PQ Corporation

Fourth Quarter 2018

February 21, 2019 – 11:00 AM ET

INVESTOR PRESENTATION

LEGAL DISCLAIMER

Forward-Looking Statements

Some of the information contained in this presentation, the conference call during which this presentation is reviewed and any discussions that follow constitutes “forward-looking statements”. Forward-looking statements can be identified by words such as “anticipates,” “intends,” “plans,” “seeks,” “believes,” “estimates,” “expects,” “projects” and similar references to future periods. Forward-looking statements are based on our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. Examples of forward looking statements include, but are not limited to, statements regarding our results of operations, financial condition, liquidity, prospects, growth, strategies, product and service offerings and 2019 outlook. Our actual results may differ materially from those contemplated by the forward-looking statements. We caution you, therefore, against relying on any of these forward-looking statements. They are neither statements of historical fact nor guarantees or assurances of future performance. Important factors that could cause actual results to differ materially from those in the forward-looking statements include, but are not limited to, regional, national or global political, economic, business, competitive, market and regulatory conditions, currency exchange rates and other factors, including those described in the sections titled “Risk Factors” and “Management Discussion & Analysis of Financial Condition and Results of Operations” in our filings with the SEC, which are available on the SEC’s website at www.sec.gov. Any forward-looking statement made by us in this presentation, the conference call during which this presentation is reviewed and any discussions that follow speaks only as of the date on which it is made. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by applicable law.

Certain supply share statistics included in this presentation, including our estimated supply share positions, are based on management estimates.

Non-GAAP Financial Measures

This presentation includes certain non-GAAP financial measures, including Adjusted EBITDA, Adjusted EBITDA margin, adjusted net income, adjusted EPS, adjusted diluted EPS, and adjusted free cash flow, which are provided to assist in an understanding of our business and its performance. These non-GAAP financial measures should be considered only as supplemental to, and not as superior to, financial measures prepared in accordance with GAAP. Non-GAAP financial measures should be read only in conjunction with consolidated financials prepared in accordance with GAAP. Reconciliations of non-GAAP measures to the relevant GAAP measures are provided in the appendix of this presentation.

The Company is not able to provide a reconciliation of the Company’s non-GAAP financial guidance to the corresponding GAAP measures without unreasonable effort because of the inherent difficulty in forecasting and quantifying certain amounts necessary for such a reconciliation such as certain non-cash, nonrecurring or other items, including transaction and restructuring related items, that are included in net income and EBITDA as well as the related tax impacts of these items and asset dispositions/acquisitions and changes in foreign currency exchange rates that are included in cash flow, due to the uncertainty and variability of the nature and amount of these future charges and costs.

Non-GAAP Financial Measures – Business Combination

On May 4, 2016, we consummated a series of transactions (the "Business Combination") to reorganize and combine the businesses of PQ Holdings Inc. and Eco Services Operations LLC under a new holding company, PQ Group Holdings Inc. In this presentation, we present pro forma information for the years ended December 31, 2016 and 2015, which gives effect to the Business Combination and the related financing transactions as if they occurred on January 1, 2015. Such information is illustrative and not intended to represent what our results of operations would have been had the Business Combination and related financing transactions occurred at any time prior to May 4, 2016 or to project our results of operations for any future period. Such information may not be comparable to, or indicative of, future performance.

Zeolyst Joint Venture

Our zeolite catalysts product group operates through Zeolyst International and Zeolyst C.V. (our 50% owned joint ventures that we refer to collectively as our “Zeolyst Joint Venture”), which we account for as an equity method investment in accordance with GAAP. The presentation of our Zeolyst Joint Venture’s total net sales in this presentation represents 50% of the total net sales of our Zeolyst Joint Venture. We do not record sales by our Zeolyst Joint Venture as revenue and such sales are not consolidated within our results of operations. However, our Adjusted EBITDA reflects our share of the earnings of our Zeolyst Joint Venture that have been recorded as equity in net income from affiliated companies in our consolidated statements of operations for such periods and includes Zeolyst Joint Venture adjustments on a proportionate basis based on our 50% ownership interest. Accordingly, our Adjusted EBITDA margins are calculated including 50% of the total net sales of our Zeolyst Joint Venture for the relevant periods in the denominator.

2018 HIGHLIGHTS

- **Posted solid financial results year-over-year**
  - 2018 Sales up 9.2%, Adjusted EBITDA up 2.4% and Adjusted EBITDA Margin of 26.3%[1]
  - Higher pricing and volumes driven by strong underlying growth in most of our end markets
- **Delivered robust Adjusted Free Cash Flow**
  - Generated ~ $150 million in 2H2018
- **Repaid ~$135 million of debt in 2018 reducing Net Debt / Adjusted EBITDA leverage ratio to 4.5x**
  - Meaningful progress toward target of 3.0 to 3.5x Net Debt/Adjusted EBITDA leverage ratio

2019 outlook for continued growth from all business units expected to drive another year of robust Adjusted free cash flow

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(1) Adjusted EBITDA margin calculation includes proportionate 50% share of total net sales from Zeolyst joint venture

FOURTH QUARTER 2018 FINANCIAL RESULTS

Higher Pricing and Volumes Drive Sales Growth

($ in millions)	Fourth Quarter 2018	Fourth Quarter 2017	% Change		Full Year 2018	Full Year 2017	% Change
Sales	**380.1**	**358.1**	**6.1%**		**1,608.2**	**1,472.1**	**9.2%**
Adjusted EBITDA	**109.1**	**109.4**	**(0.3%)**		**464.0**	**453.3**	**2.4%**
Adjusted EBITDA Margin[1]	***26.2%***	***27.3%***	***(110 bps)***		***26.3%***	***28.1%***	***(180 bps)***

PQ Group Holdings Inc.	
Q4 Sales:	%
Volume	3.6
Price/Mix	4.9
Currency	(2.4)
Q4 Sales Change	**6.1**

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(1) Adjusted EBITDA margin calculation includes proportionate 50% share of total net sales from Zeolyst joint venture

ENVIRONMENTAL CATALYSTS & SERVICES RESULTS

Robust Refining Services Demand Drives EC&S Growth

($ in millions)	Fourth Quarter 2018	Fourth Quarter 2017	% Change		Full Year 2018	Full Year 2017	% Change
Sales							
PQ	141.3	122.9	15.0%		527.7	473.7	11.4%
Zeolyst JV	36.5	42.8	(14.7%)		156.7	143.8	9.0%
Adjusted EBITDA	**69.0**	**61.0**	**13.1%**		**257.6**	**243.6**	**5.7%**
Adjusted EBITDA Margin[1]	***38.8%***	***36.8%***	***200 bps***		***37.6%***	***39.4%***	***(180 bps)***

- Sales rise on volume and price increases in Refining Services
- Higher Adjusted EBITDA and margins led by Refining Services and Hurricane Harvey proceeds ($4 million or 240 bps)
- Zeolyst JV results lower due to expected decline in hydrocracking volumes

Environmental Catalysts & Services	
Q4 Sales:	%
Volume	10.0
Price/Mix	5.5
Currency	(0.5)
Q4 Sales Change	**15.0**

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(1) Adjusted EBITDA margin calculation includes proportionate 50% share of total net sales from Zeolyst joint venture

PERFORMANCE MATERIALS & CHEMICALS RESULTS

Highway Safety Volumes Rise; Cost Pressures Weigh on Margins

($ in millions)	Fourth Quarter 2018	Fourth Quarter 2017	% Change		Full Year 2018	Full Year 2017	% Change
Sales	239.5	235.9	1.5%		1,083.8	1,001.8	8.2%
Adjusted EBITDA	49.8	55.4	(10.2%)		243.4	240.2	1.3%
Adjusted EBITDA Margin	*20.8%*	*23.5%*	*(270 bps)*		*22.5%*	*24.0%*	*(150 bps)*

- Sales up on pricing and volumes in North America highway, including ThermoDrop®; Performance Chemicals lower on weaker demand
- Adjusted EBITDA down on higher costs related to ThermoDrop® and European highway, as well as unfavorable currency
- Adjusted EBITDA margin down on higher Performance Materials manufacturing and logistics costs (110 bps) and weaker European highway volumes (80 bps)

Performance Materials & Chemicals	
Q4 Sales:	%
Volume	0.2
Price/Mix	4.6
Currency	(3.3)
Q4 Sales Change	**1.5**

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ADJUSTED FREE CASH FLOW

Adjusted Free Cash Flow Rises ~ $110 million from 2017

($ in millions)	Full Year 2018	Full Year 2017
Cash Flow from Operations before interest and tax	**377.5**	**364.5**
Less:		
Cash paid for taxes	**23.8**	**29.2**
Cash paid for interest	**105.1**	**170.1**
Cash Flow from Operations	**248.6**	**165.2**
Less: Purchases of property, plant and equipment[1]	**131.7**	**140.5**
Free Cash Flow	**116.9**	**24.7**
Plus: Proceeds from sale of assets	**12.4**	**—**
Plus: Net interest proceeds on currency swaps	**4.9**	**—**
Adjusted Free Cash Flow	**134.2**	**24.7**

- Adjusted free cash flow for the quarter ~ $60 million; $134 million for the year

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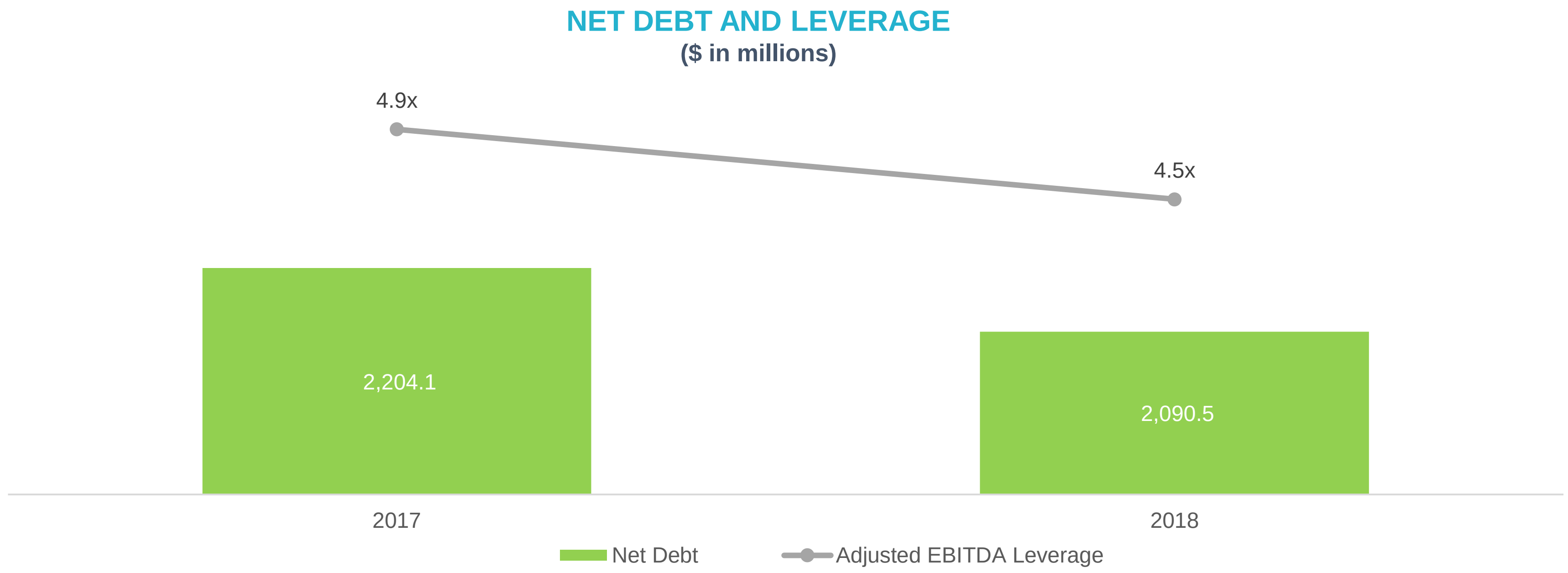
(1) Excludes the Company's proportionate 50% share of capital expenditures from the Zeolyst joint venture.

NET DEBT & LEVERAGE RATIO

Adjusted Free Cash Flow Used to Pay Down Debt



- Repaid ~$135 million of debt in 2018
- Meaningful progress towards 3.0x to 3.5x leverage target
- Fixed/floating ratio of 90/10 limits exposure to higher interest rates
  - Interest rate caps extend through July 2022

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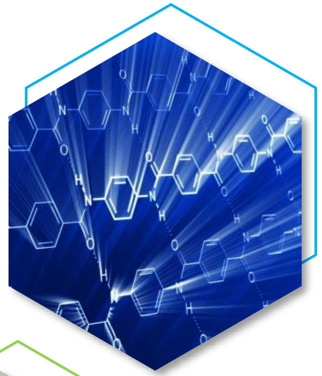
2019 GUIDANCE

Expected Adjusted Free Cash Flow Range of $125 Million to $145 Million

($ in millions except %)	2018 Actual	2019 Outlook
Sales	1,608.2	1,640 – 1,670
Adjusted EBITDA	464.0	470 – 485
Adjusted Free Cash Flow	**134.2**	**125 – 145**
Adjusted Diluted EPS	$0.87	$0.75 - $0.93
Interest Expense	113.7	115 – 120
Depreciation & Amortization		
PQ	185.2	190 – 200
Zeolyst JV	12.6	14 – 16
Capital Expenditures	131.7	140 - 150
Effective Tax Rate (ex tax reform)	23.5%	mid 20%

- Sales increases anticipated from all product groups
- Adjusted EBITDA guidance reflects higher anticipated turnaround costs in Refining Services ($5 million) and non-recurring insurance recovery ($6 million)



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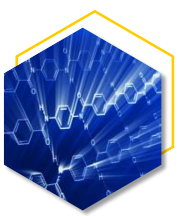
ADVANCING GOAL OF A SIMPLER + STRONGER PORTFOLIO

OPTIMIZING TECHNOLOGY MODEL

EVALUATION → OPTIMIZATION → ENABLEMENT

Commercial Value

- Rationalization
- Time Value of Technology
- Commercial Efficiency

SIMPLIFYING BUSINESS PORTFOLIO

EVALUATION → SIMPLIFICATION → TRANSFORMATION

Four Businesses

- Autonomy
- Focus
- Accountability
- Efficiency




OUR BUSINESS UNITS

Specialty, Leading and Differentiated

REFINING SERVICES

Increased octane demand

- Sulfuric acid production expertise
- End-to-end logistics and services

• > 50% US supplier of regeneration demand
• > 70% of regeneration contracts under 5 – 10 year take-or-pay terms
• ~90% costs protected with pass-through

CATALYSTS[1]

Tighter fuels standards
Light weighting demand

- Tailored catalyst solutions
- Zeolite IP chemistry expertise

• Leading catalyst supplier for hydrocracking sulfur removal
• Supplier to top 3 NOx emission control producers
• Specified with top silica licensors & sole supplier to top MMA producer

PERFORMANCE MATERIALS

Higher highway safety standards

- ~100 years glass technology leader
- Innovation in microspheres and thermoplastics technology

• Lead bead supplier to NA, Europe, Latin America
• Breadth of supply to diverse end markets
• Pricing and cost protection enabled by transactional volume and diverse customer and market base

PERFORMANCE CHEMICALS

Environmentally driven consumer demand

- Silicate/Zeolite innovation
- Tailored product sizing and coating

• Largest global supplier of sodium silicate
• > 70% sales contracted for 1 – 3 year terms
• A large component of our North America material cost protected with pass-through

Leading Furnace Technology / Material Science Capabilities / Global Operational Network

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(1) Includes Silica Catalysts and Zeolyst JV

PORTFOLIO STRENGTHS AND PRIORITIES

Drive Shareholder Value

COMPETITIVE ADVANTAGES

- Unique portfolio of businesses
- Leading positions in growth markets
- Innovation potential

EVOLUTION PATHWAYS

Simpler + Stronger

Opportunity Management

Commercial Intensity

Time Value of Technology

KEY VALUE DRIVERS

- Profitable Growth
- Capital Efficiency
- Free Cash Flow

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APPENDIX

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SALES AND ADJUSTED EBITDA MAJOR CHANGE FACTORS

Fourth Quarter and Full Year 2018

SALES

Sales (in $ millions and %)	Three months ended December 31, 2018						Year Ended December 31, 2018					
	PQ Group Holdings Inc.		Environmental Catalysts & Services		Performance Materials & Chemicals		PQ Group Holdings Inc.		Environmental Catalysts & Services		Performance Materials & Chemicals	
Sales:	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**
Volume	12.9	3.6	12.2	10.0	0.7	0.2	74.8	5.0	25.5	5.4	49.2	5.0
Price/Mix	17.6	4.9	6.8	5.5	10.8	4.6	59.9	4.1	28.6	6.0	31.3	3.1
Currency	(8.5)	(2.4)	(0.6)	(0.5)	(7.9)	(3.3)	1.4	0.1	(0.1)	—	1.5	0.1
Sales Change	**22.0**	**6.1**	**18.4**	**15.0**	**3.6**	**1.5**	**136.1**	**9.2**	**54.0**	**11.4**	**82.0**	**8.2**

ADJUSTED EBITDA

Adjusted EBITDA (in $ millions and %)	Three months ended December 31, 2018						Year Ended December 31, 2018					
	PQ Group Holdings Inc.		Environmental Catalysts & Services		Performance Materials & Chemicals		PQ Group Holdings Inc.		Environmental Catalysts & Services		Performance Materials & Chemicals	
Adjusted EBITDA:	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**	**$**	**%**
Volume/Mix	4.0	3.7	5.4	8.8	(1.4)	(2.5)	32.1	7.0	27.1	11.0	5.0	2.1
Price	17.5	16.0	6.7	11.0	10.8	19.5	59.9	13.2	28.6	11.8	31.3	13.3
Variable Cost	(15.5)	(14.2)	(6.0)	(9.8)	(9.5)	(17.1)	(48.9)	(10.8)	(26.6)	(10.9)	(21.8)	(9.3)
Currency	(1.5)	(1.4)	(0.3)	(0.5)	(1.3)	(2.3)	1.8	0.5	0.1	—	1.6	0.7
Other	(4.8)	(4.4)	2.2	3.6	(4.3)	(7.8)	(34.2)	(7.5)	(15.2)	(6.2)	(13.0)	(5.5)
Adjusted EBITDA Change	**(0.3)**	**(0.3)**	**8.0**	**13.1**	**(5.7)**	**(10.2)**	**10.7**	**2.4**	**14.0**	**5.7**	**3.1**	**1.3**

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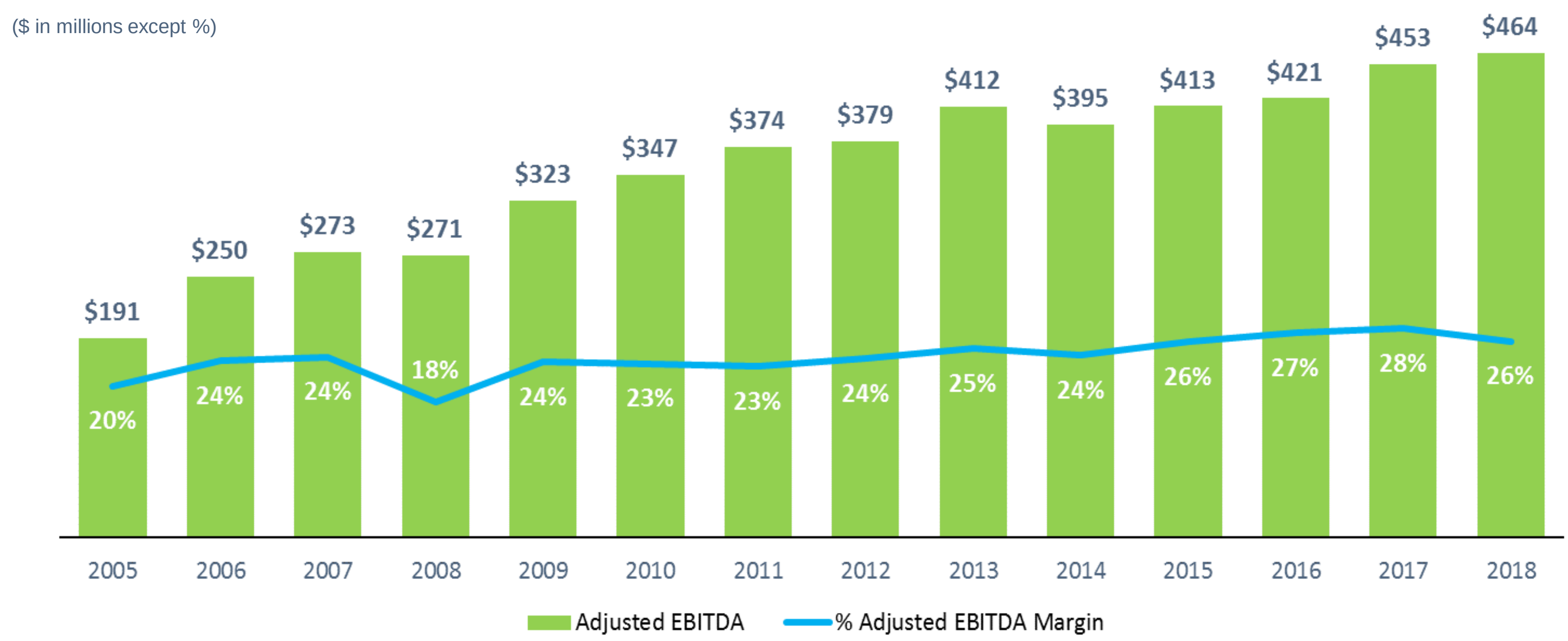
DEMONSTRATED STRONG FINANCIAL PERFORMANCE ACROSS MACROECONOMIC CYCLES

Stability Through Cycles with Attractive Margins

Adjusted EBITDA and Adjusted EBITDA Margin (%)[1,2,3]



(1) Adjusted EBITDA for the period from 2005 to 2014 represents Legacy Eco Adjusted EBITDA and Legacy PQ Adjusted EBITDA prior to the Business Combination. Adjusted EBITDA for 2015 and 2016 is presented on a pro forma basis to give effect to the Business Combination as further described in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2017
(2) See Reconciliations included within this appendix for additional information regarding Adjusted EBITDA, including a reconciliation of the amounts to net income (loss) for each of the periods presented as well as information regarding the Legacy Eco and Legacy PQ financial information included in the such amounts
(3) Adjusted EBITDA margin calculation includes proportionate 50% share of total net sales from Zeolyst joint venture

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SUPPLEMENTAL INFORMATION

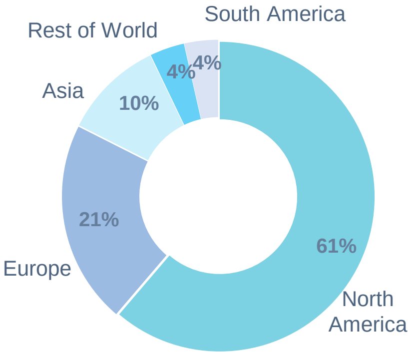
2018 Capital Expenditures, Revenues by End Use, Customer and Region

CAPITAL EXPENDITURES ($ in millions)	Full Year 2018	Full Year 2017
By Segment		
Performance Materials & Chemicals	75.5	84.8
Environmental Catalysts & Services [1]	55.0	53.1
Corporate & Adjustments [2]	1.2	2.6
Total Capital Expenditures	131.7	140.5
Maintenance[3]	94.7	102.6
Growth[5]	37.0	37.9
Total	131.7	140.5

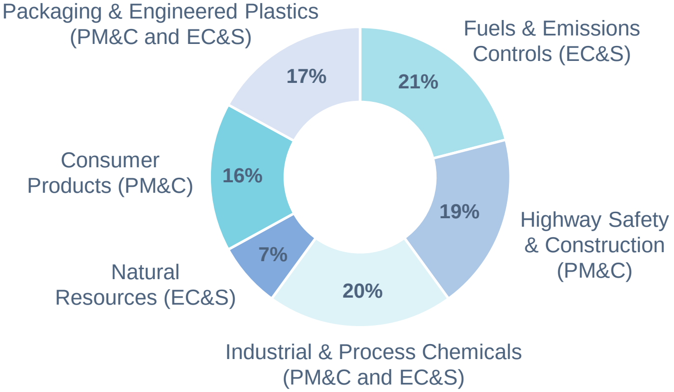
% OF GROWTH BY END USE[4]	
Fuels & Emissions Controls	+ 6%
Highway Safety & Construction	+ 19%
Industrial & Process Chemicals	+ 6%
Natural Resources	+ 16%
Consumer Products	+ 1%
Packaging & Engineered Plastics	+ 13%

CAPITALIZATION	2018
Debt:	**($ in millions)**
ABL Revolving Credit Facility	**—**
USD First Lien Term Loan	**1,157.5**
First Lien Secured Notes	**625.0**
Total First Lien Debt	**1,782.5**
Senior Unsecured Notes	**300.0**
Other debt	**65.9**
Total Debt	**2,148.4**
Cash	**57.9**
Net Debt	**2,090.5**
Net Debt/Adjusted EBITDA	**4.5x**

% SALES BY REGION[4]



% OF SALES BY END USE[4]



(1) Excludes the Company's proportionate share of capital expenditures from the Zeolyst joint venture
(2) Includes Corporate capital expenditures and the cash impact from changes in capital expenditures in accounts payable
(3) Includes the cash impact from changes in capital expenditures in accounts payable
(4) Sales includes proportionate 50% share of sales from Zeolyst joint venture
(5) Growth capital includes capital used to reduce fixed costs

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RECONCILATION OF CASH FROM OPERATIONS TO ADJUSTED FREE CASH FLOW

Third and Fourth Quarters and Full Year 2018

($ in millions)	Three months ended September 30,		Three months ended December 31,		Year ended December 31,	
	2018	2017	2018	2017	2018	2017
Net cash provided by operating activities	115.9	88.0	82.6	55.4	248.6	165.2
Less: Purchases of property, plant and equipment[1]	(29.2)	(29.6)	(36.4)	(50.3)	(131.7)	(140.5)
Free cash flow	86.7	58.4	46.2	5.1	116.9	24.7
Adjustments to free cash flow						
Plus: Net interest proceeds on currency swaps	4.3	—	0.6	—	4.9	—
Plus: Proceeds from sale of assets	—	—	12.4	—	12.4	—
Adjusted free cash flow[2]	91.0	58.4	59.2	5.1	134.2	24.7
Net cash used in investing activities[3]	(29.5)	(33.6)	(23.5)	(49.5)	(119.3)	(196.0)
Net cash (used in) provided by financing activities	(82.5)	(37.6)	(59.4)	(9.4)	(137.2)	19.8

(1) Excludes the Company's proportionate 50% share of capital expenditures from the Zeolyst joint venture.

(2) We define adjusted free cash flow as net cash provided by operating activities less purchases of property, plant and equipment, adjusted for proceeds from sale of assets and net interest proceeds on swaps designated as net investment hedges. Adjusted free cash flow is a non-GAAP financial measure that we believe will enhance a prospective investor's understanding of our ability to generate additional cash from operations, including the reduction in cash paid for interest related to our cross-currency interest rate swaps, and is an important financial measure for use in evaluating our financial performance. Our presentation of adjusted free cash flow is not intended to replace, and should not be considered superior to, the presentation of our net cash provided by operating activities determined in accordance with GAAP. Additionally, our definition of adjusted free cash flow is limited, in that it does not represent residual cash flows available for discretionary expenditures, due to the fact that the measure does not deduct the payments required for debt service and other contractual obligations or payments made for business acquisitions. Therefore, we believe it is important to view adjusted free cash flow as a measure that provides supplemental information to our condensed consolidated statements of cash flows.

(3) Net cash used in investing activities includes purchases of property, plant and equipment, proceeds on sale of assets and net interest proceeds on swaps designated as net investment hedges, which are also included in our computation of adjusted free cash flow.

RECONCILATION OF QUARTERLY NET INCOME TO ADJUSTED NET INCOME AND ADJUSTED DILUTED EARNINGS PER SHARE

Year 2018 and 2017

($ in millions except per share data)	Three Months Ended				Year Ended	Three Months Ended				Year Ended
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	December 31, 2018	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017	December 31, 2017
Reconciliation of Sales to Adjusted Net Income (loss)										
Sales	366.2	434.7	427.2	380.1	1,608.2	332.9	389.3	391.8	358.1	1,472.1
Cost of goods sold	288.1	326.3	319.7	292.4	1,226.5	250.2	281.8	289.3	274.0	1,095.3
Gross Profit	78.1	108.4	107.5	87.7	381.7	82.7	107.5	102.5	84.1	376.8
Selling, general and administrative expenses	40.6	43.5	42.1	42.3	168.6	34.7	35.3	36.3	40.3	146.7
Other operating expense, net	9.3	15.9	16.5	(12.2)	29.5	10.3	17.0	19.8	17.0	64.2
Operating Income	28.2	49.0	48.9	57.6	183.6	37.7	55.2	46.4	26.8	165.9
Equity in net (income) from affiliated companies	(11.9)	(13.7)	(5.6)	(6.5)	(37.6)	(5.9)	(8.7)	(10.3)	(13.9)	(38.8)
Interest expense, net	29.2	27.2	28.2	29.1	113.7	46.8	48.2	49.1	35.0	179.0
Debt extinguishment costs	5.9	—	0.9	1.1	7.8	—	—	0.5	61.4	61.9
Other expense, net	5.0	5.7	2.5	(2.0)	11.1	2.0	14.4	5.0	3.2	24.4
Income (loss) before income taxes and non-controlling interest	—	29.8	22.9	35.9	88.6	(5.2)	1.3	2.1	(58.9)	(60.6)
(Benefit) provision for income taxes	(0.5)	13.6	8.5	7.4	29.0	(2.9)	3.0	5.2	(124.5)	(119.2)
Effective tax rate	*NM*	*45.8 %*	*37.0 %*	*20.6 %*	*32.7 %*	*55.8 %*	*224.9 %*	*239.9 %*	*211.4 %*	*196.6 %*
Net Income (loss)	0.5	16.2	14.4	28.5	59.6	(2.3)	(1.7)	(3.1)	65.6	58.6
Less: Net income (loss) attributable to the non-controlling interest	0.3	0.4	0.2	0.3	1.3	0.2	(0.1)	0.3	0.6	1.0
Net Income (loss) attributable to PQ Group Holdings, Inc. [1]	0.2	15.8	14.2	28.2	58.3	(2.5)	(1.6)	(3.4)	65.0	57.6
Amortization of investment in affiliate step-up [b]	1.2	1.0	0.9	1.1	4.2	2.1	0.9	1.0	2.5	6.5
Amortization of inventory step-up [c]	1.1	—	—	—	1.0	0.5	—	—	0.1	0.6
Debt extinguishment costs	4.1	—	0.2	0.5	4.9	—	—	0.3	46.1	46.4
Net loss on asset disposal [d]	0.8	3.1	2.9	(2.7)	4.1	0.2	1.4	2.1	0.2	3.9
Foreign currency exchange loss [e]	2.9	5.2	4.0	(3.9)	8.2	0.2	9.5	5.2	1.2	16.1
LIFO expense [f]	3.4	—	0.3	1.6	5.3	1.4	—	0.5	0.9	2.8
Management advisory fees [g]	—	—	—	—	—	0.7	0.7	0.8	—	2.8
Transaction and other related costs [h]	0.3	0.2	0.1	—	0.6	0.8	1.7	0.6	2.5	5.6
Equity-based and other non-cash compensation	2.6	2.5	2.2	7.6	14.9	0.9	0.6	0.7	4.4	6.6
Restructuring, integration and business optimization expenses [i]	0.7	1.6	1.2	5.3	8.8	1.0	0.7	2.9	3.0	7.6
Defined benefit pension plan cost [j]	0.4	(0.3)	0.1	(0.7)	(0.5)	0.4	0.4	0.5	0.7	2.0
Gain on contract termination [k]	—	—	—	(13.0)	(13.0)	—	—	—	—	—
Other [l]	0.7	2.0	0.4	1.4	4.6	0.3	1.0	—	5.3	5.9
Adjusted net income, including tax reform and non-cash GILTI tax	18.4	31.1	26.5	25.4	101.4	6.0	15.3	11.2	131.9	164.4
Impact of tax reform [2]	—	1.1	(2.5)	(4.5)	(6.0)	—	—	—	(106.5)	(106.5)
Impact of non-cash GILTI tax [3]	2.5	5.0	11.4	2.2	21.2	—	—	—	—	—
Adjusted net income	20.9	37.2	35.4	23.1	116.6	6.0	15.3	11.2	25.4	57.9
Diluted net income (loss) per share:	0.00	0.12	0.11	0.21	0.43	(0.02)	(0.02)	(0.03)	0.49	0.52
Adjusted diluted net income per share:	0.16	0.28	0.26	0.17	0.87	0.06	0.15	0.11	0.19	0.52
Diluted Weighted Average shares outstanding	133.9	134.2	134.6	135.0	134.7	103.9	104.0	104.1	133.9	111.7

(1) For additional information with respect to each adjustment, see “Reconciliations of Non-GAAP Financial Measures” within this appendix.
(2) Represents the provisional benefit for the impact of the U.S. Tax Cuts and Jobs Act of 2017 and the Dutch Tax Plan 2019 recorded in Net Income.
(3) Represents the impact associated with Tax Cuts and Jobs Act of 2017 Global Intangible Low Taxed Income (“GILTI”). The Company is required to record a non-cash provision on GILTI as a result of having a U.S. Net Operating Loss (“NOL”) which precludes us from using foreign tax credits (“FTCs”) to offset the GILTI until the NOL is fully utilized. As this provision does not impact our cash taxes and we will be able to utilize FTCs to offset GILTI once the NOLs are utilized, we do not view this as core to our ongoing business operations.

RECONCILATION OF NET INCOME (LOSS) TO SEGMENT ADJUSTED EBITDA

Year 2018 and 2017

($ in millions)	Three Months Ended				Year Ended	Three Months Ended				Year Ended
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	December 31, 2018	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017	December 31, 2017
Reconciliation of net income (loss) attributable to PQ Group Holdings Inc. to Segment Adjusted EBITDA										
Net income (loss) attributable to PQ Group Holdings Inc.	0.2	15.8	14.2	28.2	58.3	(2.5)	(1.6)	(3.4)	65.0	57.6
Provision for (benefit from) income taxes	(0.5)	13.6	8.5	7.4	29.0	(2.9)	3.0	5.2	(124.5)	(119.2)
Interest expense	29.2	27.2	28.2	29.1	113.7	46.8	48.2	49.1	35.0	179.0
Depreciation and amortization	48.5	47.0	43.8	45.9	185.2	40.6	42.6	45.9	48.0	177.1
EBITDA	**77.4**	**103.6**	**94.7**	**110.5**	**386.2**	**82.0**	**92.2**	**96.8**	**23.5**	**294.5**
Joint venture depreciation, amortization and interest [a]	3.3	2.6	3.3	3.4	12.6	2.6	2.9	2.6	3.0	11.1
Amortization of investment in affiliate step-up [b]	1.7	1.7	1.7	1.6	6.6	3.5	1.7	1.7	1.7	8.6
Amortization of inventory step-up [c]	1.6	—	—	—	1.6	0.9	—	—	—	0.9
Debt extinguishment costs	5.9	—	0.9	1.0	7.8	—	—	0.5	61.4	61.9
Net loss on asset disposals [d]	1.2	4.8	5.2	(4.5)	6.6	0.3	2.6	3.5	(0.6)	5.8
Foreign currency exchange loss [e]	5.1	6.8	3.5	(1.5)	13.8	2.0	14.4	5.3	4.2	25.8
LIFO expense [f]	4.9	0.1	0.9	2.5	8.4	2.4	—	0.8	0.5	3.7
Management advisory fees [g]	—	—	—	—	—	1.3	1.3	1.3	—	3.8
Transaction related costs [h]	0.4	0.3	0.2	—	0.9	1.4	3.0	1.0	2.1	7.4
Equity-based and other non-cash compensation	3.8	3.8	4.3	7.6	19.5	1.7	1.2	1.0	4.9	8.8
Restructuring, integration and business optimization expenses [i]	1.1	2.4	2.2	8.3	14.0	1.7	1.4	5.0	5.2	13.2
Defined benefit plan pension cost [j]	0.6	(0.4)	0.1	(1.1)	(0.8)	0.7	0.7	0.8	0.7	2.9
Gain on contract termination	—	—	—	(20.6)	(20.6)	—	—	—	—	—
Other [k]	0.9	3.2	1.1	1.8	7.4	0.7	1.4	(0.4)	2.8	4.9
Adjusted EBITDA	**107.9**	**128.9**	**118.1**	**109.1**	**464.0**	**101.2**	**122.8**	**119.9**	**109.4**	**453.3**
Unallocated corporate costs	7.7	9.4	10.3	9.7	37.0	7.7	7.9	7.9	7.0	30.5
Total Segment Adjusted EBITDA[1]	**115.6**	**138.3**	**128.4**	**118.8**	**501.0**	**108.9**	**130.7**	**127.8**	**116.4**	**483.8**
EBITDA Adjustments by Line Item										
EBITDA	**77.4**	**103.6**	**94.7**	**110.5**	**386.2**	**82.0**	**92.2**	**96.8**	**23.5**	**294.5**
Cost of goods sold	7.3	2.6	2.1	4.3	16.3	4.0	0.7	2.3	1.1	7.9
Selling, general and administrative expenses	4.9	4.8	5.4	7.9	23.0	2.3	2.1	2.0	6.9	13.2
Other operating expense, net	2.4	7.2	7.3	(17.8)	(0.9)	4.7	9.0	9.1	8.7	31.5
Equity in net (income) loss from affiliated companies	1.7	1.7	1.7	1.6	6.6	3.5	1.7	1.6	1.7	8.6
Other expense (income), net[2]	10.9	6.4	3.6	(0.8)	20.2	2.1	14.2	5.5	64.5	86.5
Joint venture depreciation, amortization and interest(a)	3.3	2.6	3.3	3.4	12.6	2.6	2.9	2.6	3.0	11.1
Adjusted EBITDA	**107.9**	**128.9**	**118.1**	**109.1**	**464.0**	**101.2**	**122.8**	**119.9**	**109.4**	**453.3**

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(1) For additional information with respect to each adjustment, see “Reconciliation of Non-GAAP Financial Measures”
(2) Other expense (income), net includes debt extinguishment costs

QUARTERLY SEGMENT SALES AND ADJUSTED EBITDA

Year 2018 and 2017

($ in millions except %)	Three Months Ended March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	Year Ended December 31, 2018	Three Months Ended March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017	Year Ended December 31, 2017
Sales:										
Silica Catalysts	16.5	17.3	16.3	21.9	72.1	17.1	20.1	15.1	23.0	75.3
Refining Services	100.7	112.1	123.4	119.4	455.6	94.2	103.9	100.4	99.9	398.4
Environmental Catalysts & Services	**117.2**	**129.4**	**139.7**	**141.3**	**527.7**	**111.3**	**124.0**	**115.5**	**122.9**	**473.7**
Performance Materials	62.7	126.5	115.4	73.6	378.3	53.8	99.5	104.4	66.5	324.2
Performance Chemicals	190.0	183.8	174.7	168.9	717.3	170.9	169.0	175.5	172.1	687.6
Eliminations	(2.9)	(4.1)	(1.8)	(3.0)	(11.8)	(2.1)	(2.4)	(2.8)	(2.7)	(10.0)
Performance Materials & Chemicals	**249.8**	**306.2**	**288.3**	**239.5**	**1,083.8**	**222.6**	**266.1**	**277.1**	**235.9**	**1,001.8**
Inter-segment sales eliminations	(0.8)	(0.9)	(0.8)	(0.7)	(3.3)	(1.0)	(0.8)	(0.8)	(0.7)	(3.4)
Total sales	**366.2**	**434.7**	**427.2**	**380.1**	**1,608.2**	**332.9**	**389.3**	**391.8**	**358.1**	**1,472.1**
Zeolyst joint venture net sales	38.3	49.5	32.3	36.5	156.7	32.7	30.7	37.6	42.8	143.8
Adjusted EBITDA:										
Environmental Catalysts & Services	58.4	64.9	65.3	69.0	257.6	56.4	64.3	61.9	61.0	243.6
Performance Materials & Chemicals	57.2	73.4	63.1	49.8	243.4	52.5	66.4	65.9	55.4	240.2
Total Segment Adjusted EBITDA	**115.6**	**138.3**	**128.4**	**118.8**	**501.0**	**108.9**	**130.7**	**127.8**	**116.4**	**483.8**
Corporate	(7.7)	(9.4)	(10.3)	(9.7)	(37.0)	(7.7)	(7.9)	(7.9)	(7.0)	(30.5)
Total Adjusted EBITDA	**107.9**	**128.9**	**118.1**	**109.1**	**464.0**	**101.2**	**122.8**	**119.9**	**109.4**	**453.3**
Zeolyst Joint Venture Adjusted EBITDA[1]	16.8	17.9	10.5	11.5	56.7	12.1	13.2	14.4	18.5	58.2
Adjusted EBITDA Margin:										
Environmental Catalysts & Services[2]	37.6%	36.3%	38.0%	38.8%	37.6%	39.2%	41.6%	40.4%	36.8%	39.4%
Performance Materials & Chemicals	22.9%	24.0%	21.9%	20.8%	22.5%	23.6%	25.0%	23.8%	23.5%	24.0%
Total Adjusted EBITDA Margin[2]	**26.7%**	**26.6%**	**25.7%**	**26.2%**	**26.3%**	**27.7%**	**29.2%**	**27.9%**	**27.3%**	**28.1%**

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(1) Zeolyst joint venture adjusted EBITDA, included in Environmental Catalysts & Services, includes equity in net income plus proportionate 50% share of joint venture depreciation, amortization and interest
(2) Adjusted EBITDA margin calculation includes proportionate 50% share of net sales from Zeolyst joint venture.

RECONCILIATION OF SALES AND ADJUSTED EBITDA

2005 – 2017 Legacy Business

($ in millions)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 Pro forma [3]	2016 Pro forma [3]	2017	2018
	Year Ended December 31,													
Reconciliation of sales and adjusted EBITDA														
Legacy PQ Sales [1]	635.3	708.6	775.0	977.0	1,009.9	1,087.9	1,115.0	1,084.8	1,085.0	1,114.9				
Legacy Eco Services Sales [2,5]	260.2	288.7	289.4	449.4	293.9	331.0	415.4	410.4	390.8	397.4				
Total Legacy Sales	**895.5**	**997.3**	**1,064.4**	**1,426.4**	**1,303.8**	**1,418.9**	**1,530.4**	**1,495.2**	**1,475.8**	**1,512.3**	**1,413.2**	**1,403.0**	**1,472.1**	**1,608.2**
Zeolyst Joint Venture total net sales	**45.6**	**60.4**	**63.8**	**69.4**	**63.2**	**69.9**	**99.0**	**87.3**	**148.5**	**106.7**	**159.8**	**131.3**	**143.8**	**156.7**
Legacy PQ Adjusted EBITDA[1]	119.6	151.2	177.3	164.3	225.4	253.8	274.6	268.7	306.8	288.1				
Legacy Eco Services Adjusted EBITDA [2]	71.5	99.0	96.0	106.4	97.5	93.6	99.8	110.8	105.5	107.2				
Total Adjusted EBITDA	**191.1**	**250.2**	**273.3**	**270.7**	**322.9**	**347.4**	**374.4**	**379.5**	**412.3**	**395.3**	**413.1**	**420.7**	**453.3**	**464.0**
% Adjusted EBITDA Margin[4]	**20.3%**	**23.7%**	**24.2%**	**18.1%**	**23.6%**	**23.3%**	**23.0%**	**24.0%**	**25.4%**	**24.4%**	**26.3%**	**27.4%**	**28.1%**	**26.3%**

(1) Legacy PQ is the results of PQ Holdings Inc. prior to the Business Combination in May 2016
(2) Legacy Eco Services is the results of Eco Services which prior to December 1, 2014 was part of Solvay / Rhodia. Information for 2005 through 2010 is derived from financial information obtained in connection with the acquisition of Legacy Eco and is unaudited and, in some cases, is based upon management estimates
(3) Reflects unaudited pro forma results which gives effect to the Business Combination
(4) Adjusted EBITDA margin calculation includes proportionate 50% share of sales from Zeolyst joint venture
(5) Balances presented for Legacy Eco Services in 2014 includes $361.8 and $35.5 of sales and $98.1 and $9.1 of Adjusted EBITDA, for the predecessor and successor periods, respectively. Refer to reconciliations for additional details.

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RECONCILIATIONS FOR ADJUSTED EBITDA

2005 – 2014 Legacy PQ[1] Net Income (Loss) to Adjusted EBITDA Reconciliation

	Year Ended December 31,									
($ in millions)	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Reconciliation of net income (loss) attributable to Legacy PQ to Adjusted EBITDA										
Net income (loss) attributable to PQ Group Holdings Inc.	(41.9)	14.2	(64.7)	(168.2)	(10.6)	11.5	(65.4)	5.2	26.7	(3.6)
Provision for (benefit from) income taxes	(2.2)	14.0	(29.5)	(28.7)	(12.1)	(4.7)	(0.4)	18.9	10.6	7.5
Interest expense	38.3	51.9	79.5	119.2	117.8	112.9	121.2	111.2	120.3	111.6
Depreciation and amortization	44.6	46.8	57.1	88.6	99.6	96.1	98.0	93.4	89.4	91.3
EBITDA	**38.8**	**126.9**	**42.4**	**10.9**	**194.7**	**215.8**	**153.4**	**228.7**	**247.0**	**206.8**
Joint venture depreciation, amortization and interest	2.4	2.1	2.1	2.3	2.1	2.5	3.2	3.3	6.1	6.9
Amortization of investment in affiliate step-up	6.1	1.2	24.7	4.0	2.7	2.7	2.7	2.6	2.4	2.4
Amortization of inventory step-up	32.7	14.0	22.2	28.3	—	—	—	—	—	—
Impairment of long-lived and intangible assets	—	—	—	—	0.3	4.2	67.0	—	0.9	—
Debt extinguishment costs	—	—	32.6	—	—	—	2.3	20.1	20.3	2.5
Net loss on asset disposals	0.3	0.2	0.7	0.1	1.0	(1.1)	2.2	0.8	0.7	0.7
Foreign currency exchange loss	—	—	1.2	77.0	(26.9)	13.9	5.6	(1.9)	4.4	23.4
Non-cash revaluation of inventory, including LIFO	(0.8)	—	1.7	1.1	7.6	(1.5)	1.5	0.3	1.2	0.8
Management advisory fees	—	2.0	2.0	3.5	5.0	5.0	7.0	7.5	5.0	5.0
Transaction related costs	29.9	0.5	35.8	11.5	0.5	5.5	7.9	0.5	5.6	24.4
Equity-based and other non-cash compensation	0.1	0.1	0.3	0.7	0.2	1.0	0.3	—	1.0	—
Restructuring, integration and business optimization expenses	12.6	4.4	7.3	7.3	11.7	2.6	5.9	5.6	5.4	4.6
Defined benefit plan pension cost	—	—	—	0.6	(0.1)	—	—	0.5	3.6	1.8
Other	(2.5)	(0.2)	4.3	17.0	26.6	3.2	15.6	0.7	3.2	8.8
Adjusted EBITDA	**119.6**	**151.2**	**177.3**	**164.3**	**225.4**	**253.8**	**274.6**	**268.7**	**306.8**	**288.1**

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(1) Legacy PQ is the results of PQ Holdings Inc. prior to the Business Combination in May 2016

RECONCILIATIONS FOR ADJUSTED EBITDA

2005 – 2014 Legacy Eco Services[1] Net Income (Loss) to Adjusted EBITDA Reconciliation

($ in millions)	Year Ended December 31, 2005	2006	2007	2008	2009	2010	2011	2012	2013	2014 Successor	2014 Predecessor
Reconciliation of net income (loss) attributable to Legacy Eco Services to Adjusted EBITDA											
Net income (loss) attributable to PQ Group Holdings Inc.	45.4	73.0	73.8	86.0	73.4	65.4	35.8	48.5	39.3	(22.1)	30.5
Provision for (benefit from) income taxes	—	—	—	—	—	—	20.5	26.3	21.4	—	14.6
Interest expense	—	—	—	—	—	—	0.2	0.2	0.1	8.5	0.1
Depreciation and amortization	26.1	26.0	22.2	20.4	24.1	27.5	30.7	38.8	43.5	3.0	42.5
EBITDA	**71.5**	**99.0**	**96.0**	**106.4**	**97.5**	**92.9**	**87.2**	**113.8**	**104.3**	**(10.6)**	**87.7**
Amortization of inventory step-up	—	—	—	—	—	—	2.1	—	—	3.5	—
Net loss on asset disposals	—	—	—	—	—	—	—	—	—	—	—
Management advisory fees	—	—	—	—	—	—	—	—	—	—	—
Transaction related costs	—	—	—	—	—	—	—	—	—	15.5	—
Equity-based and other non-cash compensation	—	—	—	—	—	—	0.4	0.6	0.7	—	0.5
Restructuring, integration and business optimization expenses	—	—	—	—	—	—	—	—	—	0.2	—
Defined benefit plan pension cost	—	—	—	—	—	—	—	—	—	—	—
Transition services	—	—	—	—	—	—	—	—	—	—	—
Other	—	—	—	—	—	0.7	10.1	(3.6)	0.5	0.5	9.9
Adjusted EBITDA	**71.5**	**99.0**	**96.0**	**106.4**	**97.5**	**93.6**	**99.8**	**110.8**	**105.5**	**9.1**	**98.1**

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(1) Legacy Eco Services is the results of Eco Services which prior to December 1, 2014 was part of Solvay / Rhodia. Information for 2005 through 2010 is derived from financial information obtained in connection with the acquisition of Legacy Eco and is unaudited and, in some cases, is based upon management estimates.

RECONCILIATIONS FOR ADJUSTED EBITDA

2015 - 2018 Post-Business Combination PQ Net Income (Loss) to Adjusted EBITDA Reconciliation

($ in millions)	Year Ended December 31, 2015 Pro forma [1]	2016 Pro forma [1]	2017	2018
Reconciliation of net income (loss) attributable to PQ Group Holdings Inc. to Segment Adjusted EBITDA				
Net income (loss) attributable to PQ Group Holdings Inc.	(26.9)	(59.0)	57.6	58.3
Provision for (benefit from) income taxes	1.2	58.0	(119.2)	29.0
Interest expense	199.6	187.9	179.0	113.7
Depreciation and amortization	152.2	165.8	177.1	185.2
EBITDA	**326.1**	**352.7**	**294.5**	**386.1**
Joint venture depreciation, amortization and interest [a]	7.9	10.3	11.1	12.6
Amortization of investment in affiliate step-up [b]	6.6	5.8	8.6	6.6
Amortization of inventory step-up [c]	—	4.9	0.9	1.6
Impairment of long-lived and intangible assets	0.4	6.9	—	—
Debt extinguishment costs	—	1.8	61.9	7.8
Net loss on asset disposals [d]	5.5	4.8	5.8	6.6
Foreign currency exchange loss [e]	21.1	(9.0)	25.8	13.8
LIFO expense [f]	(2.1)	1.3	3.7	8.4
Management advisory fees [g]	5.6	5.3	3.8	—
Transaction related costs [h]	13.2	2.6	7.4	0.9
Equity-based and other non-cash compensation	4.2	6.5	8.8	19.5
Restructuring, integration and business optimization expenses [i]	8.6	17.9	13.2	14.0
Defined benefit plan pension cost [j]	6.1	2.8	2.9	(0.8)
Transition services	4.9	—	—	—
Gain on contract termination [k]	—	—	—	(20.6)
Other [l]	5.1	6.2	4.9	7.4
Adjusted EBITDA	**413.2**	**420.8**	**453.3**	**464.0**

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(1) Reflects unaudited pro forma results which gives effect to the Business Combination as further described in the company's annual report on Form 10-K for the year ended December 31, 2017

RECONCILIATION OF NON-GAAP FINANCIAL MEASURES

Descriptions to PQ Non-GAAP Reconciliations

Descriptions to PQ Non-GAAP Reconciliations

a) We use Adjusted EBITDA as a performance measure to evaluate our financial results. Because our Environmental Catalysts and Services segment includes our 50% interest in our Zeolyst Joint Venture, we include an adjustment for our 50% proportionate share of depreciation, amortization and interest expense of our Zeolyst Joint Venture.

b) Represents the amortization of the fair value adjustments associated with the equity affiliate investment in our Zeolyst Joint Venture as a result of the Business Combination. We determined the fair value of the equity affiliate investment and the fair value step-up was then attributed to the underlying assets of our Zeolyst Joint Venture. Amortization is primarily related to the fair value adjustments associated with inventory, fixed assets and intangible assets, including customer relationships and technical know-how.

c) As a result of the Sovitec acquisition and the Business Combination, there was a step-up in the fair value of inventory, which is amortized through cost of goods sold in the statement of operations.

d) When asset disposals occur, we remove the impact of net gain/loss of the disposed asset because such impact primarily reflects the non-cash write-off of long-lived assets no longer in use.

e) Reflects the exclusion of the negative or positive transaction gains and losses of foreign currency in the income statement primarily related to the Euro denominated term loan (which was settled as part of the February 2018 term loan refinancing) and the non-permanent intercompany debt denominated in local currency translated to U.S. dollars.

f) Represents non-cash adjustments to the Company's LIFO reserves for certain inventories in the U.S. that are valued using the LIFO method, which we believe provides a means of comparison to other companies that may not use the same basis of accounting for inventories.

g) Reflects consulting fees paid to CCMP and affiliates of INEOS for consulting services that include certain financial advisory and management services. These consulting agreements were terminated upon completion of our initial public offering ("IPO") on October 3, 2017.

h) Relates to certain transaction costs described in our condensed consolidated financial statements as well as other costs related to several transactions that are completed, pending or abandoned and that we believe are not representative of our ongoing business operations.

i) Includes the impact of restructuring, integration and business optimization expenses which are incremental costs that are not representative of our ongoing business operations.

j) Represents adjustments for defined benefit pension plan costs in our statement of operations. More than two-thirds of our defined benefit pension plan obligations are under defined benefit pension plans that are frozen, and the remaining obligations primarily relate to plans operated in certain of our non-U.S. locations that, pursuant to jurisdictional requirements, cannot be frozen. As such, we do not view such expenses as core to our ongoing business operations.

k) Represents a non-cash gain on the write-off of the remaining liability under a contractual supply arrangement. As part of Eco's acquisition of substantially all of the assets of Solvay USA Inc's sulfuric acid refining services business unit on December 1, 2014, we recognized a liability as part of business combination accounting related to our obligation to serve a customer under a pre-existing unfavorable supply agreement. In December 2018, the customer who was party to the agreement closed its facility, and as a result, we were relieved from our obligation to continue to supply the customer on the below market contract. Because the fair value of the unfavorable contract liability was recognized as part of the application of business combination accounting, and since the write-off of the remaining liability was non-cash in nature, we believe this gain is a special item that is not representative of our ongoing business operations.

l) Other costs consist of certain expenses that are not core to our ongoing business operations, including environmental remediation-related costs associated with the legacy operations of our business prior to the Business Combination, capital and franchise taxes, non-cash asset retirement obligation accretion and the initial implementation of procedures to comply with Section 404 of the Sarbanes-Oxley Act. Included in this line-item are rounding discrepancies that may arise from rounding from dollars (in thousands) to dollars (in millions).

PQ Corporation