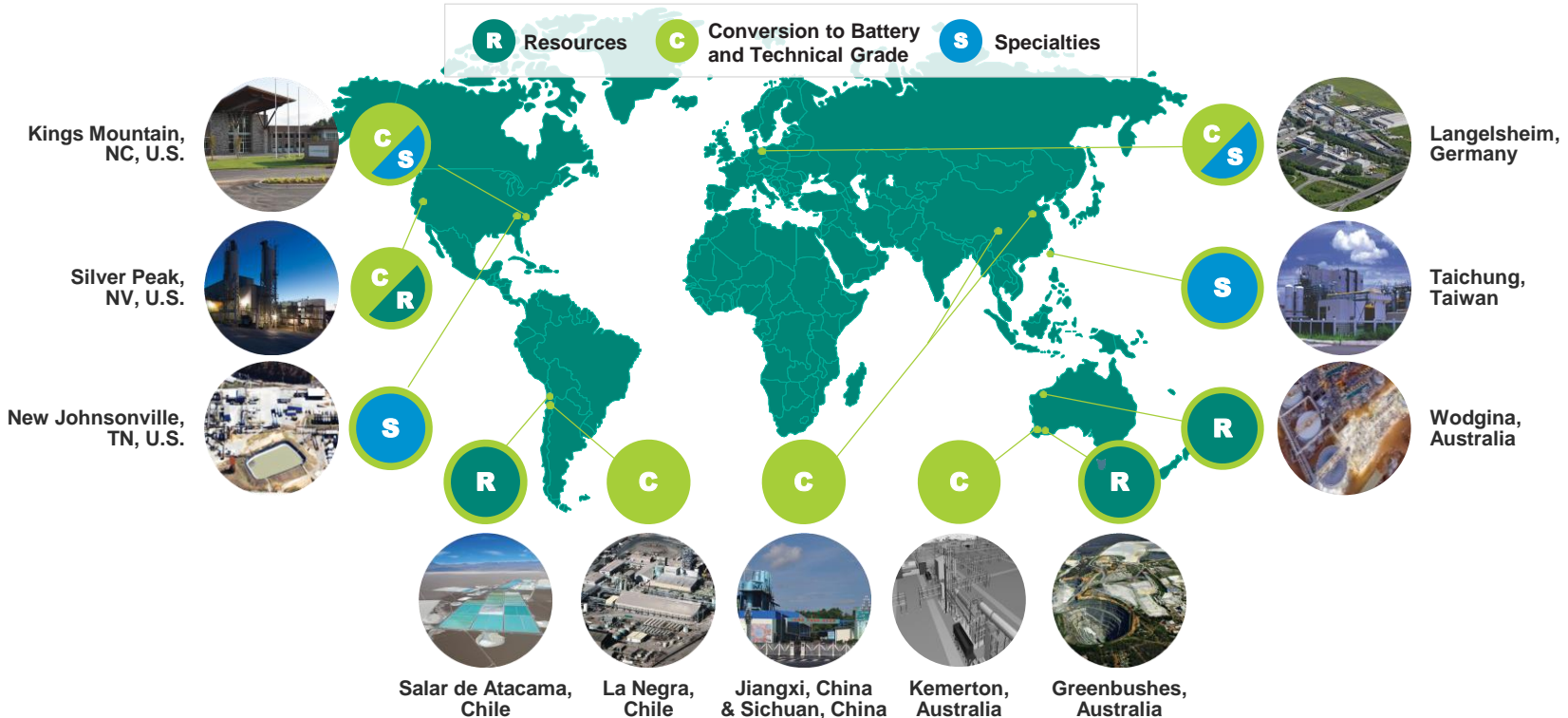


Albemarle Resources Benefit from Numerous Other Factors that Drive Low-cost Operations

- ✓ Chemical composition
- ✓ Hydrogeology
- ✓ Climate
- ✓ Utility requirements
- ✓ Environmental / regulatory
- ✓ Social responsibility
- ✓ Mine scale
- ✓ Reserve size
- ✓ Infrastructure

The Largest, Lowest-cost, and Most Diversified Base to Support Our Customers' Growth

Integrated Global Footprint for Lithium Chemical Conversion



Enables Production of 100+ Products for the Varied Needs of Our Global Customer Base

Lithium Powers the Potential of Customers Across Multiple Markets

~650 Customers within Multiple End Markets in 60 Countries



AUTOMOTIVE

EV / HEV /
PHEV
Batteries



ENERGY EFFICIENCY

Power Grid
Solar Panels



ELECTRONICS

Phones / Pads
PCs
Power tools



SPECIALTY GLASS

Cooktop Stoves
Advanced Glass
Electronic Device
Covers



GREASE

Machinery



HEALTH

Vitamins
Zeolites
X-ray Imaging



AUTOMOTIVE

Tires
Air Bags



PHARMA

HIV
Hypertension
Mood Disorder



AGRICULTURE

Fungicides
Herbicides

Energy Storage

CAGR through 2025 of ~30%

Battery Grade Hydroxide
Battery Grade Carbonate
Battery Grade Metal

Industrial

GDP Growth





Technical Grade Hydroxide
Technical Grade Carbonate
Technical Grade Spodumene
Specialty Lithium Salts

Specialties Grade

GDP+ Growth

Butyllithium
Cesium Products
Organometallics
Lithium Carbonate Pharma Grade

What We Said in 2017 and How We're Doing

	WHAT WE SAID	WHAT WE DID	STATUS
GBU Revenue Growth and Adj. EBITDA¹ Margins	<ul style="list-style-type: none"> • Double-digit growth and EBITDA margins of 38% - 44% 	<ul style="list-style-type: none"> • +24% average annual EBITDA growth with above 40% margins 	
Market Leading Position	<ul style="list-style-type: none"> • 165 kT LCE in annual capacity 	<ul style="list-style-type: none"> • Lithium Carbonate: La Negra I / II production rate increased from 24 to 44 kT LCE per year; La Negra III / IV (40 kT LCE) on track to commission by 2021 • Lithium Hydroxide: Expanded China conversion capacity from 15 to 35 kT LCE per year; commenced construction of 50 kT LCE per year hydroxide plant at Kemerton 	
Best-in-Class Resources	<ul style="list-style-type: none"> • Increase access to world-class resources 	<ul style="list-style-type: none"> • Greenbushes spodumene capacity increased from 80 to 160 kT LCE, ability to expand to 240 kT LCE per year - ALB has rights to 50% of that output • MARBL JV, Wodgina spodumene resource to support 100 kT LCE per year 	
Low-Cost Operational Excellence	<ul style="list-style-type: none"> • Large-scale project execution • Low-cost manufacturing practices 	<ul style="list-style-type: none"> • Implemented industry-standard stage gate capital deployment process • Launched lean manufacturing at La Negra in 2019 to reduce operating costs and improve reliability 	

Key Changes to Our View of the Market Since 2017

2025 Demand Outlook

Stronger than we earlier projected¹

Supply

Industry projects have cost more than projected; Australian spodumene mines started up more quickly, and China conversion capacity using Australian spodumene as a feedstock came to market faster and have met specifications sooner than projected

Customers

Customer base is shifting from cathode producers to battery manufacturers and auto OEMs

Price Cycle

Auto OEMs are pressing for more visibility on a price that fluctuates with the market, insisting that battery producers pass through material costs vs. engaging in fixed long-term contract pricing with lithium suppliers

Emphasis on Operational Excellence and Capital Efficiency



Dr. Glen Merfeld

GBU CTO

Lithium

Technology and Growth

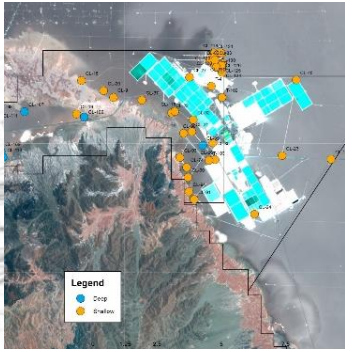


Technology Innovation: Spanning from Minerals to Market

Resources

Hydrogeology

Protect Environment & Sustain Resource



Conversion

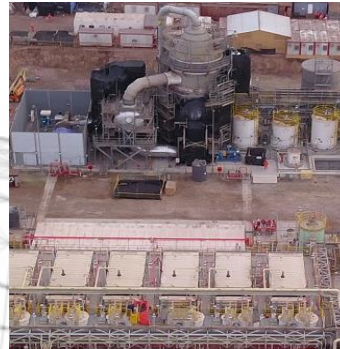


Extraction

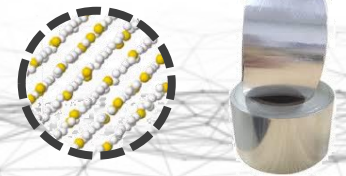
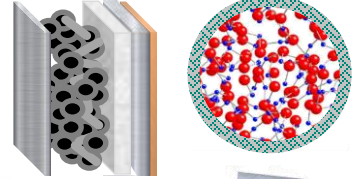
Maximize Lithium Recovery & Purity

Process Chemistry

Optimize Utilization & Tailor Product Quality



Derivatization



Advanced Materials

Create Customer Solutions & Performance Differentiation

Data Science

Link Technical Potential to Economic Impact

Extending Our Technology Differentiation

Creating Differentiation through Data Science

Proprietary models built on internal intelligence and external, third-party data

KEY OUTPUTS

Materials-to-Market
Mass Balance

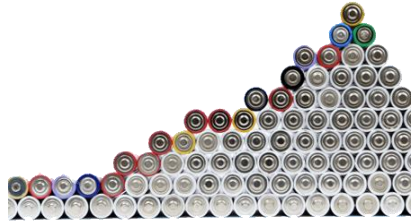
Emerging Trends

Customer Value
Models

Stress Testing &
Scenario Planning

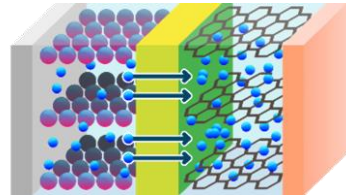
DEMAND

- OEM projections
- Consumer trends
- Model pipeline



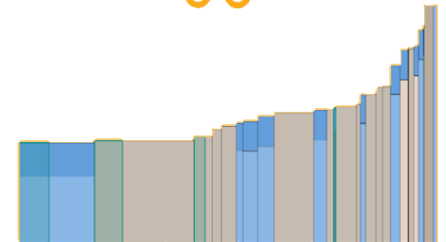
TECHNOLOGY

- What products
- When and how much
- What if...



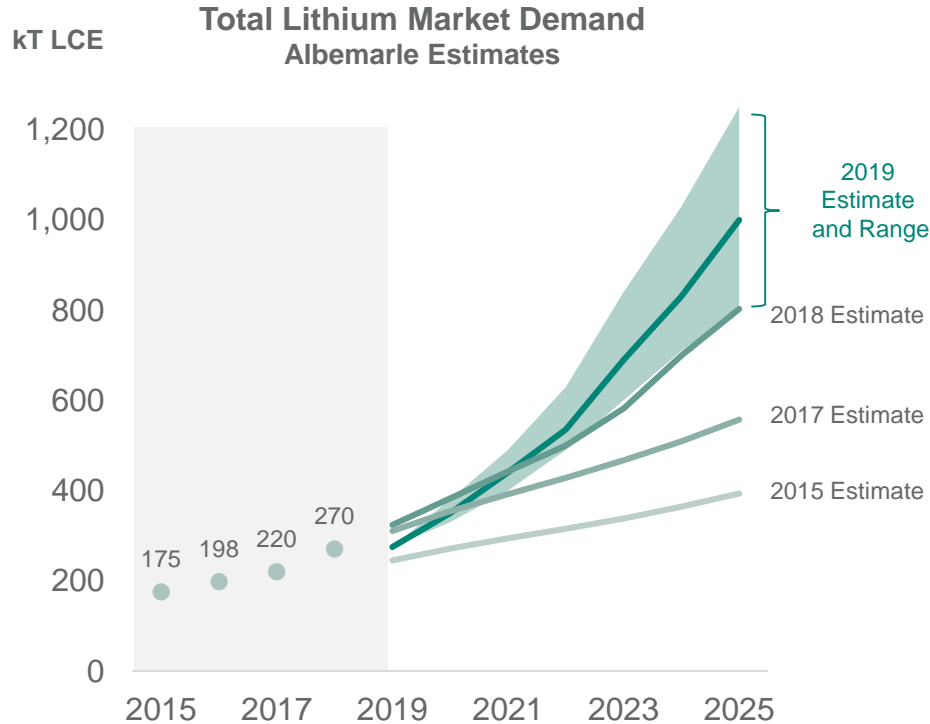
SUPPLY

- Expansive global database
- Resource type and quality
- Investment cost and time



Deep Science and Statistics to Anticipate Trends and Position to Win

Energy Storage Continues to Drive Lithium Demand

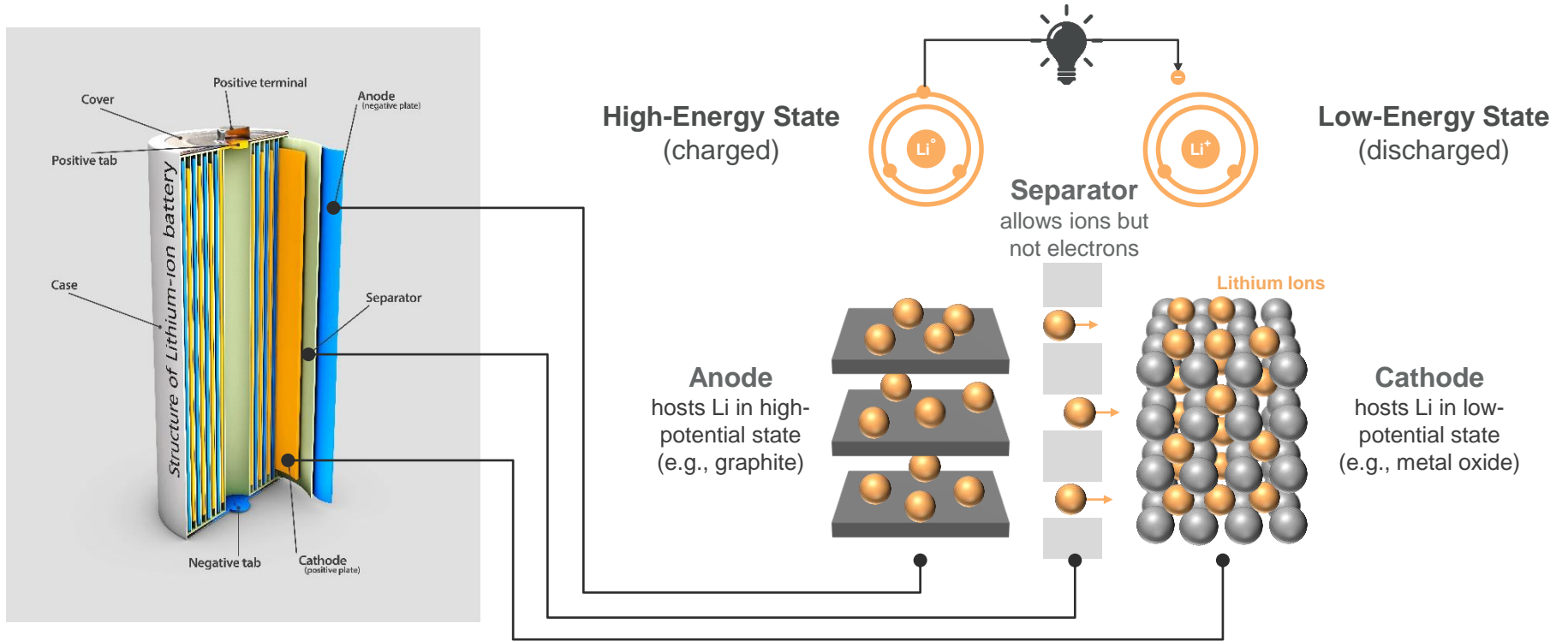


Lithium Intensity of Energy Storage Demand: 0.95, 0.76, and 0.78 kg LCE/kWh in 2018, 2019, and 2025, respectively; calculated from demand model output of total lithium demand (total real consumption and YOY inventory change), which accounts for lithium consumption of different technologies and applications
 New Car Sales: 95, 89, and 102 million in 2018, 2019, and 2025, respectively

Demand by Application (kT LCE)	2018 Estimate	2019 Estimate	'19 – '25 CAGR	2025 Forecast
Electric Vehicles	59	93	38%	650
Other Mobility	25	26	7%	40
Consumer Electronics	36	38	11%	70
Grid Storage	6	9	37%	60
All Other/Industrial	114	119	3%	140
Total Real Consumption	240	285	22%	960
YOY Inventory Change	+30	-10		+40
Total Lithium Demand	270	275	24%	1,000

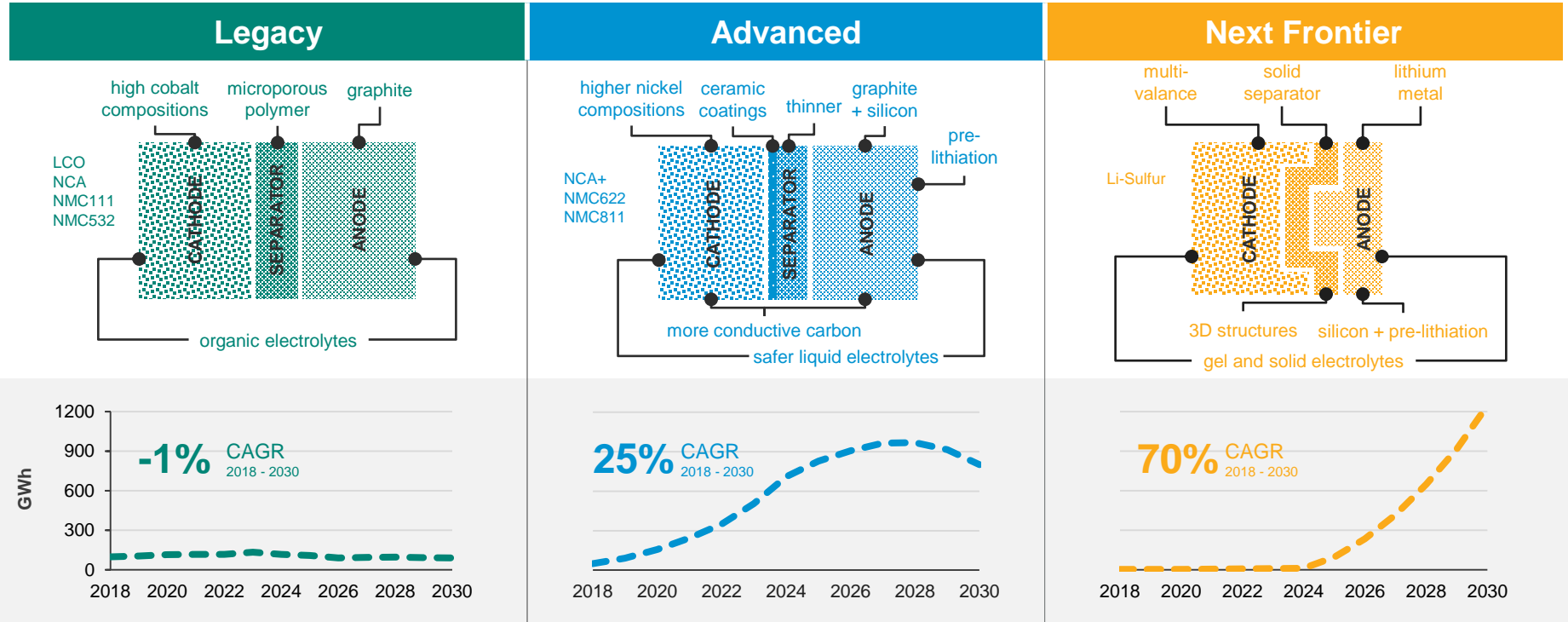
EV Consumption Buildup	2018 Estimate	2019 Estimate	2025 Forecast
EV Penetration			
PHEV	0.5%	0.9%	6%
BEV	1.5%	2.3%	12%
All EVs	2.0%	3.2%	18%
Battery Size			
kWh per EV			
PHEV	12	12	14
BEV	44	53	65
Average	32	41	48
Lithium Consumption			
kT LCE			
PHEV	5	8	65
BEV	54	85	585
Total	59	93	650

Lithium-ion Battery - Reversible Storage of Electrical Energy



The Lithium Atom - Core Enabler Across All Lithium Battery Types

Lithium Battery Technology Progression - Safer, Higher Energy, Faster Charge

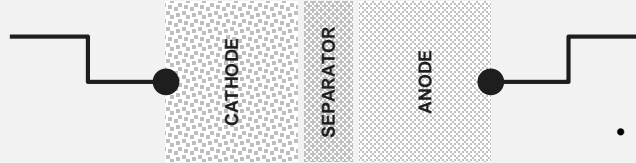


Higher Performance Materials Helping Drive Market Expansion

Albemarle Innovation on Both Sides of the Battery

Cathode Advancements

- Increased quality and purity
- Tuned particle size and morphology
- Tailored electrolyte additives



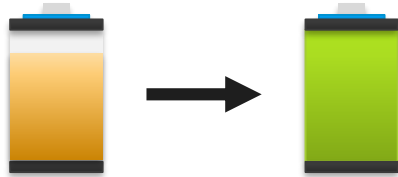
Anode Advancements

- Novel pre-lithiation chemistry
- New precursors for solid separators
- Revolutionary lithium metal anodes

Advanced: Pre-Lithiation Agents

Under Utilization of Cathode

Full Cathode Utilization



+10-20%

Energy Density Wh/kg

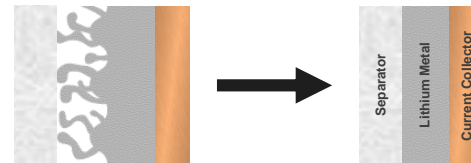
5-10%

Cost Savings \$/kWh

Next Frontier: Lithium Metal Anodes

Metal Dendrites Upon Cycling

Cycling Stable Interfaces



+100%

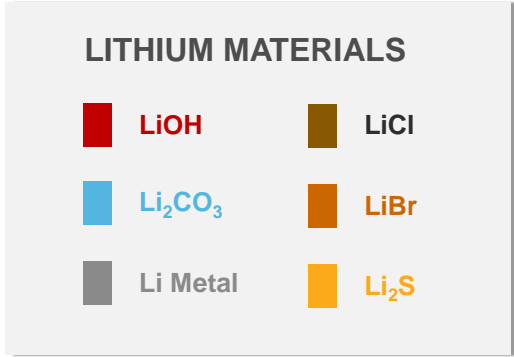
Energy Density Wh/kg

50%

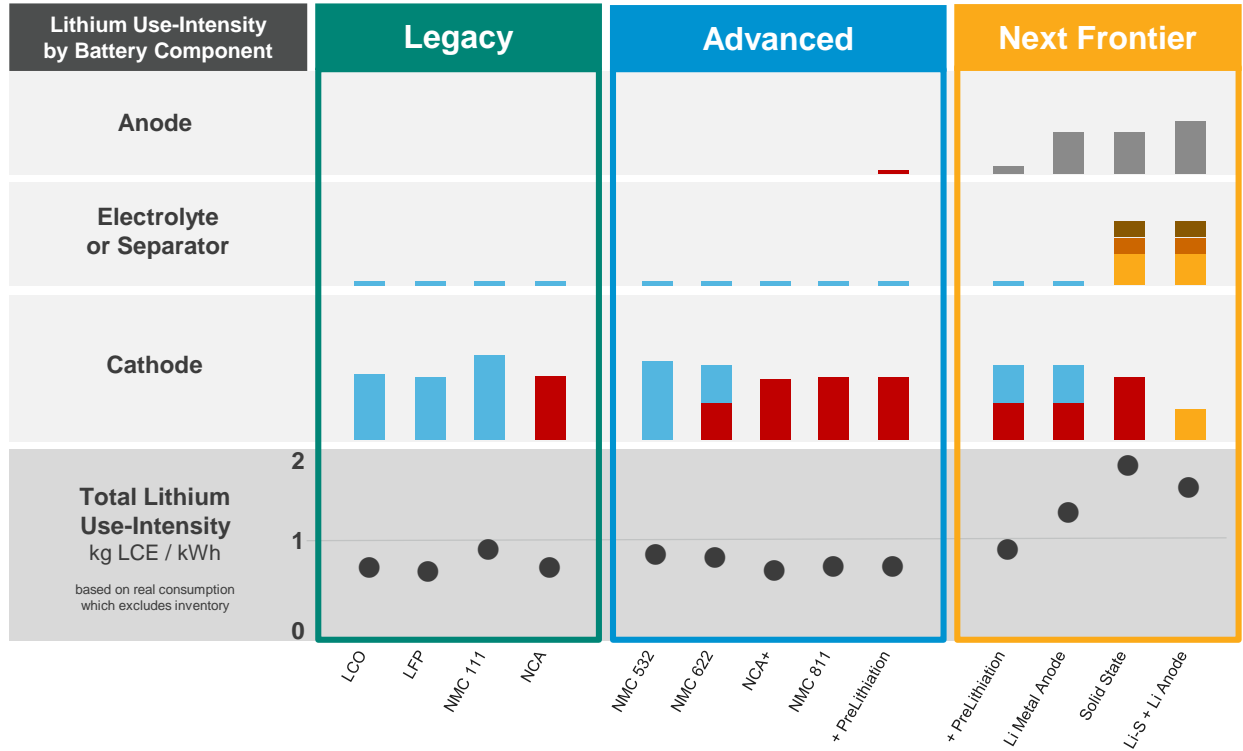
Cost Savings \$/kWh

Albemarle Technology Enabling New Levels of Performance

Lithium Use Evolves with Battery Technology Progression



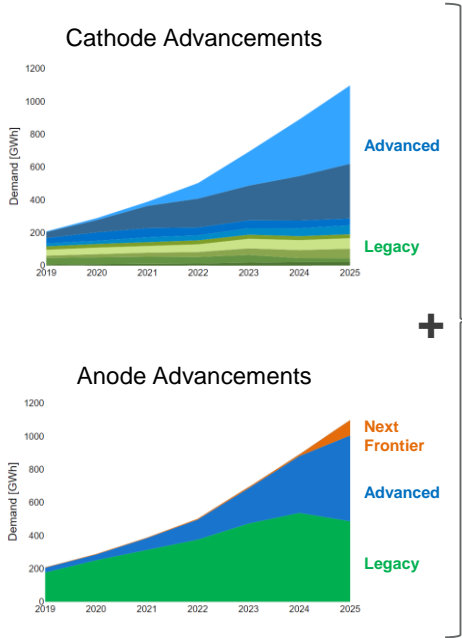
First principle chemical models used to estimate lithium use by battery cell component and by technology (today and future)



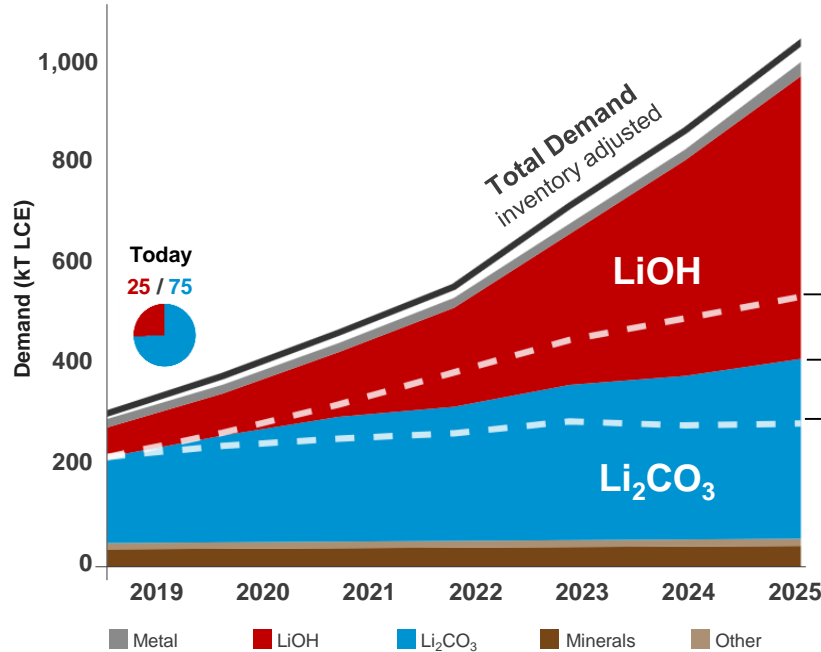
Lithium Material Innovation Underpinning Advancements in Battery Performance

Lithium Product Demand Mapped to Technology Forecast

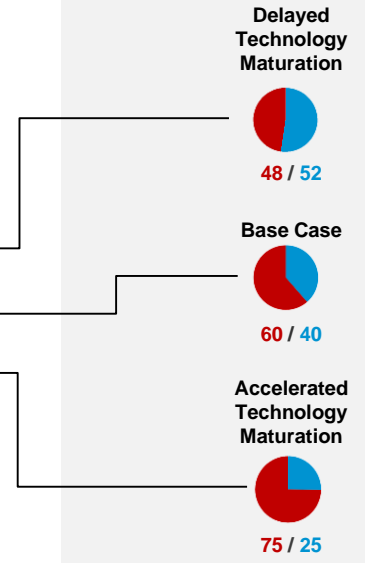
Technology Forecast



Product Forecast



Technology Scenarios cathode & anode advancements



Source Data: IHS, Roskill, B3, Avicenne, BNEF, BMI, Albemarle analysis.

Albemarle Sees Product Mix Shift to Hydroxide – Requires Carbonate & Hydroxide Production Flexibility



Eric Norris

President

Lithium

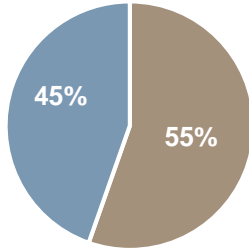
Supply, Price and Strategy

Lithium Supply Expected to Grow 3x from 2019 to 2025

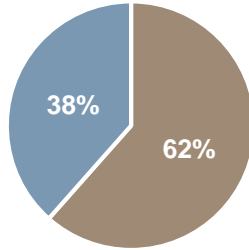
BY RESOURCE ORIGIN

KT LCE	2019E	2025F
Total Brine	145	400
Total Rock ^{1,2}	180	640
Total Supply	325	1,040

2019



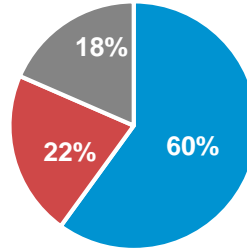
2025



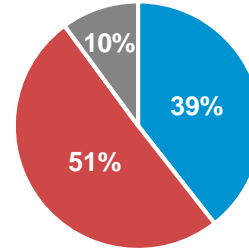
BY PRODUCT

KT LCE	2019E	2025F
Carbonate	195	410
Hydroxide	70	525
Specialties ²	60	105
Total Supply	325	1,040

2019

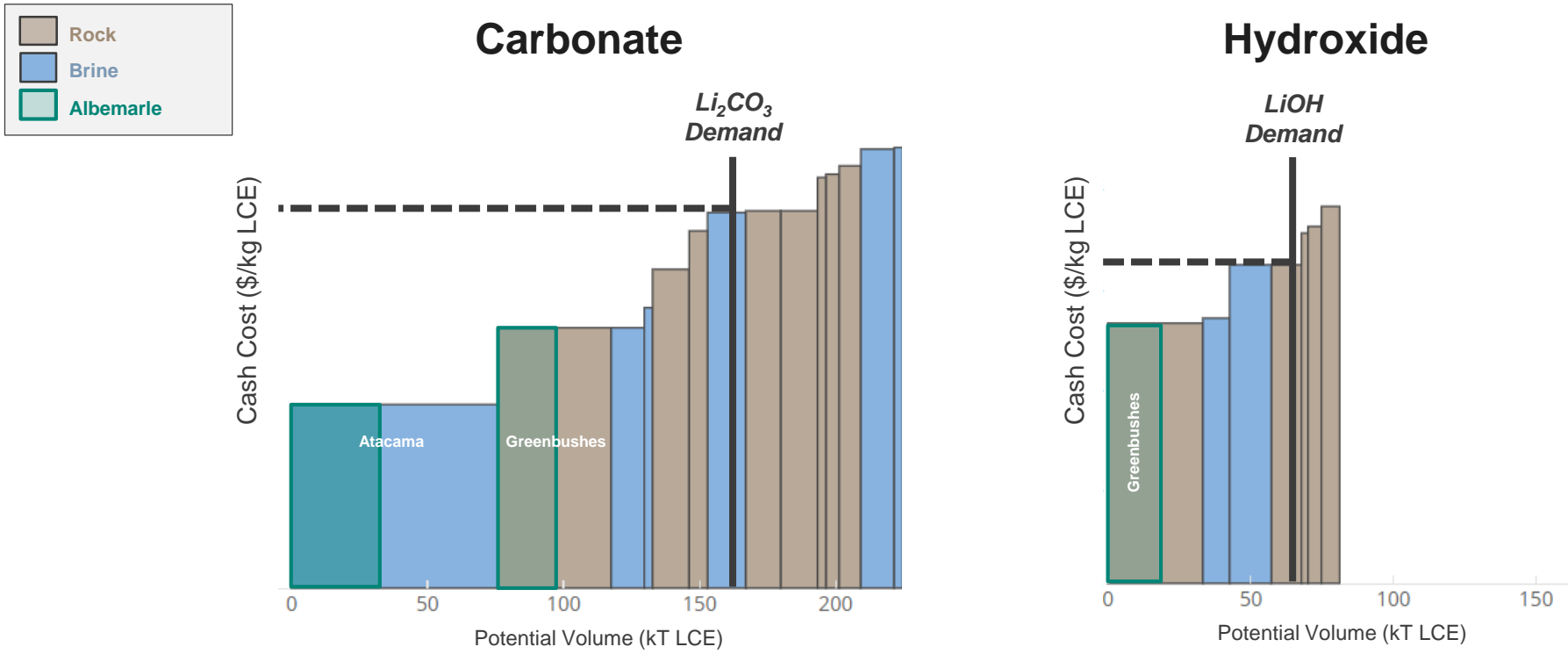


2025



Comprehensive Approach to Modeling Supply

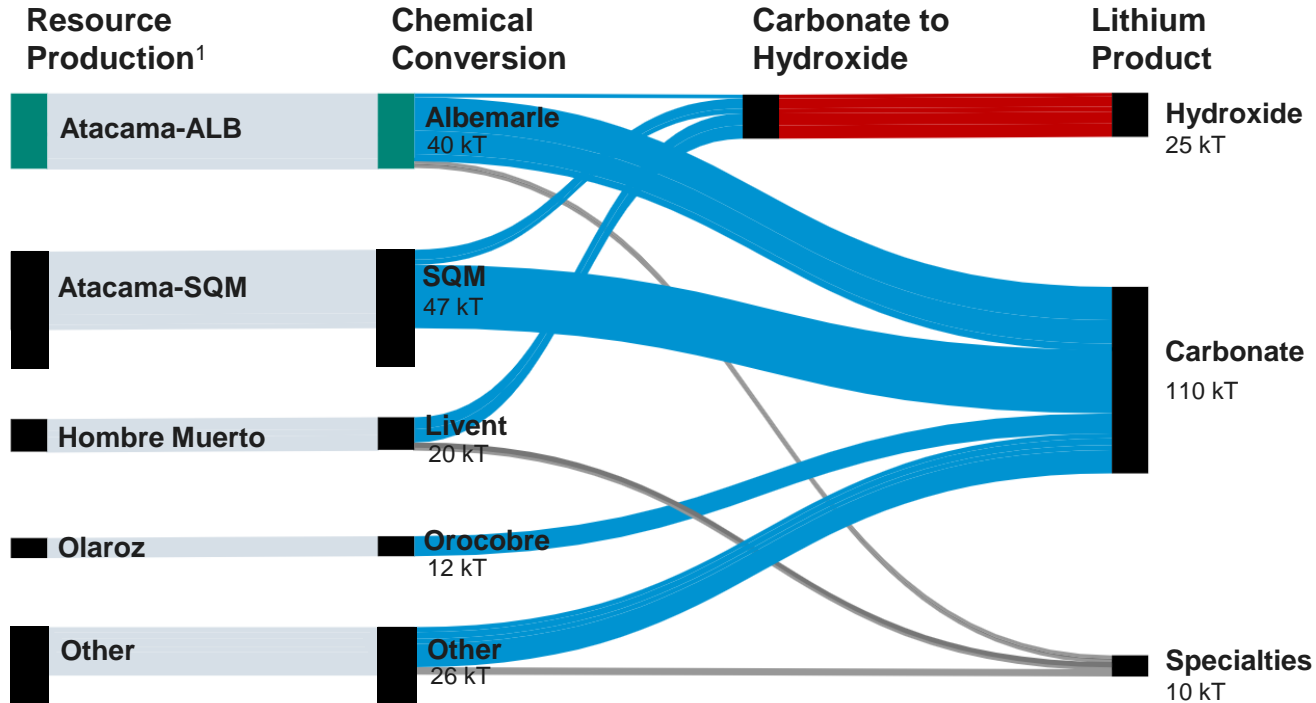
In 2019, Lithium Supply Capacity Grew Faster than Demand



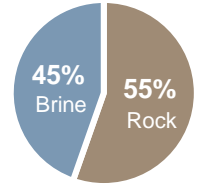
Albemarle Well Positioned in Over-Supplied Market Given Low-cost Position

2019 Brine Supply Chain: 45% of Projected LCEs and Largely Carbonate

*LCE Basis

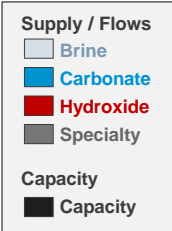


2019E Total Production of 325 kT LCE



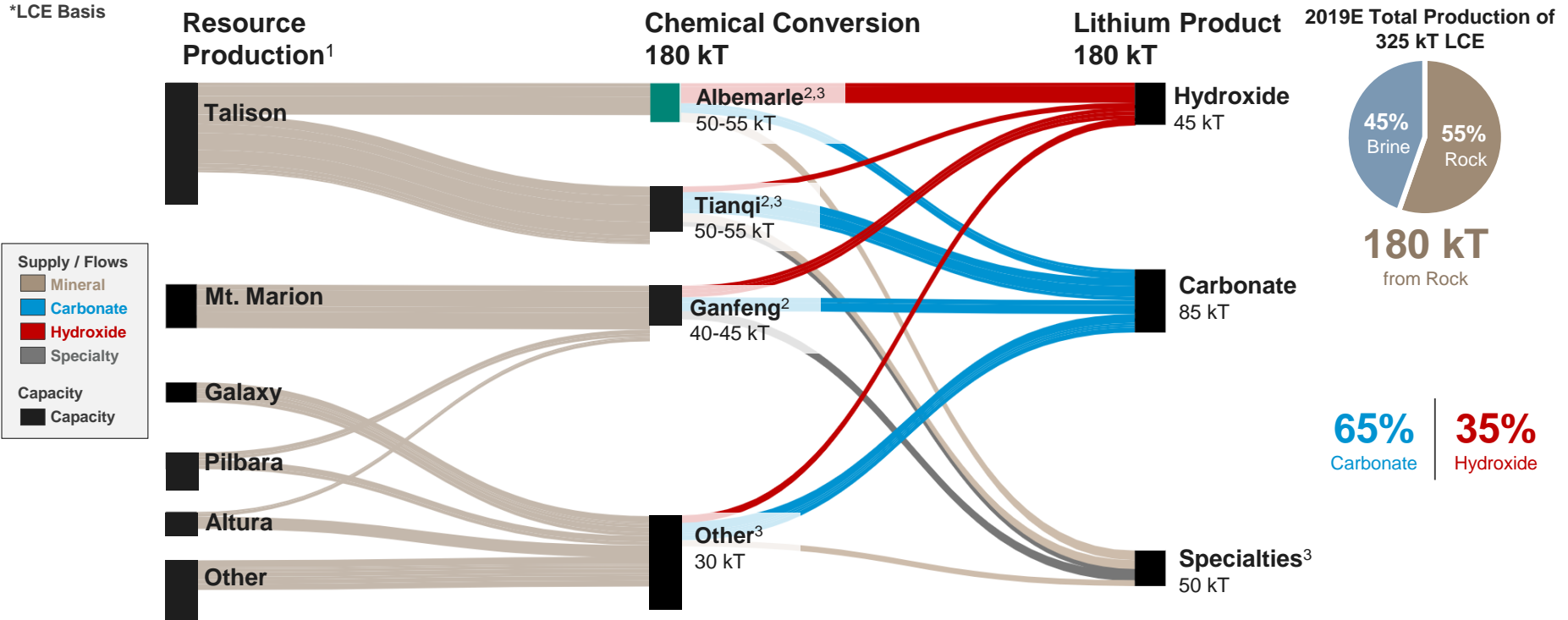
145 kT from Brine

80% Carbonate | 20% Hydroxide



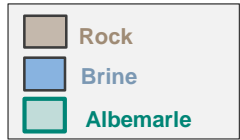
Efficient Carbonate Production - Hydroxide Requires Secondary Conversion

2019 Rock Supply Chain: 55% of Projected LCEs and Lower Total Utilization



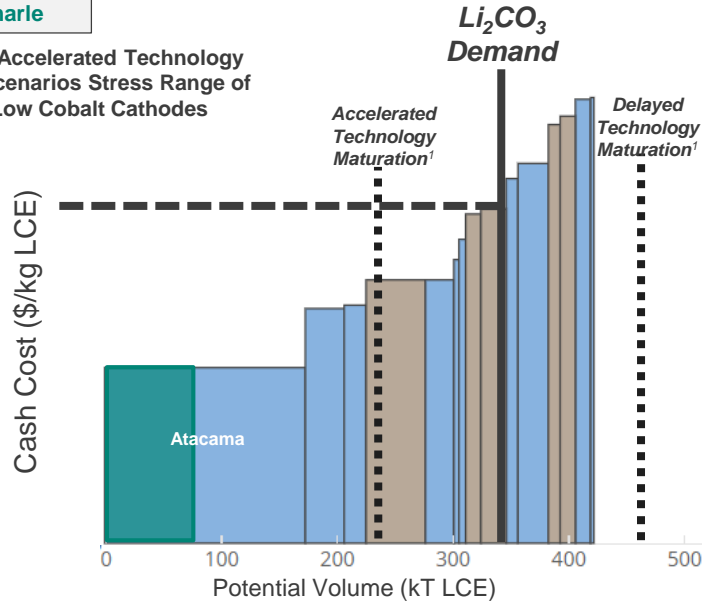
Higher-cost, Lower-quality Resources and Converters at ~50% Utilization - Some Now Idling

By 2025, Market Tightens to Undersupplied

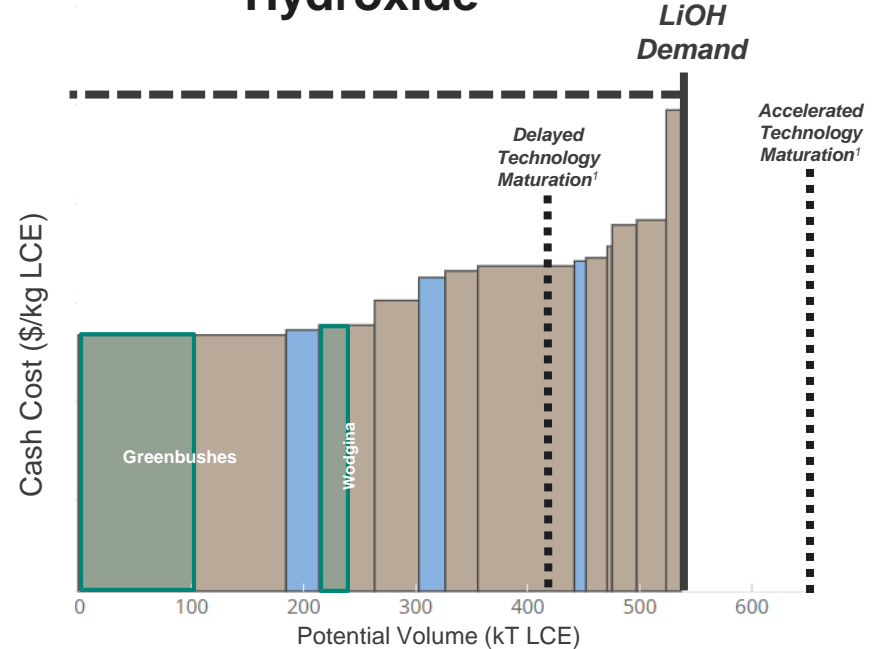


Delayed and Accelerated Technology Maturation Scenarios Stress Range of Adoption of Low Cobalt Cathodes using LiOH

Carbonate



Hydroxide

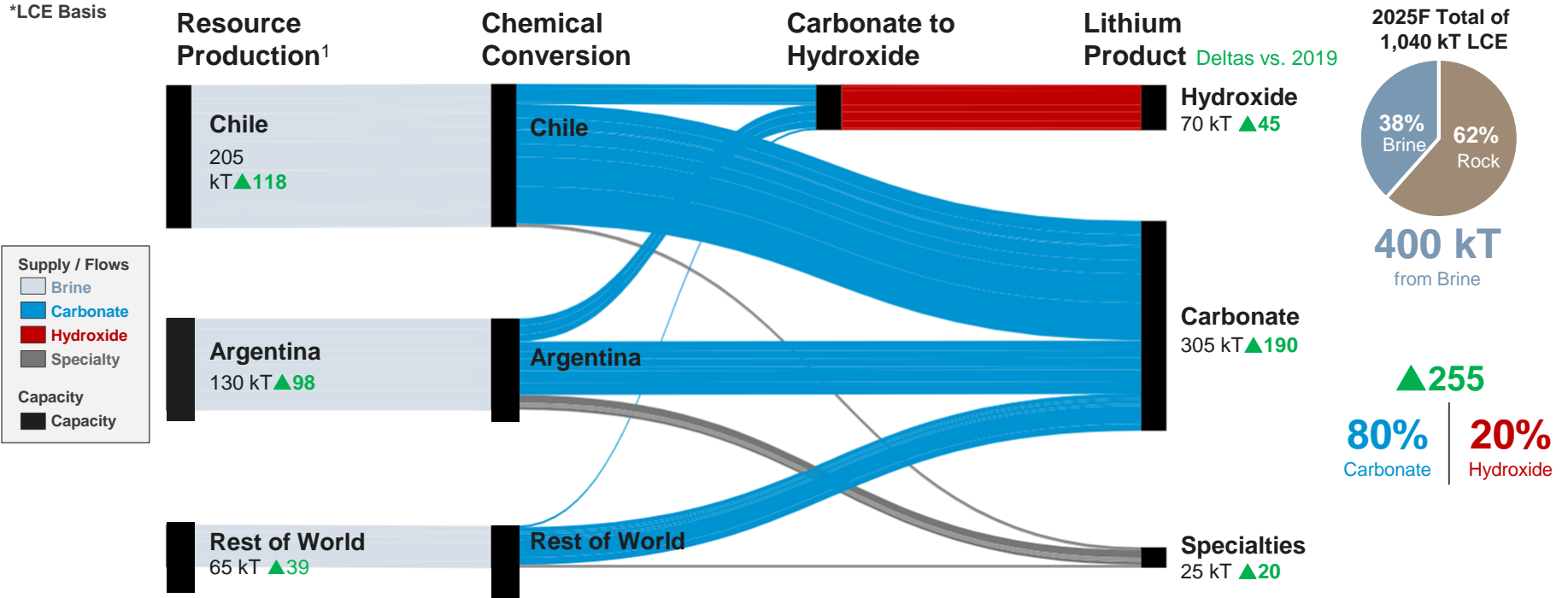


Note: Albemarle internal estimates

¹ Accelerated and Delayed Technology Maturation Scenarios from slide 73.

Rapid Growth of High Nickel Batteries Drives Potential Hydroxide Shortfall

2025 Brine Supply Chain: Grows 2.7x with Continued Carbonate Alignment

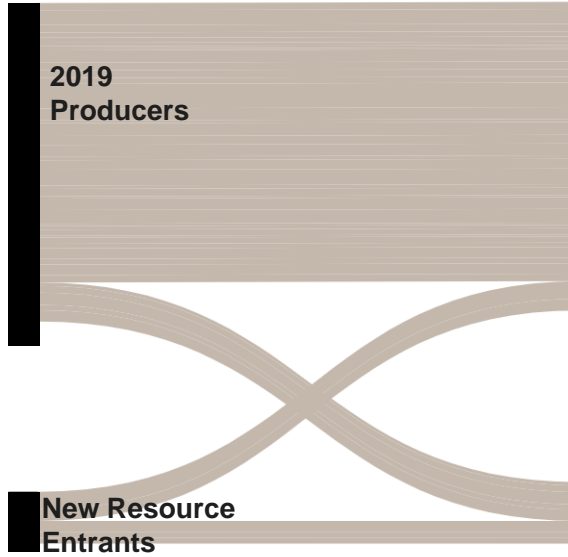


New Projects Longer to Develop - Remains Most Efficient Carbonate Production

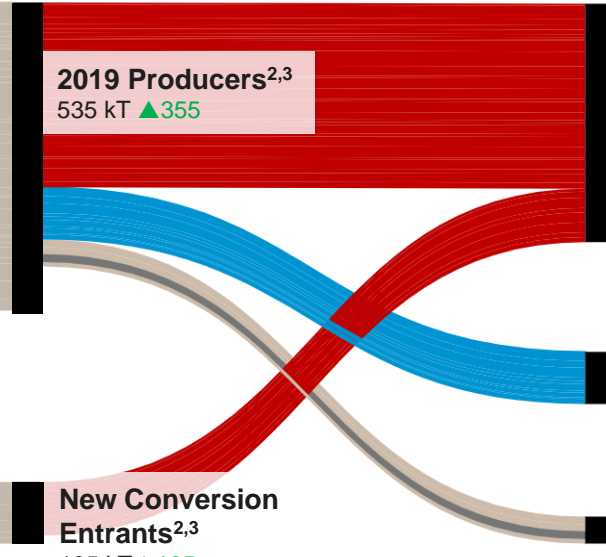
2025 Rock Supply Chain: Grows 3.6x with Strong Hydroxide Focus

*LCE Basis

Resource Production¹



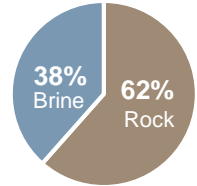
Chemical Conversion 640 kT



Lithium Product 640 kT *Deltas vs. 2019*



2025F Total of
1,040 kT LCE



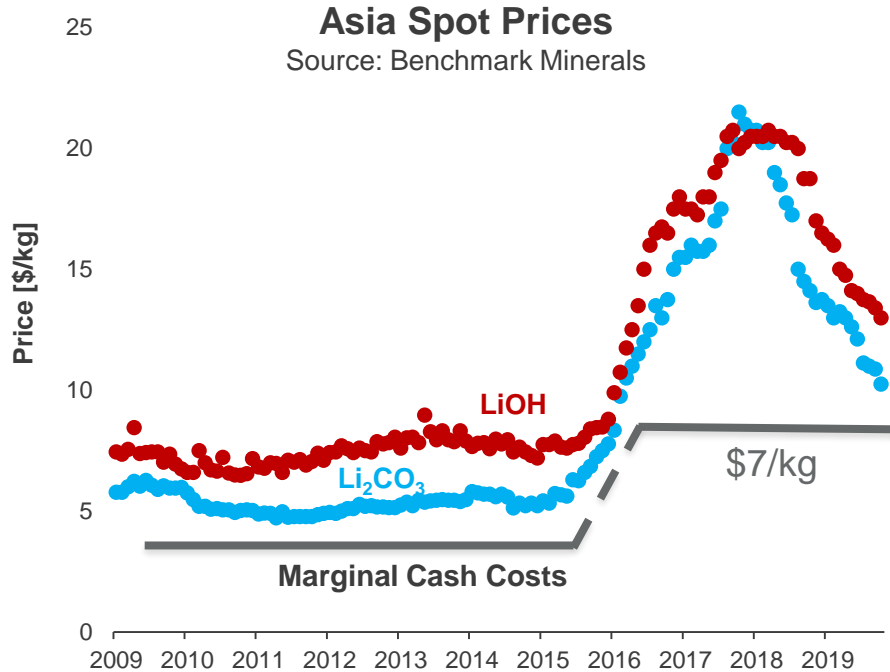
640 kT
from Rock

▲460

20% Carbonate | 80% Hydroxide

New Projects Easier to Bring to Market - Most Suited for Cost Effective Hydroxide Production

The Lithium Price Cycle is Moving Towards a New Trough Level



- First major cycle in lithium since the EV era began
- Growth acceleration is driving the need for new sources of supply with higher marginal cash costs
- Today, cash cost of the marginal producer is ~\$7/kg, of which ~65% is the cost of the lithium resource
- Current industry dynamics suggest a trough is forming at marginal cash costs due to excess supply
- Upward price inflection is a function of demand growth, channel inventory levels, and pace of supply addition
- Spot prices are indicative of trends but differ from contract prices

As the Industry Continues to Grow, the Average Cost of Supply is Expected to Increase

Lithium Strategy: Strong Foundation / Resilient to Market Dynamics

Manage World's Best Resources

- 270 kTa LCE of spodumene capacity
- 110 kTa LCE of brine capacity
- Sustainable resource management
- Geographically diverse
- High concentrations and low cost

Expand Capacity with Discipline

- Reduced capital intensity
- Build to meet market demand
- Strong return economics

Drive Cost and Operational Excellence

- Lean, low-cost manufacturing
- One world class global standard
- Leader in quality, reliability, and sustainability

Sustain Premium Value Proposition

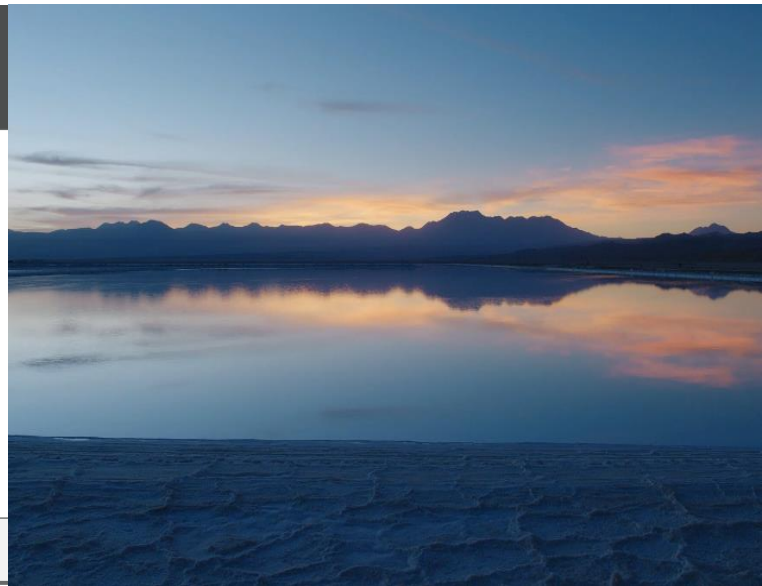
- Long-term customer partnerships
- Differentiated customer offerings
- Innovative lithium materials

Our Strategy is Guided by the Albemarle Values and Rooted in Safety and Sustainability



Large and Diverse Resources Positioned for at Least the Next Decade

Albemarle Resource	2019 Operating Capacity (kTa LCE)	Available Resource Capability (kTa LCE)	% Utilization
Atacama CORFO Lease	40	100	40%
50% Greenbushes Interest ¹	40	120	33%
Wodgina ²	0	100	0%
Silver Peak	5	10	50%
Kings Mountain	-	50	0%
Antofalla	-	TBD	0%
Total³	85	> 380	< 25%



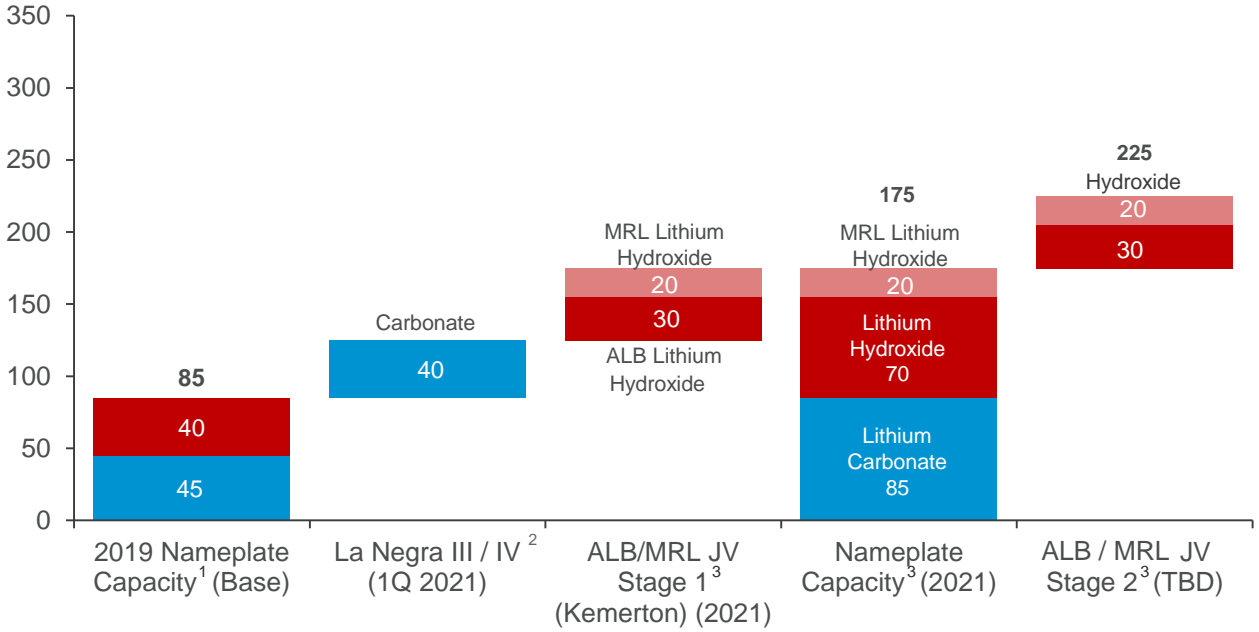
Sufficient Resources to Meet the Growth Targets of Our Customers



Disciplined and Measured Plan to Expanding Conversion Capacity

Our plan through 2024 would only utilize ~60% of available resources

All figures in kT LCE and represent estimates of lithium nameplate conversion capacity



Reducing Capital Intensity

- Deploying standard process flow and equipment in each expansion
- Process technology to gain 10-20% capacity increase (debottleneck) in existing plants
- Technology improvement at existing plants becomes the standard for new plants
- China-focused expansion at significantly lower CAPEX/MT
- Potential acquisition of Chinese converters vs. Greenfield expansion

Conversion Capacity that is Built to Customer Commitments with Lower Capital Intensity



Driving Operational Excellence to Become World Class and Low Cost

HSE

- Drive Operational Injury and Illness rate (OII) from 1.0 in 2018, to less than 0.5 in 2019 and 0.2 by 2022, implementing recognized best practices

LEAN MANUFACTURING

- Retained 3rd-party experts to implement lean manufacturing at La Negra in 2019 and multi-year plan across all plants
- Area of greatest improvements are in reliability, maintenance, and process technology
- Expect to drive down unit costs by >20% over the next 5 years

SERVICE AND QUALITY

- 10% improvement in quality and 20% improvement in service levels enabled by:
 - Driving consistent standard operating procedures across all 11 operating sites
 - Enhancing systems and processes in quality assurance and management



2022

Albemarle Lithium will be at world-class standards by 2022

- Operational Excellence journey started in early 2019 at La Negra
- By end of 2021, all Li plants will be operating with Lean Principles in place



Relentless Drive to be the Lowest-cost Producer






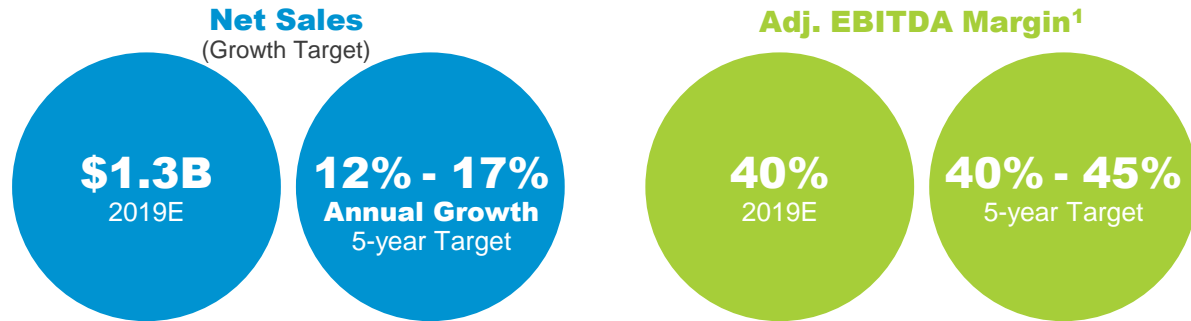
Creating Value via a Differentiated Experience for Our Customer

WHAT CUSTOMERS VALUE	ALB OFFERING TODAY	ALB FUTURE OFFERINGS
Secure supply / competitive price	✓ LTAs with floor price	Continue to meet customers' needs and provide appropriate returns to Albemarle
Flexible, scalable asset base	✓ 3 Carbonate plants / 3 Hydroxide plants / 3 continents	5 Carbonate plants / 5 Hydroxide plants / 4 continents
Local response / support	✓ Sales offices throughout Asia, Europe, U.S.	Technical support / experts at each sales office
Increased quality / purity standards	✓ Product tailored to requested standard	Setting the standard due to deep knowledge of battery performance and process know-how
R&D in advanced energy storage	✓ BG Carbonate and Hydroxide, LiBOB, and Lithium Sulfide	Innovations in pre-lithiation and metal anodes
Flawless customer experience	✓ Responsive service through 3 global customer service centers	Preferred supplier providing immediate service to customers via a digital interface
Sustainability	✓ Strong foundation with a continued commitment	Industry leader in sustainability

Albemarle Positioned to Sustain its Differentiated Position in the Market Well into the Future

Outlook for Lithium

	ENERGY STORAGE	INDUSTRIAL	SPECIALTIES
5-YEAR OUTLOOK			
BUSINESS ENVIRONMENT	<ul style="list-style-type: none"> Pricing environment expected to improve as supply becomes more balanced in the mid-term; expected strong EV growth over next 5 years Volume driven by capacity additions in a rapidly growing market 	<ul style="list-style-type: none"> Remains a GDP market and prices driven by Energy Storage 	<ul style="list-style-type: none"> Pricing based on value in use Growth above GDP due to favorable macro-economics trend of aging population



MARKET ASSUMPTIONS	Accelerating adoption of EVs driven by China and Europe	GDP Industrial Growth	GDP plus growth driven largely by pharma and niche automotive applications
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Key Takeaways

01 ALB has the **broadest range** of resources, manufacturing capabilities, products, and customer relationships in the Lithium industry

02 Global Lithium demand is on track to reach **1 million MT LCE by 2025**, a 20%+ CAGR driven by EV penetration of new car sales

03 We anticipate that the **current excess supply will diminish** in the mid-term as demand increases, particularly for hydroxide

04 Projected growth in lithium demand cannot be met without leveraging **the largest and most highly concentrated resources in the world**, and we have access to the Top 3

05 ALB has a **disciplined plan** to build battery grade conversion capacity that provide attractive returns to meet the significant growth demand from our customers



Scott Tozier

EVP, CFO

Maintaining Our Financial Flexibility

What You'll Hear Today...

01

Strong history of execution and investment in high-return projects

02

Significant growth in cash generation; committed to generate free cash in 2021

03

Stronger organization through operational excellence and talent development

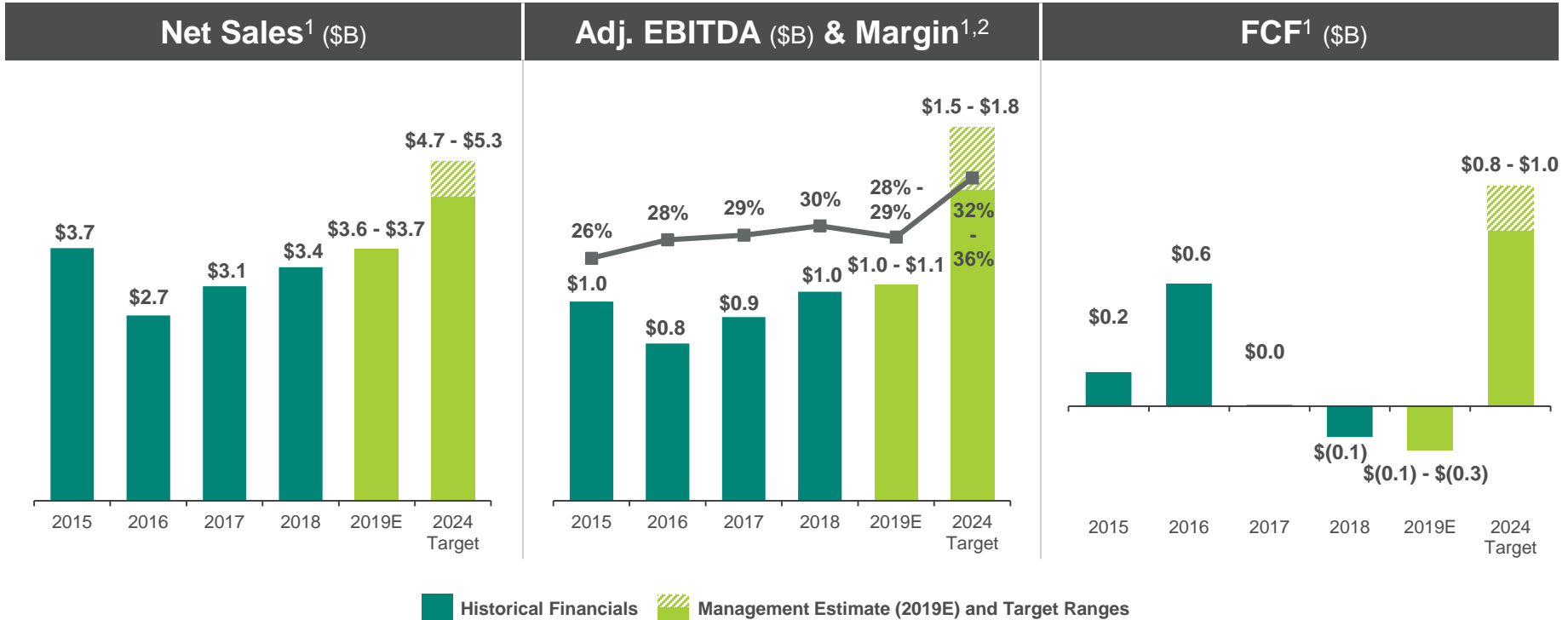
04

Disciplined capital allocation: reinvestment, M&A, and return to shareholders

05

Financial flexibility and balance sheet strength

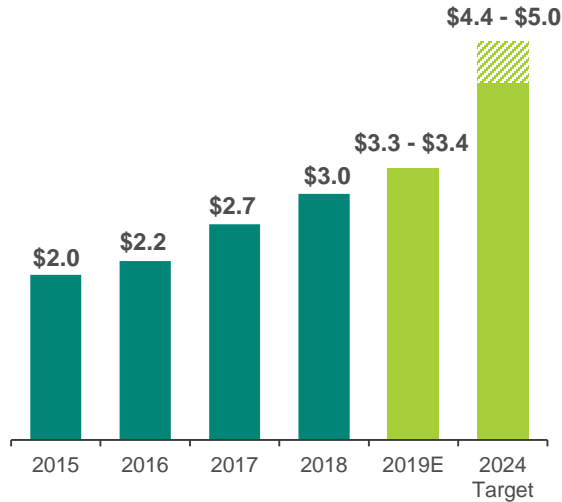
History of Strong Financial Performance



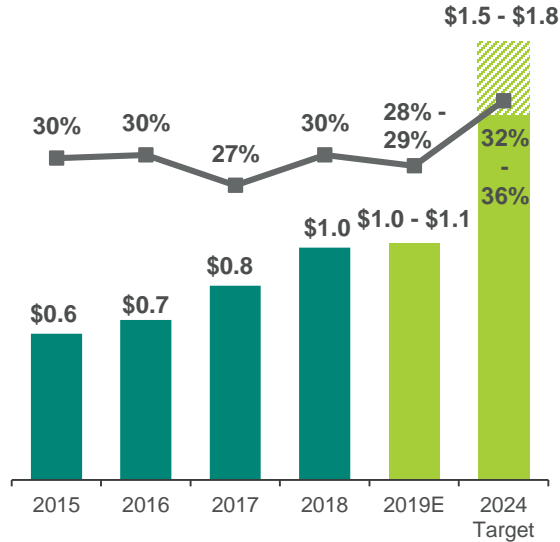
Deliberate Transformational Steps Toward Growth

Financials on a Pro Forma Basis

Net Sales¹ (\$B)



Adj. EBITDA (\$B) & Margin^{1,2}



■ Historical Financials
 ▨ Management Estimate (2019E) and Target Ranges

Focused Portfolio

- Strong margin businesses: 5-year Target:
 - Lithium 40% - 45%
 - Bromine 28% - 32%
 - Catalysts 26% - 28%

Divestitures of Lower-margin, Non-core Businesses

- 2016: Divested Chemetall
- 2018: Divested Polyolefin Catalysts and Components
- 2020: Potential divestitures of Fine Chemistry Services and Performance Catalysts Solutions

Leverage Manufacturing Excellence

- Focus on low-cost operations and business processes

Positioned for Substantial Earnings Growth

Reaffirming Full Year 2019 Guidance

	FY 2019 Guidance	2019 Guidance vs. FY 2018 Pro-Forma
Net Sales	\$3.6B - \$3.7B	7% - 10%
Adj. EBITDA ¹	\$1.02B - \$1.06B	2% - 6%
Adj. EBITDA Margin ¹	28% - 29%	--
Adj. Diluted EPS ¹	\$6.00 - \$6.20	10% - 14%
Net Cash from Operations	\$700M - \$800M	31% - 50%
Capital Expenditures	\$900M - \$950M	--

2020 Outlook

Company

- EBITDA down around 10%

Lithium

- Mid single-digit volume growth and cost productivity; price decline pushes EBITDA down

Catalysts

- FCC low single-digit volume growth; CFT less favorable volume and mix
- Expecting Adj. EBITDA flat to slightly up

Bromine

- Flat volumes, some price pressure in 2H 2020
- Expecting Adj. EBITDA flat to slightly down

Two-Year Cost Savings Initiative Underway

Project to Transform Our Business Model by the End of 2021

- Structural cost improvement task force assembled and led by Netha Johnson
- Cross-functional expertise focused on all cost elements
- Business segment assessments underway
- Targeting best-in-class functional spending
- Estimated cost to achieve annualized run-rate savings of ~\$30M one-time expense and ~\$25M capex

Three Buckets of Cost Savings



Leveraging Culture of Operational Excellence to Enhance Our Low-cost Position

Significant Enabler of Operational Excellence: Global ERP System

Rollout will be Complete in January 2020

- ▶ From a multitude of systems to one globally integrated system
- ▶ Improved governance, compliance, and controls
- ▶ Easy access to real time data
- ▶ Enhanced financial management and flexibility

AREAS THAT WILL BENEFIT



Production / Scheduling

Lead Time
Reduction



Logistics

Transport Management
Production Target



S&OP

Inventory
Management



Finance

Days to
Close

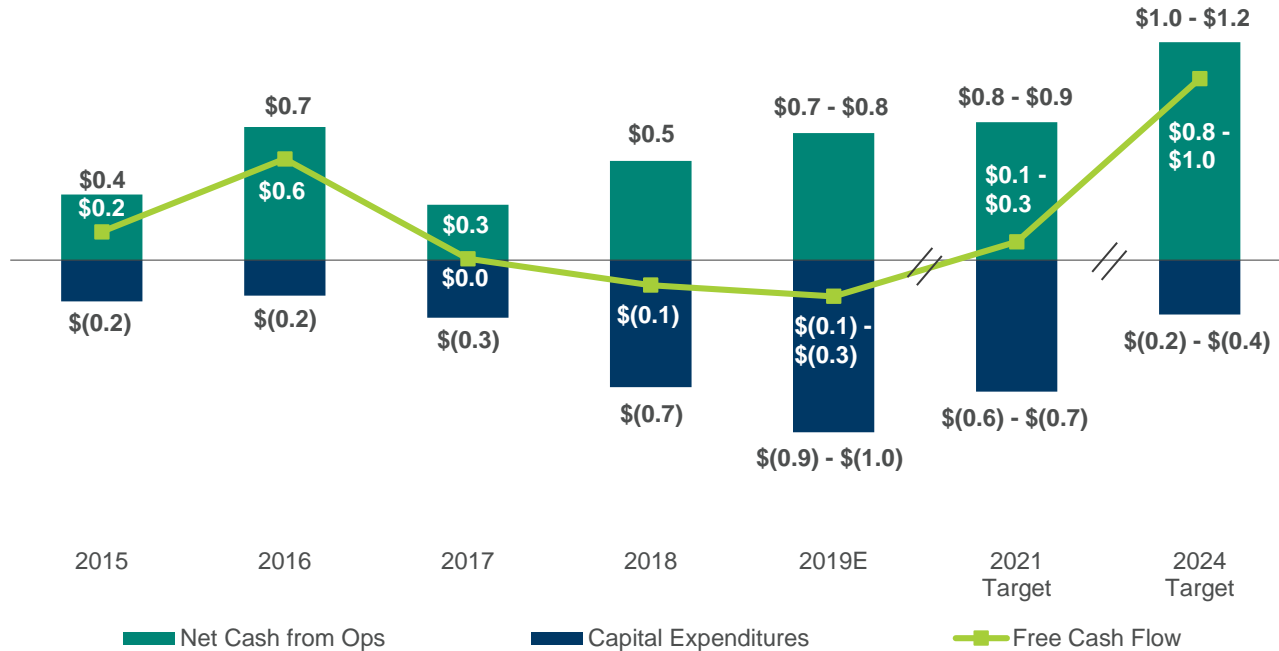


Forecasting

Guidance
Accuracy

Poised to Generate Significant Cash Growth from Lithium Expansions

Cash Flow¹ (\$B)



Highlights

- Positive FCF beginning 2021 even if prices stay depressed
 - Lithium volume growth
 - Lower CAPEX
- Net Cash from Operations improving on revenue growth and improved operating leverage
- CAPEX decline beginning in 2021 as Lithium expansion projects slow
- Significant opportunity for shareholder returns and reinvestment

Balanced Approach to Capital Allocation

Grow Dividend

- 25 years of consecutive dividend increases
- Targeting median specialty chemical payout ratio

Repurchase Shares

- Return excess cash to shareholders
- Board authorization up to 7M additional shares



Growth via M&A and / or JVs

- Improved capital efficiency
- Low-cost resources and operations

Maintain Financial Flexibility

- Maintain Investment Grade rating
- Long-term Net Debt to Adj. EBITDA Target: 2.0x - 2.5x
- Shorter-term Net Debt to Adj. EBITDA Target: 1.0x - 1.5x to increase growth flexibility

Invest to Grow Profitably

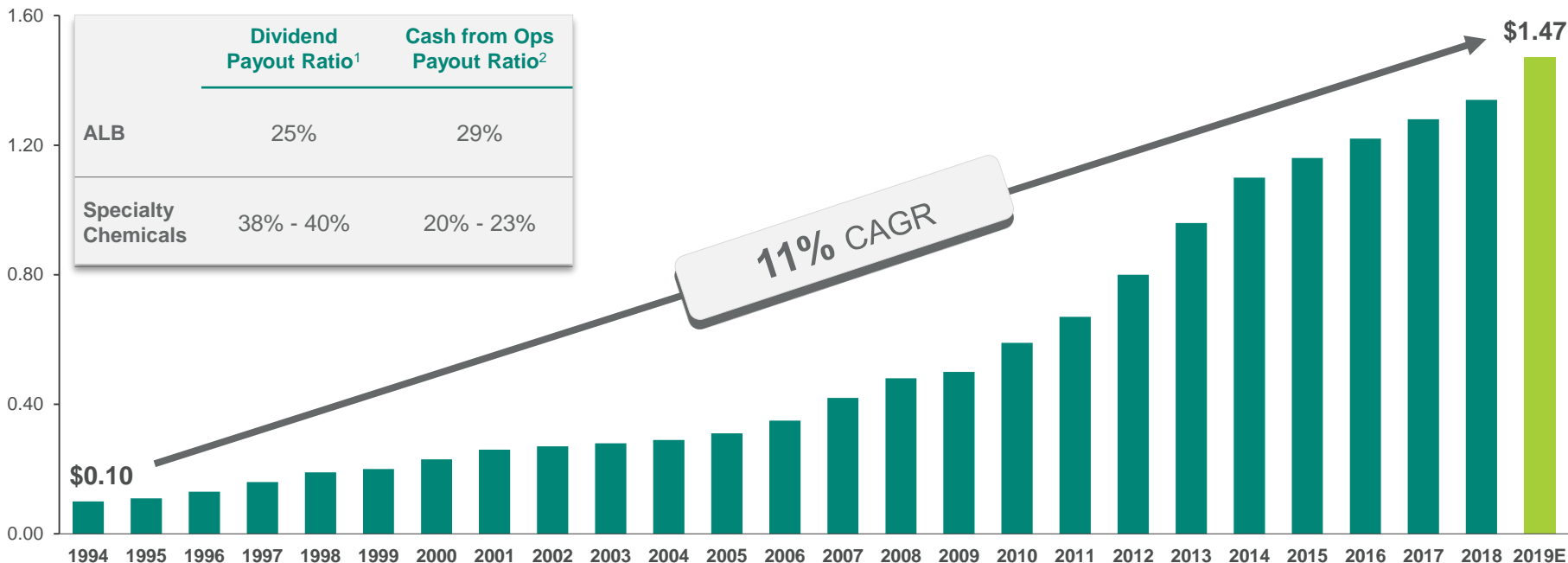
- Strategically grow lithium capacity
- Accelerate productivity projects
- Build or buy conversion

Committed to Driving Shareholder Value Over the Long Term



25 Years of Consecutive Dividend Growth

Dividends per Share (\$)



Further Opportunity with Free Cash Flow Growth



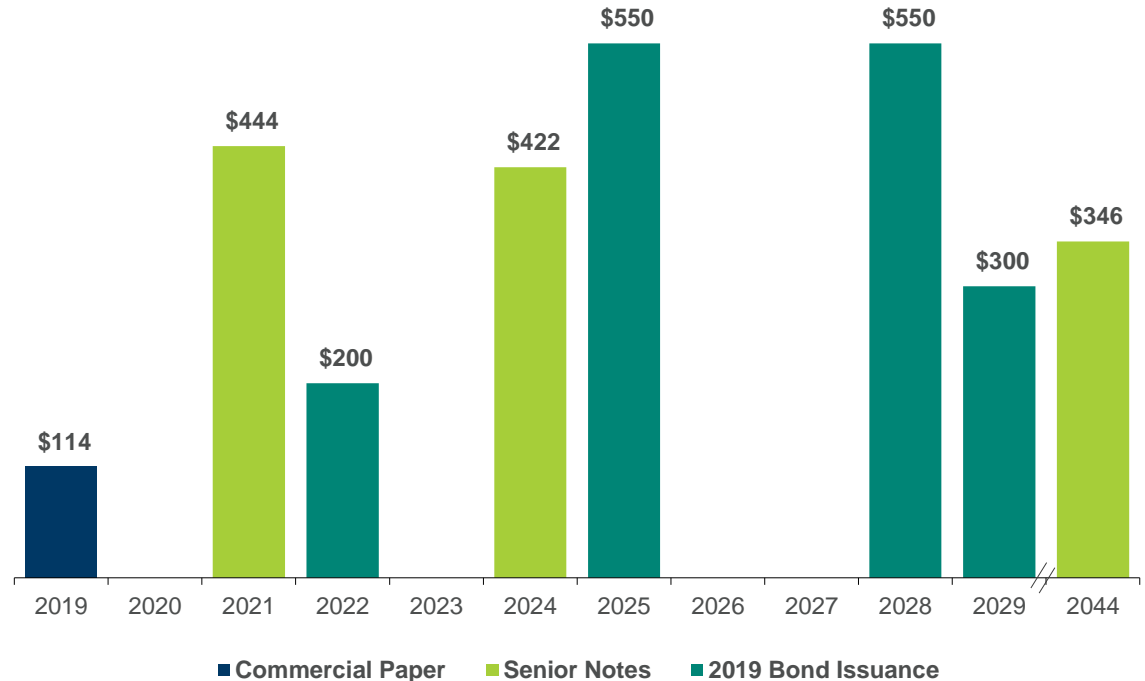
Strong Financial Position Results in Strategic Flexibility

Credit Ratings

S&P	Baa2 Stable
Moody's	BBB Stable
Fitch	BBB Stable

- Committed to maintaining midpoint Investment Grade credit rating
- ~\$1.3B liquidity
- 2019 Net Debt to Adj. EBITDA of 2.6x
- New bond issuance reduces weighted average interest cost by 70 bps to 2.7%

Maturity Profile (\$M) (Estimated Y/E 2019)



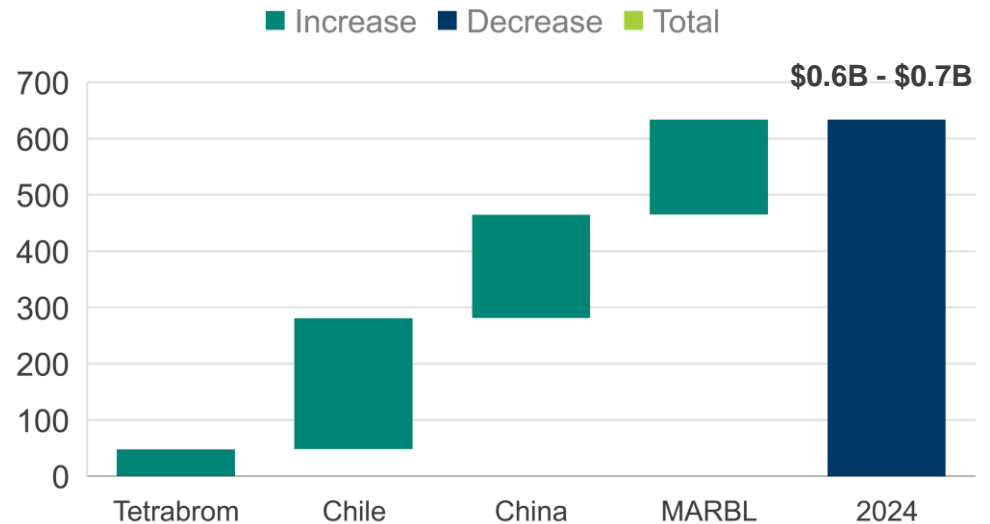


Measured Growth Capex Drives Significant Growth in EBITDA

- **Jordan Bromine: Commissioned Tetrabrom (Q3 2018)**
 - 24 kT capacity expansion
- **China: Completed Acquisition of Jiangxi Jiangli (Q4 2016) and Commissioned Xinyu II (Q1 2019)**
 - 35 kT LCE capacity
 - Jiangxi Jiangli lithium conversion capacity acquisition
 - Xinyu II lithium hydroxide expansion
- **Chile: Commissioned La Negra II (Q1 2017) and Planned Commissioning of La Negra III & IV (Q1 2021)**
 - 60 kT LCE capacity
 - La Negra 2, 3, & 4 lithium carbonate expansion
- **Australia: MARBL JV, Planned Commissioning of Kemerton (Q2 / Q3 2021) and Phase II**
 - 60 kT LCE (ALB share of 100 kt capacity)
 - Kemerton lithium hydroxide greenfield
 - Phase 2 lithium hydroxide, location and timing TBD

Estimated Annual EBITDA Improvement

Projects added between 2015 - 2024,
CAPEX of ~ \$2.1B - \$2.4B



Strategic Projects Expected to Generate Increased EBITDA of \$600M - \$700M by 2024



Measured Approach to Inorganic Growth: M&A & JVs

STRATEGIC FILTERS

- ▶ Lithium conversion assets
- ▶ Assets, businesses to fill out portfolio
- ▶ Specialized, next gen technology and / or materials

FINANCIAL CRITERIA

- ▶ Must meet our return hurdle: $IRR > WACC$
- ▶ Reduce capital intensity
- ▶ Brownfield return hurdle of $IRR \geq 2 \times WACC$

OUR PHILOSOPHY

- Enough resources for the next decade
- Limited interest in cash-only partnerships given our strong operating cash generation
- Will partner where the expertise of each partner strongly complements / strengthens a gap for the other

Focused on Strengthening Portfolio and Accelerating Strategy

MARBL JV Adds Hard Rock Assets to Support Lithium Hydroxide Growth



- Partnered with Mineral Resources - world-class Australian mining services company
- Access to high-quality spodumene source strengthens our long-term asset position to support future demand growth
 - Cash payment of \$820M for 60% interest in Wodgina Mine
 - Contributed 40% interest in 50,000-ton lithium hydroxide conversion plant being built by Albemarle at Kemerton in Western Australia
 - Albemarle will market 100% of the output
- 2020 EBITDA impact is expected to be a \$10M expense and have a \$0.50 impact on EPS; once fully built out to 100 ktpa of lithium hydroxide production, expect ROIC of 17% to 19%
- Decision made to idle production at Wodgina until 50 ktpa Kemerton conversion capacity ready to produce battery grade lithium hydroxide - commissioning in 2021, revenue in 2022
- Expect to build or buy additional 50 kT LCE through MARBL JV with lower capital intensity, if market dynamics indicate such capacity is needed





Assessing Strategic Alternatives of FCS and PCS Businesses

WHY PURSUE ALTERNATIVES

- Active interest from prospective buyers
- Profitable businesses with strong operating teams
- The right buyer would extend their track record of industry leadership and success
- Expect value greater than cash generated on their own

TIMELINE

- Targeting mid-2020 close
- Until sales are finalized, maintain “business as usual”
- Stay focused on safe operations

WHAT'S INCLUDED

- Manufacturing and Personnel: Pasadena, TX; South Haven, MI; Tyrone, PA

Fine Chemistry Services (FCS)

- Custom pharmaceutical and ag intermediates
- Generic active pharma ingredients

Polymer Catalysts Solutions (PCS)

- Co-catalysts for use in polypropylene production
- Line of Polyurethane curatives

~\$330M

2019 Estimated
Net Sales

~\$50M - \$60M

2019 Estimated
EBITDA

**Expect to Use Net Proceeds to
Pay Down Debt and Reinvest**

Divestitures will Result in ~80 bps Improvement in Adjusted EBITDA Margin

2024 Long-term Financial Targets

5-Year Targets	LITHIUM	BROMINE	CATALYSTS ²	TOTAL ALB	<h2>Assumptions</h2> <ul style="list-style-type: none"> • 5% annual dividend growth • \$100M run-rate productivity savings by 2021 • 20% effective tax rate • Currency flat at November 30, 2019 rate
Revenue CAGR	12% - 17%	1.5% - 2.5%	3% - 5%	6% - 9%	
Adj. EBITDA Margin¹	40% - 45%	28% - 32%	26% - 28%	32% - 36%	
Adj. EBITDA	--	--	--	\$1.5B - \$1.8B	
Free Cash Flow	--	--	--	\$0.8B - \$1.0B	

Key Takeaways

01 Reaffirming 2021 financial targets and **introducing 2024 outlook**

02 **Confident in our ability** to deliver value given investment in technology, talent and operational excellence

03 Committed to achieving **cost savings of \$100M** and positive cash flow in 2021 – we will get to **\$1B FCF by 2024**

04 Strong **financial flexibility** and balance sheet strength support capital deployment priorities

05 Well positioned to **deliver shareholder value** over the next five years



Luke Kissam

Chairman, President & CEO

Closing Remarks

An Industry Leader with Significant Opportunity Ahead

01 Industry-leading, competitively advantaged positions across our portfolio, which will expand in the future

02 Strong secular trends support long-term growth to annual Adj. EBITDA of \$1.5B - \$1.8B and annual FCF of ~\$1B by 2024

03 Focus on product quality, talent, low-cost operations, and effective management of our resources and assets

04 Product offerings are key enablers to a more sustainable world, and we are embedding sustainability into strategic decision making

05 Financial flexibility and balance sheet strength with significant free cash flow generation on the horizon

The background is a composite image. The top portion shows a night cityscape with tall buildings and light trails in shades of blue and cyan. The bottom portion shows a road at night with white lane markings and light trails in orange, yellow, and blue. The overall color palette is dominated by blues, greens, and oranges.

Q&A

The background is a composite image. The top portion shows a night cityscape with blurred light trails in shades of blue and cyan, suggesting motion or a long-exposure photograph of city lights. The bottom portion shows a road at night with white directional arrows painted on the pavement, overlaid with vibrant orange and blue light trails that create a sense of speed and movement.

Leadership Bios

Luke Kissam | Chairman & CEO



Luke Kissam is Chairman, President & Chief Executive Officer.

Kissam was named Chief Executive Officer of Albemarle Corporation in September 2011. He was elected to the company's board of directors in November 2011 and named chairman of the board in November 2016.

Kissam joined Albemarle in September 2003 as Vice President, General Counsel, and Corporate Secretary and served as Senior Vice President, Manufacturing and Law, and Corporate Secretary from January 2008 until his promotion to President in March 2010.

Prior to Albemarle, Kissam served as Vice President, General Counsel, and Secretary of Merisant Company, a manufacturer of artificial sweeteners such as Equal and Canderel, which was formed from Monsanto Company's tabletop sweetener business. Prior to Merisant, Kissam served as Associate General Counsel of Monsanto Company, a multinational agrochemical and agricultural biotechnology corporation.

Kissam graduated magna cum laude from the University of South Carolina School of Law and summa cum laude from The Citadel. He serves on the board of directors at DuPont de Nemours, the American Chemistry Council, the Albemarle Foundation, The Citadel Foundation, and the Charlotte Sports Foundation. He previously served on the DowDuPont Specialty Products Advisory Committee and was an ex-officio member of the company's board of directors.

Scott Tozier | EVP & CFO



Scott Tozier is Executive Vice President and Chief Financial Officer. In this role, he is responsible for all financial and fiscal management aspects of the company's operations. He sets internal controls within the organization to protect the financial interest of stakeholders, provides leadership and coordination in the administrative, business planning, accounting and budgeting efforts of the company and addresses strategic management decisions from a financial standpoint. Customer service, purchasing and logistics functional groups report to him.

Tozier joined Albemarle in January 2011 as Senior Vice President and Chief Financial Officer.

Prior to joining Albemarle, Tozier served as Vice President of Finance, Transformation and Operations of Honeywell International. During his 16-year career with Honeywell, he held senior financial positions in the U.S., Australia and Europe. His increasingly progressive roles included management of Financial Planning, Analysis and Reporting, Global Credit and Treasury Services. He also served as Chief Financial Officer of Honeywell's Transportation Systems, Turbo Technologies EMEA, Building Solutions EMEA, and Process Solutions Asia Pacific divisions.

Prior to Honeywell, Tozier served as Senior Auditor with the international firm Ernst & Young, LLP.

Tozier is a certified public accountant. He earned a Master of Business Administration from the University of Michigan and a bachelor's degree in accounting and information systems from the University of Wisconsin-Madison.

Eric Norris | President, Lithium



Eric Norris is President of Albemarle's Lithium global business unit.

Norris joined Albemarle in January 2018 as Chief Strategy Officer. In this role, he managed the company's strategic planning, M&A, and corporate business development programs as well as its investor relations efforts.

Prior to joining Albemarle, Norris served as President of Health and Nutrition for FMC Corporation. Following FMC's announcement to acquire DuPont Agricultural Chemical assets, he led the divestiture of FMC Health and Nutrition to DuPont. Previously, Norris served as Vice President and Global Business Director for FMC Health and Nutrition, and Vice President and Global Business Director for FMC Lithium. During his 16-year FMC career, he served in additional leadership roles including Investor Relations, Corporate Development and Director of FMC Healthcare Ventures.

Prior to FMC, Norris founded and led an internet-based firm offering formulation and design tools to the chemical industry. Previously, he served as Director of Investor Relations for Rohm and Haas Company.

Norris earned an MBA from Harvard University and a bachelor's degree in chemistry and German from Colgate University.

Dr. Glen Merfeld | VP, Lithium CTO



Dr. Glen Merfeld is Chief Technical Officer for the Lithium business. In this role, he leads all Lithium research and development in the areas of hydrogeology, extraction technology, energy storage, specialty materials, battery recycling and data science.

Prior to joining Albemarle, Merfeld held several progressive leadership roles over a 20-year career with GE's Global Research Center where he led material development and product innovation in batteries, thin-film solar, organic light-emitting diodes as well as polymers, coatings, and composites. Within energy storage, his contributions reached from fundamental material physics to scaled manufacturing processes with end-use in applications ranging from watt-hour capacitors for portable x-ray detectors to megawatt-hour batteries for grid connected wind turbines. He also led the creation of data science methods for directing research priorities, setting product strategy, and guiding capital allocation.

Merfeld was a founding member of the New York Battery & Energy Storage Technology consortium and served as an industrial advisory board member of Argonne National Laboratory's Joint Center for Energy Storage Research. He also served as an Advisory Board member for the University of Maryland's Energy Frontier Research Center on nano-enabled energy storage.

Merfeld earned a Doctorate in chemical engineering from the University of Texas at Austin and a bachelor's degree in chemical engineering from Northwestern University. He holds 14 patents and has authored more than 35 publications.

Netha Johnson | President, Bromine Specialties



Netha Johnson is President of Albemarle's Bromine Specialties global business unit.

Johnson joined Albemarle in 2018 as President of Bromine Specialties after more than 20 years of diverse leadership experience, both domestically and internationally. He has worked extensively in Singapore, Malaysia, Taiwan, Japan and Germany.

Prior to joining Albemarle, Johnson served in several progressive leadership roles with 3M Company. Most recently, he served as Vice President and General Manager, Electrical Markets Division, where he was directly responsible for 3M's electrical and renewable energy solutions. Prior to that, he served as 3M's Vice President, Advanced Materials Division. In this role, he was responsible for three distinct businesses comprising the Advanced Material division, which provided world-leading, innovative solutions in fluoropolymer chemicals, advanced ceramics and light-weighting materials.

Preceding his business career, Johnson served as a U.S. Naval Special Operations Officer.

Johnson earned a Master of Business Administration from Duke University and a bachelor's degree in aerospace engineering from the University of Southern California.

Raphael Crawford | President, Catalysts



Raphael Crawford is President of Albemarle's Refining Catalysts global business unit.

Crawford joined Albemarle in 2012 as Vice President of the Performance Catalyst Solutions division. In 2015, he was appointed Vice President of the Synthesis and Polymer Solutions division, as well as the Managing Director for Rockwood Lithium GbmH in Germany. Later in 2015, Crawford was appointed President of the Bromine Specialties business unit. In 2018, he assumed his current role as President of the Catalysts business unit.

Prior to Albemarle, Crawford served as the Director of Global Marketing and Business Development for Dow Coating Materials, a global business unit of The Dow Chemical Company. He also served as the Global Commercial Director and Global Asset Director for Dow Water and Process Solutions, following the acquisition of Rohm and Haas Company. Previously, Crawford held various strategic marketing and commercial roles at Rohm and Haas.

Prior to Rohm and Haas, Crawford worked at Campbell Soup Company as a Marketing Manager. He began his career at SNET Telecommunications where he served in several capacities including new ventures, finance and marketing.

Crawford currently serves on the Association of American Fuel & Petrochemical Manufacturers (AFPM) Board of Directors, where he has served as chairman of the Petrochemical Members Committee and has been elected to a member of the Executive Committee starting in 2020.

Crawford earned a master's degree in finance from the University of New Haven where he serves on their Board of Governors and a bachelor's degree in economics from Wesleyan University. He is a graduate of the Advanced Management Program at the University of Chicago Booth School of Business and maintains professional certifications in management accounting and financial management by the Institute of Management Accountants.

Dave Ryan | VP, Corporate Strategy & IR



Dave Ryan serves as Albemarle's Vice President, Corporate Strategy and Investor Relations. In this role, he manages the company's strategic planning, M&A, and corporate business development programs, as well as its investor relations efforts.

Ryan joined Albemarle in April 2016 as Vice President and Treasurer after a 25-year career with West Rock Company where he held several progressive leadership roles.

At WestRock, Ryan served as Vice President, Special Projects, responsible for leading the spin-off of the Specialty Chemicals Division into a standalone, publicly traded company. Prior to that, he served in a wide range of strategic finance roles at WestRock including, Chief Financial Officer of the Packaging Platform and the Specialty Chemicals divisions. While with Specialty Chemicals, Ryan also served as Chief Strategy Officer and General Manager of the Industrial Air Purification business. He also held several positions in the Beverage Packaging, Consumer Products, and Electronic Publishing businesses.

Ryan earned a Master of Business Administration from the University of Cincinnati and a bachelor's degree in finance from the University of Dayton.

Karen Narwold | EVP & CAO



Karen Narwold serves as Albemarle's Executive Vice President, Chief Administrative Officer and General Counsel. In this role, she leads the company's legal, ethics and compliance, government and regulatory affairs, and communications groups.

Narwold joined Albemarle in September 2010 as Senior Vice President, General Counsel and Corporate Secretary. In 2016, she was appointed Executive Vice President, CAO and General Counsel.

Narwold has over 29 years of experience with industrial and chemical companies.

Prior to joining Albemarle, she served as Special Counsel with Kelley Drye & Warren LLP and with Symmetry Advisors, where she worked in the areas of strategic, financial and capital structure planning and restructuring for public and private companies.

Previously, she served as Vice President and Strategic Counsel of Barzel Industries, a North American steel processor and distributor. Prior to Barzel, Narwold served as Vice President, General Counsel, Human Resources and Corporate Secretary during her 16-year career with GrafTech International, a global graphite and carbon manufacturer and former subsidiary of Union Carbide. She began her career practicing private law.

Narwold graduated with honors from the University of Connecticut School of Law and summa cum laude with a bachelor's degree in political science from the University of Connecticut.

DeeAnne Marlow | Chief Human Resources Officer



DeeAnne Marlow serves as Albemarle's Chief Human Resources Officer. In this role, she is responsible for leading the execution of the Human Resources' strategic plan and key initiatives with an emphasis on business partnerships, talent acquisition and development, compensation and benefits, inclusion and diversity programs, and HR operations.

Prior to joining Albemarle in 2018, Marlow served as Senior Vice President, Chief Human Resources Officer, at Greif, Inc., a leader in industrial packaging solutions.

Previously, she spent seven years with Cummins, Inc., where she led Human Resources for the Turbo Technologies business and then for the Global Power Generation business segment. In addition, she had responsibility for all Cummins operations in Central America and the Middle East including multiple manufacturing facilities, sales, engineering technical centers and general management / support. She was also responsible for marketing and sales capability development and succession across Cummins.

Prior to Cummins, Marlow held progressive leadership roles with GE, SC Johnson, and Principal Financial, where she gained experience in consumer products, financial services, diversified industrials and healthcare.

Marlow earned a Masters of Business Administration from the University of South Dakota and a bachelor's degree from Luther College in Decorah, Iowa. She is SPHR Certified and a Six Sigma Green Belt.

Tom Thomas | VP, Integrated Business Operations



Tom Thomas serves as Albemarle's Vice President of Integrated Business Operations.

Thomas joined Albemarle in 2011 as Division Vice President, Fine Chemistry Services. In 2013, he was appointed Division Vice President, Stabilizers and Curatives and was a co-lead of the Integration Management Office for the Rockwood Specialties acquisition. In 2015, he assumed his current role leading Albemarle's integrated business operations.

Thomas has over 30 years of business development and general management experience in the specialty, fine and electronic chemical industries.

Prior to joining Albemarle, Thomas held various global executive management positions at Engelhard Corporation (acquired by BASF in June 2006), Honeywell Specialty Chemicals, and FMC Corporation's Lithium Division. He has also held key sales and sales management positions within Nalco Chemical Company and Unocal Chemicals Division.

Thomas earned a bachelor's degree in chemical engineering from Carnegie Mellon University.

Jac Fourie | VP, Engineering & Project Execution



Jac Fourie serves as Albemarle's Vice President, Engineering and Project Execution.

Fourie joined Albemarle in January 2019 as Vice President, Engineering and Project Execution. In this role he is responsible for Albemarle's engineering, project development, and project execution activities across major projects and sustaining capital.

Prior to joining Albemarle, Fourie served as Senior Vice President of Capital Projects for Barrick Gold Corporation, where he was responsible for projects in the U.S., Chile, Argentina and Saudi Arabia.

Previously, Fourie spent 16 years with BHP Billiton where he held various leadership roles in projects, operations, marketing and business development. As VP Projects - Iron Ore, he oversaw a portfolio of major capital projects and sustaining capital projects in Western Australia. As Head of Group Business Management Systems, he was responsible for implementing a large SAP system project for BHP Billiton, while based in Singapore. Prior to this, he was Asset President of BHP Billiton's New Mexico Coal business.

Fourie earned his Masters of Business Administration from The Wharton School at the University of Pennsylvania and was recognized as the Ford Scholar for best academic performance. He graduated with honors from University of Pretoria with a bachelor's degree in both chemical engineering and mathematics.

Michael Brown | VP, Global HSE & Operational Excellence



Michael Brown serves as Albemarle's Vice President of Global HSE & Operational Excellence. In this role, he is responsible for overseeing the company's health and safety initiatives designed to protect our people, assets, environment and communities, while maintaining a strong focus on continuous improvement and operational excellence.

Brown joined Albemarle in 1997 as an operations and technology engineer. Over the past 22 years, he has held a variety of progressive leadership roles, primarily in manufacturing operations. Most recently, Brown served as Division Vice President, Manufacturing, where he was responsible for production, HSE, strategic sourcing, cost management, and organizational development. He also has served as Plant Manager for several union and non-union facilities and served in manufacturing leadership roles in each of the company's four global business units. Prior to that, he assumed roles in Strategic Sourcing and Technology Resources.

Brown earned his Masters of Business Administration from the University of South Carolina and his bachelor's degree in chemical engineering from the Georgia Institute of Technology.



Appendix

Non-GAAP Reconciliations and Glossary

Adj. Net Income

	Three Months Ended	
	September 30,	
	2019	2018
<i>(\$ in thousands)</i>		
Net income attributable to Albemarle Corporation	\$ 155,070	\$ 129,745
Add back:		
Non-operating pension and OPEB items (net of tax)	(543)	(1,856)
Non-recurring and other unusual items (net of tax)	8,497	13,568
Adj. net income attributable to Albemarle Corporation	\$ 163,024	\$ 141,457
Adj. diluted earnings per share	\$ 1.53	\$ 1.31
Weighted-average common shares outstanding – diluted	106,299	108,302

Net Income (Loss)

	Three Months Ended		Year Ended	
	December 31,		December 31,	
	2018	2017	2018	2017
<i>(\$ in thousands)</i>				
Net income (loss) attributable to Albemarle Corporation	\$ 129,596	\$ (218,366)	\$ 693,562	\$ 54,850
Add back:				
Non-operating pension and OPEB items (net of tax)	8,829	(8,455)	3,234	(10,548)
Non-recurring and other unusual items (net of tax)	25,291	376,641	(96,440)	471,559
Adj. net income attributable to Albemarle Corporation	163,716	149,820	600,356	515,861
Pro-forma: Net impact of (income) from non-cash FX gain (net of tax)	—	—	—	—
Pro-forma: Net impact of income from divested businesses (net of tax)	—	(8,448)	(6,242)	(21,615)
Pro-forma Adj. net income	163,716	141,372	594,114	494,246
Adj. diluted earnings per share	\$ 1.53	\$ 1.34	\$ 5.48	\$ 4.59
Pro-forma Adj. diluted earnings per share	\$ 1.53	\$ 1.26	\$ 5.43	\$ 4.40
Weighted-average common shares outstanding - diluted	107,005	112,152	109,458	112,380

See above for a reconciliation of Adj. net income (loss), and pro-forma Adj. net income, the non-GAAP financial measures, to Net income (loss) attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with GAAP. Adj. earnings is defined as Net income attributable to Albemarle Corporation before discontinued operations and the non-recurring, other unusual and non-operating pension and OPEB items as listed above. Pro-forma Adj. net income is defined as Net income attributable to Albemarle Corporation before discontinued operations and the non-recurring, other unusual and non-operating pension and OPEB items, and the net impact of divested businesses.

EBITDA and Adj. EBITDA

	Three Months Ended	
	September 30,	
	2019	2018
<i>(\$ in thousands)</i>		
Net income attributable to Albemarle Corporation	\$ 155,070	\$ 129,745
Add back:		
Interest and financing expenses	11,108	12,988
Income tax expense	25,341	33,167
Depreciation and amortization	54,487	49,707
EBITDA	246,006	225,607
Non-operating pension and OPEB items	(551)	(2,195)
Non-recurring and other unusual items	8,896	11,670
Adj. EBITDA	254,351	235,082
Net sales	\$ 879,747	\$ 777,748
EBITDA margin	28.0%	29.0%
Adj. EBITDA margin	28.9%	30.2%

EBITDA

	Three Months Ended		Year Ended	
	December 31,		December 31,	
	2018	2017	2018	2017
(\$ in thousands)				
Net income (loss) attributable to Albemarle Corporation	\$ 129,596	\$ (218,366)	\$ 693,562	\$ 54,850
Add back:				
Interest and financing expenses	12,571	16,455	52,405	115,350
Income tax expense	11,196	378,221	144,826	431,817
Depreciation and amortization	50,187	52,841	200,698	196,928
EBITDA	203,550	229,151	1,091,491	798,945
Non-operating pension and OPEB items	11,881	(12,981)	5,285	(16,125)
Non-recurring and other unusual items (excluding items associated with interest expense)	48,871	29,610	(90,112)	102,660
Adj. EBITDA	\$ 264,302	\$ 245,780	\$ 1,006,664	\$ 885,480
Pro-forma: Net impact of Adj. EBITDA from divested businesses	—	(10,156)	(10,872)	(37,123)
Pro-forma Adj. EBITDA	\$ 264,302	\$ 235,624	\$ 995,792	\$ 848,357
Net sales	\$ 921,699	\$ 857,789	\$ 3,374,950	\$ 3,071,976
Pro-forma: Net impact of net sales from divested businesses	—	(26,224)	(27,082)	(99,491)
Pro-forma net sales	\$ 921,699	\$ 831,565	\$ 3,347,868	\$ 2,972,485
EBITDA margin	22.1%	26.7%	32.3%	26.0%
Adj. EBITDA margin	28.7%	28.7%	29.8%	28.8%
Pro-forma Adj. EBITDA margin	28.7%	28.3%	29.7%	28.5%
YoY difference in Pro-forma Adj. EBITDA margin		34 bps	120 bps	

See above for a reconciliation of EBITDA, Adj. EBITDA, and pro-forma Adj. EBITDA, the non-GAAP financial measures, to Net income (loss) attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with GAAP. EBITDA is defined as Net income attributable to Albemarle Corporation before interest and financing expenses, income taxes, depreciation and amortization. Adj. EBITDA is defined as EBITDA before discontinued operations and the non-recurring, other unusual and non-operating pension and OPEB items as listed below. Pro-forma Adj. EBITDA is defined as Adj. EBITDA before the net impact of EBITDA from divested businesses.

Adj. EBITDA - by Segment (3 Months ended September 30)

(\$ in thousands)

	Lithium	Bromine Specialties	Catalysts	Reportable Segments Total	All Other	Corporate	Consolidated Total
Three months ended September 30, 2019:							
Net income (loss) attributable to Albemarle Corporation	\$ 102,136	\$ 75,224	\$ 54,345	\$ 231,705	\$ 8,305	\$ (84,940)	\$ 155,070
Depreciation and amortization	25,212	12,448	12,599	50,259	2,143	2,085	54,487
Non-recurring and other unusual items	111	1,142	—	1,253	—	7,643	8,896
Interest and financing expenses	—	—	—	—	—	11,108	11,108
Income tax expense	—	—	—	—	—	25,341	25,341
Non-operating pension and OPEB items	—	—	—	—	—	(551)	(551)
Adjusted EBITDA	\$ 127,459	\$ 88,814	\$ 66,944	\$ 283,217	\$ 10,448	\$ (39,314)	\$ 254,351
Three months ended September 30, 2018:							
Net income (loss) attributable to Albemarle Corporation	\$ 90,313	\$ 67,967	\$ 50,491	\$ 208,771	\$ 1,978	\$ (81,004)	\$ 129,745
Depreciation and amortization	23,370	10,618	12,111	46,099	1,990	1,618	49,707
Non-recurring and other unusual items	(54)	—	—	(54)	—	11,724	11,670
Interest and financing expenses	—	—	—	—	—	12,988	12,988
Income tax expense	—	—	—	—	—	33,167	33,167
Non-operating pension and OPEB items	—	—	—	—	—	(2,195)	(2,195)
Adjusted EBITDA	\$ 113,629	\$ 78,585	\$ 62,602	\$ 254,816	\$ 3,968	\$ (23,702)	\$ 235,082

See above for a reconciliation of adjusted EBITDA on a segment basis, the non-GAAP financial measure, to Net income attributable to Albemarle Corporation ("earnings"), the most directly comparable financial measure calculated and reporting in accordance with GAAP.

Adj. EBITDA - Margin by Segment (3 Months ended September 30)

(\$ in thousands)

	Lithium	Bromine Specialties	Catalysts	Reportable Segments Total	All Other	Consolidated Total
Three months ended September 30, 2019:						
Net sales	\$ 330,386	\$ 256,267	\$ 261,346	\$ 847,999	\$ 31,748	\$ 879,747
Net income (loss) attributable to Albemarle Corporation	30.9%	29.4%	20.8%	27.3%	26.2%	17.6%
Depreciation and amortization	7.6%	4.9%	4.8%	5.9%	6.8%	6.2%
Non-recurring and other unusual items	—%	0.4%	—%	0.1%	—%	1.0%
Interest and financing expenses	—%	—%	—%	—%	—%	1.3%
Income tax expense	—%	—%	—%	—%	—%	2.9%
Non-operating pension and OPEB items	—%	—%	—%	—%	—%	(0.1)%
Adjusted EBITDA Margin	38.6%	34.7%	25.6%	33.4%	32.9%	28.9%
Three months ended September 30, 2018:						
Net sales	\$ 270,928	\$ 232,616	\$ 251,139	\$ 754,683	\$ 23,065	\$ 777,748
Net income (loss) attributable to Albemarle Corporation	33.3%	29.2%	20.1%	27.7%	8.6%	16.7%
Depreciation and amortization	8.6%	4.6%	4.8%	6.1%	8.6%	6.4%
Non-recurring and other unusual items	—%	—%	—%	—%	—%	1.5%
Interest and financing expenses	—%	—%	—%	—%	—%	1.7%
Income tax expense	—%	—%	—%	—%	—%	4.2%
Non-operating pension and OPEB items	—%	—%	—%	—%	—%	(0.3)%
Adjusted EBITDA Margin	41.9%	33.8%	24.9%	33.8%	17.2%	30.2%

Adj. EBITDA - Continuing Operations (12 Months Ended)

(\$ in thousands)	12 Months Ended				
	Sep 30, 2018	Dec 31, 2018	Mar 31, 2019	Jun 30, 2019	Sep 30, 2019
Continuing Operations					
Net income attributable to Albemarle Corporation	\$ 345,600	\$ 693,562	\$ 695,371	\$ 547,108	\$ 572,433
Depreciation and amortization	203,352	200,698	199,651	202,125	206,905
Non-recurring and other unusual items (excluding items associated with interest expense)	(109,373)	(90,112)	(131,540)	67,457	64,683
Interest and financing expenses	56,289	52,405	51,453	49,746	47,866
Income tax expense	511,851	144,826	161,979	112,288	104,462
Non-operating pension and OPEB items	(19,577)	5,285	6,899	8,427	10,071
Adj. EBITDA	\$ 988,142	\$ 1,006,664	\$ 983,813	\$ 987,151	\$ 1,006,420
Pro-forma: Net impact of Adj. EBITDA from divested businesses	(21,028)	(10,872)	—	—	—
Pro-forma Adj. EBITDA	\$ 967,114	\$ 995,792	\$ 983,813	\$ 987,151	\$ 1,006,420
Net Sales	\$ 3,311,040	\$ 3,374,950	\$ 3,385,385	\$ 3,416,563	\$ 3,518,562
Pro-forma: Net impact of Net Sales from divested business	(53,306)	(27,082)	—	—	—
Pro-forma Net Sales	\$ 3,257,734	\$ 3,347,868	\$ 3,385,385	\$ 3,416,563	\$ 3,518,562
Pro-forma Adj. EBITDA Margin	30%	30%	29%	29%	29%

See above for a reconciliation of Adj. EBITDA and pro-forma Adj. EBITDA, the non-GAAP financial measures, to Net income attributable to Albemarle Corporation, the most directly comparable financial measure calculated and reported in accordance with GAAP.

Adj. EBITDA - by Segment (12 Months Ended)

(\$ in thousands)	12 Months Ended				
	Sep 30, 2018	Dec 31, 2018	Mar 31, 2019	Jun 30, 2019	Sep 30, 2019
Lithium					
Net income attributable to Albemarle Corporation	\$ 409,753	\$ 428,212	\$ 413,047	\$ 413,058	\$ 424,881
Depreciation and amortization	96,798	95,193	93,220	93,260	95,102
Non-recurring and other unusual items	(1,635)	7,368	9,108	9,219	9,384
Adj. EBITDA	504,916	530,773	515,375	515,537	529,367
Net Sales	1,176,120	1,228,171	1,222,025	1,229,220	1,288,678
Adj. EBITDA Margin	43%	43%	42%	42%	41%
Bromine Specialties					
Net income attributable to Albemarle Corporation	\$ 241,822	\$ 246,509	\$ 254,453	\$ 264,396	\$ 271,653
Depreciation and amortization	40,501	41,607	42,291	44,313	46,143
Non-recurring and other unusual items	—	—	—	—	1,142
Adj. EBITDA	282,323	288,116	296,744	308,709	318,938
Net Sales	897,853	917,880	941,293	976,212	999,863
Adj. EBITDA Margin	31%	31%	32%	32%	32%
Catalysts					
Net income attributable to Albemarle Corporation	\$ 458,897	\$ 445,604	\$ 437,803	\$ 211,040	\$ 214,894
Depreciation and amortization	51,655	49,131	49,173	49,004	49,492
Non-recurring and other unusual items	(218,705)	(210,428)	(210,428)	8,277	8,277
Adj. EBITDA	291,847	284,307	276,548	268,321	272,663
Pro-forma: Net impact of Adj. EBITDA from divested business	(21,028)	(10,872)	—	—	—
Pro-forma Adj. EBITDA	270,819	273,435	276,548	268,321	272,663
Net Sales	1,107,987	1,101,554	1,092,485	1,073,820	1,084,027
Pro-forma: Net impact of net sales from divested business	(53,306)	(27,082)	—	—	—
Pro-forma Net Sales	1,054,681	1,074,472	1,092,485	1,073,820	1,084,027
Pro-forma Adj. EBITDA Margin	26%	25%	25%	25%	25%

See above for a reconciliation of Adj. EBITDA and pro-forma Adj. EBITDA on a segment basis, the non-GAAP financial measures, to Net income attributable to Albemarle Corporation ("earnings"), the most directly comparable financial measure calculated and reporting in accordance with GAAP.

Adj. EBITDA Supplemental¹

(\$ in thousands)

	12 Months Ended	Three Months Ended			
	Sep 30, 2019	Sep 30, 2019	Jun 30, 2019	Mar 31, 2019	Dec 31, 2018
Adj. EBITDA	\$ 1,006,420	\$ 254,351	\$ 261,900	\$ 225,867	\$ 264,302
Net income attributable to noncontrolling interests	71,730	16,548	20,772	17,957	16,453
Equity in net income of unconsolidated investments (net of tax)	(134,264)	(33,236)	(38,310)	(35,181)	(27,537)
Dividends received from unconsolidated investments	87,603	2,691	57,257	3,034	24,621
Consolidated EBITDA	\$ 1,031,489	\$ 240,354	\$ 301,619	\$ 211,677	\$ 277,839
Total Long Term Debt (as reported)	\$ 1,921,944				
Off balance sheet obligations and other	79,500				
Consolidated Funded Debt	\$ 2,001,444				
Less Cash	317,823				
Consolidated Funded Net Debt	\$ 1,683,621				
Consolidated Funded Debt to Consolidated EBITDA Ratio	1.9				
Consolidated Funded Net Debt to Consolidated EBITDA Ratio	1.6				

Diluted EPS

	Three Months Ended	
	September 30,	
	2019	2018
Diluted earnings per share attributable to Albemarle Corporation	\$ 1.46	\$ 1.20
Add back:		
Non-operating pension and OPEB items (net of tax)	(0.01)	(0.02)
Non-recurring and other unusual items (net of tax)		
Restructuring and other	—	0.04
Acquisition and integration related costs	0.03	0.03
Legal accrual	—	0.02
Other	0.05	0.04
Total non-recurring and other unusual items	0.08	0.13
Adj. diluted earnings per share ¹	\$ 1.53	\$ 1.31

Diluted EPS

	Three Months Ended		Year Ended	
	December 31,		December 31,	
	2018	2017	2018	2017
Diluted earnings (loss) per share	\$ 1.21	\$ (1.95)	\$ 6.34	\$ 0.49
Add back:				
Non-operating pension and OPEB items ^(a)	0.08	(0.08)	0.03	(0.09)
Non-recurring and other unusual items (net of tax)				
Utilization of inventory markup	—	—	—	0.15
Restructuring and other	—	(0.01)	0.03	0.11
Acquisition and integration related costs	0.05	0.06	0.14	0.24
Albemarle Foundation contribution	—	—	0.11	—
Gain on sale of business	0.06	—	(1.55)	—
Gain on acquisition	—	0.01	—	(0.04)
Legal accrual	—	—	0.21	—
Environmental accrual	—	—	0.11	—
Loss on extinguishment of debt	—	(0.04)	—	0.30
Indemnification adjustments	0.23	—	0.23	—
Note receivable reserve	—	0.18	—	0.18
Other	0.07	(0.02)	0.11	0.06
Discrete tax items	(0.17)	3.18	(0.27)	3.20
Total non-recurring and other unusual items	0.24	3.36	(0.88)	4.20
Adj. diluted earnings per share ¹	\$ 1.53	\$ 1.34	\$ 5.48	\$ 4.59

Effective Tax Rate

(\$ in thousands)

Three months ended September 30, 2019:

	Income before income taxes and equity in net income of unconsolidated investments	Income tax expense	Effective income tax rate
As reported	\$ 163,723	\$ 25,341	15.5%
Non-recurring, other unusual and non-operating pension and OPEB items	8,345	391	
As adjusted	<u>\$ 172,068</u>	<u>\$ 25,732</u>	15.0%

Three months ended September 30, 2018:

As reported	\$ 154,565	\$ 33,167	21.5%
Non-recurring, other unusual and non-operating pension and OPEB items	9,475	(2,237)	
As adjusted	<u>\$ 164,040</u>	<u>\$ 30,930</u>	18.9%

Equity Income and Noncontrolling Interest

	Three Months Ended September 30,			
	2019		2018	
	Equity Income	Noncontrolling Interest	Equity Income	Noncontrolling Interest
<i>(\$ in thousands)</i>				
Lithium	\$ 31,603	\$ —	\$ 17,901	\$ —
Bromine Specialties	—	(16,492)	—	(13,717)
Catalysts	1,633	—	4,180	—
Corporate	—	(56)	—	(17)
Total Company	\$ 33,236	\$ (16,548)	\$ 22,081	\$ (13,734)

The background is a composite image. The top portion shows a night cityscape with light trails from buildings and streets, dominated by blue and cyan tones. The bottom portion shows a road at night with light trails from traffic, featuring orange, yellow, and blue streaks. The overall effect is one of motion and modern technology.

Glossary

Glossary

General

- GBU: Global Business Unit
- OPEB: Other Postemployment Benefits
- MT: Metric Tons
- IoT: Internet of Things
- ppm: parts per million
- kT: 1000's Metric Tons
- CAPEX: Capital expenditure

Bromine Specialties

- CCF: Clear Completion Fluid
- PTA: Purified Terephthalic Acid
- PET: Polyethylene Terephthalate
- ICL: Israel Chemicals Ltd
- LXS: Lanxess
- CHMT: Chemtura
- JBC: Jordan Bromine Company
- APC: Arab Potash Company
- LSOH: Low Smoke, Zero Halogen
- EPS: Expanded Polystyrene
- XPS: Extruded Polystyrene
- HFO: Hydrofluoroolefin
- ADAS: Advanced Driver Assistance System
- FR: Flame Retardant

Catalyst

- FCC: Fluid Cracking Catalysts
- CFT: Clean Fuels Technology
- HPC: Hydro Processing Catalysts
- HC: Hydrocracking
- HCPT: Hydrocracking Pretreatment
- LPG: Liquefied Petroleum Gas
- VGO: Vacuum Gas Oil
- RESID: Residual Fuel Oil
- FBR: Fluidized Bed Reactor
- ULSD: Ultra-Low Sulfur Diesel
- PHEV: Plug-in Hybrid Electric Vehicle

Glossary Continued

Lithium

- Li: Lithium
- LiCl: Lithium Chloride
- LiO₂: Lithium Oxide
- Li₂CO₃: Lithium Carbonate
- TG: Technical Grade
- LCE: Lithium Carbonate Equivalent
- LDV: Light Duty Vehicles
- BEV: Battery Electric Vehicles
- HEV: Hybrid Electric Vehicle
- xEV: Plug-in Electric Vehicle
- PEV: Plug-in Electric Vehicle
- ESS: Energy Storage System
- CE: Consumer Electronics
- ICE: Internal Combustion Engine
- IPP: Independent Power Producer
- KWh: Kilowatt hour
- GWh: Gigawatt hour
- Pen. Rate: Penetration rate as a % of annual sale
- OII: Occupational Illness and Injury, OSHA standard - injuries per 200,000 hours worked



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