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FOR IMMEDIATE RELEASE

Federal Signal Finishes Record Year with Fourth Quarter Operating Income up 58%; Projects Continued Momentum in 2019

Oak Brook, Illinois, February 28, 2019 — Federal Signal Corporation (NYSE:FSS), a leader in environmental and safety solutions, today reported results for the fourth quarter and year ended December 31, 2018.

- Q4 operating income of \$33.4 million, up \$12.3 million, or 58%, compared to last year
- Q4 net sales of \$279 million, up \$32 million, or 13% compared to last year
- GAAP EPS of \$0.53 for the quarter, up 10% from last year, and \$1.53 for the year, up 53%
- Adjusted EPS of \$0.39 for the quarter, up 63% from last year, and \$1.43 for the year, up 68%
- Projecting another strong year in 2019, with adjusted EPS* outlook of \$1.48 to \$1.60

Consolidated net sales for the fourth quarter were \$279.4 million, up 13% versus the same quarter a year ago. Fourth quarter income from continuing operations was \$32.2 million, equal to \$0.53 per diluted share, up 10% compared to \$29.3 million, or \$0.48 per share, in the prior-year quarter. The Company also reported adjusted income from continuing operations for the fourth quarter of \$23.8 million, equal to \$0.39 per diluted share, up 65% compared to \$14.4 million, or \$0.24 per share, in the same quarter a year ago.

Consolidated net sales for the year ended December 31, 2018 were \$1,089.5 million, up 21% compared to the prior year. Income from continuing operations for the year was \$93.7 million, equal to \$1.53 per diluted share, up 55% compared to \$60.5 million, or \$1.00 per share, in the prior year. Adjusted income from continuing operations for the year was \$87.5 million, equal to \$1.43 per diluted share, up 71% compared to \$51.1 million, or \$0.85 per diluted share, in the prior year. The Company is reporting adjusted results to facilitate comparisons of underlying performance on a year-over-year basis. A reconciliation of these and other non-GAAP measures is provided at the conclusion of this news release.

Fourth Quarter Financial Performance Contributes to Record Annual Results

"We had a strong finish to 2018, a year in which our businesses reported record annual revenues and earnings," said Jennifer L. Sherman, President and Chief Executive Officer. "During the fourth quarter, both of our groups achieved double-digit organic sales growth and significant improvements in adjusted EBITDA margins. Benefiting from several large orders, our Safety and Security Group delivered an outstanding quarter, with a 12% increase in the top line, and an EBITDA margin in excess of 20%. With continued momentum on our aftermarket and safe-digging initiatives, and ongoing traction from recent new product introductions, our Environmental Solutions Group reported organic sales growth of 13%, and a 170 basis point year-over-year improvement in adjusted EBITDA margin."

In the Environmental Solutions Group ("ESG"), net sales were up \$25.3 million, or 13% primarily due to increases in shipments of vacuum trucks and sewer cleaners, as well as higher aftermarket revenue. Sales in the Safety and Security Systems Group ("SSG") increased by \$6.5 million, or 12%, primarily due to higher sales of public safety products and warning systems.

Consolidated fourth quarter operating income was \$33.4 million, up \$12.3 million, or 58%, compared to the prior-year quarter, driven by improvements of \$7.0 million and \$2.9 million within ESG and SSG, respectively, in addition to a \$2.4 million reduction in corporate expenses.

Consolidated adjusted earnings before interest, tax, depreciation and amortization ("adjusted EBITDA") for the fourth quarter of 2018 was \$43.0 million, up \$10.9 million, or 34%, compared to the prior-year quarter, and consolidated adjusted EBITDA margin was 15.4% compared to 13.0% last year.

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ESG's adjusted EBITDA for the quarter was up \$7.5 million, or 27%, to \$35.5 million, and its adjusted EBITDA margin was 16.3%, up from 14.6% last year. SSG's adjusted EBITDA for the quarter was \$12.7 million, up \$2.7 million, or 27%, from last year, and its adjusted EBITDA margin was 20.5%, compared to 18.0% last year.

Order intake in the fourth quarter of 2018 remained strong, with consolidated orders of \$297.8 million contributing to a year-end backlog of \$338 million, up \$80.2 million, or 31%, from a year ago.

Strong Q4 Cash Flow Supports Additional Debt Pay Down and Cash Returns to Shareholders

Net cash of \$20.9 million was generated from operations in the fourth quarter of 2018, compared to \$21.4 million in the prior-year quarter. For the year ended December 31, 2018, operating cash flow totaled \$92.8 million, an increase of \$19.3 million, or 26%, compared to the prior year. At December 31, 2018, total debt was \$210 million, total cash and cash equivalents were \$37 million and the Company had \$179 million of availability for borrowings under its credit facility.

"With the 26% year-over-year improvement in operating cash flow, we have paid down approximately \$62 million of borrowings in 2018, lowering our debt leverage ratio at the end of the year to 1.3 times adjusted EBITDA," said Sherman. "Our strong financial position allows us to continue to invest in organic growth initiatives, like the recently announced plant expansion at Vactor and ongoing new product development. At the same time, we remain committed to pursuing strategic acquisitions and funding cash returns to shareholders."

The Company funded dividends of \$4.9 million during the fourth quarter, bringing the totals for the year to \$18.7 million, and the Board of Directors also recently declared a \$0.08 per share dividend that will be payable in the first quarter of 2019. In addition, the Company repurchased \$1.2 million of stock in the fourth quarter under its existing share repurchase program.

Outlook

"Solid execution drove a record year for Federal Signal, with annual revenues exceeding \$1 billion for the first time in over a decade. Both groups reported significant improvement in sales and earnings, delivering adjusted EBITDA margins towards the high end of their target ranges, and our adjusted EPS improved by 68% in comparison to a strong 2017," Sherman continued. "We entered 2019 with a backlog that is 31% higher than a year ago. In addition, conditions in most of our end markets remain healthy and we are gaining traction with our strategic initiatives. Although seasonal effects typically result in our first quarter earnings being lower than subsequent quarters, we are anticipating year-over-year earnings growth in the first quarter. We are expecting another strong year, with revenue growth and adjusted earnings per share of between \$1.48 and \$1.60, the midpoint of which would represent a 9% improvement over a record 2018."

CONFERENCE CALL

Federal Signal will host its fourth quarter earnings conference call on Thursday, February 28, 2019 at 10:00 a.m. Eastern Time. The call will last approximately one hour. The call may be accessed over the internet through Federal Signal's website at http://www.federalsignal.com or by dialing phone number 1-800-289-0438 and entering the pin number 6491007. An archived replay will be available on Federal Signal's website shortly after the call.

About Federal Signal

Federal Signal Corporation (NYSE: FSS) builds and delivers equipment of unmatched quality that moves material, cleans infrastructure, and protects the communities where we work and live. Founded in 1901, Federal Signal is a leading global designer, manufacturer and supplier of products and total solutions that serve municipal, governmental, industrial and commercial customers. Headquartered in Oak Brook, Ill., with manufacturing facilities worldwide, the Company operates two groups: Environmental Solutions and Safety and Security Systems. For more information on Federal Signal, visit: http://www.federalsignal.com.

"Safe Harbor" Statement under the Private Securities Litigation Reform Act of 1995

This release contains unaudited financial information and various forward-looking statements as of the date hereof and we undertake no obligation to update these forward-looking statements regardless of new developments or otherwise. Statements in this release that are not historical are forward-looking statements. Such statements are subject to various risks and uncertainties that could cause actual results to vary materially from those stated. Such risks and uncertainties include but are not limited to: economic conditions in various regions; product and price competition; supplier and raw material prices; foreign currency exchange rate changes; interest rate changes; increased legal expenses and litigation results; legal and regulatory developments and other risks and uncertainties described in filings with the Securities and Exchange Commission.

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*Adjusted earnings per share ("EPS") is a non-GAAP measure, which includes certain adjustments to reported GAAP net income and diluted EPS. In 2018, we made adjustments to exclude the impact of acquisition and integration-related expenses, purchase accounting effects, hearing loss settlement charges and special tax items, where applicable. Should any similar items occur in 2019, we would expect to exclude them from the determination of adjusted EPS. However, because of the underlying uncertainty in quantifying amounts which may not yet be known, a reconciliation of our Adjusted EPS outlook to the most applicable GAAP measure is excluded based on the unreasonable efforts exception in Item 10(e)(1)(i)(B). In addition, to facilitate comparisons with prior periods, when reporting our interim and annual non-GAAP results in 2019, we will be adjusting our previously issued non-GAAP results for 2018 to exclude the recognition of a deferred gain, which will no longer occur in 2019 following the adoption of the new lease accounting standards. On this basis, Adjusted EPS for 2018 would have been \$1.41. At the conclusion of this news release, we have included a reconciliation of GAAP EPS for interim and annual periods in 2018 to both the previously issued and revised adjusted EPS for the interim and annual periods in 2018.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF OPERATIONS

	Three Months Ended December 31,					Twelve Months Ended December 31,					
(in millions, except per share data)		2018		2017		2018		2017			
Net sales	\$	279.4	\$	247.6	\$ 1	1,089.5	\$	898.5			
Cost of sales		207.4		186.0		807.4		677.3			
Gross profit		72.0		61.6		282.1		221.2			
Selling, engineering, general and administrative expenses		38.4		39.9		159.1		144.3			
Acquisition and integration-related expenses		0.2		0.5		1.5		2.7			
Restructuring				0.1				0.6			
Operating income		33.4		21.1		121.5		73.6			
Interest expense		2.1		2.7		9.3		7.3			
Pension settlement charges		_		6.1		_		6.1			
Other expense (income), net		0.1		(0.1)		0.6		(0.8)			
Income before income taxes		31.2		12.4		111.6		61.0			
Income tax (benefit) expense		(1.0)		(16.9)		17.9		0.5			
Income from continuing operations		32.2		29.3		93.7		60.5			
Gain from discontinued operations and disposal, net of income tax (benefit) expense of \$0.1, \$(0.8), \$0.1 and \$(0.8), respectively		0.3		1.1		0.3		1.1			
Net income	\$	32.5	\$	30.4	\$	94.0	\$	61.6			
Basic earnings per share:											
Earnings from continuing operations	\$	0.53	\$	0.49	\$	1.56	\$	1.01			
Earnings from discontinued operations and disposal, net of tax	\$	0.01		0.02		0.01		0.02			
Net earnings per share	\$	0.54	\$	0.51	\$	1.57	\$	1.03			
Diluted earnings per share:											
Earnings from continuing operations	\$	0.53	\$	0.48	\$	1.53	\$	1.00			
Earnings from discontinued operations and disposal, net of tax		0.00		0.02		0.01		0.02			
Net earnings per share	\$	0.53	\$	0.50	\$	1.54	\$	1.02			
Weighted average shares outstanding:											
Basic		60.0		59.8		59.9		59.7			
Diluted		61.3		60.7		61.2		60.4			
Cash dividends declared per common share	\$	0.08	\$	0.07	\$	0.31	\$	0.28			
Operating data:											
Operating margin		12.0%		8.5%		11.2%		8.2%			
Adjusted EBITDA	\$	43.0	\$	32.1	\$	160.5	\$	113.5			
Adjusted EBITDA margin		15.4%		13.0%		14.7%		12.6%			
Total orders	\$	297.8	\$	302.7	\$ 1	1,173.2	\$	1,018.0			
Backlog		337.7		257.5		337.7		257.5			
Depreciation and amortization		9.4		8.7		36.4		30.0			

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES CONSOLIDATED BALANCE SHEETS

Grand William Control and Auto Mark		As of Dec	embe	
(in millions, except per share data) ASSETS		2018	_	2017
Current assets:				
Cash and cash equivalents	\$	37.4	\$	37.5
Accounts receivable, net of allowances for doubtful accounts of \$1.6 and \$1.1, respectively	Ψ	124.4	Ψ	118.2
Inventories		157.3		137.2
Prepaid expenses and other current assets		9.4		10.9
Total current assets		328.5		303.8
Properties and equipment, net of accumulated depreciation of \$116.0 and \$108.9, respectively		62.0		60.1
Rental equipment, net of accumulated depreciation of \$30.0 and \$20.0, respectively		96.6		87.2
Goodwill		375.1		377.3
Intangible assets, net of accumulated amortization of \$13.4 and \$5.5, respectively		143.1		151.8
Deferred tax assets		12.5		6.2
Deferred that assets Deferred charges and other long-term assets		5.6		5.4
Long-term assets of discontinued operations		0.4		0.5
Total assets	\$	1,023.8	\$	992.3
LIABILITIES AND STOCKHOLDERS' EQUITY	Ψ —	1,023.6	Ψ	774.2
Current liabilities:				
Current portion of long-term borrowings and capital lease obligations		0.2		0.3
Accounts payable		66.1		51.5
Customer deposits		10.1		6.5
Accrued liabilities:		10.1		0.2
Compensation and withholding taxes		29.5		22.2
Other current liabilities		52.7		36.1
Current liabilities of discontinued operations		0.2		0.5
Total current liabilities		158.8		117.1
Long-term borrowings and capital lease obligations		209.9		277.4
Long-term pension and other post-retirement benefit liabilities		54.6		56.6
Deferred gain		6.8		8.7
Deferred tax liabilities		46.3		45.4
Other long-term liabilities		15.9		28.2
Long-term liabilities of discontinued operations		1.4		
Total liabilities		493.7		534.9
Stockholders' equity:		493.7		334.3
Common stock, \$1 par value per share, 90.0 shares authorized, 66.4 and 66.1 shares issued,				
respectively		66.4		66.1
Capital in excess of par value		217.0		207.7
Retained earnings		432.5		346.6
Treasury stock, at cost, 6.2 and 6.1 shares, respectively		(88.5)		(86.1
Accumulated other comprehensive loss		(97.3)		(76.9
Total stockholders' equity		530.1		457.4
Total liabilities and stockholders' equity	\$	1,023.8	\$	992.3

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF CASH FLOWS

	 For the Young	31,
(in millions)	 2018	2017
Operating activities:		
Net income	\$ 94.0	\$ 61.6
Adjustments to reconcile net income to net cash provided by operating activities:		
Net gain on discontinued operations and disposal	(0.3)	(1.1)
Depreciation and amortization	36.4	30.0
Deferred financing costs	0.4	0.3
Deferred gain	(1.9)	(2.0)
Stock-based compensation expense	7.6	4.6
Pension settlement charges	_	6.1
Pension expense, net of funding	(7.8)	(5.2)
Changes in fair value of contingent consideration and deferred payment	1.1	1.0
Deferred income taxes, including change in valuation allowance	(5.6)	(14.9)
Changes in operating assets and liabilities, net of effects of discontinued operations:		
Accounts receivable	(7.9)	(11.1)
Inventories	(22.6)	9.4
Rental equipment	(30.6)	(15.7)
Prepaid expenses and other current assets	(1.0)	3.9
Accounts payable	15.6	(5.2)
Customer deposits	3.7	1.5
Accrued liabilities	8.2	8.0
Income taxes	2.2	1.6
Other	 1.3	0.7
Net cash provided by continuing operating activities	92.8	73.5
Net cash used for discontinued operating activities	 	(0.7)
Net cash provided by operating activities	92.8	72.8
Investing activities:		
Purchases of properties and equipment	(14.1)	(8.0)
Proceeds from (payments for) acquisitions, net of cash acquired	3.0	(269.2)
Other, net	 0.1	0.1
Net cash used for continuing investing activities	 (11.0)	(277.1)
Net cash (used for) provided by discontinued investing activities	_	(1.1)
Net cash used for investing activities	 (11.0)	(278.2)
Financing activities:		
(Decrease) increase in revolving lines of credit, net	(62.1)	209.1
Payments of debt financing fees	_	(0.2)
Purchases of treasury stock	(1.2)	_
Redemptions of common stock to satisfy withholding taxes related to stock-based compensation	(0.5)	(2.9)
Cash dividends paid to stockholders	(18.7)	(16.8)
Proceeds from stock compensation activity	1.3	1.6
Other, net	_	(0.1)
Net cash (used for) provided by continuing financing activities	(81.2)	190.7
Net cash provided by discontinued financing activities	_	_
Net cash (used for) provided by financing activities	(81.2)	190.7
Effects of foreign exchange rate changes on cash and cash equivalents	(0.7)	1.5
Decrease in cash and cash equivalents	(0.1)	(13.2)
Cash and cash equivalents at beginning of year	37.5	50.7
Cash and cash equivalents at end of year	\$ 37.4	\$ 37.5

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

GROUP RESULTS

The following tables summarize group operating results as of and for the three and twelve months ended December 31, 2018 and 2017:

Environmental Solutions Group

	Three Months Ended December 31,							Twelve Months Ended December 31,						
(\$ in millions)		2018		2017	(Change		2018		2017		Change		
Net sales	\$	217.3	\$	192.0	\$	25.3	\$	863.5	\$	692.6	\$	170.9		
Operating income		26.9		19.9		7.0		113.0		72.4		40.6		
Adjusted EBITDA		35.5		28.0		7.5		147.3		103.5		43.8		
Operating data:														
Operating margin		12.4%		10.4%		2.0%		13.1%		10.5%		2.6%		
Adjusted EBITDA margin		16.3%		14.6%		1.7%		17.1%		14.9%		2.2%		
Total orders	\$	239.6	\$	246.8	\$	(7.2)	\$	945.8	\$	806.3	\$	139.5		
Backlog		310.3		231.1		79.2		310.3		231.1		79.2		
Depreciation and amortization		8.5		7.6		0.9		32.6		25.7		6.9		

Safety and Security Systems Group

	Three Months Ended December 31,						Twelve M	December 31,		
(\$ in millions)		2018		2017	(Change	2018	2017	(Change
Net sales	\$	62.1	\$	55.6	\$	6.5	\$ 226.0	\$ 205.9	\$	20.1
Operating income		11.8		8.9		2.9	34.1	27.0		7.1
Adjusted EBITDA		12.7		10.0		2.7	37.8	31.7		6.1
Operating data:										
Operating margin		19.0%)	16.0%		3.0%	15.1%	13.1%	,	2.0%
Adjusted EBITDA margin		20.5%)	18.0%		2.5%	16.7%	15.4%	,	1.3%
Total orders	\$	58.2	\$	55.9	\$	2.3	\$ 227.4	\$ 211.7	\$	15.7
Backlog		27.4		26.4		1.0	27.4	26.4		1.0
Depreciation and amortization		0.9		1.0		(0.1)	3.7	4.1		(0.4)

Corporate Expenses

Corporate operating expenses were \$5.3 million and \$7.7 million for the three months ended December 31, 2018 and 2017, respectively. The decrease was primarily driven by reductions in hearing loss litigation and post-employment expenses, partially offset by increased stock compensation expense.

Corporate operating expenses were \$25.6 million and \$25.8 million for the years ended December 31, 2018 and 2017, respectively.

SEC REGULATION G NON-GAAP RECONCILIATION

The financial measures presented below are unaudited and are not in accordance with U.S. generally accepted accounting principles ("GAAP"). The non-GAAP financial information presented herein should be considered supplemental to, and not a substitute for, or superior to, financial measures calculated in accordance with GAAP. The Company has provided this supplemental information to investors, analysts, and other interested parties to enable them to perform additional analyses of operating results, to illustrate the results of operations giving effect to the non-GAAP adjustments shown in the reconciliations below, and to provide an additional measure of performance which management considers in operating the business.

Adjusted income and earnings per share from continuing operations ("EPS"):

The Company believes that modifying its 2018 and 2017 income and diluted EPS provides additional measures which are representative of the Company's underlying performance and improve the comparability of results between reporting periods. During the three and twelve months ended December 31, 2018 and 2017, adjustments were made to reported GAAP income and diluted EPS from continuing operations to exclude the impact of restructuring activity, executive severance costs, acquisition and integration-related expenses, purchase accounting effects, pension settlement charges and hearing loss settlement charges, where applicable. In addition, during the three and twelve months ended December 31, 2018 and 2017, adjustments were made to reported GAAP income tax expense to exclude certain special tax items.

	Three Months Ended December 31,						nths ber 3	s Ended	
(in millions)		2018		2017		2018		2017	
Income from continuing operations	\$	32.2	\$	29.3	\$	93.7	\$	60.5	
Add:									
Income tax (benefit) expense		(1.0)		(16.9)		17.9		0.5	
Income before income taxes		31.2		12.4		111.6		61.0	
Add:									
Restructuring				0.1				0.6	
Executive severance costs		_		_		_		0.7	
Acquisition and integration-related expenses		0.2		0.5		1.5		2.7	
Purchase accounting effects (a)		0.1		0.5		1.2		4.8	
Pension settlement charges				6.1				6.1	
Hearing loss settlement charges		_		1.5		0.4		1.5	
Adjusted income before income taxes	\$	31.5	\$	21.1	\$	114.7	\$	77.4	
Adjusted income tax expense (b) (c)		(7.7)		(6.7)		(27.2)		(26.3)	
Adjusted income from continuing operations	\$	23.8	\$	14.4	\$	87.5	\$	51.1	
		Three Mon Decem				Twelve Mor Decemb			
(dollars per diluted share)					_				
(dollars per diluted share) EPS, as reported	\$	Decem		31,	<u> </u>	Decem		31,	
	\$	December 2018	ber (2017	\$	December 2018	ber 3	2017	
EPS, as reported	\$	December 2018	ber (2017	\$	December 2018	ber 3	2017	
EPS, as reported Add:	\$	2018 0.53	ber (2017 0.48	\$	2018 1.53	ber 3	2017 1.00	
EPS, as reported Add: Income tax expense (benefit)	\$	December 2018 0.53 (0.02)	ber (2017 0.48 (0.28)	\$	2018 1.53	ber 3	2017 1.00 0.01	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes	\$	December 2018 0.53 (0.02)	ber (2017 0.48 (0.28)	\$	2018 1.53	ber 3	2017 1.00 0.01	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add:	\$	December 2018 0.53 (0.02)	ber (2017 0.48 (0.28) 0.20	\$	2018 1.53	ber 3	2017 1.00 0.01 1.01	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add: Restructuring	\$	December 2018 0.53 (0.02)	ber (2017 0.48 (0.28) 0.20	\$	2018 1.53	ber 3	2017 1.00 0.01 1.01 0.01	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add: Restructuring Executive severance costs	\$	0.53 (0.02) 0.51	ber (0.48 (0.28) 0.20 0.00	\$	December 2018 1.53 0.29 1.82	ber 3	0.01 0.01 0.01 0.01	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add: Restructuring Executive severance costs Acquisition and integration-related expenses	\$	0.53 (0.02) 0.51 0.00	ber (0.48 (0.28) 0.20 0.00 0.01	\$	0.029 1.82 0.02	ber 3	0.01 0.01 0.01 0.01 0.01 0.04	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add: Restructuring Executive severance costs Acquisition and integration-related expenses Purchase accounting effects (a)	\$	0.53 (0.02) 0.51 0.00	ber (0.48 (0.28) 0.20 0.00 0.01 0.01	\$	0.029 1.82 0.02	ber 3	0.01 0.01 0.01 0.01 0.01 0.04 0.08	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add: Restructuring Executive severance costs Acquisition and integration-related expenses Purchase accounting effects (a) Pension settlement charges	\$	0.53 (0.02) 0.51 0.00	ber (0.48 (0.28) 0.20 0.00 0.01 0.01 0.10	\$ -	0.02 0.02 0.02 0.02 0.01	ber 3	0.01 0.01 0.01 0.01 0.04 0.08 0.10	
EPS, as reported Add: Income tax expense (benefit) Income before income taxes Add: Restructuring Executive severance costs Acquisition and integration-related expenses Purchase accounting effects (a) Pension settlement charges Hearing loss settlement charges		0.00 0.00 0.00 0.00	\$	0.48 (0.28) 0.20 0.00 0.01 0.01 0.10 0.03		0.02 0.02 0.02 0.02 0.01	\$	0.01 0.01 0.01 0.01 0.04 0.08 0.10 0.03	

- (a) Purchase accounting effects relate to adjustments to exclude the step-up in the valuation of equipment acquired in connection with recent acquisitions that was sold subsequent to the acquisition dates in the three and twelve months ended December 31, 2018 and 2017, as well as to exclude the depreciation of the step-up in the valuation of the rental fleet acquired in the JJE transaction.
- (b) Adjusted income tax expense for the three and twelve months ended December 31, 2018 excludes an \$8.6 million net tax benefit associated with tax planning strategies. Adjusted income tax expense for the three and twelve months ended December 31, 2018 also excludes the tax effects of acquisition and integration-related expenses, purchase accounting effects and hearing loss settlement charges, where applicable.
- (c) Adjusted income tax expense for the three and twelve months ended December 31, 2017 excludes a \$20.0 million net tax benefit, representing the Company's preliminary estimate of the impact of the 2017 Tax Act, and a \$0.8 million benefit from changes in state deferred tax valuation allowance. Adjusted income tax expense for the twelve months ended December 31, 2017 also excludes \$0.6 million of tax expense associated with a change in the enacted state tax rate in Illinois. Adjusted income tax expense for the three and twelve months ended December 31, 2017 also excludes the tax effects of restructuring activity, executive severance costs, acquisition and integration-related expenses, purchase accounting effects, hearing loss settlement charges and pension settlement charges, where applicable.

Adjusted EBITDA:

The Company uses adjusted EBITDA and the ratio of adjusted EBITDA to net sales ("adjusted EBITDA margin"), at both the consolidated and segment level, as additional measures which are representative of its underlying performance and to improve the comparability of results across reporting periods. We believe that investors use versions of these metrics in a similar manner. For these reasons, the Company believes that adjusted EBITDA and adjusted EBITDA margin, at both the consolidated and segment level, are meaningful metrics to investors in evaluating the Company's underlying financial performance.

Consolidated adjusted EBITDA is a non-GAAP measure that represents the total of income from continuing operations, interest expense, pension settlement charges, hearing loss settlement charges, acquisition and integration-related expenses, restructuring activity, executive severance costs, purchase accounting effects, other expense/income, income tax expense (benefit), and depreciation and amortization expense. Consolidated adjusted EBITDA margin is a non-GAAP measure that represents the total of income from continuing operations, interest expense, pension settlement charges, hearing loss settlement charges, acquisition and integration-related expenses, restructuring activity, executive severance costs, purchase accounting effects, other expense/income, income tax expense (benefit), and depreciation and amortization expense divided by net sales for the applicable period(s).

Segment adjusted EBITDA is a non-GAAP measure that represents the total of segment operating income, acquisition and integration-related expenses, restructuring activity, purchase accounting effects and depreciation and amortization expense, as applicable. Segment adjusted EBITDA margin is a non-GAAP measure that represents the total of segment operating income, acquisition and integration-related expenses, restructuring activity, purchase accounting effects and depreciation and amortization expense, as applicable, divided by net sales for the applicable period(s). Segment operating income includes all revenues, costs and expenses directly related to the segment involved. In determining segment income, neither corporate nor interest expenses are included. Segment depreciation and amortization expense relates to those assets, both tangible and intangible, that are utilized by the respective segment.

Other companies may use different methods to calculate adjusted EBITDA and adjusted EBITDA margin.

Consolidated

The following table summarizes the Company's consolidated adjusted EBITDA and adjusted EBITDA margin and reconciles income from continuing operations to consolidated adjusted EBITDA for the three and twelve months ended December 31, 2018 and 2017:

	Three Months Ended December 31,					Twelve Mo Decem		
(\$ in millions)	2	018		2017		2018		2017
Income from continuing operations		32.2		29.3		93.7		60.5
Add:								
Interest expense		2.1		2.7		9.3		7.3
Pension settlement charges				6.1		_		6.1
Hearing loss settlement charges		_		1.5		0.4		1.5
Acquisition and integration-related expenses		0.2		0.5		1.5		2.7
Restructuring		_		0.1		_		0.6
Executive severance costs		_		_		_		0.7
Purchase accounting effects*		_		0.2		0.7		4.4
Other expense (income), net		0.1		(0.1)		0.6		(0.8)
Income tax (benefit) expense		(1.0)		(16.9)		17.9		0.5
Depreciation and amortization		9.4		8.7		36.4		30.0
Consolidated adjusted EBITDA	\$	43.0	\$	32.1	\$	160.5	\$	113.5
Net sales	\$	279.4	\$	247.6	\$	1,089.5	\$	898.5
Consolidated adjusted EBITDA margin		15.4%		13.0%		14.7%		12.6%

^{*} Excludes purchase accounting expense effects included within depreciation and amortization of \$0.1 million and \$0.3 million for the three months ended December 31, 2018 and 2017, and \$0.5 million and \$0.4 million for the twelve months ended December 31, 2018 and 2017, respectively

Environmental Solutions Group

The following table summarizes the Environmental Solutions Group's adjusted EBITDA and adjusted EBITDA margin and reconciles operating income to adjusted EBITDA for the three and twelve months ended December 31, 2018 and 2017:

		Three Mor Decem		Twelve Months Ended December 31,				
(\$ in millions)	2018			2017	2018			2017
Operating income	\$	26.9	\$	19.9	\$	113.0	\$	72.4
Add:								
Acquisition and integration-related expenses		0.1		0.3		1.0		1.0
Purchase accounting effects *		_		0.2		0.7		4.4
Depreciation and amortization		8.5		7.6		32.6		25.7
Adjusted EBITDA	\$	35.5	\$	28.0	\$	147.3	\$	103.5
Net sales	\$	217.3	\$	192.0	\$	863.5	\$	692.6
Adjusted EBITDA margin		16.3%		14.6%		17.1%		14.9%

^{*} Excludes purchase accounting expense effects included within depreciation and amortization of \$0.1 million and \$0.3 million for the three months ended December 31, 2018 and 2017, and \$0.5 million and \$0.4 million for the twelve months ended December 31, 2018 and 2017, respectively

Safety and Security Systems Group

The following table summarizes the Safety and Security Systems Group's adjusted EBITDA and adjusted EBITDA margin and reconciles operating income to adjusted EBITDA for the three and twelve months ended December 31, 2018 and 2017:

	Three Mor Decem			Twelve Months Ended December 31,				
(\$ in millions)	2018	2017		2018			2017	
Operating income	\$ 11.8	\$	8.9	\$	34.1	\$	27.0	
Add:								
Restructuring	_		0.1		_		0.6	
Depreciation and amortization	0.9		1.0		3.7		4.1	
Adjusted EBITDA	\$ 12.7	\$	10.0	\$	37.8	\$	31.7	
Net sales	\$ 62.1	\$	55.6	\$	226.0	\$	205.9	
Adjusted EBITDA margin	20.5%	_	18.0%		16.7%		15.4%	

Lease Accounting Change

Effective January 1, 2019, the Company will adopt the new lease accounting standard, which will result in the recognition of right-of-use assets and lease liabilities on the Company's Consolidated Balance Sheet and will result in a change to the Company's recognition of the deferred gain associated with historical sale lease-back transactions. The deferred gain, which initially totaled \$29.0 million, has been recognized through the Company's Consolidated Statement of Operations on a straight-line basis over the 15-year life of the respective leases. As a result, approximately \$1.9 million of the deferred gain has been recognized each year since 2008, of which approximately \$1.1 million and \$0.8 million has been recognized within the Environmental Solutions Group and Safety and Security Systems Group, respectively. Effective in 2019, the Company will no longer recognize any portion of the gain through the Consolidated Statement of Operations, and will recognize the remaining deferred gain balance, net of the related deferred tax asset, as a cumulative effect adjustment to opening retained earnings.

To facilitate comparisons with prior periods, when reporting our interim and annual non-GAAP results in 2019, we will be adjusting our previously issued interim and annual non-GAAP results for 2018 to exclude the recognition of this deferred gain. The impact of this adjustment on previously reported adjusted income from continuing operations and adjusted EPS for interim and annual periods in 2018 is reflected in the following tables:

				Three Mon	ths E	nded			Yea	r Ended	
(in millions)		arch 31, 2018	J	June 30, 2018		tember, 2018	Dec	ember 31, 2018	December 31, 2018		
Income from continuing operations	\$	12.9	\$	26.9	\$	21.7	\$	32.2	\$	93.7	
Add:											
Income tax expense (benefit)		4.1		8.3		6.5		(1.0)		17.9	
Income before income taxes		17.0		35.2		28.2		31.2		111.6	
Add:											
Acquisition and integration-related expenses		0.5		0.4		0.4		0.2		1.5	
Purchase accounting effects (a)		0.6		0.4		0.1		0.1		1.2	
Hearing loss settlement charges		0.4				_				0.4	
Adjusted income before income taxes	\$	18.5	\$	36.0	\$	28.7	\$	31.5	\$	114.7	
Adjusted income tax expense (b)		(4.5)		(8.5)		(6.6)		(7.7)		(27.2	
Adjusted income from continuing operations	\$	14.0	\$	27.5	\$	22.1	\$	23.8	\$	87.5	
Less:											
Deferred gain recognition, net of income tax expense of \$0.1, \$0.1, \$0.1, \$0.1, and \$0.4, respectively		(0.4)		(0.4)		(0.4)		(0.4)		(1.5	
Adjusted income from continuing operations, as revised	\$	13.6	\$	27.1	\$	21.7	\$	23.4	\$	86.0	
		Three Months Ended									
(dollars per diluted share)		arch 31, 2018	J	June 30, 2018		tember, 2018		ember 31, 2018		ember 31, 2018	
EPS, as reported	\$	0.21	\$	0.44	\$	0.36	\$	0.53	\$	1.53	
Add:											
Income tax expense (benefit)		0.07		0.14		0.10		(0.02)		0.29	
Income before income taxes		0.28		0.58		0.46		0.51		1.82	
Add:											
Acquisition and integration-related expenses		0.01		0.01		0.01		0.00		0.02	
Purchase accounting effects (a)		0.01		0.00		0.00		0.00		0.02	
Hearing loss settlement charges		0.01		_		_		_		0.01	
Adjusted income before income taxes	\$	0.31	\$	0.59	\$	0.47	\$	0.51	\$	1.87	
Adjusted income tax expense (b)		(0.08)		(0.14)		(0.11)		(0.12)		(0.44	
	Φ.	0.23	\$	0.45	\$	0.36	\$	0.39	\$	1.43	
	\$	0.23							=		
Adjusted EPS	\$	0.23									
Adjusted EPS Less: Deferred gain recognition, net of income tax expense	<u>\$</u>	0.00		(0.01)		0.00		(0.01)		(0.02)	

⁽a) Purchase accounting effects relate to adjustments to exclude the step-up in the valuation of equipment acquired in connection with recent acquisitions that was sold subsequent to the acquisition dates in the interim and annual periods within the year ended December 31, 2018, as well as to exclude the depreciation of the step-up in the valuation of the rental fleet acquired in the JJE transaction.

⁽b) Adjusted income tax expense for the three and twelve months ended December 31, 2018 excludes a \$8.6 million net tax benefit associated with tax planning strategies. Adjusted income tax expense for the interim and annual periods within the year ended December 31, 2018 also excludes the tax effects of acquisition and integration-related expenses, purchase accounting effects and hearing loss settlement charges, where applicable.