UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(Mark One)

☑ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2019

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from __________ to __________

Commission file number: 1-6003

FEDERAL SIGNAL CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	**36-1063330**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

1415 West 22nd Street, Oak Brook, Illinois
(Address of principal executive offices)

60523
(Zip code)

(630) 954-2000
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $1.00 per share	FSS	New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☑	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☑

As of June 30, 2019, the number of shares outstanding of the registrant's common stock was 60,354,662.

FEDERAL SIGNAL CORPORATION

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FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q ("Form 10-Q") is being filed by Federal Signal Corporation and its subsidiaries (referred to collectively as the "Company," "we," "our" or "us" herein, unless the context otherwise indicates) with the United States ("U.S.") Securities and Exchange Commission (the "SEC"), and includes comments made by management that may contain words such as "may," "will," "believe," "expect," "anticipate," "intend," "plan," "project," "estimate" and "objective" or similar terminology, or the negative thereof, concerning the Company's future financial performance, business strategy, plans, goals and objectives. These expressions are intended to identify forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Private Securities Litigation Reform Act of 1995. Forward-looking statements include information concerning the Company's possible or assumed future performance or results of operations and are not guarantees. While these statements are based on assumptions and judgments that management has made in light of industry experience as well as perceptions of historical trends, current conditions, expected future developments and other factors believed to be appropriate under the circumstances, they are subject to risks, uncertainties and other factors that may cause the Company's actual results, performance or achievements to be materially different.

These risks and uncertainties, some of which are beyond the Company's control, include the risk factors described under Part I, Item 1A, *Risk Factors*, of the Company's Annual Report on Form 10-K for the year ended December 31, 2018, which was filed with the SEC on February 28, 2019, and as updated in Part II, Item 1A, *Risk Factors* of this Form 10-Q. These factors may not constitute all factors that could cause actual results to differ materially from those discussed in any forward-looking statement. The Company operates in a continually changing business environment and new factors emerge from time to time. The Company cannot predict such factors, nor can it assess the impact, if any, of such factors on its results of operations, financial condition or cash flow. Accordingly, forward-looking statements should not be relied upon as a predictor of actual results. The Company disclaims any responsibility to update any forward-looking statement provided in this Form 10-Q.

ADDITIONAL INFORMATION

The Company is subject to the reporting and information requirements of the Exchange Act and, as a result, is obligated to file Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and other reports and information with the SEC, as well as amendments to those reports. The Company makes these filings available free of charge through our website at www.federalsignal.com as soon as reasonably practicable after such materials are filed with, or furnished to, the SEC. Information on our website does not constitute part of this Form 10-Q.

PART I. FINANCIAL INFORMATION

Item 1. *Financial Statements (Unaudited).*

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
(in millions, except per share data)	**2019**	**2018**	**2019**	**2018**
Net sales	$ 324.3	$ 291.0	$ 598.1	$ 540.7
Cost of sales	235.3	211.8	438.8	399.6
Gross profit	89.0	79.2	159.3	141.1
Selling, engineering, general and administrative expenses	41.8	40.7	85.7	82.5
Acquisition and integration-related expenses	0.9	0.4	1.5	0.9
Operating income	46.3	38.1	72.1	57.7
Interest expense	2.0	2.5	4.0	5.0
Other (income) expense, net	(0.1)	0.4	0.3	0.5
Income before income taxes	44.4	35.2	67.8	52.2
Income tax expense	11.6	8.3	17.5	12.4
Net income	$ 32.8	$ 26.9	$ 50.3	$ 39.8
Earnings per share:				
Basic	$ 0.55	$ 0.45	$ 0.84	$ 0.67
Diluted	0.54	0.44	0.82	0.65
Weighted average common shares outstanding:				
Basic	60.1	59.9	60.1	59.9
Diluted	61.3	61.0	61.2	60.9

See notes to condensed consolidated financial statements.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
(in millions)	**2019**	**2018**	**2019**	**2018**
Net income	$ 32.8	$ 26.9	$ 50.3	$ 39.8
Other comprehensive income (loss):				
Change in foreign currency translation adjustment	0.8	(5.2)	0.8	(3.2)
Change in unrecognized net actuarial loss and prior service cost related to pension benefit plans, net of income tax expense of $0.1, $0.2, $0.3 and $0.4, respectively	1.3	1.7	1.5	1.8
Change in unrealized gain on derivatives, net of income tax (benefit) expense of ($0.2), $0.1, ($0.4) and $0.3, respectively	(0.7)	0.2	(1.2)	1.0
Total other comprehensive income (loss)	1.4	(3.3)	1.1	(0.4)
Comprehensive income	$ 34.2	$ 23.6	$ 51.4	$ 39.4

See notes to condensed consolidated financial statements.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED BALANCE SHEETS

(in millions, except per share data)	June 30, 2019 (Unaudited)	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 38.6	$ 37.4
Accounts receivable, net of allowances for doubtful accounts of $1.8 and $1.6, respectively	145.9	124.4
Inventories	173.5	157.3
Prepaid expenses and other current assets	9.6	9.4
Total current assets	367.6	328.5
Properties and equipment, net of accumulated depreciation of $121.0 and $116.0, respectively	67.2	62.0
Rental equipment, net of accumulated depreciation of $38.5 and $30.0, respectively	106.5	96.6
Operating lease right-of-use assets	24.9	—
Goodwill	375.0	375.1
Intangible assets, net of accumulated amortization of $17.5 and $13.4, respectively	139.5	143.1
Deferred tax assets	11.3	12.5
Deferred charges and other long-term assets	3.3	5.6
Long-term assets of discontinued operations	0.4	0.4
Total assets	$ 1,095.7	$ 1,023.8
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current portion of long-term borrowings and finance lease obligations	$ 0.2	$ 0.2
Accounts payable	71.3	66.1
Customer deposits	10.0	10.1
Accrued liabilities:		
Compensation and withholding taxes	22.8	29.5
Other current liabilities	61.5	52.7
Current liabilities of discontinued operations	0.2	0.2
Total current liabilities	166.0	158.8
Long-term borrowings and finance lease obligations	209.2	209.9
Long-term operating lease liabilities	19.4	—
Long-term pension and other postretirement benefit liabilities	54.7	54.6
Deferred gain	—	6.8
Deferred tax liabilities	51.0	46.3
Other long-term liabilities	14.1	15.9
Long-term liabilities of discontinued operations	1.2	1.4
Total liabilities	515.6	493.7
Stockholders' equity:		
Common stock, $1 par value per share, 90.0 shares authorized, 66.7 and 66.4 shares issued, respectively	66.7	66.4
Capital in excess of par value	221.3	217.0
Retained earnings	479.7	432.5
Treasury stock, at cost, 6.3 and 6.2 shares, respectively	(91.4)	(88.5)
Accumulated other comprehensive loss	(96.2)	(97.3)
Total stockholders' equity	580.1	530.1
Total liabilities and stockholders' equity	$ 1,095.7	$ 1,023.8

See notes to condensed consolidated financial statements.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)

(in millions)	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
Operating activities:		
Net income	$ 50.3	$ 39.8
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	19.3	17.6
Deferred financing costs	0.2	0.2
Deferred gain	—	(0.9)
Stock-based compensation expense	4.2	4.0
Pension expense, net of funding	(0.1)	(3.2)
Changes in fair value of contingent consideration and deferred payment	0.8	0.6
Deferred income taxes	4.0	2.0
Changes in operating assets and liabilities	(52.9)	(22.3)
Net cash provided by operating activities	25.8	37.8
Investing activities:		
Purchases of properties and equipment	(9.4)	(7.0)
Proceeds from acquisition-related activity	—	3.0
Other, net	—	0.1
Net cash used for investing activities	(9.4)	(3.9)
Financing activities:		
Decrease in revolving lines of credit, net	(3.1)	(26.6)
Purchases of treasury stock	(1.0)	—
Redemptions of common stock to satisfy withholding taxes related to stock-based compensation	(1.6)	(0.3)
Cash dividends paid to stockholders	(9.6)	(9.0)
Proceeds from stock-based compensation activity	—	0.9
Other, net	(0.1)	0.1
Net cash used for financing activities	(15.4)	(34.9)
Effects of foreign exchange rate changes on cash and cash equivalents	0.2	(0.5)
Increase (decrease) in cash and cash equivalents	1.2	(1.5)
Cash and cash equivalents at beginning of year	37.4	37.5
Cash and cash equivalents at end of period	$ 38.6	$ 36.0

See notes to condensed consolidated financial statements.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (Unaudited)

	Three Months Ended June 30, 2019					
(in millions)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss	Total
Balance at April 1, 2019	$ 66.5	$ 218.4	$ 451.7	$ (90.6)	$ (97.6)	$ 548.4
Net income			32.8			32.8
Total other comprehensive income					1.4	1.4
Cash dividends declared ($0.08 per share)			(4.8)			(4.8)
Stock-based payments:						
Stock-based compensation		2.1				2.1
Stock option exercises and other	0.2	0.8		(0.8)		0.2
Balance at June 30, 2019	$ 66.7	$ 221.3	$ 479.7	$ (91.4)	$ (96.2)	$ 580.1

	Three Months Ended June 30, 2018					
(in millions)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss	Total
Balance at April 1, 2018	$ 66.1	$ 208.8	$ 355.3	$ (86.3)	$ (74.0)	$ 469.9
Net income			26.9			26.9
Total other comprehensive loss					(3.3)	(3.3)
Cash dividends declared ($0.08 per share)			(4.8)			(4.8)
Stock-based payments:						
Stock-based compensation		2.4				2.4
Stock option exercises and other	0.2	1.5		(0.4)		1.3
Balance at June 30, 2018	$ 66.3	$ 212.7	$ 377.4	$ (86.7)	$ (77.3)	$ 492.4

	Six Months Ended June 30, 2019					
(in millions)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss	Total
Balance at January 1, 2019	$ 66.4	$ 217.0	$ 432.5	$ (88.5)	$ (97.3)	$ 530.1
Net income			50.3			50.3
Total other comprehensive income					1.1	1.1
Cash dividends declared ($0.16 per share)			(9.6)			(9.6)
Impact of adoption of ASU 2016-02			6.5			6.5
Stock-based payments:						
Stock-based compensation		3.5				3.5
Stock option exercises and other	0.2	0.9		(1.0)		0.1
Performance share unit transactions	0.1	(0.1)		(0.9)		(0.9)
Stock repurchase program				(1.0)		(1.0)
Balance at June 30, 2019	$ 66.7	$ 221.3	$ 479.7	$ (91.4)	$ (96.2)	$ 580.1

(in millions)	Six Months Ended June 30, 2018 Common Stock	Capital in Excess of Par Value	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss	Total
Balance at January 1, 2018	$ 66.1	$ 207.7	$ 346.6	$ (86.1)	$ (76.9)	$ 457.4
Net income			39.8			39.8
Total other comprehensive loss					(0.4)	(0.4)
Cash dividends declared ($0.15 per share)			(9.0)			(9.0)
Stock-based payments:						
Stock-based compensation		3.3				3.3
Stock option exercises and other	0.2	1.7		(0.6)		1.3
Balance at June 30, 2018	$ 66.3	$ 212.7	$ 377.4	$ (86.7)	$ (77.3)	$ 492.4

See notes to condensed consolidated financial statements.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Organization and Description of the Business

Federal Signal Corporation was founded in 1901 and was reincorporated as a Delaware corporation in 1969. References herein to the "Company," "we," "our" or "us" refer collectively to Federal Signal Corporation and its subsidiaries.

Products manufactured and services rendered by the Company are divided into two reportable segments: Environmental Solutions Group and Safety and Security Systems Group. The individual operating businesses are organized as such because they share certain characteristics, including technology, marketing, distribution and product application, which create long-term synergies. These segments are discussed in Note 11 – Segment Information.

Basis of Presentation and Consolidation

The accompanying unaudited condensed consolidated financial statements represent the consolidation of Federal Signal Corporation and its subsidiaries included herein and have been prepared by the Company pursuant to the rules and regulations of the United States ("U.S.") Securities and Exchange Commission (the "SEC"). Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles ("GAAP") have been condensed or omitted pursuant to such rules and regulations, although the Company believes that the disclosures presented herein are adequate to ensure the information presented is not misleading. Except as otherwise noted, these condensed consolidated financial statements have been prepared in accordance with the Company's accounting policies described in the Company's Annual Report on Form 10-K for the year ended December 31, 2018, and should be read in conjunction with those consolidated financial statements and the notes thereto.

These condensed consolidated financial statements include all normal and recurring adjustments that we considered necessary to present a fair statement of our results of operations, financial condition and cash flow. Intercompany balances and transactions have been eliminated in consolidation.

The results reported in these condensed consolidated financial statements should not be regarded as necessarily indicative of results that may be expected for the entire year. While we label our quarterly information using a calendar convention whereby our first, second and third quarters are labeled as ending on March 31, June 30 and September 30, respectively, it is our longstanding practice to establish interim quarterly closing dates based on a 13-week period ending on a Saturday, with our fiscal year ending on December 31. The effects of this practice are not material and exist only within a reporting year.

Recent Accounting Pronouncements and Accounting Changes

In February 2016, the Financial Accounting Standards Board (the "FASB") issued Accounting Standards Update ("ASU") No. 2016-02, *Leases* ("Topic 842"), which supersedes the lease accounting requirements in Accounting Standards Codification ("ASC") 840, *Leases* ("Topic 840"). Topic 842 requires organizations that are lessees in operating lease arrangements to recognize right-of-use assets and lease liabilities on the balance sheet and requires disclosure of key qualitative and quantitative information about leasing arrangements by both lessors and lessees. The Company adopted Topic 842 effective January 1, 2019, using the alternative transition method outlined in ASU No. 2018-11, *Leases (Topic 842): Targeted Improvements*, which permits application of the new guidance at the beginning of the period of adoption, with comparative periods continuing to be reported under Topic 840. See Note 3 – Leases for further discussion.

No other new accounting pronouncements issued, but not yet adopted, are expected to have a material impact on the Company's results of operations, financial position or cash flow.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect (i) the reported amounts of assets and liabilities, (ii) the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and (iii) the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Significant Accounting Policies

Following the adoption of Topic 842, the Company's lease accounting policy is and will be disclosed as a significant accounting policy. See Note 3 – Leases for further discussion. There have been no other changes to the Company's significant accounting policies as disclosed in the Company's Annual Report on Form 10-K for the year ended December 31, 2018.

NOTE 2 – REVENUE RECOGNITION

The following table presents the Company's Net sales disaggregated by geographic region, based on the location of the end customer, and by major product line:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in millions)	**2019**	**2018**	**2019**	**2018**
Geographic Region:				
U.S.	$ 248.2	$ 220.7	$ 453.0	$ 417.3
Canada	51.2	45.8	95.6	78.2
Europe/Other	24.9	24.5	49.5	45.2
Total net sales	$ 324.3	$ 291.0	$ 598.1	$ 540.7
Major Product Line:				
Environmental Solutions				
Vehicles and equipment [(a)]	$ 213.7	$ 185.2	$ 387.4	$ 340.8
Parts	35.5	32.4	66.6	62.2
Rental income [(b)]	13.4	11.6	23.0	19.4
Other [(c)]	4.6	4.1	9.7	7.5
Total	267.2	233.3	486.7	429.9
Safety and Security Systems				
Public safety and security equipment	34.6	36.7	67.0	67.3
Industrial signaling equipment	16.2	13.5	30.0	26.7
Warning systems	6.3	7.5	14.4	16.8
Total	57.1	57.7	111.4	110.8
Total net sales	$ 324.3	$ 291.0	$ 598.1	$ 540.7

(a) Includes net sales from the sale of new and used vehicles and equipment, including sales of rental equipment.
(b) Represents income from vehicle and equipment lease arrangements with customers.
(c) Primarily includes revenues from services such as maintenance and repair work and the sale of extended warranty contracts.

Contract Balances

The Company recognizes contract liabilities when cash payments, such as customer deposits, are received in advance of the Company's satisfaction of the related performance obligations. Contract liabilities are recognized as Net sales when the related performance obligations are satisfied, which generally occurs within three to six months of the cash receipt. Contract liability balances are not materially impacted by any other factors. The Company's contract liabilities were $12.1 million as of both June 30, 2019 and December 31, 2018. Contract assets, such as unbilled receivables, were not material as of any of the periods presented herein.

NOTE 3 – LEASES

Impact of the Adoption of Topic 842

On January 1, 2019, the Company adopted Topic 842, using the alternative transition method under ASU 2018-11, which permits application of the new guidance at the beginning of the period of adoption, with comparative periods continuing to be reported under Topic 840. The Company elected to apply the practical expedient package outlined in the transition guidance which, among other things, allows for the carryforward of historical lease classifications. In addition, the Company elected to separately account for non-lease and associated lease components and apply the short-term lease exception, whereby the Company does not recognize a right-of-use asset or lease liability for leases with an initial term of twelve months or less.

Upon adoption, the Company recognized operating lease right-of-use assets and liabilities on its Condensed Consolidated Balance Sheet of $27.1 million and $29.5 million, respectively. In addition, the Company recognized the remaining deferred gain of $8.7 million associated with the sale-leaseback transactions that the Company entered into in July 2008 for its Elgin, Illinois and University Park, Illinois plant locations, net of the related deferred tax asset of $2.2 million, as a cumulative effect adjustment to opening retained earnings as of the January 1, 2019 adoption date. Prior to the adoption of Topic 842, the deferred gain, which initially totaled $29.0 million, had been amortized through the Company's Condensed Consolidated Statements of Operations on a straight-line basis over the 15-year life of the respective leases. Effective in 2019, approximately $1.9 million of the deferred gain, which had been recognized each year since 2008, will no longer be recognized through the Condensed Consolidated Statements of Operations.

Other than the aforementioned elimination of the deferred gain recognition, the adoption of Topic 842 did not have a material impact on the Company's results of operations or cash flows. Further, the adoption of Topic 842 did not have an impact on the Company's liquidity or debt-covenant compliance under its current arrangements.

Description of Leases

The Company leases certain facilities within the U.S., Europe and Canada from which the Company provides sales, service and/or equipment rentals, some of which contain options to renew. In addition, eight of the Company's 14 principal manufacturing plants are leased. The Company also leases vehicles and various other equipment. The Company's lease agreements may contain lease and non-lease components, which are accounted for separately.

In connection with the 2016 acquisition of substantially all of the assets and operations of Joe Johnson Equipment, Inc. and Joe Johnson Equipment (USA), Inc. (collectively, "JJE"), the Company entered into lease agreements for two facilities owned by affiliates of the sellers of JJE. Both agreements include an annual rent that is considered market-based, and were for an initial lease term of five years, with options to renew. The total lease liability under these agreements to the former shareholders of JJE, some of whom are now employees of the Company, was $0.6 million as of June 30, 2019.

The Company determines if an arrangement is a lease at inception. Operating lease right-of-use assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease right-of-use assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the lease term. As most of the Company's leases do not provide an implicit rate, the Company uses its incremental collateralized borrowing rate based on the information available at the commencement date in determining the present value of lease payments. Implicit rates are used when readily determinable. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for operating lease payments is recognized on a straight-line basis over the respective lease term.

The following table summarizes the Company's total lease costs and supplemental cash flow information arising from operating lease transactions:

(in millions)	Three Months Ended June 30, 2019	Six Months Ended June 30, 2019
Total operating lease costs [(a)]	$ 3.3	$ 6.1
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	$ 2.0	$ 4.0

(a) Includes short-term leases and variable lease costs, which are immaterial.

The following table summarizes the components of lease right-of-use assets and liabilities:

(in millions)	June 30, 2019	Affected Line Item in Condensed Consolidated Balance Sheets
Assets		
Operating lease right-of-use assets	$ 24.9	Operating lease right-of-use assets
Finance lease right-of-use assets	0.9	Properties and equipment, net of accumulated depreciation
Total lease right-of-use assets	$ 25.8	
Liabilities		
Current:		
Operating leases	$ 7.8	Other current liabilities
Finance leases	0.2	Current portion of long-term borrowings and finance lease obligations
Noncurrent:		
Operating leases	19.4	Long-term operating lease liabilities
Finance leases	0.4	Long-term borrowings and finance lease obligations
Total lease liabilities	$ 27.8	

As of June 30, 2019, the Company's operating leases have a weighted-average remaining lease term of 4.0 years and a weighted-average discount rate of 4.0%.

Maturities of operating lease liabilities as of June 30, 2019 were as follows:

(in millions)	
2019 (excluding the six months ended June 30, 2019)	$ 4.1
2020	7.7
2021	7.0
2022	6.1
2023	3.4
Thereafter	1.2
Total lease payments	29.5
Less: Imputed interest	2.3
Present value of operating lease liabilities	$ 27.2

At December 31, 2018, minimum future rental commitments under operating leases having non-cancelable lease terms in excess of one year, as previously determined in accordance with Topic 840, aggregated $34.3 million and were payable as follows: $8.9 million in 2019, $8.0 million in 2020, $6.9 million in 2021, $5.9 million in 2022, $3.4 million in 2023 and $1.2 million thereafter.

NOTE 4 – INVENTORIES

The following table summarizes the components of Inventories:

(in millions)	June 30, 2019	December 31, 2018
Finished goods	$ 87.3	$ 78.3
Raw materials	71.8	66.3
Work in process	14.4	12.7
Total inventories	$ 173.5	$ 157.3

NOTE 5 – DEBT

The following table summarizes the components of Long-term borrowings and finance lease obligations:

(in millions)	June 30, 2019	December 31, 2018
Amended 2016 Credit Agreement [a]	$ 208.8	$ 209.4
Finance lease obligations	0.6	0.7
Total long-term borrowings and finance lease obligations, including current portion	209.4	210.1
Less: Current finance lease obligations	0.2	0.2
Total long-term borrowings and finance lease obligations	$ 209.2	$ 209.9

(a) Defined as the Amended and Restated Credit Agreement, dated January 27, 2016, as amended on June 2, 2017.

As more fully described within Note 12 – Fair Value Measurements, the Company uses a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. The fair value of long-term debt is based on interest rates that we believe are currently available to us for issuance of debt with similar terms and remaining maturities (Level 2 input).

The following table summarizes the carrying amounts and estimated fair values of the Company's long-term borrowings:

	June 30, 2019		December 31, 2018	
(in millions)	Notional Amount	Fair Value	Notional Amount	Fair Value
Long-term borrowings [a]	$ 209.4	$ 209.4	$ 210.1	$ 210.1

(a) Long-term borrowings includes current portions of long-term debt and current portions of finance lease obligations of $0.2 million and $0.2 million as of June 30, 2019 and December 31, 2018, respectively.

Borrowings under the Amended 2016 Credit Agreement bear interest, at the Company's option, at a base rate or a LIBOR rate, plus, in each case, an applicable margin. The applicable margin ranges from 0.00% to 1.25% for base rate borrowings and 1.00% to 2.25% for LIBOR borrowings. The Company must also pay a commitment fee to the lenders ranging between 0.15% to 0.30% per annum on the unused portion of the $400 million revolving credit facility along with other standard fees. Letter of credit fees are payable on outstanding letters of credit in an amount equal to the applicable LIBOR margin plus other customary fees.

The Company is subject to certain leverage ratio and interest coverage ratio financial covenants under the Amended 2016 Credit Agreement that are to be measured at each fiscal quarter-end. The Company was in compliance with all such covenants as of June 30, 2019.

As of June 30, 2019, there was $208.8 million of cash drawn and $11.3 million of undrawn letters of credit under the Amended 2016 Credit Agreement, with $179.9 million of net availability for borrowings. As of December 31, 2018, there was $209.4 million cash drawn and $11.3 million of undrawn letters of credit under the Amended 2016 Credit Agreement, with $179.3 million of net availability for borrowings.

For the six months ended June 30, 2019, gross borrowings under the Amended 2016 Credit Agreement were $10.7 million and there were $13.8 million of gross payments. For the six months ended June 30, 2018, gross borrowings and gross payments were $8.0 million and $34.6 million, respectively.

On July 30, 2019, the Company entered into the Second Amended and Restated Credit Agreement (the "2019 Credit Agreement"), by and among the Company (the "U.S. Borrower") and certain of its foreign subsidiaries (collectively, the "Borrowers"), Wells Fargo Bank, National Association, as administrative agent, swingline lender and issuing lender, JPMorgan Chase Bank, N.A. as syndication agent, and the other lenders and parties signatory thereto. The 2019 Credit Agreement amends and restates the Company's Amended 2016 Credit Agreement. See Note 13 – Subsequent Events for additional information.

Interest Rate Swap

On June 2, 2017, the Company entered into an interest rate swap (the "Swap") with a notional amount of $150.0 million, as a means of fixing the floating interest rate component on $150.0 million of its variable-rate debt. The Swap is designated as a cash flow hedge, with a termination date of June 2, 2020. As a result of the application of hedge accounting treatment, all unrealized gains and losses related to the derivative instrument are recorded in Accumulated other comprehensive loss and are reclassified into operations in the same period in which the hedged transaction affects earnings. Hedge effectiveness is assessed quarterly. We do not use derivative instruments for trading or speculative purposes.

As more fully described within Note 12 – Fair Value Measurements, the Company uses a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. The fair value of the Swap is derived from a discounted cash flow analysis based on the terms of the contract and the interest rate curve (Level 2 inputs) and measured on a recurring basis in our Condensed Consolidated Balance Sheets. At June 30, 2019 and December 31, 2018, the fair value of the Swap, included in Prepaid expenses and other current assets on the Condensed Consolidated Balance Sheets, was $0.4 million and $2.0 million, respectively. During the three and six months ended June 30, 2019, unrealized pre-tax losses of $1.0 million and $1.6 million, respectively, were recorded in Accumulated other comprehensive loss. During the three and six months ended June 30, 2018, unrealized pre-tax gains of $0.3 million and $1.3 million, respectively, were recorded in Accumulated other comprehensive loss.

NOTE 6 – INCOME TAXES

The Company recognized income tax expense of $11.6 million and $8.3 million for the three months ended June 30, 2019 and 2018, respectively. The increase in tax expense in the current-year quarter was largely due to higher pre-tax income levels. The Company's effective tax rate for the three months ended June 30, 2019 was 26.1%, compared to 23.6% in the prior-year quarter, which included the recognition of a $0.5 million excess tax benefit from stock compensation activity.

For the six months ended June 30, 2019 and 2018, the Company recognized income tax expense of $17.5 million and $12.4 million, respectively. The increase in tax expense in the current year was largely due to higher pre-tax income levels. The Company's effective tax rate for the six months ended June 30, 2019 was 25.8%, compared to 23.8% in the prior-year period, which included the recognition of a $0.5 million excess tax benefit from stock compensation activity.

NOTE 7 – PENSIONS

The following table summarizes the components of net periodic pension expense (benefit):

	U.S. Benefit Plan				Non-U.S. Benefit Plan			
	Three Months Ended June 30,		Six Months Ended June 30,		Three Months Ended June 30,		Six Months Ended June 30,	
(in millions)	2019	2018	2019	2018	2019	2018	2019	2018
Service cost	$ —	$ —	$ —	$ —	$ —	$ —	$ 0.1	$ 0.1
Interest cost	1.7	1.6	3.4	3.2	0.4	0.4	0.7	0.7
Amortization of actuarial loss	0.6	0.7	1.2	1.5	0.1	0.1	0.3	0.3
Amortization of prior service cost	—	—	—	—	0.1	—	0.1	—
Expected return on plan assets	(2.2)	(2.2)	(4.4)	(4.4)	(0.5)	(0.6)	(1.0)	(1.2)
Net periodic pension expense (benefit)	$ 0.1	$ 0.1	$ 0.2	$ 0.3	$ 0.1	$ (0.1)	$ 0.2	$ (0.1)

NOTE 8 – COMMITMENTS AND CONTINGENCIES

Financial Commitments

The Company provides indemnifications and other guarantees in the ordinary course of business, the terms of which range in duration and often are not explicitly defined. Specifically, the Company is occasionally required to provide letters of credit and bid and performance bonds to various customers, principally to act as security for retention levels related to casualty insurance policies and to guarantee the performance of subsidiaries that engage in export and domestic transactions. At June 30, 2019, the Company had outstanding performance and financial standby letters of credit, as well as outstanding bid and performance bonds, aggregating to $18.6 million. If any such letters of credit or bonds are called, the Company would be obligated to reimburse the issuer of the letter of credit or bond. The Company believes the likelihood of any currently outstanding letter of credit or bond being called is remote.

The Company has transactions involving the sale of equipment to certain of its customers which include (i) guarantees to repurchase the equipment for a fixed price at a future date and (ii) guarantees to repurchase the equipment from the third-party lender in the event of default by the customer. As of June 30, 2019, the single year and maximum potential cash payments the Company could be required to make to repurchase equipment under these agreements were $3.6 million and $4.2 million, respectively. The Company's risk under these repurchase arrangements would be partially mitigated by the value of the products repurchased as part of the transaction. Historical cash requirements and losses associated with these obligations have not been significant, but could increase if customer defaults exceed current expectations.

Product Warranties

The Company issues product performance warranties to customers with the sale of its products. The specific terms and conditions of these warranties vary depending upon the product sold and country in which the Company does business, with warranty periods generally ranging from one to five years. The Company estimates the costs that may be incurred under its basic limited warranty and records a liability in the amount of such costs at the time the sale of the related product is recognized. Factors that affect the Company's warranty liability include (i) the number of units under warranty, (ii) historical and anticipated rates of warranty claims and (iii) costs per claim. The Company periodically assesses the adequacy of its recorded warranty liabilities and adjusts the amounts as necessary.

The following table summarizes the changes in the Company's warranty liabilities during the six months ended June 30, 2019 and 2018:

(in millions)	2019	2018
Balance at January 1	$ 9.8	$ 8.4
Provisions to expense	2.9	3.5
Payments	(3.1)	(3.2)
Balance at June 30	$ 9.6	$ 8.7

As of June 30, 2019 and December 31, 2018, an estimated liability was recorded within the Environmental Solutions Group in connection with a specific warranty matter. It is reasonably possible that the Company's estimate may change in the future as more information becomes available; however, the ultimate resolution of this matter is not expected to have a material adverse effect on the Company's results of operations, financial position or liquidity.

Liabilities of Discontinued Operations

The Company retains certain liabilities for operations discontinued in prior periods, primarily for environmental remediation and product liability. Included in liabilities of discontinued operations on the Condensed Consolidated Balance Sheets as of June 30, 2019 and December 31, 2018, were reserves of $0.3 million and $0.4 million, respectively, related to environmental remediation at the Pearland, Texas facility previously used by the Company's discontinued Pauluhn business, and $1.1 million and $1.1 million, respectively, related to estimated product liability obligations of the discontinued North American refuse truck body business.

Legal Proceedings

The Company is subject to various claims, including pending and possible legal actions for product liability and other damages, and other matters arising in the ordinary course of the Company's business. On a quarterly basis, the Company reviews uninsured material legal claims against the Company and accrues for the costs of such claims as appropriate in the exercise of management's best judgment and experience. However, due to a lack of factual information available to the Company about a claim, or the procedural stage of a claim, it may not be possible for the Company to reasonably assess either the probability of a favorable or unfavorable outcome of the claim or to reasonably estimate the amount of loss should there be an unfavorable outcome. Therefore, for many claims, the Company cannot reasonably estimate a range of loss.

The Company believes, based on current knowledge and after consultation with counsel, that the outcome of such claims and actions will not have a material adverse effect on the Company's results of operations or financial condition. However, in the event of unexpected future developments, it is possible that the ultimate resolution of such matters, if unfavorable, could have a material adverse effect on the Company's results of operations, financial condition or cash flow.

Hearing Loss Litigation

The Company has been sued for monetary damages by firefighters who claim that exposure to the Company's sirens has impaired their hearing and that the sirens are therefore defective. There were 33 cases filed during the period of 1999 through 2004, involving a total of 2,443 plaintiffs, in the Circuit Court of Cook County, Illinois. These cases involved more than 1,800 firefighter plaintiffs from locations outside of Chicago. In 2009, six additional cases were filed in Cook County, involving 299 Pennsylvania firefighter plaintiffs. During 2013, another case was filed in Cook County involving 74 Pennsylvania firefighter plaintiffs.

The trial of the first 27 of these plaintiffs' claims occurred in 2008, whereby a Cook County jury returned a unanimous verdict in favor of the Company.

An additional 40 Chicago firefighter plaintiffs were selected for trial in 2009. Plaintiffs' counsel later moved to reduce the number of plaintiffs from 40 to nine. The trial for these nine plaintiffs concluded with a verdict against the Company and for the plaintiffs in varying amounts totaling $0.4 million. The Company appealed this verdict. On September 13, 2012, the Illinois Appellate Court rejected this appeal. The Company thereafter filed a petition for rehearing with the Illinois Appellate Court, which was denied on February 7, 2013. The Company sought further review by filing a petition for leave to appeal with the Illinois Supreme Court on March 14, 2013. On May 29, 2013, the Illinois Supreme Court issued a summary order declining to accept review of this case. On July 1, 2013, the Company satisfied the judgments entered for these plaintiffs, which resulted in final dismissal of these cases.

A third consolidated trial involving eight Chicago firefighter plaintiffs occurred during November 2011. The jury returned a unanimous verdict in favor of the Company at the conclusion of this trial.

Following this trial, on March 12, 2012 the trial court entered an order certifying a class of the remaining Chicago Fire Department firefighter plaintiffs for trial on the sole issue of whether the Company's sirens were defective and unreasonably dangerous. The Company petitioned the Illinois Appellate Court for interlocutory appeal of this ruling. On May 17, 2012, the Illinois Appellate Court accepted the Company's petition. On June 8, 2012, plaintiffs moved to dismiss the appeal, agreeing with the Company that the trial court had erred in certifying a class action trial in this matter. Pursuant to plaintiffs' motion, the Illinois Appellate Court reversed the trial court's certification order.

Thereafter, the trial court scheduled a fourth consolidated trial involving three firefighter plaintiffs, which began in December 2012. Prior to the start of this trial, the claims of two of the three firefighter plaintiffs were dismissed. On December 17, 2012, the jury entered a complete defense verdict for the Company.

Following this defense verdict, plaintiffs again moved to certify a class of Chicago Fire Department plaintiffs for trial on the sole issue of whether the Company's sirens were defective and unreasonably dangerous. Over the Company's objection, the trial court granted plaintiffs' motion for class certification on March 11, 2013 and scheduled a class action trial to begin on June 10, 2013. The Company filed a petition for review with the Illinois Appellate Court on March 29, 2013 seeking reversal of the class certification order.

On June 25, 2014, a unanimous three-judge panel of the First District Illinois Appellate Court issued its opinion reversing the class certification order of the trial court. Specifically, the Appellate Court determined that the trial court's ruling failed to satisfy the class-action requirements that the common issues of the firefighters' claims predominate over the individual issues and that there is an adequate representative for the class. During a status hearing on October 8, 2014, plaintiffs represented to the Court that they would again seek to certify a class of firefighters on the issue of whether the Company's sirens were defective and unreasonably dangerous. On January 12, 2015, plaintiffs filed motions to amend their complaints to add class action allegations with respect to Chicago firefighter plaintiffs, as well as the approximately 1,800 firefighter plaintiffs from locations outside of Chicago. On March 11, 2015, the trial court granted plaintiff's motions to amend their complaints. On April 24, 2015, the cases were transferred to Cook County chancery court, which will decide all class certification issues. On March 23, 2018, plaintiffs filed a motion to certify as a class all firefighters from the Chicago Fire Department who have filed lawsuits in this matter. The Company has served discovery upon plaintiffs related to this motion and intends to continue its objections to any attempt at certification. The court has ordered plaintiffs to respond to the Company's discovery.

The Company has also filed motions to dismiss cases involving firefighters who worked for fire departments located outside of the State of Illinois based on improper venue. On February 24, 2017, the Circuit Court of Cook County entered orders dismissing the cases of 1,770 such firefighter plaintiffs from the jurisdiction of the State of Illinois. Pursuant to these orders, these plaintiffs had six months thereafter to refile their cases in jurisdictions where these firefighters are located. Prior to this six-month deadline, attorneys representing some of these plaintiffs contacted the Company regarding possible settlement of their cases. During the year ended December 31, 2017, the Company entered into a global settlement agreement with two attorneys who represented approximately 1,090 of these plaintiffs. Under the terms of the settlement agreement, the Company offered $700 per plaintiff to settle these cases and 717 plaintiffs accepted this offer as a final settlement. The attorneys representing these plaintiffs agreed to withdraw from representing plaintiffs who did not respond to the settlement offer. It is the Company's position that the non-settling plaintiffs who failed to timely refile their cases following the February 2017 dismissal by the Circuit Court of Cook County are now barred from doing so by the statute of limitations. The Company filed a venue motion seeking to transfer to DuPage County cases involving 10 plaintiffs who reside and work in Illinois but outside of Cook County. The Court granted this motion on June 28, 2017.

The Company has also been sued on this issue outside of the Cook County, Illinois venue. Between 2007 and 2009, a total of 71 lawsuits involving 71 plaintiffs were filed in the Court of Common Pleas, Philadelphia County, Pennsylvania. Three of these cases were dismissed pursuant to pretrial motions filed by the Company. Another case was voluntarily dismissed. Prior to trial in four cases, the Company paid nominal sums to obtain dismissals.

Three trials occurred in Philadelphia involving these cases filed in 2007 through 2009. The first trial involving one of these plaintiffs occurred in 2010, when the jury returned a verdict for the plaintiff. In particular, the jury found that the Company's siren was not defectively designed, but that the Company negligently constructed the siren. The jury awarded damages in the amount of $0.1 million, which was subsequently reduced to $0.08 million. The Company appealed this verdict. Another trial, involving nine Philadelphia firefighter plaintiffs, also occurred in 2010 when the jury returned a defense verdict for the Company as to all claims and all plaintiffs involved in that trial. The third trial, also involving nine Philadelphia firefighter plaintiffs, was completed during 2010 when the jury returned a defense verdict for the Company as to all claims and all plaintiffs involved in that trial.

Following defense verdicts in the last two Philadelphia trials, the Company negotiated settlements with respect to all remaining filed cases in Philadelphia at that time, as well as other firefighter claimants represented by the attorney who filed the Philadelphia cases. On January 4, 2011, the Company entered into a Global Settlement Agreement (the "Settlement Agreement") with the law firm of the attorney representing the Philadelphia claimants, on behalf of 1,125 claimants the firm represented (the "Claimants") and who had asserted product claims against the Company (the "Claims"). Three hundred eight of the Claimants had lawsuits pending against the Company in Cook County, Illinois.

The Settlement Agreement provided that the Company pay a total amount of $3.8 million (the "Settlement Payment") to settle the Claims (including the costs, fees and other expenses of the law firm in connection with its representation of the Claimants), subject to certain terms, conditions and procedures set forth in the Settlement Agreement. In order for the Company to be required to make the Settlement Payment: (i) each Claimant who agreed to settle his or her claims had to sign a release acceptable to the Company (a "Release"), (ii) each Claimant who agreed to the settlement and who was a plaintiff in a lawsuit, had to dismiss his or her lawsuit with prejudice, (iii) by April 29, 2011, at least 93% of the Claimants identified in the Settlement Agreement must have agreed to settle their claims and provide a signed Release to the Company and (iv) the law firm had to withdraw from representing any Claimants who did not agree to the settlement, including those who filed lawsuits. If the conditions to the settlement were met, but less than 100% of the Claimants agreed to settle their Claims and sign a Release, the Settlement Payment would be reduced by the percentage of Claimants who did not agree to the settlement.

On April 22, 2011, the Company confirmed that the terms and conditions of the Settlement Agreement had been met and made a payment of $3.6 million to conclude the settlement. The amount was based upon the Company's receipt of 1,069 signed releases provided by Claimants, which was 95% of all Claimants identified in the Settlement Agreement.

The Company generally denies the allegations made in the claims and lawsuits by the Claimants and denies that its products caused any injuries to the Claimants. Nonetheless, the Company entered into the Settlement Agreement for the purpose of minimizing its expenses, including legal fees, and avoiding the inconvenience, uncertainty and distraction of the claims and lawsuits.

During April through October 2012, 20 new cases were filed in the Court of Common Pleas, Philadelphia County, Pennsylvania. These cases were filed on behalf of 20 Philadelphia firefighters and involve various defendants in addition to the Company. Five of these cases were subsequently dismissed. The first trial involving these 2012 Philadelphia cases occurred during December 2014 and involved three firefighter plaintiffs. The jury returned a verdict in favor of the Company. Following this trial, all of the parties agreed to settle cases involving seven firefighter plaintiffs set for trial during January 2015 for nominal amounts per plaintiff.

In January 2015, plaintiffs' attorneys filed two new complaints in the Court of Common Pleas, Philadelphia, Pennsylvania on behalf of approximately 70 additional firefighter plaintiffs. The vast majority of the firefighters identified in these complaints are located outside of Pennsylvania. One of the complaints in these cases, which involves 11 firefighter plaintiffs from the District of Columbia, was removed to federal court in the Eastern District of Pennsylvania. Plaintiffs voluntarily dismissed all claims in this case on May 31, 2016. The Company thereafter moved to recover various fees and costs in this case, asserting that plaintiffs' counsel failed to properly investigate these claims prior to filing suit. The Court granted this motion on April 25, 2017, awarding $0.1 million to the Company. After plaintiffs appealed this Order, the United States Court of Appeals for the Third Circuit affirmed the lower court decision awarding fees and costs to the Company.

With respect to claims of other out-of-state firefighters involved in these two cases, the Company moved to dismiss these claims as improperly filed in Pennsylvania. The Court granted this motion and dismissed these claims on November 5, 2015. During August through December 2015, another nine new cases were filed in the Court of Common Pleas, Philadelphia County, Pennsylvania. These cases involve a total of 193 firefighters, most of whom are located outside of Pennsylvania. The Company again moved to dismiss all claims filed by out-of-state firefighters in these cases as improperly filed in Pennsylvania. On May 24, 2016, the Court granted this motion and dismissed these claims. Plaintiffs appealed this decision and, on September 25, 2018, the appellate court reversed this dismissal. The Company has filed a petition with the appellate court requesting that the court reconsider its ruling. On December 7, 2018, the appellate court granted the Company's petition and withdrew its prior decision. The Court has ordered that the parties file additional briefs and a new panel of appellate judges issue a decision.

On May 13, 2016, four new cases were filed in Philadelphia state court, involving a total of 55 Philadelphia firefighters who live in Pennsylvania. During August 2016, the Company settled a case involving four Philadelphia firefighters that had been set for trial in Philadelphia state court during September 2016. During 2017, plaintiffs filed additional cases in the Court of Common Pleas, Philadelphia County, involving over 100 Philadelphia firefighter plaintiffs. During January 2017, plaintiffs filed a motion to consolidate and bifurcate, similar to a motion filed in the Pittsburgh hearing loss cases, as described below. The Company has filed an opposition to this motion. These cases were then transferred to the mass tort program in Philadelphia for pretrial purposes. Plaintiffs' counsel thereafter dismissed several plaintiffs. During November 2017, a trial involving one Philadelphia firefighter occurred. The jury returned a verdict in favor of the Company in this trial. Prior to a dismissal of these cases pursuant to the Tolling Agreement, discussed below, there was a total of 75 firefighters involved in cases pending in the Philadelphia mass tort program.

During April through July 2013, additional cases were filed in Allegheny County, Pennsylvania on behalf of 247 plaintiff firefighters from Pittsburgh and against various defendants, including the Company. During May 2016, two additional cases were filed against the Company in Allegheny County involving 19 Pittsburgh firefighters. After the Company filed pretrial motions, the Court dismissed claims of 55 Pittsburgh firefighter plaintiffs. The Court scheduled trials for May, September and November 2016, for eight firefighters per trial. Prior to the first scheduled trial in Pittsburgh, the Court granted the Company's motion for summary judgment and dismissed all claims asserted by plaintiff firefighters involved in this trial. Following an appeal by the plaintiff firefighters, the appellate court affirmed this dismissal. The next trial for six Pittsburgh firefighters started on November 7, 2016. Shortly after this trial began, plaintiffs' counsel moved for a mistrial because a key witness suddenly became unavailable. The Court granted this motion and rescheduled this trial for March 6, 2017. During January 2017, plaintiffs also moved to consolidate and bifurcate trials involving Pittsburgh firefighters. In particular, plaintiffs sought one trial involving liability issues which will apply to all Pittsburgh firefighters who filed suit against the Company. The Company filed an opposition to this motion. On April 18, 2017, the trial court granted plaintiffs' motion to bifurcate the next Pittsburgh trial. Pursuant to a motion for clarification filed by the Company, the Court ruled that the bifurcation order would only apply to six plaintiffs who were part of the next trial group in Pittsburgh. The Company thereafter sought an interlocutory appeal of the Court's bifurcation order. The appellate court declined to accept the appeal at that time. A bifurcated trial began on September 27, 2017 in Allegheny County, Pennsylvania. Prior to and during trial, two plaintiffs were dismissed, resulting in four plaintiffs remaining for trial. After approximately two weeks of trial, the jury found that the Company's siren product was not defective or unreasonably dangerous and rendered a verdict in favor of the Company.

A second trial involving Pittsburgh firefighters began during January 2018. At the outset of this trial, plaintiffs' attorneys requested that the Company consider settlement of various cases. This trial was continued to allow the parties to further discuss possible settlement. During March 2018, the parties agreed in principle on a framework to resolve hearing loss claims and cases in all jurisdictions involved in the hearing loss litigation except in Cook County and Lackawanna County, and excluding one case involving one firefighter in New York City. The firefighters excluded from this settlement framework are represented by different attorneys. Pursuant to this settlement framework, the Company would pay $700 to each firefighter who has filed a lawsuit and is eligible to be part of the settlement. The Company would pay $300 to each firefighter who has not yet filed a case and is eligible to be part of the settlement. To be eligible for settlement, among other things, firefighters must provide proof that they have high frequency noise-induced hearing loss. There are approximately 3,700 firefighters whose claims may be considered as part of this settlement, including approximately 1,320 firefighters who have ongoing filed lawsuits. The parties are in the process of determining how many of these firefighters will be eligible to participate in the settlement. In order to minimize the parties' respective legal costs and expenses during this settlement process, on July 5, 2018, the parties entered into a tolling agreement (the "Tolling Agreement"). Pursuant to the Tolling Agreement, counsel for the settling firefighters agreed to dismiss the pending lawsuits in all jurisdictions except for the Allegheny County (Pittsburgh), Pennsylvania cases, and the Company agreed to a tolling of any statute of limitations applicable to the dismissed cases until July 31, 2019. The settlement framework will require plaintiffs' attorneys to withdraw from representing firefighters who elect not to participate in this settlement. As of June 30, 2019, the Company has recognized an estimated liability for the potential settlement amount. While it is reasonably possible that the ultimate resolution of this matter may result in a loss in excess of the amount accrued, the incremental loss is not expected to be material.

During March 2014, an action also was brought in the Court of Common Pleas of Erie County, Pennsylvania on behalf of 61 firefighters. This case likewise involves various defendants in addition to the Company. After the Company filed pretrial motions, 33 Erie County firefighter plaintiffs voluntarily dismissed their claims. During August 2017, five cases involving 70 firefighter plaintiffs were filed in Lackawanna County, Pennsylvania. These cases involve firefighter plaintiffs who originally filed in Cook County and were dismissed pursuant to the Company's forum nonconveniens motion. As of June 30, 2019, a total of 263 firefighters are involved in cases filed in Allegheny and Lackawanna counties in Pennsylvania.

On September 17, 2014, 20 lawsuits, involving a total of 193 Buffalo Fire Department firefighters, were filed in the Supreme Court of the State of New York, Erie County. All of the cases filed in Erie County, New York have been removed to federal court in the Western District of New York. Plaintiffs have filed a motion to consolidate and bifurcate these cases, similar to the motion filed in the Pittsburgh hearing loss cases, as described above. The Company has filed an opposition to the motion. During February 2015, a lawsuit involving one New York City firefighter plaintiff was filed in the Supreme Court of the State of New York, New York County. The plaintiff named the Company as well as several other parties as defendants. That case subsequently was transferred to federal court in the Northern District of New York and thereafter dismissed. During April 2015 through January 2016, 29 new cases involving a total of 235 firefighters were filed in various counties in the New York City area. During December 2016 through October 2017, additional cases were filed in these jurisdictions. On February 5, 2018, the Company was served with a complaint in an additional case filed in Kings County, New York. This case involves one plaintiff. Prior to a dismissal of these cases pursuant to the Tolling Agreement, there was a total of 536 firefighters involved in cases filed in the State of New York.

During November 2015, the Company was served with a complaint filed in Union County, New Jersey state court, involving 34 New Jersey firefighters. This case has been transferred to federal court in the District of New Jersey. During the period from January through May 2016, eight additional cases were filed in various New Jersey state courts. Most of the firefighters in these cases reside in New Jersey and work or worked at New Jersey fire departments. During December 2016, a case involving one New Jersey firefighter was filed in the United States District Court of New Jersey. On May 2, 2017, plaintiffs filed a motion to consolidate and bifurcate in the pending federal court case in New Jersey. This motion was similar to bifurcation motions filed by plaintiffs in Pittsburgh, Buffalo and Philadelphia. The Court has denied this motion as premature. Pursuant to a petition filed by both parties, all New Jersey state court cases were consolidated for pretrial purposes. Prior to a dismissal of these cases pursuant to the Tolling Agreement, there was a total of 61 firefighters involved in cases filed in New Jersey.

During May through October 2016, nine cases were filed in Suffolk County, Massachusetts state court, naming the Company as a defendant. These cases involve 194 firefighters who lived and worked in the Boston area. During August 2017, plaintiffs filed additional cases in Suffolk County court. The Company moved to transfer various cases filed in Suffolk County to other counties in Massachusetts where plaintiffs reside and work. Prior to a dismissal of these cases pursuant to the Tolling Agreement, there was a total of 218 firefighters involved in cases filed in Massachusetts.

During August and September 2017, plaintiffs' attorneys filed additional hearing loss cases in Florida. The Company is the only named defendant. These cases were filed in several different counties in Florida, including Tampa, Miami and Orlando municipalities. Plaintiffs have agreed to stipulate that they will not seek more than $75,000 in damages in any individual plaintiff case. Prior to a dismissal of these cases pursuant to the Tolling Agreement, there was a total of 166 firefighters involved in cases filed in Florida.

From 2007 through 2009, firefighters also brought hearing loss claims against the Company in New Jersey, Missouri, Maryland and Kings County, New York. All of those cases, however, were dismissed prior to trial, including four cases in the Supreme Court of Kings County, New York that were dismissed upon the Company's motion in 2008. On appeal, the New York appellate court affirmed the trial court's dismissal of these cases. Plaintiffs' attorneys have threatened to file additional lawsuits. The Company intends to vigorously defend all of these lawsuits, if filed.

NOTE 9 – EARNINGS PER SHARE

The Company computes earnings per share ("EPS") in accordance with ASC 260, *Earnings per Share*, which requires that non-vested restricted stock containing non-forfeitable dividend rights should be treated as participating securities pursuant to the two-class method. Under the two-class method, net income is reduced by the amount of dividends declared in the period for common stock and participating securities. The remaining undistributed earnings are then allocated to common stock and participating securities as if all of the net income for the period had been distributed. The amounts of distributed and undistributed earnings allocated to participating securities for the three and six months ended June 30, 2019 and 2018 were insignificant and did not materially impact the calculation of basic or diluted EPS.

Basic EPS is computed by dividing income available to common stockholders by the weighted average number of shares of common stock and non-vested restricted stock awards outstanding for the period.

Diluted EPS is computed using the weighted average number of shares of common stock and non-vested restricted stock awards outstanding for the year, plus the effect of dilutive potential common shares outstanding during the period. The dilutive effect of common stock equivalents is determined using the more dilutive of the two-class method or alternative methods. The Company uses the treasury stock method to determine the potentially dilutive impact of our employee stock options and restricted stock units, and the contingently issuable method for our performance-based restricted stock unit awards.

For both the three and six months ended June 30, 2019, options to purchase 0.5 million shares of the Company's common stock, respectively, had an anti-dilutive effect on EPS, and accordingly, are excluded from the calculation of diluted EPS. For both the three and six months ended June 30, 2018, options to purchase 0.3 million shares of the Company's common stock had an anti-dilutive effect on EPS, and accordingly, are excluded from the calculation of diluted EPS.

The following table reconciles Net income to basic and diluted EPS:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in millions, except per share data)	**2019**	**2018**	**2019**	**2018**
Net income	$ 32.8	$ 26.9	$ 50.3	$ 39.8
Weighted average shares outstanding – Basic	60.1	59.9	60.1	59.9
Dilutive effect of common stock equivalents	1.2	1.1	1.1	1.0
Weighted average shares outstanding – Diluted	61.3	61.0	61.2	60.9
Earnings per share:				
Basic	$ 0.55	$ 0.45	$ 0.84	$ 0.67
Diluted	0.54	0.44	0.82	0.65

NOTE 10 – STOCKHOLDERS' EQUITY

Dividends

On February 19, 2019, the Company's Board of Directors (the "Board") declared a quarterly cash dividend of $0.08 per common share. The dividend totaled $4.8 million and was distributed on March 29, 2019 to holders of record at the close of business on March 18, 2019.

On April 30, 2019, the Board declared a quarterly cash dividend of $0.08 per common share. The dividend totaled $4.8 million and was distributed on May 30, 2019 to holders of record at the close of business on May 15, 2019.

During the three and six months ended June 30, 2018, dividends of $4.8 million and $9.0 million, respectively, were paid to stockholders.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS — (CONTINUED)
(Unaudited)

On July 30, 2019, the Board declared a quarterly cash dividend of $0.08 per common share payable on August 28, 2019 to holders of record at the close of business on August 14, 2019.

Stock Repurchase Program

In November 2014, the Board authorized a stock repurchase program of up to $75.0 million of the Company's common stock. The stock repurchase program is intended primarily to facilitate opportunistic purchases of Company stock as a means to provide cash returns to stockholders, enhance stockholder returns and manage the Company's capital structure. Under the stock repurchase program, the Company is authorized to repurchase, from time to time, shares of its outstanding common stock in the open market or through privately negotiated transactions. Stock repurchases by the Company are subject to market conditions and other factors and may be commenced, suspended or discontinued at any time.

During the six months ended June 30, 2019, the Company repurchased 48,409 shares for a total of $1.0 million under the stock repurchase program.

Accumulated Other Comprehensive Loss

The following tables summarize the changes in each component of Accumulated other comprehensive loss, net of tax:

Three Months Ended June 30, 2019 and 2018

(in millions) [(a)]	Actuarial Losses	Prior Service Costs	Foreign Currency Translation	Unrealized Gain on Derivatives	Total
Balance at April 1, 2019	$ (87.2)	(2.5)	$ (8.9)	$ 1.0	$ (97.6)
Other comprehensive income (loss) before reclassifications	0.6	—	0.8	(0.5)	0.9
Amounts reclassified from accumulated other comprehensive loss	0.6	0.1	—	(0.2)	0.5
Net current-period other comprehensive income (loss)	1.2	0.1	0.8	(0.7)	1.4
Balance at June 30, 2019	$ (86.0)	(2.4)	$ (8.1)	$ 0.3	$ (96.2)

(in millions) [(a)]	Actuarial Losses	Foreign Currency Translation	Unrealized Gain on Derivatives	Total
Balance at April 1, 2018	$ (75.3)	$ (0.5)	$ 1.8	$ (74.0)
Other comprehensive income (loss) before reclassifications	1.1	(5.2)	0.3	(3.8)
Amounts reclassified from accumulated other comprehensive loss	0.6	—	(0.1)	0.5
Net current-period other comprehensive income (loss)	1.7	(5.2)	0.2	(3.3)
Balance at June 30, 2018	$ (73.6)	$ (5.7)	$ 2.0	$ (77.3)

Six months ended June 30, 2019 and 2018

(in millions) [(a)]	Actuarial Losses	Prior Service Costs	Foreign Currency Translation	Unrealized Gain on Derivatives	Total
Balance at January 1, 2019	$ (87.4)	(2.5)	$ (8.9)	$ 1.5	$ (97.3)
Other comprehensive income (loss) before reclassifications	0.2	—	0.8	(0.7)	0.3
Amounts reclassified from accumulated other comprehensive loss	1.2	0.1	—	(0.5)	0.8
Net current-period other comprehensive income (loss)	1.4	0.1	0.8	(1.2)	1.1
Balance at June 30, 2019	$ (86.0)	(2.4)	$ (8.1)	$ 0.3	$ (96.2)

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS — (CONTINUED)
(Unaudited)

(in millions) [(a)]	Actuarial Losses	Foreign Currency Translation	Unrealized Gain on Derivatives	Total
Balance at January 1, 2018	$ (75.4)	$ (2.5)	$ 1.0	$ (76.9)
Other comprehensive income (loss) before reclassifications	0.4	(3.2)	1.1	(1.7)
Amounts reclassified from accumulated other comprehensive loss	1.4	—	(0.1)	1.3
Net current-period other comprehensive income (loss)	1.8	(3.2)	1.0	(0.4)
Balance at June 30, 2018	$ (73.6)	$ (5.7)	$ 2.0	$ (77.3)

(a) Amounts in parentheses indicate losses.

The following table summarizes the amounts reclassified from Accumulated other comprehensive loss, net of tax, in the three months ended June 30, 2019 and 2018 and the affected line item in the Condensed Consolidated Statements of Operations:

Details about Accumulated Other Comprehensive Loss Components	Amount Reclassified from Accumulated Other Comprehensive Loss		Affected Line Item in Condensed Consolidated Statements of Operations
	2019	2018	
(in millions) [(a)]			
Amortization of actuarial losses of defined benefit pension plans	$ (0.7)	$ (0.8)	Other (income) expense, net
Amortization of prior service costs of defined benefit pension plans	(0.1)	—	Other (income) expense, net
Interest rate swap	0.3	0.2	Interest expense
Total before tax	(0.5)	(0.6)	
Income tax benefit	—	0.1	Income tax expense
Total reclassifications for the period, net of tax	$ (0.5)	$ (0.5)	

(a) Amounts in parentheses indicate losses.

The following table summarizes the amounts reclassified from Accumulated other comprehensive loss, net of tax, in the six months ended June 30, 2019 and 2018 and the affected line item in the Condensed Consolidated Statements of Operations:

Details about Accumulated Other Comprehensive Loss Components	Amount Reclassified from Accumulated Other Comprehensive Loss		Affected Line Item in Condensed Consolidated Statements of Operations
	2019	2018	
(in millions) [(a)]			
Amortization of actuarial losses of defined benefit pension plans	$ (1.5)	$ (1.8)	Other (income) expense, net
Amortization of prior service costs of defined benefit pension plans	(0.1)	—	Other (income) expense, net
Interest rate swap	0.7	0.2	Interest expense
Total before tax	(0.9)	(1.6)	
Income tax benefit	0.1	0.3	Income tax expense
Total reclassifications for the period, net of tax	$ (0.8)	$ (1.3)	

(a) Amounts in parentheses indicate losses.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS — (CONTINUED)
(Unaudited)

NOTE 11 – SEGMENT INFORMATION

The Company has two reportable segments. Business units are organized under each reportable segment because they share certain characteristics, such as technology, marketing, distribution and product application, which create long-term synergies.

The following tables summarize the Company's operations by segment, including Net sales, Operating income (loss), and Total assets:

	Three Months Ended June 30,		Six Months Ended June 30,	
(in millions)	**2019**	**2018**	**2019**	**2018**
Net sales:				
Environmental Solutions	$ 267.2	$ 233.3	$ 486.7	$ 429.9
Safety and Security Systems	57.1	57.7	111.4	110.8
Total net sales	$ 324.3	$ 291.0	$ 598.1	$ 540.7
Operating income (loss):				
Environmental Solutions	$ 44.8	$ 37.2	$ 70.5	$ 57.8
Safety and Security Systems	9.5	8.2	18.2	14.3
Corporate and eliminations	(8.0)	(7.3)	(16.6)	(14.4)
Total operating income	46.3	38.1	72.1	57.7
Interest expense	2.0	2.5	4.0	5.0
Other (income) expense, net	(0.1)	0.4	0.3	0.5
Income before income taxes	$ 44.4	$ 35.2	$ 67.8	$ 52.2

(in millions)	**As of June 30, 2019**	**As of December 31, 2018**
Total assets:		
Environmental Solutions	$ 838.1	$ 775.2
Safety and Security Systems	219.3	211.5
Corporate and eliminations	37.9	36.7
Total assets of continuing operations	1,095.3	1,023.4
Total assets of discontinued operations	0.4	0.4
Total assets	$ 1,095.7	$ 1,023.8

NOTE 12 – FAIR VALUE MEASUREMENTS

The Company uses a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. This hierarchy maximizes the use of observable inputs and minimizes the use of unobservable inputs. Observable inputs are developed based on market data obtained from independent sources, while unobservable inputs reflect the Company's assumptions about valuation based on the best information available in the circumstances. The three levels of inputs are classified as follows:

- Level 1 — quoted prices in active markets for identical assets or liabilities;
- Level 2 — observable inputs, other than quoted prices included in Level 1, such as quoted prices for markets that are not active, or other inputs that are observable or can be corroborated by observable market data; and
- Level 3 — unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities, including certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

In determining fair value, the Company uses various valuation approaches within the fair value measurement framework. The valuation methodologies used for the Company's assets and liabilities measured at fair value and their classification in the valuation hierarchy are summarized below:

Cash Equivalents

Cash equivalents primarily consist of time-based deposits and interest-bearing instruments with maturities of three months or less. The Company classified cash equivalents as Level 1 due to the short-term nature of these instruments and measured the fair value based on quoted prices in active markets for identical assets.

Interest Rate Swap

As described in Note 5 – Debt, the Company entered into an interest rate swap as a means of fixing the floating interest rate component on a portion of its floating-rate debt. The Company classified the interest rate swap as Level 2 due to the use of a discounted cash flow model based on the terms of the contract and the interest rate curve (Level 2 inputs) to calculate the fair value of the swap.

Contingent Consideration

The Company has a contingent obligation to transfer cash to the former owners of JJE if specified financial results are met over future reporting periods (i.e., an earn-out). Liabilities for contingent consideration are measured at fair value each reporting period, with the acquisition-date fair value included as part of the consideration transferred. Subsequent changes in fair value are recorded as a component of Acquisition and integration-related expenses on the Condensed Consolidated Statements of Operations.

The Company uses an income approach to value the contingent consideration obligation based on future financial performance, which is determined based on the present value of expected future cash flows. Due to the lack of relevant observable market data over fair value inputs, the Company has classified the contingent consideration liability within Level 3 of the fair value hierarchy outlined in ASC 820, *Fair Value Measurements*. Increases in the expected payout under a contingent consideration arrangement contribute to increases in the fair value of the related liability. Conversely, decreases in the expected payout under a contingent consideration arrangement contribute to decreases in the fair value of the related liability. Changes in assumptions could have an impact on the fair value of the contingent consideration, which has a maximum payout of C$10.0 million (approximately $7.6 million). The Company expects to settle the contingent consideration liability during the third quarter of 2019.

The following table summarizes the Company's assets and liabilities that are measured at fair value on a recurring basis as of June 30, 2019:

	Fair Value Measurement at Reporting Date Using			
(in millions)	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:				
Cash equivalents	$ 13.8			$ 13.8
Interest rate swap		$ 0.4		0.4
Liabilities:				
Contingent consideration			$ 7.6	7.6

The following table provides a roll-forward of the fair value of recurring Level 3 fair value measurements in the three months ended June 30, 2019 and 2018:

(in millions)	2019	2018
Contingent consideration liability, at April 1	$ 7.1	$ 6.4
Foreign currency translation	0.1	(0.1)
Total losses included in earnings [(a)]	0.4	0.2
Contingent consideration liability, at June 30	$ 7.6	$ 6.5

(a) Changes in the fair value of contingent consideration liabilities are included as a component of Acquisition and integration-related expenses within the Condensed Consolidated Statements of Operations.

The following table provides a roll-forward of the fair value of recurring Level 3 fair value measurements in the six months ended June 30, 2019 and 2018:

(in millions)	2019	2018
Contingent consideration liability, at January 1	$ 6.7	$ 6.3
Foreign currency translation	0.3	(0.2)
Total losses included in earnings [(a)]	0.6	0.4
Contingent consideration liability, at June 30	$ 7.6	$ 6.5

(a) Changes in the fair value of contingent consideration liabilities are included as a component of Acquisition and integration-related expenses within the Condensed Consolidated Statements of Operations.

NOTE 13 – SUBSEQUENT EVENTS

Acquisition of Mark Rite Lines Equipment Company, Inc.

On July 1, 2019, the Company completed the acquisition of substantially all of the assets and operations of Mark Rite Lines Equipment Company, Inc. (“MRL”), a U.S. manufacturer of truck-mounted and ride-on road-marking equipment, including its wholly-owned subsidiary HighMark Traffic Services, Inc., for an initial purchase price of $55.5 million, subject to certain post-closing adjustments, which are expected to be finalized in the fourth quarter of 2019. The initial cash consideration was funded through borrowings under the Company’s revolving credit facility. The acquisition also includes contingent consideration of up to $15.5 million, based on the achievement of certain financial targets over the three-year period following the closing.

The preliminary purchase price allocation has not been completed at this time, due to the proximity of the date of acquisition to the date of issuance of the condensed consolidated financial statements. The Company expects that MRL will provide an efficient entry into a new line of product offerings and access to new markets. The post-acquisition operating results of MRL are expected to be included within the Environmental Solutions Group.

Debt Refinancing

On July 30, 2019, the Company entered into the 2019 Credit Agreement, which amends and restates the Amended 2016 Credit Agreement.

The 2019 Credit Agreement is a $500 million revolving credit facility, maturing on July 30, 2024, that provides for borrowings in the form of loans or letters of credit up to the aggregate availability under the facility, with a sub-limit of $75 million for letters of credit. The 2019 Credit Agreement allows for the Borrowers to borrow in denominations of U.S. Dollars, Canadian Dollars, Euros or British Pounds (with borrowings in non-U.S. currencies subject to a sublimit of $200 million). In addition, the Company may cause the commitments to increase by up to an additional $250 million, subject to the approval of the applicable lenders providing such additional financing. Borrowings under the 2019 Credit Agreement may be used for working capital and general corporate purposes, including acquisitions.

The Company’s material domestic subsidiaries provide guarantees for all obligations of the Borrowers under the 2019 Credit Agreement, which is secured by a first priority security interest in (i) all existing or hereafter acquired domestic property and assets of the U.S. Borrower and material domestic subsidiaries, (ii) the stock or other equity interests in each of the material domestic subsidiaries and (iii) 65% of outstanding voting capital stock of certain first-tier foreign subsidiaries, subject to certain exclusions.

Borrowings under the 2019 Credit Agreement bear interest, at the Company’s option, at a base rate or a LIBOR rate, plus, in each case, an applicable margin. The applicable margin ranges from zero to 0.75% for base rate borrowings and 1.00% to 1.75% for LIBOR borrowings. The Company must also pay a commitment fee to the lenders ranging between 0.10% to 0.25% per annum on the unused portion of the $500 million revolving credit facility along with other standard fees. Letter of credit fees are payable on outstanding letters of credit in an amount equal to the applicable LIBOR margin plus other customary fees.

The Company is subject to certain net leverage ratio and interest coverage ratio financial covenants under the 2019 Credit Agreement that are to be measured at each fiscal quarter-end. The 2019 Credit Agreement also includes a series of “covenant holiday” periods, which allow for the temporary increase of the minimum net leverage ratio following the completion of a permitted acquisition, or a series of acquisitions, when the aggregate consideration over a period of twelve months exceeds $75 million. In addition, the 2019 Credit Agreement includes customary negative covenants, subject to certain exceptions, restricting or limiting the Company’s and its subsidiaries’ ability to, among other things: (i) make non-ordinary course dispositions of assets; (ii) make certain fundamental business changes, such as mergers, consolidations or any similar combination; (iii) make restricted payments, including dividends and stock repurchases; (iv) incur indebtedness; (v) make certain loans and investments; (vi) create liens; (vii) transact with affiliates; (viii) enter into sale/leaseback transactions; (ix) make negative pledges; and (x) modify subordinated debt documents.

Under the 2019 Credit Agreement, restricted payments, including dividends and stock repurchases, shall be permitted if (i) the Company’s leverage ratio is less than or equal to 3.25; (ii) the Company is in compliance with all other financial covenants; and (iii) there are no existing defaults under the 2019 Credit Agreement. If its leverage ratio is more than 3.25, the Company is still permitted to fund (i) up to $35 million of dividend payments and stock repurchases; and (ii) an incremental $50 million of other cash payments.

The 2019 Credit Agreement contains customary events of default. If an event of default occurs and is continuing, the Borrowers may be required immediately to repay all amounts outstanding under the 2019 Credit Agreement and the commitments from the lenders may be terminated.

Item 2. ***Management's Discussion and Analysis of Financial Condition and Results of Operations.***

Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") is designed to provide information that is supplemental to, and should be read together with, the condensed consolidated financial statements and the accompanying notes contained in this Form 10-Q, as well as the Company's Annual Report on Form 10-K for the year ended December 31, 2018. Information in MD&A is intended to assist the reader in obtaining an understanding of (i) the condensed consolidated financial statements, (ii) the Company's business segments and how the results of those segments impact the Company's results of operations and financial condition as a whole and (iii) how certain accounting principles affect the Company's condensed consolidated financial statements. The Company's results for interim periods are not necessarily indicative of annual operating results.

Executive Summary

The Company is a leading global manufacturer and supplier of (i) vehicles and equipment for maintenance and infrastructure end-markets, including sewer cleaners, vacuum trucks, street sweepers, dump truck bodies and trailers and (ii) safety, security and communication equipment, such as lights, sirens and warning systems. In addition, we sell parts and provide service, repair, equipment rentals and training as part of a comprehensive aftermarket offering to our customer base. We operate 14 manufacturing facilities in five countries and provide products and integrated solutions to municipal, governmental, industrial and commercial customers in all regions of the world.

As described in Note 11 – Segment Information to the accompanying condensed consolidated financial statements, the Company's business units are organized in two reportable segments: the Environmental Solutions Group and the Safety and Security Systems Group.

Net sales increased by $33.3 million, or 11%, in the three months ended June 30, 2019 as compared to the prior-year quarter. Our Environmental Solutions Group reported a net sales increase of $33.9 million, or 15%, largely due to increases in shipments of vacuum trucks, sewer cleaners, and dump truck bodies of $17.2 million, $8.7 million, and $3.3 million, respectively, as well as an $8.0 million increase in aftermarket revenues, represented by higher rental income and improved parts, service and used equipment sales. Within our Safety and Security Systems Group, net sales decreased by $0.6 million, or 1%, primarily due to unfavorable foreign currency translation effects and lower global sales of public safety products and warning systems, partially offset by higher sales of industrial signaling equipment.

For the six months ended June 30, 2019, net sales increased by $57.4 million, or 11%, as compared to the corresponding period of the prior year. Within our Environmental Solutions Group, net sales improved by $56.8 million, or 13%, largely due to increases in shipments of vacuum trucks, sewer cleaners, dump truck bodies, and street sweepers of $25.6 million, $9.5 million, $5.5 million and $5.1 million, respectively, as well as a $9.5 million increase in aftermarket revenues, represented by higher rental income and improved parts and service sales. In our Safety and Security Systems Group, net sales increased by $0.6 million, or 1%, primarily due to higher sales of industrial signaling equipment, partially offset by unfavorable foreign currency translation effects and lower sales of warning systems.

Operating income increased by $8.2 million, or 22%, to $46.3 million in the three months ended June 30, 2019 as compared to the prior-year quarter, primarily driven by a $7.6 million increase within our Environmental Solutions Group associated with increased sales volumes and improved operating leverage. Operating income in the three months ended June 30, 2019 within our Safety and Security Systems Group increased by $1.3 million, largely due to benefits from pricing actions, favorable sales mix, and lower operating expenses, while Corporate expenses increased by $0.7 million. Consolidated operating margin for the three months ended June 30, 2019 was 14.3%, up from 13.1% in the prior-year quarter.

For the six months ended June 30, 2019, operating income increased by $14.4 million as compared to the corresponding period of the prior year. Within our Environmental Solutions Group, operating income for the six months ended June 30, 2019 increased by $12.7 million, or 22%, largely due to higher sales volumes and improved operating leverage. Within our Safety and Security Systems Group, operating income in the six months ended June 30, 2019 increased by $3.9 million, or 27%, largely due to benefits from pricing actions, favorable sales mix, and lower operating expenses, while Corporate expenses increased by $2.2 million. Consolidated operating margin for the six months ended June 30, 2019 was 12.1%, compared to 10.7% in the prior-year period.

Income before income taxes increased by $9.2 million, or 26%, to $44.4 million for the three months ended June 30, 2019 as compared to the prior-year quarter. The increase resulted from the higher operating income, a $0.5 million decrease in interest expense and a $0.5 million decrease in other expense. For the six months ended June 30, 2019, income before income taxes increased by $15.6 million, or 30%, as compared to the prior-year period, primarily due to the higher operating income, a $1.0 million decrease in interest expense and a $0.2 million decrease in other expense.

Net income for the three months ended June 30, 2019 increased by $5.9 million compared to the prior-year period, largely due to the aforementioned increase in income before income taxes, partially offset by a $3.3 million increase in income tax expense. For the six months ended June 30, 2019, net income increased by $10.5 million compared to the corresponding period of the prior year, largely due to the aforementioned increase in income before income taxes, partially offset by a $5.1 million increase in income tax expense. The increase in income tax expense in both the three and six months ended June 30, 2019 was primarily due to higher income levels. For the first half of 2019, our effective tax rate was 25.8%. We currently expect our full-year effective tax rate to be within the range of 25% to 26%.

Total orders for the three months ended June 30, 2019 were $308.0 million, an increase of $30.4 million, or 11%, as compared to the prior-year quarter. Our Environmental Solutions Group reported total orders of $253.2 million in the second quarter of 2019, up $35.9 million, or 17% in comparison to the prior-year quarter. Orders in the three months ended June 30, 2019 within our Safety and Security Systems Group were $54.8 million, compared to $60.3 million in the prior-year quarter.

For the six months ended June 30, 2019, total orders were $607.0 million, generally consistent with the order intake in the first half of 2018. Our Environmental Solutions Group reported total orders of $496.9 million in the first half of 2019, an increase of $5.2 million, or 1%, compared to the first half of 2018. Orders in the six months ended June 30, 2019 within our Safety and Security Systems Group decreased by $5.5 million, or 5%.

Our consolidated backlog at June 30, 2019 was $347.7 million, up $25.4 million, or 8%, compared to the prior-year quarter.

Results of Operations

The following table summarizes our Condensed Consolidated Statements of Operations and illustrates the key financial indicators used to assess our consolidated financial results:

	Three Months Ended June 30,			Six Months Ended June 30,		
($ in millions, except per share data)	**2019**	**2018**	**Change**	**2019**	**2018**	**Change**
Net sales	$ 324.3	$ 291.0	$ 33.3	$ 598.1	$ 540.7	$ 57.4
Cost of sales	235.3	211.8	23.5	438.8	399.6	39.2
Gross profit	89.0	79.2	9.8	159.3	141.1	18.2
Selling, engineering, general and administrative expenses	41.8	40.7	1.1	85.7	82.5	3.2
Acquisition and integration-related expenses	0.9	0.4	0.5	1.5	0.9	0.6
Operating income	46.3	38.1	8.2	72.1	57.7	14.4
Interest expense	2.0	2.5	(0.5)	4.0	5.0	(1.0)
Other (income) expense, net	(0.1)	0.4	(0.5)	0.3	0.5	(0.2)
Income before income taxes	44.4	35.2	9.2	67.8	52.2	15.6
Income tax expense	11.6	8.3	3.3	17.5	12.4	5.1
Net income	$ 32.8	$ 26.9	$ 5.9	$ 50.3	$ 39.8	$ 10.5
Operating data:						
Operating margin	14.3%	13.1%	1.2%	12.1%	10.7%	1.4%
Diluted earnings per share	$ 0.54	$ 0.44	$ 0.10	$ 0.82	$ 0.65	$ 0.17
Total orders	308.0	277.6	30.4	607.0	607.3	(0.3)
Backlog	347.7	322.3	25.4	347.7	322.3	25.4
Depreciation and amortization	9.8	9.0	0.8	19.3	17.6	1.7

Net sales

Net sales increased by $33.3 million, or 11%, in the three months ended June 30, 2019 as compared to the prior-year quarter. The Environmental Solutions Group reported a net sales increase of $33.9 million, or 15%, largely due to increases in shipments of vacuum trucks, sewer cleaners, and dump truck bodies of $17.2 million, $8.7 million, and $3.3 million, respectively, as well as a $8.0 million increase in aftermarket revenues, represented by higher rental income and improved parts, service and used equipment sales. Within the Safety and Security Systems Group, net sales decreased by $0.6 million, or 1%, primarily due to unfavorable foreign currency translation effects and lower global sales of public safety products and warning systems, partially offset by higher sales of industrial signaling equipment.

For the six months ended June 30, 2019, net sales increased by $57.4 million, or 11%, as compared to the corresponding period of the prior year. Within the Environmental Solutions Group, net sales improved by $56.8 million, or 13%, largely due to increases in shipments of vacuum trucks, sewer cleaners, dump truck bodies, and street sweepers of $25.6 million, $9.5 million, $5.5 million and $5.1 million, respectively, as well as a $9.5 million increase in aftermarket revenues, represented by higher rental income and improved parts and service sales. In the Safety and Security Systems Group, net sales increased by $0.6 million, or 1%, primarily due to higher sales of industrial signaling equipment, partially offset by unfavorable foreign currency translation effects and lower sales of warning systems.

Cost of sales

Cost of sales increased by $23.5 million, or 11%, for the three months ended June 30, 2019 compared to the prior-year quarter, largely due to an increase of $25.1 million, or 14%, within the Environmental Solutions Group, primarily attributable to increased sales volumes, higher material costs in comparison to the prior-year quarter, and a $0.9 million increase in depreciation expense, partially offset by a $0.2 million reduction in purchase accounting expenses. Within the Safety and Security Systems Group, cost of sales decreased by $1.6 million, or 4%, primarily related to lower sales volumes and favorable foreign currency translation effects.

For the six months ended June 30, 2019, cost of sales increased by $39.2 million, or 10%, largely due to an increase of $41.8 million, or 13%, within the Environmental Solutions Group, primarily attributable to increased sales volumes, higher material costs in comparison to the first half of 2018, and a $2.0 million increase in depreciation expense, partially offset by a $0.7 million reduction in purchase accounting expenses. This increase was partially offset by a decrease in cost of sales of $2.6 million, or 4%, within the Safety and Security Systems Group, largely due to favorable sales mix and favorable foreign currency translation effects.

Gross profit

Gross profit increased by $9.8 million, or 12%, for the three months ended June 30, 2019, compared to the prior-year quarter, primarily due to improvements of $8.8 million and $1.0 million within the Environmental Solutions Group and the Safety and Security Systems Group, respectively. Gross margin for the three months ended June 30, 2019 improved to 27.4%, from 27.2% in the prior-year quarter, primarily driven by improvements within the Safety and Security Group and Environmental Solutions Group of 220 basis points and 20 basis points, respectively. Margin improvements were primarily attributable to improved operating leverage, benefits from pricing actions and favorable sales mix.

For the six months ended June 30, 2019, gross profit increased by $18.2 million, or 13%, primarily due to improvements of $15.0 million and $3.2 million within the Environmental Solutions Group and the Safety and Security Systems Group, respectively. Gross margin for the six months ended June 30, 2019 was 26.6%, compared to 26.1% in the prior-year period, primarily driven by improvements within the Safety and Security Group and Environmental Solutions Group of 260 basis points and 40 basis points, respectively. Margin improvements were primarily attributable to improved operating leverage, benefits from pricing actions and favorable sales mix.

Selling, engineering, general and administrative expenses

Selling, engineering, general and administrative ("SEG&A") expenses for the three months ended June 30, 2019 increased by $1.1 million, or 3%, primarily due to increases within the Environmental Solutions Group and Corporate of $0.9 million and $0.5 million, respectively, partially offset by a $0.3 million reduction within the Safety and Security Systems Group. As a percentage of net sales, SEG&A expenses decreased from 14.0% in the prior-year quarter, to 12.9% in the current-year quarter.

For the six months ended June 30, 2019, SEG&A expenses increased by $3.2 million, or 4%, primarily due to increases within the Environmental Solutions Group and Corporate of $1.9 million and $2.0 million, respectively, partially offset by a $0.7 million reduction within the Safety and Security Systems Group. As a percentage of net sales, SEG&A expenses decreased from 15.3% in the prior-year period, to 14.3% in the current-year period.

Operating income

Operating income increased by $8.2 million, or 22%, to $46.3 million in the three months ended June 30, 2019 as compared to the prior-year quarter, primarily driven by a $7.6 million increase within the Environmental Solutions Group associated with increased sales volumes and improved operating leverage. Operating income in the three months ended June 30, 2019 within the Safety and Security Systems Group increased by $1.3 million, largely due to benefits from pricing actions, favorable sales mix, and lower operating expenses, while Corporate expenses increased by $0.7 million. Consolidated operating margin for the three months ended June 30, 2019 was 14.3%, up from 13.1% in the prior-year quarter.

For the six months ended June 30, 2019, operating income increased by $14.4 million as compared to the corresponding period of the prior year. Within the Environmental Solutions Group, operating income for the six months ended June 30, 2019 increased by $12.7 million, or 22%, largely due to higher sales volumes and improved operating leverage. Within the Safety and Security Systems Group, operating income in the six months ended June 30, 2019 increased by $3.9 million, or 27%, largely due to benefits from pricing actions, favorable sales mix, and lower operating expenses, while Corporate expenses increased by $2.2 million. Consolidated operating margin for the six months ended June 30, 2019 was 12.1%, compared to 10.7% in the prior-year period.

Interest expense

Interest expense for the three months ended June 30, 2019 decreased by $0.5 million, or 20%. For six months ended June 30, 2019 interest expense decreased by $1.0 million, or 20%. The reductions in both periods were largely due to lower average debt levels when compared to same period of the prior year.

Other (income) expense, net

For the three months ended June 30, 2019, other income totaled $0.1 million and was primarily due to foreign currency transaction gains which were partially offset by pension expense, whereas in the prior-year period, other expense totaled $0.4 million and was primarily related to foreign currency transaction losses and pension expense.

For the six months ended June 30, 2019, other expense totaled $0.3 million and was primarily consisted of pension expense, whereas in the prior-year period, other expense totaled $0.5 million and was primarily related to foreign currency transaction losses and pension expense.

Income tax expense

The Company recognized income tax expense of $11.6 million and $8.3 million for the three months ended June 30, 2019 and 2018, respectively. The increase in tax expense in the current-year quarter was largely due to higher pre-tax income levels. The Company’s effective tax rate for the three months ended June 30, 2019 was 26.1%, compared to 23.6% in the prior-year quarter, which included the recognition of a $0.5 million excess tax benefit from stock compensation activity.

For the six months ended June 30, 2019 and 2018, the Company recognized income tax expense of $17.5 million and $12.4 million, respectively. The increase in tax expense in the current year was largely due to higher pre-tax income levels. The Company’s effective tax rate for the six months ended June 30, 2019 was 25.8%, compared to 23.8% in the prior-year period, which included the recognition of a $0.5 million excess tax benefit from stock compensation activity.

Net income

Net income for the three months ended June 30, 2019 increased by $5.9 million compared to the prior-year period, largely due to the aforementioned increase in operating income, the $0.5 million reduction in interest expense and the $0.5 million in other expense, partially offset by the $3.3 million increase in income tax expense.

For the six months ended June 30, 2019, net income increased by $10.5 million compared to the corresponding period of the prior year, largely due to the aforementioned increase in operating income, the $1.0 million reduction in interest expense and the $0.2 million in other expense, partially offset by the $5.1 million increase in income tax expense.

Orders

Three months ended June 30, 2019 vs. three months ended June 30, 2018

Total orders for the three months ended June 30, 2019 were $308.0 million, an increase of $30.4 million, or 11%, as compared to the prior-year quarter. The Environmental Solutions Group reported total orders of $253.2 million in the second quarter of 2019, up $35.9 million, or 17% in comparison to the prior-year quarter. Orders in the three months ended June 30, 2019 within the Safety and Security Systems Group were $54.8 million, compared to $60.3 million in the prior-year quarter.

U.S. municipal and governmental orders increased by $5.6 million, or 6%, primarily due to an $11.2 million increase within the Environmental Solutions Group, driven by increased orders for sewer cleaners, dump truck bodies and vacuum trucks of $9.4 million, $2.6 million and $1.4 million, respectively. Aftermarket demand also increased by $1.8 million. Partially offsetting these increases was a $4.0 million reduction in orders for street sweepers. Within the Safety and Security Systems Group, municipal and governmental orders decreased by $5.6 million, due to reductions in orders for public safety products and warning systems of $3.6 million and $2.0 million, respectively.

U.S. industrial orders increased by $15.3 million, or 13%, primarily due to a $14.1 million increase within the Environmental Solutions Group, largely represented by increases in orders for dump truck bodies and vacuum trucks of $5.5 million and $5.0 million, respectively. Aftermarket demand also increased by $5.9 million. These improvements were partially offset by a $3.3 million decrease in orders for trailers. The Safety and Security Systems Group reported a $1.2 million increase in industrial orders, primarily due to improvements in orders for public safety products and industrial signaling equipment of $0.9 million and $0.4 million, respectively.

Non-U.S. orders increased by $9.5 million, or 14%, primarily due to a $10.6 million increase within the Environmental Solutions Group, primarily due to improvements in orders for refuse trucks, vacuum trucks and street sweepers of $7.5 million, $3.4 million and $2.6 million, respectively, which were partially offset by a $2.1 million decrease in orders for sewer cleaners. Within the Safety and Security Solutions Group, non-U.S. orders decreased by $1.1 million, largely due to a $0.9 million unfavorable foreign currency translation impact and reductions in orders for warning systems and public safety products of $0.6 million and $0.5 million, respectively, which were partially offset by a $0.9 million improvement in orders for industrial signaling equipment.

Six months ended June 30, 2019 vs. six months ended June 30, 2018

Total orders for the six months ended June 30, 2019 were $607.0 million, a decrease of $0.3 million, as compared to the prior-year period. The Environmental Solutions Group reported total orders of $496.9 million in the first half of 2019, compared to $491.7 million in the first half of 2018. Orders in the six months ended June 30, 2019 within the Safety and Security Systems Group decreased by $5.5 million, or 5%.

U.S. municipal and governmental orders decreased by $5.0 million, or 3%, primarily due to a $6.9 million decrease within the Safety and Security Systems Group, driven by decreases in orders for public safety products and warning systems of $4.5 million and $2.4 million, respectively. Within the Environmental Solutions Group, municipal and governmental orders increased by $1.9 million, primarily due to increases in orders for vacuum trucks, dump truck bodies and sewer cleaners of $4.1 million, $2.5 million and $1.3 million, respectively. Additionally, aftermarket demand increased by $2.2 million. These increases were partially offset by a decrease in orders for street sweepers of $8.6 million.

U.S. industrial orders decreased by $9.4 million, or 3%, primarily due to a $12.9 million decrease within the Environmental Solutions Group, largely represented by decreases in orders for sewer cleaners, trailers and dump truck bodies of $10.3 million, $7.4 million and $2.6 million, respectively. These decreases were partially offset by a $7.3 million increase in aftermarket demand. The Safety and Security Systems Group reported a $3.5 million increase in industrial orders, primarily due to improvements in orders for public safety products and industrial signaling equipment of $2.7 million and $1.1 million, respectively, partially offset by a decrease in orders for warnings systems of $0.3 million.

Non-U.S. orders increased by $14.1 million, or 11%, primarily due to a $16.2 million increase within the Environmental Solutions Group, driven by increases in orders for vacuum trucks, refuse trucks and street sweepers of $9.2 million, $7.0 million and $1.5 million, respectively. In addition, aftermarket demand increased by $3.4 million. Partially offsetting these improvements were reductions in orders for sewer cleaners, snow removal trucks and waterblasting equipment of $1.5 million, $1.3 million and $1.2 million, respectively. Within the Safety and Security Solutions Group, non-U.S. orders decreased by $2.1 million, primarily due to a $2.0 million unfavorable foreign currency translation impact, and reductions in orders of public safety products and warning systems of $1.5 million and $1.1 million, respectively, which were partially offset by a $2.5 million improvement in orders for industrial signaling equipment.

Backlog

Backlog was $347.7 million at June 30, 2019 compared to $322.3 million at June 30, 2018. The increase of $25.4 million, or 8%, was primarily due to a $30.7 million increase in backlog within the Environmental Solutions Group, largely associated with strong demand for sewer cleaners and vacuum trucks.

Environmental Solutions

The following table summarizes the Environmental Solutions Group's operating results as of and for the three and six months ended June 30, 2019 and 2018:

	Three Months Ended June 30,			Six Months Ended June 30,		
($ in millions)	**2019**	**2018**	**Change**	**2019**	**2018**	**Change**
Net sales	$ 267.2	$ 233.3	$ 33.9	$ 486.7	$ 429.9	$ 56.8
Operating income	44.8	37.2	7.6	70.5	57.8	12.7
Operating data:						
Operating margin	16.8%	15.9%	0.9%	14.5%	13.4%	1.1%
Total orders	$ 253.2	$ 217.3	$ 35.9	$ 496.9	$ 491.7	$ 5.2
Backlog	322.0	291.3	30.7	322.0	291.3	30.7
Depreciation and amortization	8.9	8.0	0.9	17.5	15.7	1.8

Three months ended June 30, 2019 vs. three months ended June 30, 2018

Total orders increased by $35.9 million, or 17%, for the three months ended June 30, 2019. U.S. orders increased by $25.3 million, or 15%, primarily due to increases in orders for sewer cleaners, dump truck bodies, and vacuum trucks, of $10.8 million, $8.1 million, and $6.4 million, respectively. Additionally, aftermarket demand increased by $7.7 million. Partially offsetting these improvements were reductions in orders for street sweepers and trailers of $3.4 million and $3.3 million, respectively. Non-U.S. orders increased by $10.6 million, or 24%, primarily due to improvements in orders for refuse trucks, vacuum trucks, and street sweepers of $7.5 million, $3.4 million, and $2.6 million, respectively, which were partially offset by a $2.1 million decrease in orders for sewer cleaners.

Net sales increased by $33.9 million, or 15%, for the three months ended June 30, 2019. U.S. sales increased by $25.6 million, primarily due to increases in sales of vacuum trucks, sewer cleaners, and dump truck bodies of $14.1 million, $5.1 million, and $3.2 million, respectively. In addition, aftermarket sales increased by $6.0 million. Partially offsetting these increases was a $2.1 million reduction in sales of trailers. Non-U.S. sales increased by $8.3 million, primarily due to increases in sales of sewer cleaners and vacuum trucks of $3.6 million and $3.1 million, respectively. In addition, aftermarket sales increased by $2.0 million.

Cost of sales increased by $25.1 million, or 14%, for the three months ended June 30, 2019, primarily attributable to increased sales volumes, higher material costs in comparison to the prior-year quarter, and a $0.9 million increase in depreciation expense, partially offset by a $0.2 million reduction in purchase accounting expenses. Gross margin improved to 25.0% from 24.8% in the prior-year quarter, primarily due to improved operating leverage, benefits from pricing actions, and favorable sales mix.

SEG&A expenses increased by $0.9 million for the three months ended June 30, 2019, primarily due to higher employee related expenses. As a percentage of net sales, SEG&A expenses decreased from 8.7% in the prior-year quarter, to 8.0% in the current-year quarter.

Operating income for the three months ended June 30, 2019 increased by $7.6 million, largely due to a $8.8 million increase in gross profit, partially offset by the $0.9 million increase in SEG&A expenses and a $0.3 million increase in acquisition-related expenses.

Six months ended June 30, 2019 vs. six months ended June 30, 2018

Total orders increased by $5.2 million, or 1%, for the six months ended June 30, 2019. U.S. orders decreased by $11.0 million, or 3%, primarily due to decreases in orders for sewer cleaners, street sweepers, and trailers of $9.0 million, $8.5 million, and $7.4 million, respectively. Partially offsetting these decreases was a $9.5 million improvement in aftermarket demand and a $4.4 million increase in orders for vacuum trucks. Non-U.S. orders increased by $16.2 million, or 18%, primarily due to increases in orders for vacuum trucks, refuse trucks, and street sweepers of $9.2 million, $7.0 million, and $1.5 million, respectively. In addition, aftermarket demand increased by $3.4 million. Partially offsetting these improvements were reductions in orders for sewer cleaners, snow removal trucks, and waterblasting equipment of $1.5 million, $1.3 million, and $1.2 million, respectively.

Net sales increased by $56.8 million, or 13%, for the six months ended June 30, 2019. U.S. sales increased by $35.7 million, primarily due to increases in sales of vacuum trucks, dump truck bodies, street sweepers, sewer cleaners, and waterblasting equipment of $18.0 million, $5.7 million, $2.8 million, $2.6 million, and $2.3 million, respectively. In addition, aftermarket sales increased by $5.8 million. Partially offsetting these increases was a $1.0 million reduction in sales of trailers. Non-U.S. sales increased by $21.1 million, primarily due to increases in sales of vacuum trucks, sewer cleaners, refuse trucks, and street sweepers of $7.6 million, $6.9 million, $4.1 million, and $2.3 million, respectively. In addition, aftermarket sales increased by $3.7 million. Partially offsetting these increases were reductions in sales of snow removal trucks of $2.8 million.

Cost of sales increased by $41.8 million, or 13%, for the six months ended June 30, 2019, primarily attributable to increased sales volumes, higher material costs in comparison to the first half of 2018, and a $2.0 million increase in depreciation expense, partially offset by a $0.7 million reduction in purchase accounting expenses. Gross margin improved to 23.8% from 23.4% in the prior-year period, primarily due to improved operating leverage, benefits from pricing actions, and favorable sales mix.

SEG&A expenses increased by $1.9 million for the six months ended June 30, 2019, primarily due to higher employee-related expenses. As a percentage of net sales, SEG&A expenses decreased from 9.9% in the prior-year period, to 9.1% in the current-year period.

Operating income for the six months ended June 30, 2019 increased by $12.7 million, largely due to a $15.0 million increase in gross profit, partially offset by the $1.9 million increase in SEG&A expenses and a $0.4 million increase in acquisition-related expenses.

Backlog was $322.0 million at June 30, 2019, up 11% compared to $291.3 million at June 30, 2018. The increase was largely due to continued strong demand for sewer cleaners and vacuum trucks.

Safety and Security Systems

The following table summarizes the Safety and Security Systems Group's operating results as of and for the three and six months ended June 30, 2019 and 2018:

	Three Months Ended June 30,			Six Months Ended June 30,		
($ in millions)	**2019**	**2018**	**Change**	**2019**	**2018**	**Change**
Net sales	$ 57.1	$ 57.7	$ (0.6)	$ 111.4	$ 110.8	$ 0.6
Operating income	9.5	8.2	1.3	18.2	14.3	3.9
Operating data:						
Operating margin	16.6%	14.2%	2.4%	16.3%	12.9%	3.4%
Total orders	$ 54.8	$ 60.3	$ (5.5)	$ 110.1	$ 115.6	$ (5.5)
Backlog	25.7	31.0	(5.3)	25.7	31.0	(5.3)
Depreciation and amortization	0.8	1.0	(0.2)	1.7	1.9	(0.2)

Three months ended June 30, 2019 vs. three months ended June 30, 2018

Total orders for the three months ended June 30, 2019 decreased by $5.5 million, or 9%, compared with the prior-year quarter. U.S. orders decreased by $4.4 million, primarily driven by a $2.7 million decrease in orders for public safety products, largely due to delays of police vehicle production following a major manufacturer's changeover to a new model, and a $2.1 million reduction in orders for warning systems. Partially offsetting these decreases was a $0.4 million improvement in orders for industrial signaling equipment. Non-U.S. orders decreased by $1.1 million, largely due to a $0.9 million unfavorable foreign currency translation impact, and reductions in orders for warning systems and public safety products of $0.6 million and $0.5 million, respectively, which were partially offset by a $0.9 million improvement in orders for industrial signaling equipment.

Net sales decreased by $0.6 million, or 1%, for the three months ended June 30, 2019. In the aggregate, U.S. sales increased by $0.1 million, primarily due to a $1.4 million improvement in sales of industrial signaling equipment, partially offset by decreases in sales of public safety products and warning systems of $0.8 million and $0.5 million, respectively. Non-U.S. sales decreased by $0.7 million, or 3%, primarily due an unfavorable foreign currency impact of $0.9 million and reductions in sales of warning systems and public safety products of $0.7 million and $0.6 million, respectively, partially offset by a $1.5 million improvement in sales of industrial signaling equipment.

Cost of sales for the three months ended June 30, 2019 decreased by $1.6 million, or 4%, primarily related to lower sales volumes and a favorable foreign currency translation impact of $0.7 million. Gross margin for the three months ended June 30, 2019 improved to 39.1%, compared to 36.9% in the prior-year quarter, primarily due to benefits from pricing actions and improved sales mix in comparison to the prior-year quarter.

SEG&A expenses for the three months ended June 30, 2019 remained relatively flat compared to the prior-year quarter, decreasing by $0.3 million, or 2%. As a percentage of net sales, SEG&A expenses decreased from 22.7% in the prior-year quarter, to 22.4% in the current-year quarter.

Operating income increased by $1.3 million, or 16%, for the three months ended June 30, 2019. The increase was primarily attributable to the $1.0 million improvement in gross profit and the $0.3 million reduction in SEG&A expenses.

Six months ended June 30, 2019 vs. six months ended June 30, 2018

Total orders decreased by $5.5 million, or 5%, for the six months ended June 30, 2019. U.S. orders decreased by $3.4 million, primarily due to reductions in orders for warning systems and public safety products of $2.7 million and $1.8 million, respectively, which were partially offset by a $1.1 million increase in orders for industrial signaling equipment. Non-U.S. orders decreased by $2.1 million, primarily due to a $2.0 million unfavorable foreign currency translation impact, and reductions in orders for public safety products and warning systems of $1.5 million and $1.1 million, respectively, which were partially offset by a $2.5 million improvement in orders for industrial signaling equipment.

Net sales increased by $0.6 million, or 1%, for the six months ended June 30, 2019. U.S. sales decreased by $0.1 million, primarily due to reductions in sales of warning systems and public safety products of $1.8 million and $0.2 million, respectively, which were partially offset by a $1.9 million improvement in sales of industrial signaling equipment. Non-U.S. sales increased by $0.7 million, or 2%, primarily due to improvements in sales of industrial signaling equipment and public safety products of $1.9 million and $1.3 million, respectively, partially offset by an unfavorable foreign currency translation impact of $2.0 million and a $0.5 million reduction in sales of warning systems.

Cost of sales for the six months ended June 30, 2019 decreased by $2.6 million, or 4%, largely due to favorable sales mix and a favorable foreign currency translation impact of $1.5 million. Gross margin for the six months ended June 30, 2019 improved to 39.0%, compared to 36.4% in the prior-year period, primarily due to benefits from pricing actions and improved sales mix in comparison to the prior-year period.

SEG&A expenses for the six months ended June 30, 2019 decreased by $0.7 million, or 3%. As a percentage of net sales, SEG&A expenses decreased from 23.5% in the prior-year period, to 22.7% in the current-year period.

Operating income increased by $3.9 million for the six months ended June 30, 2019. The increase was primarily attributable to the $3.2 million improvement in gross profit and the $0.7 million reduction in SEG&A expenses.

Backlog was $25.7 million at June 30, 2019, compared to $31.0 million at June 30, 2018.

Corporate Expenses

Corporate operating expenses for the three months ended June 30, 2019 were $8.0 million, compared to $7.3 million in the prior-year quarter. The increase was primarily driven by increases in employee and post-employment expenses, as well as a $0.2 million increase in acquisition-related expenses.

Corporate operating expenses for the six months ended June 30, 2019 were $16.6 million, compared to $14.4 million in the prior-year period. The increase was primarily driven by higher employee-related costs, post-employment expenses, and a $0.2 million increase in acquisition-related expenses, which were partially offset by lower expenses associated with hearing loss litigation.

Seasonality of Company's Business

Certain of the Company's businesses are susceptible to the influences of seasonal factors, including buying patterns, delivery patterns and productivity influences from holiday periods and weather. In general, the Company tends to have lower equipment sales in the first calendar quarter of each year compared to other quarters as a result of these factors. In addition, rental income and parts sales are generally higher in the second and third quarters of the year, because many of the Company's products are used for maintenance activities in North America, where usage is typically lower during periods of harsher weather conditions.

Financial Condition, Liquidity and Capital Resources

The Company uses its cash flow from operations to fund growth and to make capital investments that sustain its operations, reduce costs, or both. Beyond these uses, remaining cash is used to pay down debt, repurchase shares, fund dividend payments and make pension contributions. The Company may also choose to invest in the acquisition of businesses. In the absence of significant unanticipated cash demands, we believe that the Company's existing cash balances, cash flow from operations and borrowings available under the Company's credit facility will provide funds sufficient for these purposes. The net cash flows associated with the Company's rental equipment transactions are included in cash flow from operating activities.

The Company's cash and cash equivalents totaled $38.6 million and $37.4 million as of June 30, 2019 and December 31, 2018, respectively. As of June 30, 2019, $18.5 million of cash and cash equivalents was held by foreign subsidiaries. Cash and cash equivalents held by subsidiaries outside the U.S. typically are held in the currency of the country in which it is located. This cash is used to fund the operating activities of our foreign subsidiaries and for further investment in foreign operations. Historically, we have considered such cash to be permanently reinvested in our foreign operations and our current plans do not demonstrate a need to repatriate such cash to fund U.S. operations. However, in the event that these funds are needed to fund U.S. operations or to satisfy U.S. obligations, they generally could be repatriated. The repatriation of these funds may cause us to incur additional U.S. income tax expense, dependent on income tax laws and other circumstances at the time any such amounts are repatriated. While the Company has no transition tax liability, the Company continues to assert that its undistributed earnings of certain foreign subsidiaries are indefinitely reinvested. The Company will continue to evaluate its U.S. and foreign cash needs and, as circumstances change, may change its assertion related to all or a portion of its undistributed foreign earnings.

In the six months ended June 30, 2019, net cash of $25.8 million was provided by operating activities, compared to $37.8 million in the prior-year period. Higher earnings were offset by increases in working capital requirements, higher incentive compensation and tax payments, and rental fleet investment.

Net cash of $9.4 million was used for investing activities in the six months ended June 30, 2019, compared to $3.9 million in the prior-year period. Capital expenditures in the six months ended June 30, 2019 and 2018 were $9.4 million and $7.0 million, respectively. During the six months ended June 30, 2018, the Company also received $3.0 million as part of the finalization of certain post-closing adjustments in connection with the 2017 acquisition of Truck Bodies and Equipment International.

Net cash of $15.4 million was used for financing activities in the six months ended June 30, 2019, compared to $34.9 million in the prior-year period. In the six months ended June 30, 2019, the Company paid down $3.1 million of debt, funded cash dividends and share repurchases of $9.6 million and $1.0 million, respectively, and redeemed $1.6 million of stock in order to remit funds to tax authorities to satisfy employees' tax withholdings following the vesting of stock-based compensation. In the six months ended June 30, 2018, the Company paid down $26.6 million of debt and funded cash dividends of $9.0 million.

The Company is subject to certain leverage ratio and interest coverage ratio financial covenants under the Amended 2016 Credit Agreement that are to be measured at each fiscal quarter-end. The Company was in compliance with all such covenants as of June 30, 2019.

As of June 30, 2019, there was $208.8 million of cash drawn and $11.3 million of undrawn letters of credit under the Amended 2016 Credit Agreement, with $179.9 million of net availability for borrowings.

During the six months ended June 30, 2019, the Company announced plans to expand the primary production facility of its Vactor Manufacturing, Inc. subsidiary. Over the course of the expansion project, the Company is expecting to invest up to $25 million. The Company anticipates that capital expenditures for 2019, excluding investment associated with the Vactor plant expansion, will be in the range of $15 million to $20 million.

On July 1, 2019, the Company completed the acquisition of Mark Rite Lines Equipment Company, Inc. for initial cash consideration of $49.8 million, inclusive of certain preliminary closing adjustments. In addition, during the third quarter of 2019, the Company is expecting to pay an aggregate sum of approximately C$17.6 million (approximately $13.4 million) to settle the contingent consideration liability and fund substantially all of the deferred payment associated with the acquisition of JJE.

On July 30, 2019, the Company entered into the 2019 Credit Agreement, which amends and restates the Amended 2016 Credit Agreement. The 2019 Credit Agreement increases the Company's revolving credit facility from $400 million to $500 million. In addition, the Company may cause the revolving commitments to increase by and/or incur term loans up to an additional $250 million, subject to the approval of the applicable lenders providing such additional financing. In addition to increasing the Company's net availability for borrowings, the 2019 Credit Agreement includes improved pricing and more favorable terms in comparison to the Amended 2016 Credit Agreement.

Contractual Obligations and Off-Balance Sheet Arrangements

During the six months ended June 30, 2019, there have been no material changes in the Company's contractual obligations and off-balance sheet arrangements as described in Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, of the Company's Annual Report on Form 10-K for the year ended December 31, 2018.

Item 3. *Quantitative and Qualitative Disclosures about Market Risk.*

See Item 7A, *Quantitative and Qualitative Disclosures about Market Risk*, of the Company's Annual Report on Form 10-K for the year ended December 31, 2018. During the six months ended June 30, 2019, there have been no significant changes in our exposure to market risk.

Item 4. *Controls and Procedures.*

As required by Rule 13a-15 under the Exchange Act, the Company's management, with the participation of the Company's Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the design and operation of the Company's disclosure controls and procedures (as defined in Rule 13a-15(e) or Rule 15d-15(e) under the Exchange Act) as of June 30, 2019. Based on that evaluation, the Company's Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures were effective as of June 30, 2019.

As a matter of practice, the Company's management continues to review and document internal control and procedures for financial reporting. From time to time, the Company may make changes aimed at enhancing the effectiveness of the controls and ensuring that the systems evolve with the business. There were no changes in the Company's internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting during the three months ended June 30, 2019.

PART II. OTHER INFORMATION

Item 1. *Legal Proceedings.*

The information set forth under the heading "Legal Proceedings" in Note 8 – Commitments and Contingencies to the accompanying condensed consolidated financial statements as included in Part I of this Form 10-Q is incorporated herein by reference.

Item 1A. *Risk Factors.*

There have been no material changes in the Company's risk factors as described in Item 1A, *Risk Factors*, of the Company's Annual Report on Form 10-K for the year ended December 31, 2018, except that the Company entered into a new three-year collective bargaining agreement with the International Brotherhood of Electrical Workers, effective April 2019.

Item 2. *Unregistered Sales of Equity Securities and Use of Proceeds.*

The following table provides a summary of the Company's repurchase activity for its common stock during the three months ended June 30, 2019:

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs [(a)]
April 2019 (3/31/19 – 5/4/19)	—	$ —	—	$ 29,198,155
May 2019 (5/5/19 – 6/1/19)	—	—	—	29,198,155
June 2019 (6/2/19 – 6/29/19)	—	—	—	29,198,155

(a) On November 4, 2014, the Board authorized a stock repurchase program of up to $75.0 million of the Company's common stock.

Item 3. *Defaults upon Senior Securities.*

None.

Item 4. *Mine Safety Disclosures.*

Not applicable.

Item 5. *Other Information.*

Other Events

On July 30, 2019, the Company entered into the 2019 Credit Agreement, by and among the Company and certain of its foreign subsidiaries, Wells Fargo Bank, National Association, as administrative agent, swingline lender and issuing lender, JPMorgan Chase Bank, N.A. as syndication agent, KeyBank National Association, PNC Bank, National Association, and SunTrust Bank, as documentation agents, Wells Fargo Securities, LLC and JPMorgan Chase Bank, N.A., as joint lead arrangers and joint bookrunners, and the other lenders and parties signatory thereto. The 2019 Credit Agreement, which amends and restates the Company's Amended 2016 Credit Agreement, is a $500 million revolving credit facility, maturing on July 30, 2024, that provides for borrowings in the form of loans or letters of credit up to the aggregate availability under the facility, with a sub-limit of $75 million for letters of credit. In addition, the Company may cause the commitments to increase by up to an additional $250 million, subject to the approval of the applicable lenders providing such additional financing. Refer to Note 13 – Subsequent Events to the accompanying condensed consolidated financial statements for a description of certain additional, material terms and conditions contained in the 2019 Credit Agreement. This summary of the 2019 Credit Agreement is not intended to be complete and is qualified in its entirety by reference to the 2019 Credit Agreement, which is attached hereto as Exhibit 10.1 to this Current Report on Form 10-Q and is incorporated herein by reference.

On July 31, 2019, the Company issued a press release announcing its financial results for the three and six months ended June 30, 2019 and the execution of the aforementioned 2019 Credit Agreement. The presentation slides for the second quarter 2019 earnings call were also posted on the Company's website at that time. The full text of the second quarter financial results press release and earnings presentation are attached hereto as Exhibits 99.1 and 99.2, respectively, to this Form 10-Q.

Item 6. ***Exhibits.***

3.1	Restated Certificate of Incorporation of the Company. Incorporated by reference to Exhibit 3.1 to the Company's Form 8-K filed April 30, 2010.
3.2	Amended and Restated By-laws of the Company. Incorporated by reference to Exhibit 3.1 to the Company's Form 8-K filed February 9, 2016.
10.1	Second Amended and Restated Credit Agreement, dated as of July 30, 2019, by and among the Company, and certain of its foreign subsidiaries, as Borrowers, Wells Fargo Bank, National Association, as administrative agent, swingline lender and issuing lender, JPMorgan Chase Bank, as syndication agent, KeyBank National Association, PNC Bank, National Association and SunTrust Bank, as documentation agents, Wells Fargo Securities, LLC and JP Morgan Chase Bank, N.A., as joint lead arrangers and joint bookrunners, and the other parties thereto.
31.1	CEO Certification under Section 302 of the Sarbanes-Oxley Act.
31.2	CFO Certification under Section 302 of the Sarbanes-Oxley Act.
32.1	CEO Certification of Periodic Report under Section 906 of the Sarbanes-Oxley Act.
32.2	CFO Certification of Periodic Report under Section 906 of the Sarbanes-Oxley Act.
99.1	Second Quarter Financial Results Press Release, Dated July 31, 2019.
99.2	Second Quarter Earnings Call Presentation Slides.
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Calculation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	XBRL Taxonomy Label Linkbase Document.
101.PRE	XBRL Taxonomy Presentation Linkbase Document.

SIGNATURE

Pursuant to the requirements of Section 13 or 15 (d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Federal Signal Corporation

Date: July 31, 2019

/s/ Ian A. Hudson

Ian A. Hudson

Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 31.1

CEO Certification under Section 302 of the Sarbanes-Oxley Act

I, Jennifer L. Sherman, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Federal Signal Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)), for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: July 31, 2019

/s/ Jennifer L. Sherman

Jennifer L. Sherman
President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CFO Certification under Section 302 of the Sarbanes-Oxley Act

I, Ian A. Hudson, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Federal Signal Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)), for the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: July 31, 2019

/s/ Ian A. Hudson

Ian A. Hudson

Senior Vice President and Chief Financial Officer

(Principal Financial Officer)

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002
(18 U.S.C. SECTION 1350)

In connection with the Quarterly Report of Federal Signal Corporation (the “Company”) on Form 10-Q for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Jennifer L. Sherman, President and Chief Executive Officer of the Company, certify, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (15 U.S.C. 78m or 78o (d)); and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: July 31, 2019

/s/ Jennifer L. Sherman

Jennifer L. Sherman
President and Chief Executive Officer
(*Principal Executive Officer)*

This certification accompanies the Report pursuant to § 906 of the Sarbanes-Oxley Act of 2002 and shall not be deemed filed by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section. This certification shall also not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange act of 1934, as amended, except to the extent that the Company specifically incorporates it by reference.

EXHIBIT 32.2

CERTIFICATION PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002
(18 U.S.C. SECTION 1350)

In connection with the Quarterly Report of Federal Signal Corporation (the “Company”) on Form 10-Q for the period ended June 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Ian A. Hudson, Senior Vice President and Chief Financial Officer of the Company, certify, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (15 U.S.C. 78m or 78o (d)); and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: July 31, 2019

/s/ Ian A. Hudson

Ian A. Hudson
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

This certification accompanies the Report pursuant to § 906 of the Sarbanes-Oxley Act of 2002 and shall not be deemed filed by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section. This certification shall also not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange act of 1934, as amended, except to the extent that the Company specifically incorporates it by reference.

EXHIBIT 99.1

1415 West 22nd Street
Oak Brook, Illinois 60523
630.954.2000
federalsignal.com

FOR IMMEDIATE RELEASE

Federal Signal Raises Full-Year Outlook after Record Second Quarter

Oak Brook, Illinois, July 31, 2019 — Federal Signal Corporation (NYSE:FSS), a leader in environmental and safety solutions, today reported results for the second quarter ended June 30, 2019.

- Net sales of $324 million, up $33 million, or 11%, from last year
- Operating income of $46.3 million, up $8.2 million, or 22%, from last year
- GAAP EPS of $0.54, up $0.10, or 23%, from last year
- Adjusted EPS of $0.55, up $0.11, or 25%, from last year
- Executed new five-year $500 million revolving credit facility
- Raising full-year adjusted EPS* outlook to a new range of $1.64 to $1.72, from the previous range of $1.50 to $1.60

Consolidated net sales for the second quarter were $324.3 million, a record for the Company, and up $33.3 million, or 11%, versus the same quarter a year ago. Net income for the second quarter was $32.8 million, equal to $0.54 per diluted share, compared to $26.9 million, equal to $0.44 per share, in the prior-year quarter.

The Company also reported adjusted net income for the second quarter of $33.6 million, equal to $0.55 per diluted share, another Company record, and up from $27.1 million, or $0.44 per diluted share, in the second quarter of last 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.

Outstanding Q2 Results Exceed Expectations; Reflect Significant Increases in Sales and Income

"We were anticipating a strong second quarter in what is typically a seasonally-strong period for many of our businesses. Our outstanding results surpassed those expectations," commented Jennifer L. Sherman, President and Chief Executive Officer. "We reported double-digit organic growth in both net sales and orders, and our operating income was up 22% year-over-year. Each of our groups delivered margin performance in excess of our target ranges, translating to a consolidated adjusted EBITDA margin of 17.6%. Within the Environmental Solutions Group, we realized benefits from higher sales volumes, favorable sales mix, strong aftermarket demand and operational efficiencies resulting from increased production levels, associated with our ongoing efforts to reduce backlogs for certain product lines with extended lead times. I was also pleased that the Safety and Security Systems Group largely overcame the effects of some temporary softness in domestic public safety markets, which we had anticipated, and improved its adjusted EBITDA margin by 240 basis points."

In the Environmental Solutions Group, net sales were up $33.9 million, or 15%, to $267.2 million, primarily due to increases in shipments of vacuum trucks, sewer cleaners, and dump truck bodies, as well as a 14% improvement in aftermarket revenues, represented by higher rental income and increases in parts, service and used equipment sales. Net sales in the Safety and Security Systems Group of $57.1 million were generally consistent with the prior-year quarter.

Consolidated operating income for the second quarter was $46.3 million, up $8.2 million, or 22%, compared to the prior-year quarter, primarily driven by increases of $7.6 million and $1.3 million within the Environmental Solutions Group and Safety and Security Systems Group, respectively. Consolidated operating margin was 14.3%, up from 13.1% in the prior-year quarter.

Consolidated adjusted earnings before interest, tax, depreciation and amortization ("adjusted EBITDA") for the second quarter was $57.1 million, up $9.8 million, or 21%, compared to the prior-year quarter, and consolidated adjusted EBITDA margin was 17.6%, compared to 16.3% last year.

Adjusted EBITDA in the Environmental Solutions Group was up $8.9 million, or 20%, to $54.4 million, and its adjusted EBITDA margin was 20.4%, up from 19.5% last year. Within the Safety and Security Systems Group, adjusted EBITDA was $10.3 million, up $1.3 million, or 14%, from last year, and its adjusted EBITDA margin was 18.0%, compared to 15.6% last year.

Consolidated orders for the second quarter were $308.0 million, up $30.4 million, or 11%, compared to the prior-year quarter, primarily due to organic order growth of $35.9 million, or 17%, within the Environmental Solutions Group. Consolidated backlog at June 30, 2019 was $348 million, up $25 million, or 8%, compared to last year.

New Credit Facility Further Strengthens Our Financial Position, Providing Additional Financial Flexibility to Fund Growth Opportunities

Net cash of $34.6 million was provided by operating activities during the second quarter, up $7.1 million, or 26%, compared to the prior-year quarter. At June 30, 2019, consolidated debt was $209 million, total cash and cash equivalents were $39 million and the Company had $180 million of availability for borrowings.

The Company also announced today the completion of a new five-year $500 million revolving credit facility, to replace its existing $400 million credit facility. The new arrangement also provides the Company with the flexibility to borrow up to an additional $250 million for permitted acquisitions, subject to approval by applicable lenders.

"We are extremely pleased to announce this new credit facility, which provides further financial flexibility to invest in organic growth initiatives and pursue strategic acquisitions," said Sherman. "The terms of the new facility are more favorable to the Company, reflecting the strength of our performance, cash flow and balance sheet. This marks another important milestone on our path to disciplined, strategic growth."

The Company also funded dividends of $4.8 million during the second quarter, reflecting a dividend of $0.08 per share, and the Board of Directors recently declared a similar dividend that will be payable in the third quarter.

Outlook

"Conditions in our end markets remain positive and our organic growth initiatives are continuing to gain traction," Sherman noted. "With our record second quarter results, the strength of our backlog, and a modest earnings contribution from the recently-completed MRL acquisition, we are raising our 2019 adjusted EPS* outlook to a new range of $1.64 to $1.72, from a range of $1.50 to $1.60. The new range equates to a year-over-year improvement of between 16% and 22%."

CONFERENCE CALL

Federal Signal will host its second quarter conference call on Wednesday, July 31, 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 www.federalsignal.com or by dialing phone number 1-877-705-6003 and entering the pin number 13692737. A 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: 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; risks associated with acquisitions such as integration of operations and achieving anticipated revenue and cost benefits; 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.

Contact: Ian Hudson, Chief Financial Officer, +1-630-954-2000, ihudson@federalsignal.com

* Adjusted EPS is a non-GAAP measure, which includes certain adjustments to reported GAAP net income and diluted EPS. Our outlook assumes certain adjustments to exclude the impact of acquisition and integration-related expenses and purchase accounting effects, where applicable. In 2018, we also made adjustments to exclude the impact of hearing loss settlement charges and special tax items, where applicable. Should any similar items occur during 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 are 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 standard. On this basis, Adjusted EPS for 2018 would have been $1.41. See Exhibit 99.1 to the Form 10-K for the year ended December 31, 2018 for the associated non-GAAP reconciliation.

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
(in millions, except per share data)	**2019**	**2018**	**2019**	**2018**
Net sales	$ 324.3	$ 291.0	$ 598.1	$ 540.7
Cost of sales	235.3	211.8	438.8	399.6
Gross profit	89.0	79.2	159.3	141.1
Selling, engineering, general and administrative expenses	41.8	40.7	85.7	82.5
Acquisition and integration-related expenses	0.9	0.4	1.5	0.9
Operating income	46.3	38.1	72.1	57.7
Interest expense	2.0	2.5	4.0	5.0
Other (income) expense, net	(0.1)	0.4	0.3	0.5
Income before income taxes	44.4	35.2	67.8	52.2
Income tax expense	11.6	8.3	17.5	12.4
Net income	$ 32.8	$ 26.9	$ 50.3	$ 39.8
Earnings per share:				
Basic	$ 0.55	$ 0.45	$ 0.84	$ 0.67
Diluted	$ 0.54	$ 0.44	$ 0.82	$ 0.65
Weighted average common shares outstanding:				
Basic	60.1	59.9	60.1	59.9
Diluted	61.3	61.0	61.2	60.9
Cash dividends declared per common share	$ 0.08	$ 0.08	$ 0.16	$ 0.15
Operating data:				
Operating margin	14.3%	13.1%	12.1%	10.7%
Adjusted EBITDA	$ 57.1	$ 47.3	$ 93.0	$ 76.3
Adjusted EBITDA margin	17.6%	16.3%	15.5%	14.1%
Total orders	$ 308.0	$ 277.6	$ 607.0	$ 607.3
Backlog	347.7	322.3	347.7	322.3
Depreciation and amortization	9.8	9.0	19.3	17.6

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED BALANCE SHEETS

(in millions, except per share data)	June 30, 2019 (Unaudited)	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 38.6	$ 37.4
Accounts receivable, net of allowances for doubtful accounts of $1.8 and $1.6, respectively	145.9	124.4
Inventories	173.5	157.3
Prepaid expenses and other current assets	9.6	9.4
Total current assets	367.6	328.5
Properties and equipment, net of accumulated depreciation of $121.0 and $116.0, respectively	67.2	62.0
Rental equipment, net of accumulated depreciation of $38.5 and $30.0, respectively	106.5	96.6
Operating lease right-of-use assets	24.9	—
Goodwill	375.0	375.1
Intangible assets, net of accumulated amortization of $17.5 and $13.4, respectively	139.5	143.1
Deferred tax assets	11.3	12.5
Deferred charges and other long-term assets	3.3	5.6
Long-term assets of discontinued operations	0.4	0.4
Total assets	$ 1,095.7	$ 1,023.8
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current portion of long-term borrowings and finance lease obligations	$ 0.2	$ 0.2
Accounts payable	71.3	66.1
Customer deposits	10.0	10.1
Accrued liabilities:		
Compensation and withholding taxes	22.8	29.5
Other current liabilities	61.5	52.7
Current liabilities of discontinued operations	0.2	0.2
Total current liabilities	166.0	158.8
Long-term borrowings and finance lease obligations	209.2	209.9
Long-term operating lease liabilities	19.4	—
Long-term pension and other postretirement benefit liabilities	54.7	54.6
Deferred gain	—	6.8
Deferred tax liabilities	51.0	46.3
Other long-term liabilities	14.1	15.9
Long-term liabilities of discontinued operations	1.2	1.4
Total liabilities	515.6	493.7
Stockholders' equity:		
Common stock, $1 par value per share, 90.0 shares authorized, 66.7 and 66.4 shares issued, respectively	66.7	66.4
Capital in excess of par value	221.3	217.0
Retained earnings	479.7	432.5
Treasury stock, at cost, 6.3 and 6.2 shares, respectively	(91.4)	(88.5)
Accumulated other comprehensive loss	(96.2)	(97.3)
Total stockholders' equity	580.1	530.1
Total liabilities and stockholders' equity	$ 1,095.7	$ 1,023.8

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)

(in millions)	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
Operating activities:		
Net income	$ 50.3	$ 39.8
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	19.3	17.6
Deferred financing costs	0.2	0.2
Deferred gain	—	(0.9)
Stock-based compensation expense	4.2	4.0
Pension expense, net of funding	(0.1)	(3.2)
Changes in fair value of contingent consideration and deferred payment	0.8	0.6
Deferred income taxes	4.0	2.0
Changes in operating assets and liabilities	(52.9)	(22.3)
Net cash provided by operating activities	25.8	37.8
Investing activities:		
Purchases of properties and equipment	(9.4)	(7.0)
Proceeds from acquisition-related activity	—	3.0
Other, net	—	0.1
Net cash used for investing activities	(9.4)	(3.9)
Financing activities:		
Decrease in revolving lines of credit, net	(3.1)	(26.6)
Purchases of treasury stock	(1.0)	—
Redemptions of common stock to satisfy withholding taxes related to stock-based compensation	(1.6)	(0.3)
Cash dividends paid to stockholders	(9.6)	(9.0)
Proceeds from stock-based compensation activity	—	0.9
Other, net	(0.1)	0.1
Net cash used for financing activities	(15.4)	(34.9)
Effects of foreign exchange rate changes on cash and cash equivalents	0.2	(0.5)
Increase (decrease) in cash and cash equivalents	1.2	(1.5)
Cash and cash equivalents at beginning of year	37.4	37.5
Cash and cash equivalents at end of period	$ 38.6	$ 36.0

FEDERAL SIGNAL CORPORATION AND SUBSIDIARIES

GROUP RESULTS (Unaudited)

The following tables summarize group operating results as of and for the three and six months ended June 30, 2019 and 2018:

Environmental Solutions Group

	Three Months Ended June 30,			Six Months Ended June 30,		
($ in millions)	2019	2018	Change	2019	2018	Change
Net sales	$ 267.2	$ 233.3	$ 33.9	$ 486.7	$ 429.9	$ 56.8
Operating income	44.8	37.2	7.6	70.5	57.8	12.7
Adjusted EBITDA	54.4	45.5	8.9	89.1	74.2	14.9
Operating data:						
Operating margin	16.8%	15.9%	0.9%	14.5%	13.4%	1.1%
Adjusted EBITDA margin	20.4%	19.5%	0.9%	18.3%	17.3%	1.0%
Total orders	$ 253.2	$ 217.3	$ 35.9	$ 496.9	$ 491.7	$ 5.2
Backlog	322.0	291.3	30.7	322.0	291.3	30.7
Depreciation and amortization	8.9	8.0	0.9	17.5	15.7	1.8

Safety and Security Systems Group

	Three Months Ended June 30,			Six Months Ended June 30,		
($ in millions)	2019	2018	Change	2019	2018	Change
Net sales	$ 57.1	$ 57.7	$ (0.6)	$ 111.4	$ 110.8	$ 0.6
Operating income	9.5	8.2	1.3	18.2	14.3	3.9
Adjusted EBITDA	10.3	9.0	1.3	19.9	15.8	4.1
Operating data:						
Operating margin	16.6%	14.2%	2.4%	16.3%	12.9%	3.4%
Adjusted EBITDA margin	18.0%	15.6%	2.4%	17.9%	14.3%	3.6%
Total orders	$ 54.8	$ 60.3	$ (5.5)	$ 110.1	$ 115.6	$ (5.5)
Backlog	25.7	31.0	(5.3)	25.7	31.0	(5.3)
Depreciation and amortization	0.8	1.0	(0.2)	1.7	1.9	(0.2)

Corporate Expenses

Corporate operating expenses were $8.0 million and $7.3 million for the three months ended June 30, 2019 and 2018, respectively. For the six months ended June 30, 2019 and 2018, corporate operating expenses were $16.6 million and $14.4 million, 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.

Impact of New Lease Accounting Standard on Non-GAAP Measures:

Effective January 1, 2019, the Company adopted the new lease accounting standard, which resulted in a change to the Company's recognition of the deferred gain associated with historical sale lease-back transactions. Prior to 2019, the deferred gain, which initially totaled $29.0 million, was being recognized through the Consolidated Statement of Operations on a straight-line basis over the 15-year lease term. As a result, approximately $1.9 million of the deferred gain had been recognized each year since 2008, of which approximately $1.1 million and $0.8 million had been recognized within the Environmental Solutions Group and Safety and Security Systems Group, respectively. Effective in 2019, the Company no longer recognizes any portion of the gain through the Consolidated Statement of Operations, and recognized 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, we have revised our previously-issued non-GAAP results for the three and six months ended June 30, 2018 to exclude the recognition of this deferred gain.

Adjusted Net Income and Earnings Per Share ("EPS"):

The Company believes that modifying its 2019 and 2018 net income and diluted EPS provides additional measures which are representative of the Company's underlying performance and improves the comparability of results across reporting periods. During the three and six months ended June 30, 2019 and 2018 adjustments were made to reported GAAP net income and diluted EPS to exclude the impact of acquisition and integration-related expenses, purchase accounting effects and hearing loss settlement charges, where applicable.

(in millions)	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
Net income	$ 32.8	$ 26.9	$ 50.3	$ 39.8
Add:				
Income tax expense	11.6	8.3	17.5	12.4
Income before income taxes	44.4	35.2	67.8	52.2
Add:				
Acquisition and integration-related expenses	0.9	0.4	1.5	0.9
Purchase accounting effects [a]	0.2	0.4	0.3	1.0
Hearing loss settlement charges	—	—	—	0.4
Adjusted income before income taxes	45.5	36.0	69.6	54.5
Adjusted income tax expense [b]	(11.9)	(8.5)	(17.9)	(12.9)
Adjusted net income	$ 33.6	$ 27.5	$ 51.7	$ 41.6
Less:				
Deferred gain recognition, net of income tax expense	—	(0.4)	—	(0.8)
Adjusted net income, as revised	$ 33.6	$ 27.1	51.7	40.8

(dollars per diluted share)	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
EPS, as reported	$ 0.54	$ 0.44	$ 0.82	$ 0.65
Add:				
Income tax expense	0.19	0.14	0.29	0.20
Income before income taxes	0.73	0.58	1.11	0.85
Add:				
Acquisition and integration-related expenses	0.01	0.01	0.02	0.01
Purchase accounting effects [a]	0.00	0.00	0.00	0.02
Hearing loss settlement charges	—	—	—	0.01
Adjusted income before income taxes	0.74	0.59	1.13	0.89
Adjusted income tax expense [b]	(0.19)	(0.14)	(0.29)	(0.21)
Adjusted EPS	$ 0.55	$ 0.45	$ 0.84	$ 0.68
Less:				
Deferred gain recognition, net of income tax expense	—	(0.01)	—	(0.01)
Adjusted EPS, as revised	0.55	0.44	$ 0.84	$ 0.67

(a) Purchase accounting effects relate to adjustments to exclude the step-up in the valuation of acquired JJE equipment that was sold subsequent to the acquisition in the three and six months ended June 30, 2019 and 2018, as well as to exclude the depreciation of the step-up in the valuation of the rental fleet acquired.

(b) Adjusted income tax expense for the three and six months ended June 30, 2019 and 2018 was recomputed after excluding the impact of acquisition and integration-related expenses, purchase accounting effects and hearing loss settlement charges, where applicable.

Adjusted EBITDA and Adjusted EBITDA Margin:

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 net income, interest expense, hearing loss settlement charges, acquisition and integration-related expenses, purchase accounting effects, other income/expense, income tax expense, and depreciation and amortization expense. Consolidated adjusted EBITDA margin is a non-GAAP measure that represents the total of net income, interest expense, hearing loss settlement charges, acquisition and integration-related expenses, purchase accounting effects, other income/expense, income tax expense, 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, 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, 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 net income to consolidated adjusted EBITDA for the three and six months ended June 30, 2019 and 2018:

	Three Months Ended June 30,		Six Months Ended June 30,	
($ in millions)	**2019**	**2018**	**2019**	**2018**
Net income	$ 32.8	$ 26.9	$ 50.3	$ 39.8
Add:				
Interest expense	2.0	2.5	4.0	5.0
Hearing loss settlement charges	—	—	—	0.4
Acquisition and integration-related expenses	0.9	0.4	1.5	0.9
Purchase accounting effects*	0.1	0.3	0.1	0.7
Other (income) expense, net	(0.1)	0.4	0.3	0.5
Income tax expense	11.6	8.3	17.5	12.4
Depreciation and amortization	9.8	9.0	19.3	17.6
Consolidated adjusted EBITDA	$ 57.1	$ 47.8	$ 93.0	$ 77.3
Less:				
Deferred gain recognition	—	(0.5)	$ —	$ (1.0)
Consolidated adjusted EBITDA, as revised	$ 57.1	$ 47.3	$ 93.0	$ 76.3
Net sales	$ 324.3	$ 291.0	$ 598.1	$ 540.7
Consolidated adjusted EBITDA margin	17.6%	16.4%	15.5%	14.3%
Consolidated adjusted EBITDA margin, as revised	17.6%	16.3%	15.5%	14.1%

** Excludes purchase accounting expenses reflected in depreciation and amortization of $0.1 million and $0.1 million for the three months ended June 30, 2019 and 2018, and $0.2 million and $0.3 million for the six months ended June 30, 2019 and 2018, 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 six months ended June 30, 2019 and 2018:

($ in millions)	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
Operating income	$ 44.8	$ 37.2	$ 70.5	$ 57.8
Add:				
Acquisition and integration-related expenses	0.6	0.3	1.0	0.6
Purchase accounting effects*	0.1	0.3	0.1	0.7
Depreciation and amortization	8.9	8.0	17.5	15.7
Adjusted EBITDA	$ 54.4	$ 45.8	$ 89.1	$ 74.8
Less:				
Deferred gain recognition	—	(0.3)	—	(0.6)
Adjusted EBITDA, as revised	$ 54.4	$ 45.5	$ 89.1	$ 74.2
Net sales	$ 267.2	$ 233.3	$ 486.7	$ 429.9
Adjusted EBITDA margin	20.4%	19.6%	18.3%	17.4%
Adjusted EBITDA margin, as revised	20.4%	19.5%	18.3%	17.3%

** Excludes purchase accounting expenses reflected in depreciation and amortization of $0.1 million and $0.1 million for the three months ended June 30, 2019 and 2018, and $0.2 million and $0.3 million for the six months ended June 30, 2019 and 2018, 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 six months ended June 30, 2019 and 2018:

($ in millions)	Three Months Ended June 30, 2019	Three Months Ended June 30, 2018	Six Months Ended June 30, 2019	Six Months Ended June 30, 2018
Operating income	$ 9.5	$ 8.2	$ 18.2	$ 14.3
Add:				
Depreciation and amortization	0.8	1.0	1.7	1.9
Adjusted EBITDA	$ 10.3	$ 9.2	$ 19.9	$ 16.2
Less:				
Deferred gain recognition	—	(0.2)	—	(0.4)
Adjusted EBITDA, as revised	$ 10.3	$ 9.0	$ 19.9	$ 15.8
Net sales	$ 57.1	$ 57.7	$ 111.4	$ 110.8
Adjusted EBITDA margin	18.0%	15.9%	17.9%	14.6%
Adjusted EBITDA margin, as revised	18.0%	15.6%	17.9%	14.3%