KRATOS DEFENSE & SECURITY SOLUTIONS, INC.
Form 4
April 15, 2016

FORM 4

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

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. *See* Instruction 1(b).

OMB APPROVAL

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(Print or Type Responses)

1. Name and Address of Reporting Person *
MILLS THOMAS E IV

(Last) (First) (Middle)

4820 EASTGATE MALL

(Street)

SAN DIEGO, CA 92121

(City) (State) (Zip)

2. Issuer Name **and** Ticker or Trading Symbol
KRATOS DEFENSE & SECURITY SOLUTIONS, INC. [KTOS]

3. Date of Earliest Transaction (Month/Day/Year)
04/08/2016

4. If Amendment, Date Original Filed(Month/Day/Year)

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

_____ Director _____ 10% Owner
__X__ Officer (give title below) _____ Other (specify below)
President, MS Division

6. Individual or Joint/Group Filing(Check Applicable Line)
_X_ Form filed by One Reporting Person
___ Form filed by More than One Reporting Person

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1.Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			
Common Stock	04/08/2016		M		3,000 (2)	A	$ 0	64,390 (4)	D	
Common Stock	04/08/2016		F		945 (3)	D	$ 4.67	63,445 (4)	D	

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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SEC 1474 (9-02)

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned
(*e.g.*, puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Underlying Securities (Instr. 3 and 4)		8. Pr Deriv Secu (Instr
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares	
Restricted Stock Units	(1)	04/08/2016		M			3,000	(2)	(2)	Common Stock	3,000	$

Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
MILLS THOMAS E IV 4820 EASTGATE MALL SAN DIEGO, CA 92121			President, MS Division	

Signatures

Thomas E. Mills, by Eva Yee, Attorney-In-Fact	04/15/2016
**Signature of Reporting Person	Date

Explanation of Responses:

* If the form is filed by more than one reporting person, *see* Instruction 4(b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

(1) Each Restricted Stock Unit (RSU) represents a contingent right to receive one share of Issuer's common stock.

(2) RSUs were granted and previously reported on a Form 4 filed January 5, 2016. Of these RSUs, 3,000 were released on April 8, 2016.

(3) Shares withheld for payment of minimum tax liability, in accordance with Issuer's trading policies, in connection with shares released as reported in this Form 4.

(4) Includes 10,190 shares purchased through Issuer's Employee Stock Purchase Plan and 6,485 shares held in Issuer's 401(k) Plan.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure.
Potential persons who are to respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB number. >

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Probable expansion airspace
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Changes in engineering estimates typically include modifications to the available disposal capacity of a landfill based on a refinement of the capacity calculations resulting from updated information.
As of December 31, 2016, we owned or operated 192 active solid waste landfills with total available disposal capacity estimated to be 4,994.4 million in-place cubic yards. Total available disposal capacity represents the sum of estimated permitted airspace plus an estimate of probable expansion airspace. Engineers develop these estimates at least annually using information provided by annual aerial surveys. As of December 31, 2016, total available disposal capacity is estimated to be 4,707.6 million in-place cubic yards of permitted airspace plus 286.8 million in-place cubic yards of probable expansion airspace. Before airspace included in an expansion area is determined to be probable expansion airspace and, therefore, included in our calculation of total available disposal capacity, it must meet all of our expansion criteria. See Note 2, Summary of Significant Accounting Policies, and Note 8, Landfill and Environmental Costs, to our consolidated financial statements in Item 8 of this Form 10-K for further information. Also see our "Critical Accounting Judgments and Estimates" section of this Management's Discussion and Analysis of Financial Condition and Results of Operations.
As of December 31, 2016, thirteen of our landfills met all of our criteria for including their probable expansion airspace in their total available disposal capacity. At projected annual volumes, these thirteen landfills have an estimated remaining average site life of 44 years, including probable expansion airspace. The average estimated remaining life of all of our landfills is 64 years. We have other expansion opportunities that are not included in our total available airspace because they do not meet all of our criteria for treatment as probable expansion airspace.

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The following table reflects the estimated operating lives of our active landfill sites based on available and probable disposal capacity using current annual volumes as of December 31, 2016:

	Number of Sites without Probable Expansion Airspace	Number of Sites with Probable Expansion Airspace	Total Sites	Percent of Total
0 to 5 years	18	—	18	9.4 %
6 to 10 years	13	—	13	6.8
11 to 20 years	31	2	33	17.2
21 to 40 years	45	4	49	25.5
41+ years	72	7	79	41.1
Total	179	13	192	100.0%

Final Capping, Closure and Post-Closure Costs

As of December 31, 2016, accrued final capping, closure and post-closure costs were $1,224.6 million, of which $64.8 million were current and $1,159.8 million were long-term as reflected in our consolidated balance sheets in accrued landfill and environmental costs included in Item 8 of this Form 10-K.

Remediation and Other Charges for Landfill Matters

It is reasonably possible that we will need to adjust our liabilities to reflect the effects of new or additional information, to the extent that such information impacts the costs, timing or duration of the required actions. Future changes in our estimates of the costs, timing or duration of the required actions could have a material adverse effect on our consolidated financial position, results of operations and cash flows.

The following is a discussion of certain of our significant remediation matters:

Bridgeton Landfill. During the year ended December 31, 2016, we paid $23.0 million related to management and monitoring of the remediation area for our closed Bridgeton Landfill in Missouri. We continue to work with state and federal regulatory agencies on our remediation efforts. From time to time, this may require us to modify our future operating timeline and procedures, which could result in changes to our expected liability. As of December 31, 2016, the remediation liability recorded for this site is $197.2 million, of which $26.4 million is expected to be paid during 2017. We believe the remaining reasonably possible high end of our range would be approximately $156 million higher than the amount recorded as of December 31, 2016.

During 2015, we collected an insurance recovery of $50.0 million related to our Bridgeton Landfill. As such, we recorded a reduction of remediation expenses included in our cost of operations during the year ended December 31, 2015.

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Investment in Landfills

The following tables reflect changes in our investment in landfills for the years ended December 31, 2016, 2015 and 2014 and the future expected investment as of December 31, 2016 (in millions):

	Balance as of December 31, 2015	Capital Additions	Retirements	Acquisitions Net of Divestitures	Non-cash Additions for Asset Retirement Obligations	Additions Charged to Expense	Impairments, Transfers and Other Adjustments	Adjustments for Asset Retirement Obligations	Balance as of December 31, 2016
Non-depletable landfill land	$ 165.6	$ 1.2	$ —	$ —	$ —	$ —	$ —	$ —	$ 166.8
Landfill development costs	6,078.1	12.7	—	—	41.0	—	255.1	(0.2)	6,386.7
Construction-in-progress -landfill	191.6	291.0	—	—	—	—	(261.4)	—	221.2
Accumulated depletion and amortization	(2,723.0)	—	—	—	—	(296.7)	—	3.2	(3,016.5)
Net investment in landfill land and development costs	$ 3,712.3	$ 304.9	$ —	$ —	$ 41.0	$ (296.7)	$ (6.3)	$ 3.0	$ 3,758.2

	Balance as of December 31, 2014	Capital Additions	Retirements	Acquisitions Net of Divestitures	Non-cash Additions for Asset Retirement Obligations	Additions Charged to Expense	Impairments, Transfers and Other Adjustments	Adjustments for Asset Retirement Obligations	Balance as of December 31, 2015
Non-depletable landfill land	$ 162.2	$ 1.9	$ —	$ —	$ —	$ —	$ 1.5	$ —	$ 165.6
Landfill development costs	5,645.3	4.6	—	173.1	39.4	—	235.4	(19.7)	6,078.1
Construction-in-progress -landfill	140.8	287.6	—	—	—	—	(236.8)	—	191.6
Accumulated depletion and amortization	(2,437.4)	—	—	—	—	(286.7)	0.5	0.6	(2,723.0)
Net investment in landfill land and development costs	$ 3,510.9	$ 294.1	$ —	$ 173.1	$ 39.4	$ (286.7)	$ 0.6	$ (19.1)	$ 3,712.3

	Balance as of December 31, 2013	Capital Additions	Retirements	Acquisitions Net of Divestitures	Non-cash Additions for Asset Retirement Obligations	Additions Charged to Expense	Impairments, Transfers and Other Adjustments	Adjustments for Asset Retirement Obligations	Balance as of December 31, 2014
Non-depletable landfill land	$ 164.2	$ —	$ (2.0)	$ —	$ —	$ —	$ —	$ —	$ 162.2
Landfill development costs	5,392.7	4.9	(0.3)	26.6	38.6	—	195.0	(12.2)	5,645.3
Construction-in-progress -landfill	72.5	261.5	—	—	—	—	(193.2)	—	140.8
Accumulated depletion and amortization	(2,160.2)	—	0.1	—	—	(276.5)	—	(0.8)	(2,437.4)
Net investment in landfill land and development costs	$ 3,469.2	$ 266.4	$ (2.2)	$ 26.6	$ 38.6	$ (276.5)	$ 1.8	$ (13.0)	$ 3,510.9

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	Balance as of December 31, 2016	Expected Future Investment	Total Expected Investment
Non-depletable landfill land	$ 166.8	$ —	$166.8
Landfill development costs	6,386.7	8,593.5	14,980.2
Construction-in-progress - landfill	221.2	—	221.2
Accumulated depletion and amortization	(3,016.5)	—	(3,016.5)
Net investment in landfill land and development costs	$ 3,758.2	$ 8,593.5	$12,351.7

The following table reflects our net investment in our landfills, excluding non-depletable land, and our depletion, amortization and accretion expense for the years ended December 31, 2016, 2015 and 2014:

	2016	2015	2014
Number of landfills owned or operated	192	193	189
Net investment, excluding non-depletable land (in millions)	$3,591.4	$3,546.7	$3,348.7
Total estimated available disposal capacity (in millions of cubic yards)	4,994.4	4,966.6	4,845.8
Net investment per cubic yard	$0.72	$0.71	$0.69
Landfill depletion and amortization expense (in millions)	$290.2	$285.3	$263.0
Accretion expense (in millions)	79.1	79.4	78.0
	369.3	364.7	341.0
Airspace consumed (in millions of cubic yards)	78.9	77.0	74.6
Depletion, amortization and accretion expense per cubic yard of airspace consumed	$4.68	$4.74	$4.57

During 2016 and 2015, our average compaction rate was approximately 2,000 pounds per cubic yard based on a three-year historical moving average.

As of December 31, 2016, we expect to spend an estimated additional $8.6 billion on existing landfills, primarily related to cell construction and environmental structures, over their remaining lives. Our total expected investment, excluding non-depletable land, estimated to be $12.2 billion, or $2.44 per cubic yard, is used in determining our depletion and amortization expense based on airspace consumed using the units-of-consumption method.

Property and Equipment

The following tables reflect the activity in our property and equipment accounts for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars):

	Gross Property and Equipment							
	Balance as of December 31, 2015	Capital Additions	Retirements	Acquisitions, Net of Divestitures	Non-Cash Additions for Asset Retirement Obligations	Adjustments for Asset Retirement Obligations	Impairments, Transfers and Other Adjustments	Balance as of December 31, 2016
Land	$425.4	$ 0.3	$ (0.7)	$ 1.0	$ —	$ —	$ 4.2	$ 430.2
Non-depletable landfill land	165.6	1.2	—	—	—	—	—	166.8
Landfill development costs	6,078.1	12.7	—	—	41.0	(0.2)	255.1	6,386.7
Vehicles and equipment	6,211.8	494.7	(204.2)	10.0	—	—	39.5	6,551.8
Buildings and improvements	1,098.6	12.4	(3.5)	5.7	—	—	46.9	1,160.1
Construction-in-progress - landfill	191.6	291.0	—	—	—	—	(261.4)	221.2
Construction-in-progress - other	25.5	105.2	—	(0.8)	—	—	(94.2)	35.7
Total	$14,196.6	$ 917.5	$ (208.4)	$ 15.9	$ 41.0	$ (0.2)	$ (9.9)	$ 14,952.5

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Accumulated Depreciation, Amortization and Depletion

	Balance as of December 31, 2015	Additions Charged to Expense	Retirements	Acquisitions, Net of Divestitures	Adjustments for Asset Retirement Obligations	Impairments, Transfers and Other Adjustments	Balance as of December 31, 2016
Landfill development costs	$ (2,723.0)	$ (296.7)	$ —	$ —	$ 3.2	$ —	$ (3,016.5)
Vehicles and equipment	(3,555.0)	(577.5)	200.3	0.9	—	(0.1)	(3,931.4)
Buildings and improvements	(365.8)	(53.8)	3.2	—	—	0.4	(416.0)
Total	$ (6,643.8)	$ (928.0)	$ 203.5	$ 0.9	$ 3.2	$ 0.3	$ (7,363.9)

Gross Property and Equipment

	Balance as of December 31, 2014	Capital Additions	Retirements	Acquisitions, Net of Divestitures	Non-Cash Additions for Asset Retirement Obligations	Adjustments for Asset Retirement Obligations	Impairments, Transfers and Other Adjustments	Balance as of December 31, 2015
Land	$ 401.3	$ 0.3	$ (0.6)	$ 23.6	$ —	$ —	$ 0.8	$ 425.4
Non-depletable landfill land	162.2	1.9	—	—	—	—	1.5	165.6
Landfill development costs	5,645.3	4.6	—	173.1	39.4	(19.7)	235.4	6,078.1
Vehicles and equipment	5,834.1	547.4	(301.1)	78.5	—	—	52.9	6,211.8
Buildings and improvements	1,002.3	47.3	(3.9)	54.9	—	—	(2.0)	1,098.6
Construction-in-progress - landfill	140.8	287.6	—	—	—	—	(236.8)	191.6
Construction-in-progress - other	10.1	66.7	—	1.4	—	—	(52.7)	25.5
Total	$ 13,196.1	$ 955.8	$ (305.6)	$ 331.5	$ 39.4	$ (19.7)	$ (0.9)	$ 14,196.6

Accumulated Depreciation, Amortization and Depletion

	Balance as of December 31, 2014	Additions Charged to Expense	Retirements	Acquisitions, Net of Divestitures	Adjustments for Asset Retirement Obligations	Impairments, Transfers and Other Adjustments	Balance as of December 31, 2015
Landfill development costs	$ (2,437.4)	$ (286.7)	$ —	$ —	$ 0.6	$ 0.5	$ (2,723.0)
Vehicles and equipment	(3,273.3)	(566.6)	284.5	—	—	0.4	(3,555.0)
Buildings and improvements	(320.1)	(48.8)	3.0	—	—	0.1	(365.8)
Total	$ (6,030.8)	$ (902.1)	$ 287.5	$ —	$ 0.6	$ 1.0	$ (6,643.8)

Gross Property and Equipment

	Balance as of December 31, 2013	Capital Additions	Retirements	Acquisitions, Net of Divestitures	Non-Cash Additions for Asset Retirement Obligations	Adjustments for Asset Retirement Obligations	Impairments, Transfers and Other Adjustments	Balance as of December 31, 2014
Land	$ 377.6	$ 0.7	$ (2.8)	$ 25.7	$ —	$ —	$ 0.1	$ 401.3
Non-depletable landfill land	164.2	—	(2.0)	—	—	—	—	162.2

Landfill development costs	5,392.7	4.9	(0.3)	26.6	38.6	(12.2)	195.0	5,645.3
Vehicles and equipment	5,403.7	530.4	(155.3)	39.1	—	—	16.2	5,834.1
Buildings and improvements	935.6	28.9	(3.3)	11.3	—	—	29.8	1,002.3
Construction-in-progress - landfill	72.5	261.5	—	—	—	—	(193.2)	140.8
Construction-in-progress - other	13.3	48.7	—	—	—	—	(51.9)	10.1
Total	$ 12,359.6	$ 875.1	$ (163.7)	$ 102.7	$ 38.6	$ (12.2)	$ (4.0)	$ 13,196.1

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	Accumulated Depreciation, Amortization and Depletion						
	Balance as of December 31, 2013	Additions Charged to Expense	Retirements	Acquisitions, Net of Divestitures	Adjustments for Asset Retirement Obligations	Impairments, Transfers and Other Adjustments	Balance as of December 31, 2014
Landfill development costs	$(2,160.2)	$(276.5)	$ 0.1	$ —	$ (0.8)	$ —	$ (2,437.4)
Vehicles and equipment	(2,883.8)	(535.0)	145.4	—	—	0.1	(3,273.3)
Buildings and improvements	(278.8)	(42.6)	1.1	—	—	0.2	(320.1)
Total	$(5,322.8)	$(854.1)	$ 146.6	$ —	$ (0.8)	$ 0.3	$ (6,030.8)

Liquidity and Capital Resources

The major components of changes in cash flows for 2016, 2015 and 2014 are discussed in the following paragraphs. The following table summarizes our cash flow from operating activities, investing activities and financing activities for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars):

	2016	2015	2014
Net cash provided by operating activities	$1,847.8	$1,679.7	$1,529.8
Net cash used in investing activities	(961.2)	(1,482.8)	(959.8)
Net cash used in financing activities	(851.2)	(239.7)	(708.1)

Cash Flows Provided by Operating Activities

The most significant items affecting the comparison of our operating cash flows for 2016 and 2015 are summarized below:

Changes in assets and liabilities, net of effects from business acquisitions and divestitures, decreased our cash flow from operations by $205.2 million in 2016, compared to a decrease of $316.7 million in 2015, primarily as a result of the following:

- Our accounts receivable, exclusive of the change in allowance for doubtful accounts and customer credits, increased $52.3 million during 2016 due to the timing of billings net of collections, compared to a $15.7 million increase in 2015. As of December 31, 2016 and 2015, our days sales outstanding were 38.1 and 38.3 days, or 26.1 and 25.8 days net of deferred revenue, respectively.
- Our accounts payable decreased $9.8 million during 2016 compared to an increase of $35.6 million during 2015, due to the timing of payments.
- Cash paid for capping, closure and post-closure obligations was $11.0 million lower during 2016 compared to 2015. The decrease in cash paid for capping, closure, and post-closure obligations is primarily due to payments in 2015 related to a required capping event at one of our closed landfills.
- Cash paid for remediation obligations was $13.2 million lower during 2016 compared to 2015 primarily due to the timing of obligations.

In addition, cash paid for income taxes was approximately $265 million and $321 million for 2016 and 2015, respectively. Income taxes paid in 2016 and 2015 reflect the favorable tax depreciation provisions of the Protecting Americans from Tax Hikes Act signed into law in December 2015 as well as the realization of certain tax credits.

Cash paid for interest was $330.2 million and $327.6 million for 2016 and 2015, respectively.

The most significant items affecting the comparison of our operating cash flows for 2015 and 2014 are summarized below:

Changes in assets and liabilities, net of effects of business acquisitions and divestitures, decreased our cash flow from operations by $316.7 million in 2015, compared to a decrease of $295.6 million in 2014, primarily as a result of the following:

- Our accounts receivable, exclusive of the change in allowance for doubtful accounts and customer credits, increased $15.7 million during 2015 due to the timing of billings, net of collections, compared to a $54.3 million increase in 2014. As of December 31, 2015 and 2014, our days sales outstanding were 38 days, or 26 and 25 days net of deferred revenue, respectively.

- Our accounts payable increased $35.6 million and $3.3 million during 2015 and 2014, respectively, due to the timing of payments as of December 31, 2015.
- Cash paid for capping, closure and post-closure obligations was $33.8 million higher during 2015 compared to 2014 primarily due to a required capping event at one of our landfills that closed during 2015.

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- Cash paid for remediation obligations was $19.4 million lower during 2015 compared to 2014 primarily due to remediation activity at our closed Bridgeton Landfill.
- In December 2015 we settled outstanding liabilities with respect to the withdrawal events and paid $153.5 million to the Fund.

In addition, cash paid for income taxes was approximately $321 million and $382 million for 2015 and 2014, respectively. Income taxes paid in 2015 reflect the favorable tax depreciation provisions of the Protecting Americans from Tax Hikes Act signed into law in December 2015. Cash paid for interest was $327.6 million and $320.2 million for 2015 and 2014, respectively.

We use cash flows from operations to fund capital expenditures, acquisitions, dividend payments, share repurchases and debt repayments.

Cash Flows Used in Investing Activities

The most significant items affecting the comparison of our cash flows used in investing activities for 2016, 2015 and 2014 are summarized below:

- Capital expenditures during 2016 were $927.8 million, compared with $945.6 million for 2015 and $862.5 million for 2014. Property and equipment received during 2016, 2015 and 2014 was $915.6 million, $953.0 million and $872.9 million, respectively.
- Proceeds from sales of property and equipment during 2016 were $9.8 million, compared to $21.2 million for 2015 and $35.7 million for 2014.
- During 2016, 2015 and 2014, we paid $62.4 million, $572.7 million and $195.7 million, respectively, for business acquisitions. During 2016, we received $15.0 million related to business divestitures. There were no divestitures in 2015 or 2014.
- Our restricted cash and marketable securities balance decreased $5.2 million, $15.3 million and $70.8 million for 2016, 2015 and 2014, respectively. The decrease of $5.2 million during 2016 is due to a release of a holdback related to one of our acquisitions, whereas the decrease of $15.3 million during 2015 was due to a release of funds restricted for certain construction related activities. The decrease of $70.8 million during 2014 was due to a release of restricted investments related to a change in certain of our closure and post-closure collateral obligation requirements and a release of restricted investments in restricted cash related to our insurance programs. We received $50.0 million in connection with issuances of tax-exempt bonds during 2014. Funds received from issuances of tax-exempt bonds are deposited directly into trust accounts by the bonding authority at the time of issuance. Reimbursements from the trust for qualifying expenditures or for repayments of the related tax-exempt bonds are presented as investing activities in our consolidated statements of cash flows. Such reimbursements amounted to $2.1 million, $18.7 million and $51.1 million during 2016, 2015 and 2014, respectively.

We intend to finance capital expenditures and acquisitions through cash on hand, restricted cash held for capital expenditures, cash flows from operations, our revolving credit facilities, and tax-exempt bonds and other financings. We expect to primarily use cash for consideration paid for future business acquisitions.

Cash Flows Used in Financing Activities

The most significant items affecting the comparison of our cash flows used in financing activities for 2016, 2015 and 2014 are summarized below:

- During 2016, we issued $500.0 million of notes for net cash proceeds of $498.9 million. Net payments of notes payable and long-term debt were $395.7 million during 2016, compared to net proceeds of $2.7 million and net payments of $15.1 million during 2015 and 2014, respectively. For a more detailed discussion, see the "Financial Condition" section of this Management's Discussion and Analysis of Financial Condition and Results of Operations.
- In October 2015, our board of directors added $900.0 million to the existing share repurchase authorization. As of December 31, 2016, there were $451.7 million remaining under our share repurchase authorization. During 2016, we repurchased 8.4 million shares of our stock for $403.8 million. During 2015, we repurchased 9.8 million shares of our stock for $404.7 million.
- In July 2016, our board of directors approved an increase in our quarterly dividend to $0.32 per share. Dividends paid were $418.9 million, $399.3 million and $378.6 million for 2016, 2015 and 2014, respectively.

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Financial Condition

Cash and Cash Equivalents

As of December 31, 2016, we had $67.8 million of cash and cash equivalents and $90.5 million of restricted cash deposits and restricted marketable securities, including $27.9 million of restricted cash and marketable securities pledged to regulatory agencies and governmental entities as financial guarantees of our performance related to our final capping, closure and post-closure obligations at our landfills, and $62.6 million of restricted cash and marketable securities related to our insurance obligations.

We intend to use excess cash on hand and cash from operating activities to fund capital expenditures, acquisitions, dividend payments, share repurchases and debt repayments. Debt repayments may include purchases of our outstanding indebtedness in the secondary market or otherwise. We believe that our excess cash, cash from operating activities and our availability to draw from our credit facilities provide us with sufficient financial resources to meet our anticipated capital requirements and maturing obligations as they come due.

We may choose to voluntarily retire certain portions of our outstanding debt before their maturity dates using cash from operations or additional borrowings. We may also explore opportunities in the capital markets to fund redemptions should market conditions be favorable. Early extinguishment of debt will result in an impairment charge in the period in which the debt is repaid. The loss on early extinguishment of debt relates to premiums paid to effectuate the repurchase and the relative portion of unamortized note discounts and debt issue costs.

Credit Facilities

In May 2016, we entered into a $1.0 billion unsecured revolving credit facility (the Replacement Credit Facility), which replaced our $1.0 billion credit facility maturing in May 2017. The Replacement Credit Facility matures in May 2021 and includes a feature that allows us to increase availability, at our option, by an aggregate amount up to $500.0 million through increased commitments from existing lenders or the addition of new lenders. At our option, borrowings under the Replacement Credit Facility bear interest at a Base Rate, or a Eurodollar Rate, plus an applicable margin based on our Debt Ratings (all as defined in the agreements).

Contemporaneous with the execution of the Replacement Credit Facility, we entered into Amendment No. 1 to our existing $1.25 billion unsecured credit facility (the Existing Credit Facility and, together with the Replacement Credit Facility, the Credit Facilities), to conform certain terms of the Existing Credit Facility with those of the Replacement Credit Facility. Amendment No. 1 does not extend the maturity date of the Existing Credit Facility, which matures in June 2019. The Existing Credit Facility also maintains the feature that allows us to increase availability, at our option, by an aggregate amount of up to $500.0 million through increased commitments from existing lenders or the addition of new lenders.

The credit agreements require us to comply with financial and other covenants. To the extent we are not in compliance with these covenants, we cannot pay dividends and repurchase common stock. Compliance with covenants also is a condition for any incremental borrowings under our Credit Facilities, and failure to meet these covenants would enable the lenders to require repayment of any outstanding loans (which would adversely affect our liquidity). As of December 31, 2016, our EBITDA to interest ratio was 7.05 compared to the 3.00 minimum required by the covenants, and our total debt to EBITDA ratio was 2.96 compared to the 3.50 maximum allowed by the covenants. As of December 31, 2016, we were in compliance with the covenants under our Credit Facilities, and we expect to be in compliance throughout 2017.

EBITDA, which is a non-U.S. GAAP measure, is calculated as defined in our Credit Facility agreements. In this context, EBITDA is used solely to provide information regarding the extent to which we are in compliance with debt covenants and is not comparable to EBITDA used by other companies or used by us for other purposes.

Failure to comply with the financial and other covenants under our Credit Facilities, as well as the occurrence of certain material adverse events, would constitute defaults and would allow the lenders under our Credit Facilities to accelerate the maturity of all indebtedness under the related agreements. This could also have an adverse effect on the availability of financial assurances. In addition, maturity acceleration on our Credit Facilities constitutes an event of default under our other debt instruments, including our senior notes, and, therefore, our senior notes would also be subject to acceleration of maturity. If such acceleration were to occur, we would not have sufficient liquidity available to repay the indebtedness. We would likely have to seek an amendment under our Credit Facilities for relief from the financial covenants or repay the debt with proceeds from the issuance of new debt or equity, or asset sales, if necessary. We may be unable to amend our Credit Facilities or raise sufficient capital to repay such obligations in the event the maturities are accelerated.

Availability under our Credit Facilities totaled $1,543.1 million and $1,727.7 million as of December 31, 2016 and 2015, respectively, and can be used for working capital, capital expenditures, acquisitions, letters of credit and other general corporate purposes. As of December 31, 2016 and 2015, we had $210.0 million and no borrowings under our Credit Facilities,

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respectively. We had $478.4 million and $503.3 million of letters of credit outstanding under our Credit Facilities as of December 31, 2016 and 2015, respectively.

During 2016, we amended our existing unsecured credit facility agreement (the Uncommitted Credit Facility), to increase the size to $135.0 million with all other terms remaining unchanged. Our Uncommitted Credit Facility bears interest at LIBOR, plus an applicable margin and is subject to facility fees defined in the agreement, regardless of usage. We can use borrowings under the Uncommitted Credit Facility for working capital and other general corporate purposes. The agreements governing our Uncommitted Credit Facility require us to comply with covenants. The Uncommitted Credit Facility may be terminated by either party at any time. As of December 31, 2016, we had no borrowings and as of December 31, 2015, we had $19.0 million of borrowings under our Uncommitted Credit Facility.

Senior Notes and Debentures

During 2016, we priced cash tender offers to purchase up to $575.4 million combined aggregate principal amount of the 6.20% Notes due March 2040, 5.70% Notes due May 2041, 7.40% Debentures due September 2035 and 6.09% Notes due March 2035 (collectively the Existing Notes), subject to priority levels and the other terms and conditions set forth in the Offer to Purchase. During 2016, we priced an offering of $500.0 million of 2.90% senior notes due 2026 (the 2.90% Notes). The sale of the 2.90% Notes and the tender offers closed on July 5, 2016. We used the net proceeds of the offering, together with borrowing under our credit facilities, to purchase $575.4 million of the combined aggregate principal amount of the Existing Notes tendered as well as premium due of $148.1 million and early tender consideration of $28.7 million.

During 2015, we issued $500.0 million of 3.20% notes due 2025 (the 3.20% Notes). We used the net proceeds from the 3.20% Notes to refinance debt incurred in connection with our acquisition of all of the equity interests of Tervita during 2015.

As of December 31, 2016 and 2015, we had $6,267.7 million and $6,330.3 million, respectively, of unsecured senior notes and debentures outstanding with maturities ranging from 2018 to 2041. Our senior notes are general senior unsecured obligations.

Interest Rate Swap and Lock Agreements

During the second half of 2013, we entered into various interest rate swap agreements relative to our 4.750% fixed rate senior notes due in May 2023. The goal was to reduce overall borrowing costs and rebalance our debt portfolio's ratio of fixed to floating interest rates. As of December 31, 2016, these swap agreements have a total notional value of $300.0 million and require us to pay interest at floating rates based on changes in LIBOR, and receive interest at a fixed rate of 4.750%. For 2016, 2015 and 2014, we recognized $6.3 million, $7.5 million and $7.7 million, respectively, as offsetting benefits to our interest expense from these swap agreements, which mature in May 2023.

During 2016, we entered into a number of interest rate lock agreements having an aggregate notional amount of $525.0 million with fixed interest rates ranging from 1.900% to 2.280% to manage exposure to fluctuations in interest rates in anticipation of a planned future issuance of senior notes. Upon the expected issuance of senior notes, we will terminate the interest rate locks and settle with our counterparties. The aggregate fair value of the outstanding interest rate locks as of December 31, 2016 was $20.2 million and was recorded in other long-term assets in our consolidated balance sheet. As of December 31, 2016, the effective portion of the interest rate locks recorded as a component of accumulated other comprehensive income (loss), net of tax, was $12.2 million.

During 2015, we entered into a number of interest rate lock agreements having an aggregate notional amount of $200.0 million with fixed interest rates ranging from 2.155% to 2.270% to manage exposure to fluctuations in interest rates in anticipation of the planned issuance of the 3.20% Notes. Upon issuance of the 3.20% Notes, we terminated the interest rate locks and received $1.2 million from the counterparties.

Tax-Exempt Financings

As of December 31, 2016 and 2015, we had $1,072.7 million and $1,072.1 million, respectively, of fixed and variable rate tax-exempt financings outstanding with maturities ranging from 2019 to 2044. Approximately 90% of our tax-exempt financings are remarketed quarterly by remarketing agents to effectively maintain a variable yield. The holders of the bonds can put them back to the remarketing agents at the end of each interest period. To date, the remarketing agents have been able to remarket our variable rate unsecured tax-exempt bonds. These bonds have been classified as long-term because of our ability and intent to refinance them using availability under our Credit Facilities, if necessary.

Intended Uses of Cash

We intend to use excess cash on hand and cash from operating activities to fund capital expenditures, acquisitions, dividend payments, share repurchases and debt repayments. Debt repayments may include purchases of our outstanding indebtedness in the secondary market or otherwise. We believe our excess cash, cash from operating activities and our availability to draw from

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our Credit Facilities provide us with sufficient financial resources to meet our anticipated capital requirements and maturing obligations as they come due.

We may choose to voluntarily retire certain portions of our outstanding debt before their maturity dates using cash from operations or additional borrowings. We also may explore opportunities in capital markets to fund redemptions should market conditions be favorable. Early extinguishment of debt will result in an impairment charge in the period in which the debt is repaid.

Fuel Hedges

We use derivative instruments designated as cash flow hedges to manage our exposure to changes in diesel fuel prices. We have entered into multiple agreements related to forecasted diesel fuel purchases. The agreements qualified for, and were designated as, effective hedges of changes in the prices of forecasted diesel fuel purchases (fuel hedges). For a summary of our outstanding fuel hedges as of December 31, 2016, see Note 16, Financial Instruments, to our consolidated financial statements in Item 8 of this Form 10-K.

The aggregate fair values of our outstanding fuel hedges as of December 31, 2016 and 2015 were current liabilities of $2.7 million and $37.8 million, respectively, and have been recorded in other accrued liabilities in our consolidated balance sheets.

The effective portions of the changes in fair values as of December 31, 2016 and 2015, net of tax, of $1.6 million and $22.3 million, respectively, have been recorded in stockholders' equity as components of accumulated other comprehensive loss.

During 2016 and 2015, approximately 20% of our fuel volume purchases were hedged with swap agreements.

Recycling Commodity Hedges

Revenue from the sale of recycled commodities is primarily from sales of old corrugated containers and old newsprint. From time to time we use derivative instruments such as swaps and costless collars designated as cash flow hedges to manage our exposure to changes in prices of these commodities. During 2016, we entered into multiple agreements related to the forecasted OCC sales. The agreements qualified for, and were designated as, effective hedges of changes in the prices of certain forecasted recycling commodity sales (commodity hedges). For further discussion, see Note 16, Financial Instruments, to our consolidated financial statements in Item 8 of this Form 10-K.

The aggregate fair value of our outstanding recycling commodity hedges as of December 31, 2016 was a current liability of $0.8 million, and has been recorded in other accrued liabilities in our consolidated balance sheets.

The effective portion of the changes in fair value as of December 31, 2016, net of tax, of $(0.5) million, has been recorded in stockholders' equity as components of accumulated other comprehensive loss.

Contractual Obligations

The following table summarizes our contractual obligations as of December 31, 2016 (in millions):

Year Ending December 31,	Operating Leases	Maturities of Notes Payable, Capital Leases and Other Long-Term Debt	Scheduled Interest Payment Obligations	Final Capping, Closure and Post-Closure	Remediation	Unconditional Purchase Commitments	Total
2017	$ 34.7	$ 5.1	$ 315.3	$ 64.8	$ 77.9	$ 224.0	$721.8
2018	32.2	705.7	301.6	95.0	74.9	73.1	1,282.5
2019	29.6	829.9	286.5	89.8	65.9	57.1	1,358.8
2020	27.3	926.3	227.3	78.1	63.7	35.3	1,358.0
2021	25.1	837.5	202.9	75.0	46.3	24.3	1,211.1
Thereafter	85.5	4,444.0	1,661.1	5,833.1	493.0	348.2	12,864.9
Total	$ 234.4	$ 7,748.5	$ 2,994.7	$ 6,235.8	$ 821.7	$ 762.0	$18,797.1

Scheduled interest payment obligations in the above table were calculated using stated coupon rates for fixed rate debt and interest rates applicable as of December 31, 2016 for variable rate debt. The effect of our outstanding interest rate swaps on the interest payments of our 4.750% fixed rate senior notes is also included based on the floating rates in effect as of December 31, 2016.

The present value of capital lease obligations is included in our consolidated balance sheets.

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The estimated remaining final capping, closure and post-closure and remediation expenditures presented above are not inflated or discounted and reflect the estimated future payments for liabilities incurred and recorded as of December 31, 2016 and for liabilities yet to be incurred over the remaining life of our landfills.

Unconditional purchase commitments consist primarily of (1) disposal related agreements that include fixed or minimum royalty payments, host agreements and take-or-pay and put-or-pay agreements and (2) other obligations including committed capital expenditures and consulting service agreements.

Financial Assurance

We must provide financial assurance to governmental agencies and a variety of other entities under applicable environmental regulations relating to our landfill operations for capping, closure and post-closure costs, and related to our performance under certain collection, landfill and transfer station contracts. We satisfy these financial assurance requirements by providing surety bonds, letters of credit, or insurance policies (Financial Assurance Instruments), or trust deposits, which are included in restricted cash and marketable securities and other assets in our consolidated balance sheets. The amount of the financial assurance requirements for capping, closure and post-closure costs is determined by applicable state environmental regulations. The financial assurance requirements for capping, closure and post-closure costs may be associated with a portion of the landfill or the entire landfill. Generally, states require a third-party engineering specialist to determine the estimated capping, closure and post-closure costs that are used to determine the required amount of financial assurance for a landfill. The amount of financial assurance required can, and generally will, differ from the obligation determined and recorded under U.S. GAAP. The amount of the financial assurance requirements related to contract performance varies by contract. Additionally, we must provide financial assurance for our insurance program and collateral for certain performance obligations. We do not expect a material increase in financial assurance requirements during 2017, although the mix of Financial Assurance Instruments may change.

These Financial Assurance Instruments are issued in the normal course of business and are not considered indebtedness. Because we currently have no liability for the Financial Assurance Instruments, they are not reflected in our consolidated balance sheets; however, we record capping, closure and post-closure liabilities and insurance liabilities as they are incurred.

Off-Balance Sheet Arrangements

We have no off-balance sheet debt or similar obligations, other than operating leases and financial assurances, which are not classified as debt. We have no transactions or obligations with related parties that are not disclosed, consolidated into or reflected in our reported financial position or results of operations. We have not guaranteed any third-party debt.

Free Cash Flow

We define free cash flow, which is not a measure determined in accordance with U.S. GAAP, as cash provided by operating activities less purchases of property and equipment, plus proceeds from sales of property and equipment, as presented in our consolidated statements of cash flows.

The following table calculates our free cash flow for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars):

	2016	2015	2014
Cash provided by operating activities	$1,847.8	$1,679.7	$1,529.8
Purchases of property and equipment	(927.8)	(945.6)	(862.5)
Proceeds from sales of property and equipment	9.8	21.2	35.7
Free cash flow	$929.8	$755.3	$703.0

For a discussion of the changes in the components of free cash flow, see our discussion regarding Cash Flows Provided By Operating Activities and Cash Flows Used In Investing Activities contained elsewhere in this Management's Discussion and Analysis of Financial Condition and Results of Operations.

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Purchases of property and equipment as reflected in our consolidated statements of cash flows and as presented in the free cash flow table above represent amounts paid during the period for such expenditures. The following table reconciles property and equipment reflected in the consolidated statements of cash flows to property and equipment received for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars):

	2016	2015	2014
Purchases of property and equipment per the consolidated statements of cash flows	$927.8	$945.6	$862.5
Adjustments for property and equipment received during the prior period but paid for in the following period, net	(12.2)	7.4	10.4
Property and equipment received during the period	$915.6	$953.0	$872.9

The adjustments noted above do not affect our net change in cash and cash equivalents as reflected in our consolidated statements of cash flows.

We believe that presenting free cash flow provides useful information regarding our recurring cash provided by operating activities after expenditures for property and equipment received, plus proceeds from sales of property and equipment. It also demonstrates our ability to execute our financial strategy, which includes reinvesting in existing capital assets to ensure a high level of customer service, investing in capital assets to facilitate growth in our customer base and services provided, maintaining our investment grade credit ratings and minimizing debt, paying cash dividends and repurchasing common stock, and maintaining and improving our market position through business optimization. In addition, free cash flow is a key metric used to determine executive compensation. The presentation of free cash flow has material limitations. Free cash flow does not represent our cash flow available for discretionary expenditures because it excludes certain expenditures that are required or that we have committed to such as debt service requirements and dividend payments. Our definition of free cash flow may not be comparable to similarly titled measures presented by other companies.

Contingencies

For a description of our commitments and contingencies, see Note 8, Landfill and Environmental Costs, Note 10, Income Taxes, and Note 17, Commitments and Contingencies, to our consolidated financial statements in Item 8 of this Form 10-K.

Critical Accounting Judgments and Estimates

Our consolidated financial statements have been prepared in accordance with U.S. GAAP and necessarily include certain estimates and judgments made by management. The following is a list of accounting policies that we believe are the most critical in understanding our consolidated financial position, results of operations and cash flows and that may require management to make subjective or complex judgments about matters that are inherently uncertain. Such critical accounting policies, estimates and judgments are applicable to all of our operating segments.

We have noted examples of the residual accounting and business risks inherent in the accounting for these areas. Residual accounting and business risks are defined as the inherent risks that we face after the application of our policies and processes that are generally outside of our control or ability to forecast.

Landfill Accounting

Landfill operating costs are treated as period expenses and are not discussed further in this section.

Our landfill assets and liabilities fall into the following two categories, each of which requires accounting judgments and estimates:

- Landfill development costs that are capitalized as an asset.
- Landfill retirement obligations relating to our capping, closure and post-closure liabilities that result in a corresponding landfill retirement asset.

Landfill Development Costs

We use life-cycle accounting and the units-of-consumption method to recognize landfill development costs over the life of the site. In life-cycle accounting, all current and future capitalized costs to acquire and construct a site are calculated, and charged to expense based on the consumption of cubic yards of available airspace. Obligations associated with final capping, closure and post-closure are also capitalized, and amortized on a units-of-consumption basis as airspace is consumed. Cost and airspace estimates are developed at least annually by engineers.

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Site permits. To develop, construct and operate a landfill, we must obtain permits from various regulatory agencies at the local, state and federal levels. The permitting process requires an initial site study to determine whether the location is feasible for landfill operations. The initial studies are reviewed by our environmental management group and then submitted to the regulatory agencies for approval. During the development stage we capitalize certain costs that we incur after site selection but before the receipt of all required permits if we believe that it is probable that the site will be permitted.

Residual risks:

- Changes in legislative or regulatory requirements may cause changes to the landfill site permitting process. These changes could make it more difficult and costly to obtain and maintain a landfill permit.
- Studies performed could be inaccurate, which could result in the denial or revocation of a permit and changes to accounting assumptions. Conditions could exist that were not identified in the study, which may make the location not feasible for a landfill and could result in the denial of a permit. Denial or revocation of a permit could impair the recorded value of the landfill asset.
- Actions by neighboring parties, private citizen groups or others to oppose our efforts to obtain, maintain or expand permits could result in denial, revocation or suspension of a permit, which could adversely impact the economic viability of the landfill and could impair the recorded value of the landfill. As a result of opposition to our obtaining a permit, improved technical information as a project progresses, or changes in the anticipated economics associated with a project, we may decide to reduce the scope of, or abandon a project, which could result in an asset impairment.

Technical landfill design. Upon receipt of initial regulatory approval, technical landfill designs are prepared. The technical designs, which include the detailed specifications to develop and construct all components of the landfill including the types and quantities of materials that will be required, are reviewed by our environmental management group. The technical designs are submitted to the regulatory agencies for approval. Upon approval of the technical designs, the regulatory agencies issue permits to develop and operate the landfill.

Residual risks:

- Changes in legislative or regulatory requirements may require changes in the landfill technical designs. These changes could make it more difficult and costly to meet new design standards.
- Technical design requirements, as approved, may need modifications at some future point in time.
- Technical designs could be inaccurate and could result in increased construction costs, difficulty in obtaining a permit or the use of rates to recognize the amortization of landfill development costs and asset retirement obligations that are not appropriate.

Permitted and probable landfill disposal capacity. Included in the technical designs are factors that determine the ultimate disposal capacity of the landfill. These factors include the area over which the landfill will be developed, such as the depth of excavation, the height of the landfill elevation and the angle of the side-slope construction. The disposal capacity of the landfill is calculated in cubic yards. This measurement of volume is then converted to a disposal capacity expressed in tons based on a site-specific expected density to be achieved over the remaining operating life of the landfill.

Residual risks:

- Estimates of future disposal capacity may change as a result of changes in legislative or regulatory design requirements.
- The density of waste may vary due to variations in operating conditions, including waste compaction practices, site design, climate and the nature of the waste.
- Capacity is defined in cubic yards but waste received is measured in tons. The number of tons per cubic yard varies by type of waste and our rate of compaction.

Development costs. The types of costs that are detailed in the technical design specifications generally include excavation, natural and synthetic liners, construction of leachate collection systems, installation of methane gas collection systems and monitoring probes, installation of groundwater monitoring wells, construction of leachate management facilities and other costs associated with the development of the site. We review the adequacy of our cost estimates on an annual basis by comparing estimated costs with third-party bids or contractual arrangements, reviewing the changes in year over year cost estimates for reasonableness, and comparing our resulting development cost per acre with prior period costs. These development costs, together with any costs incurred to acquire, design and permit the landfill, including capitalized interest, are recorded to the landfill asset on the balance sheet as incurred.

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Residual risk:

- Actual future costs of construction materials and third-party labor could differ from the costs we have estimated because of the level of demand and the availability of the required materials and labor. Technical designs could be altered due to unexpected operating conditions, regulatory changes or legislative changes.

Landfill development asset amortization. To match the expense related to the landfill asset with the revenue generated by the landfill operations, we amortize the landfill development asset over its operating life on a per-ton basis as waste is accepted at the landfill. The landfill asset is fully amortized at the end of a landfill's operating life. The per-ton rate is calculated by dividing the sum of the landfill development asset net book value plus estimated future development costs (as described above) for the landfill, by the landfill's estimated remaining disposal capacity. The expected future development costs are not inflated or discounted, but rather expressed in nominal dollars. This rate is applied to each ton accepted at the landfill to arrive at amortization expense for the period.

Amortization rates are influenced by the original cost basis of the landfill, including acquisition costs, which in turn is determined by geographic location and market values. We secure significant landfill assets through business acquisitions and value them at the time of acquisition based on fair value. Amortization rates are also influenced by site-specific engineering and cost factors.

Residual risk:

- Changes in our future development cost estimates or our disposal capacity will normally result in a change in our amortization rates and will impact amortization expense prospectively. An unexpected significant increase in estimated costs or reduction in disposal capacity could affect the ongoing economic viability of the landfill and result in asset impairment.

On at least an annual basis, we update the estimates of future development costs and remaining disposal capacity for each landfill. These costs and disposal capacity estimates are reviewed and approved by senior operations management annually. Changes in cost estimates and disposal capacity are reflected prospectively in the landfill amortization rates that are updated annually.

Landfill Asset Retirement Obligations

We have two types of retirement obligations related to landfills: (1) capping and (2) closure and post-closure. Obligations associated with final capping activities that occur during the operating life of the landfill are recognized on a units-of-consumption basis as airspace is consumed within each discrete capping event. Obligations related to closure and post-closure activities that occur after the landfill has ceased operations are recognized on a units-of-consumption basis as airspace is consumed throughout the entire life of the landfill. Landfill retirement obligations are capitalized as the related liabilities are recognized and amortized using the units-of-consumption method over the airspace consumed within the capping event or the airspace consumed within the entire landfill, depending on the nature of the obligation. All obligations are initially measured at estimated fair value. Fair value is calculated on a present value basis using an inflation rate and our credit-adjusted, risk-free rate in effect at the time the liabilities were incurred. Future costs for final capping, closure and post-closure are developed at least annually by engineers, and are inflated to future value using estimated future payment dates and inflation rate projections.

Landfill capping. As individual areas within each landfill reach capacity, we must cap and close the areas in accordance with the landfill site permit. These requirements are detailed in the technical design of the landfill site process previously described.

Closure and post-closure. Closure costs are costs incurred after a landfill stops receiving waste, but prior to being certified as closed. After the entire landfill has reached capacity and is certified closed, we must continue to maintain and monitor the site for a post-closure period, which generally extends for 30 years. Costs associated with closure and post-closure requirements generally include maintenance of the site, the monitoring of methane gas collection systems and groundwater systems, and other activities that occur after the site has ceased accepting waste. Costs associated with post-closure monitoring generally include groundwater sampling, analysis and statistical reports, third-party labor associated with gas system operations and maintenance, transportation and disposal of leachate, and erosion control costs related to the final cap.

Landfill retirement obligation liabilities and assets. Estimates of the total future costs required to cap, close and monitor each landfill as specified by the landfill permit are updated annually. The estimates include inflation, the specific timing of future cash outflows, and the anticipated waste flow into the capping events. Our cost estimates are inflated to the period of performance using an estimate of inflation, which is updated annually and is based upon the ten year average consumer price index (1.8% in 2016, 2.0% in 2015, and 2.3% in 2014).

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The present value of the remaining capping costs for specific capping events and the remaining closure and post-closure costs for each landfill are recorded as incurred on a per-ton basis. These liabilities are incurred as disposal capacity is consumed at the landfill.

Capping, closure and post-closure liabilities are recorded in layers and discounted using our credit-adjusted risk-free rate in effect at the time the obligation is incurred (3.75% in 2016, 4.75% in 2015, and 4.5% in 2014).

Retirement obligations are increased each year to reflect the passage of time by accreting the balance at the weighted average credit-adjusted risk-free rate that was used to calculate each layer of the recorded liabilities. This accretion is charged to operating expenses. Actual cash expenditures reduce the asset retirement obligation liabilities as they are made.

Corresponding retirement obligation assets are recorded for the same value as the additions to the capping, closure and post-closure liabilities. The retirement obligation assets are amortized to expense on a per-ton basis as disposal capacity is consumed. The per-ton rate is calculated by dividing the sum of each of the recorded retirement obligation asset's net book value and expected future additions to the retirement obligation asset by the remaining disposal capacity. A per-ton rate is determined for each separate capping event based on the disposal capacity relating to that event. Closure and post-closure per-ton rates are based on the total disposal capacity of the landfill.

Residual risks:

- Changes in legislative or regulatory requirements, including changes in capping, closure activities or post-closure monitoring activities, types and quantities of materials used, or term of post-closure care, could cause changes in our cost estimates.
- Changes in the landfill retirement obligation due to changes in the anticipated waste flow, changes in airspace compaction estimates or changes in the timing of expenditures for closed landfills and fully incurred but unpaid capping events are recorded in results of operations prospectively. This could result in unanticipated increases or decreases in expense.
- Actual timing of disposal capacity utilization could differ from projected timing, causing differences in timing of when amortization and accretion expense is recognized for capping, closure and post-closure liabilities.
- Changes in inflation rates could impact our actual future costs and our total liabilities.
- Changes in our capital structure or market conditions could result in changes to the credit-adjusted risk-free rate used to discount the liabilities, which could cause changes in future recorded liabilities, assets and expense.
- Amortization rates could change in the future based on the evaluation of new facts and circumstances relating to landfill capping design, post-closure monitoring requirements, or the inflation or discount rate.

On an annual basis, we update our estimates of future capping, closure and post-closure costs and of future disposal capacity for each landfill. Revisions in estimates of our costs or timing of expenditures are recognized immediately as increases or decreases to the capping, closure and post-closure liabilities and the corresponding retirement obligation assets. Changes in the assets result in changes to the amortization rates which are applied prospectively, except for fully incurred capping events and closed landfills, where the changes are recorded immediately in results of operations since the associated disposal capacity has already been consumed.

Permitted and probable disposal capacity. Disposal capacity is determined by the specifications detailed in the landfill permit. We classify this disposal capacity as permitted. We also include probable expansion disposal capacity in our remaining disposal capacity estimates, thus including additional disposal capacity being sought through means of a permit expansion. Probable expansion disposal capacity has not yet received final approval from the applicable regulatory agencies, but we have determined that certain critical criteria have been met and that the successful completion of the expansion is probable. We have developed six criteria that must be met before an expansion area is designated as probable expansion airspace. We believe that satisfying all of these criteria demonstrates a high likelihood that expansion airspace that is incorporated in our landfill costing will be permitted. However, because some of these criteria are judgmental, they may exclude expansion airspace that will eventually be permitted or include expansion airspace that will not be permitted. In either of these scenarios, our amortization, depletion and accretion expense could change significantly. Our internal criteria to classify disposal capacity as probable expansion airspace are as follows:

- We own the land associated with the expansion airspace or control it pursuant to an option agreement;

- We are committed to supporting the expansion project financially and with appropriate resources;
- There are no identified fatal flaws or impediments associated with the project, including political impediments;
- Progress is being made on the project;
- The expansion is attainable within a reasonable time frame; and
- We believe it is likely we will receive the expansion permit.

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After successfully meeting these criteria, the disposal capacity that will result from the planned expansion is included in our remaining disposal capacity estimates. Additionally, for purposes of calculating landfill amortization and capping, closure and post-closure rates, we include the incremental costs to develop, construct, close and monitor the related probable expansion disposal capacity.

Residual risk:

- We may be unsuccessful in obtaining permits for probable expansion disposal capacity because of the failure to obtain the final local, state or federal permits or due to other unknown reasons. If we are unsuccessful in obtaining permits for probable expansion disposal capacity, or the disposal capacity for which we obtain approvals is less than what was estimated, both our estimated total costs and disposal capacity will be reduced, which generally increases the rates we charge for landfill amortization and capping, closure and post-closure accruals. An unexpected decrease in disposal capacity could also cause an asset impairment.

Environmental Liabilities

We are subject to an array of laws and regulations relating to the protection of the environment, and we remediate sites in the ordinary course of our business. Under current laws and regulations, we may be responsible for environmental remediation at sites that we either own or operate, including sites that we have acquired, or sites where we have (or a company that we have acquired has) delivered waste. Our environmental remediation liabilities primarily include costs associated with remediating groundwater, surface water and soil contamination, as well as controlling and containing methane gas migration and the related legal costs. To estimate our ultimate liability at these sites, we evaluate several factors, including the nature and extent of contamination at each identified site, the required remediation methods, timing of expenditures, the apportionment of responsibility among the potentially responsible parties and the financial viability of those parties. We accrue for costs associated with environmental remediation obligations when such costs are probable and reasonably estimable in accordance with accounting for loss contingencies. We periodically review the status of all environmental matters and update our estimates of the likelihood of and future expenditures for remediation as necessary. Changes in the liabilities resulting from these reviews are recognized currently in earnings in the period in which the adjustment is known. Adjustments to estimates are reasonably possible in the near term and may result in changes to recorded amounts. With the exception of those obligations assumed in the acquisition of Allied, environmental obligations are recorded on an undiscounted basis. Environmental obligations assumed in the acquisition of Allied, which were initially estimated on a discounted basis, are accreted to full value over time through charges to interest expense. Adjustments arising from changes in amounts and timing of estimated costs and settlements may result in increases or decreases in these obligations and are calculated on a discounted basis as they were initially estimated on a discounted basis. These adjustments are charged to operating income when they are known. We perform a comprehensive review of our environmental obligations annually and also review changes in facts and circumstances associated with these obligations at least quarterly. We have not reduced the liabilities we have recorded for recoveries from other potentially responsible parties or insurance companies.

Residual risks:

- We cannot determine with precision the ultimate amounts of our environmental remediation liabilities. Our estimates of these liabilities require assumptions about uncertain future events. Thus, our estimates could change substantially as additional information becomes available regarding the nature or extent of contamination, the required remediation methods, timing of expenditures, the final apportionment of responsibility among the potentially responsible parties identified, the financial viability of those parties, and the actions of governmental agencies or private parties with interests in the matter. The actual environmental costs may exceed our current and future accruals for these costs, and any adjustments could be material.
- Actual amounts could differ from the estimated liabilities as a result of changes in estimated future litigation costs to pursue the matter to ultimate resolution.
- An unanticipated environmental liability that arises could result in a material charge to our consolidated statement of income.

Insurance Reserves and Related Costs

Our insurance policies for workers' compensation, commercial general liability, commercial auto liability and environmental liability are high deductible, or retention programs. The deductibles, or retentions, range from $3 million to $7.5 million. The employee-related health benefits are also subject to a high deductible insurance policy. Accruals for deductibles or retentions are based on claims filed and actuarial estimates of claims development and claims incurred but not reported.

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Residual risks:

- Incident rates, including frequency and severity, and other actuarial assumptions could change causing our current and future actuarially determined obligations to change, which would be reflected in our consolidated statement of income in the period in which such adjustment is known.
- Recorded reserves may not be adequate to cover the future payment of claims. Adjustments, if any, to estimates recorded resulting from ultimate claim payments would be reflected in the consolidated statements of income in the periods in which such adjustments are known.
- The settlement costs to discharge our obligations, including legal and health care costs, could increase or decrease causing current estimates of our insurance reserves to change.

Loss Contingencies

We are subject to various legal proceedings, claims and regulatory matters, the outcomes of which are subject to significant uncertainty. We determine whether to disclose material loss contingencies or accrue for loss contingencies based on an assessment of whether the risk of loss is remote, reasonably possible or probable, and whether it can be reasonably estimated. We analyze our litigation and regulatory matters based on available information to assess the potential liabilities. Management develops its assessment based on an analysis of possible outcomes under various strategies. We record and disclose loss contingencies pursuant to the applicable accounting guidance for such matter. We record losses related to contingencies in cost of operations or selling, general and administrative expenses, depending on the nature of the underlying transaction leading to the loss contingency.

Residual risks:

- Actual costs may vary from our estimates for a variety of reasons, including differing interpretations of laws, opinions on culpability and assessments of the amount of damages.
- Loss contingency assumptions involve judgments that are inherently subjective and generally involve matters that are by their nature complex and unpredictable. If a loss contingency results in an adverse judgment or is settled for a significant amount, it could have a material adverse effect on our consolidated financial position, results of operations and cash flows in the period in which such judgment or settlement occurs.
- New claims may be asserted that are not included in our loss contingencies.

Asset Impairment

Valuation methodology. We evaluate our long-lived assets (other than goodwill) for impairment whenever events or changes in circumstances indicate the carrying amount of the asset or asset group may not be recoverable based on projected cash flows anticipated to be generated from the ongoing operation of those assets or we intend to sell or otherwise dispose of the assets.

Residual risk:

- If events or changes in circumstances occur, including reductions in anticipated cash flows generated by our operations or determinations to divest assets, certain assets could be impaired, which would result in a non-cash charge to earnings.

Evaluation criteria.   We test long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable. Examples of such events could include a significant adverse change in the extent or manner in which we use a long-lived asset, a change in its physical condition, or new circumstances that could cause an expectation that it is more likely than not that we would sell or otherwise dispose of a long-lived asset significantly before the end of its previously estimated useful life.

Residual risk:

- Our most significant asset impairment exposure, other than goodwill (which is discussed below), relates to our landfills. A significant reduction in our estimated disposal capacity as a result of unanticipated events such as regulatory developments, revocation of an existing permit or denial of an expansion permit, or changes in our assumptions used to calculate disposal capacity, could trigger an impairment charge.

Recognition criteria. If such circumstances arise, we recognize impairment for the difference between the carrying amount and fair value of the asset if the net book value of the asset exceeds the sum of the estimated undiscounted cash flows expected to result from its use and eventual disposition. We generally use the present value of the expected cash flows from that asset to determine fair value.

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Explanation of Responses:

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Goodwill Recoverability

We have historically evaluated goodwill for impairment annually, or when an indicator of impairment exists. During 2015 we changed the date of our annual goodwill impairment assessment for our reporting units to October 1st. This voluntary change in the annual goodwill testing date is a change in accounting principle, which we believe is preferable as it better aligns the timing of the assessment with our planning and forecasting process and also provides additional time to complete our annual assessment in advance of our year-end reporting. This change in assessment date was applied prospectively and did not delay, accelerate or avoid a potential impairment charge.

We test goodwill for impairment using a two-step process. The first step is a screen for potential impairment, while the second step measures the amount of the impairment, if any. The first step compares the fair value of a reporting unit with its carrying amount, including goodwill.

During 2016, we managed and evaluated our operations through two field groups: Group 1 and Group 2. In determining fair value, we primarily use discounted future cash flows and operating results based on a comparative multiple of earnings or revenues.

Significant estimates used in our fair value calculation using discounted future cash flows include: (1) estimates of future revenue and expense growth by reporting unit, which we estimate to range from 3% to 5%; (2) future estimated effective tax rates, which we estimate to be 40%; (3) future estimated capital expenditures as well as future required investments in working capital; (4) estimated discount rates, which we estimate to range between 7% and 8%; and (5) the future terminal value of the reporting unit, which is based on its ability to exist into perpetuity. Significant estimates used in the fair value calculation using market value multiples include: (a) estimated future growth potential of the reporting unit; (b) estimated multiples of revenue or earnings a willing buyer is likely to pay; and (c) the estimated control premium a willing buyer is likely to pay.

In addition, we evaluate a reporting unit for impairment if events or circumstances change between annual tests, indicating a possible impairment. Examples of such events or circumstances include: (1) a significant adverse change in legal factors or in the business climate; (2) an adverse action or assessment by a regulator; (3) a more likely than not expectation that a reporting unit or a significant portion thereof will be sold; (4) continued or sustained losses at a reporting unit; (5) a significant decline in our market capitalization as compared to our book value; or (6) the testing for recoverability of a significant asset group within the reporting unit.

We assign assets and liabilities from our corporate operating segment to our three reporting units to the extent that such assets or liabilities relate to the cash flows of the reporting unit and would be included in determining the reporting unit’s fair value.

In preparing our annual test for impairment as of October 1, 2016, we determined that our indicated fair value of total invested capital exceeded our total market capitalization. We believe one of the primary reconciling differences between the indicated fair value of total invested capital and our total market capitalization is due to a control premium. We believe the control premium represents the value a market participant could extract as savings and/or synergies by obtaining control.

As of October 1, 2016, we determined that the indicated fair value of our reporting units exceeded their carrying value by approximately 80% on average and, therefore, we noted no indicators of impairment at our reporting units.

Our operating segments, which also represent our reporting units, are comprised of several vertically integrated businesses. When an individual business within an integrated operating segment is divested, goodwill is allocated to that business based on its fair value relative to the fair value of its operating segment.

Residual risks:

- Future events could cause us to conclude that impairment indicators exist and that goodwill associated with acquired businesses is impaired.
- The valuation of identifiable goodwill requires significant estimates and judgment about future performance, cash flows and fair value. Our future results could be affected if these current estimates of future performance and fair value change. For example, a reduction in long-term growth assumptions could reduce the estimated fair value of the operating segments to below their carrying values, which could trigger an impairment charge. Similarly, an increase in our discount rate could trigger an impairment charge. Any resulting impairment charge could have a material adverse effect on our financial condition and results of operations.

Income Taxes

Our income tax expense, deferred taxes and liabilities for unrecognized tax benefits reflect management's best assessment of estimated future taxes to be paid. We are subject to U.S. federal income taxes and to the income taxes of numerous states and Puerto Rico. Significant judgments and estimates are required in determining the combined income tax expense.

Deferred income taxes arise from temporary differences between the financial reporting and income tax bases of assets (other than non-deductible goodwill) and liabilities, which will result in taxable or deductible amounts in the future. Deferred tax

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assets and liabilities are measured using the income tax rate in effect during the year in which the differences are expected to reverse.

We record net deferred tax assets to the extent we believe these assets will more likely than not be realized. In making this determination, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies and recent financial operations. The assumptions about future taxable income require the use of significant judgment and are consistent with the plans and estimates we are using to manage the underlying businesses. In the event we determine that we would be able to realize our deferred income tax assets in the future in excess of their net recorded amount, we will make an adjustment to the valuation allowance which would reduce our provision for income taxes.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax laws and regulations in a multitude of jurisdictions. Regarding the accounting for uncertainty in income taxes recognized in the financial statements, we record unrecognized tax benefits as liabilities in accordance with ASC 740 when it is not more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits. We recognize interest and penalties related to uncertain tax positions within the provision for income taxes in our consolidated statements of income. Accrued interest and penalties are included within other accrued liabilities, deferred income taxes and other long-term tax liabilities in our consolidated balance sheets. We adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available. Because of the complexity of some of these uncertainties, the ultimate resolution may result in a payment that is materially different from our current estimate of the unrecognized tax benefit liabilities. These differences will be reflected as increases or decreases to income tax expense in the period in which new information is available.

We consider the earnings from our Puerto Rican subsidiaries to be indefinitely invested outside the United States on the basis that the earnings from our Puerto Rican subsidiaries are reinvested in operating our Puerto Rican subsidiaries. We have not recorded a deferred tax liability related to the U.S. federal and state income taxes and Puerto Rican withholding taxes on approximately $48 million of undistributed earnings from our Puerto Rican subsidiaries indefinitely invested outside the United States. If we decide to repatriate the Puerto Rican earnings, we would need to adjust our income tax provision in the period we determined that the earnings will no longer be indefinitely invested outside the United States.

Residual risks:

- Income tax assets and liabilities established in purchase accounting for acquisitions are based on assumptions that could differ from the ultimate outcome of the tax matters. Such adjustments would be charged or credited to earnings, unless they meet certain remeasurement criteria and are allowed to be adjusted to goodwill.
- Changes in the estimated realizability of deferred tax assets could result in adjustments to our provision for income taxes.
- Valuation allowances for deferred tax assets and the realizability of net operating loss carryforwards for tax purposes are based on our judgment. If our judgments and estimates concerning valuation allowances and the realizability of net operating loss carryforwards are incorrect, our provision for income taxes would change.
- We are regularly under examination or administrative review by various taxing authorities. The Internal Revenue Code, state tax laws and income tax regulations are a complex set of rules that we must interpret and apply. Positions taken in tax years under examination or subsequent years are subject to challenge. Accordingly, we may have exposure for additional tax liabilities arising from these audits if any positions taken by us or by companies we have acquired are disallowed by the taxing authorities.
- We adjust our liabilities for uncertain tax positions when our judgment changes as a result of the evaluation of new information not previously available. Due to the complexity of some of these uncertainties, their ultimate resolution may result in payments that are materially different from our current estimates of the tax liabilities. These differences will be reflected as increases or decreases to our provision for income taxes in the period in which they are determined.

Defined Benefit Pension Plans

We currently have one qualified defined benefit pension plan, the BFI Retirement Plan (the Plan). The Plan covers certain employees in the United States, including some employees subject to collective bargaining agreements. The benefits of all current plan participants are frozen.

Our pension contributions are made in accordance with funding standards established by the Employee Retirement Income Security Act of 1974 and the Internal Revenue Code, as amended by the Pension Protection Act of 2006.

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The Plan's assets are invested as determined by our Employee Benefits Committee. As of December 31, 2016, the plan assets were invested in fixed income funds, equity funds and cash. The Employee Benefits Committee annually reviews and adjusts the plan's asset allocation as deemed necessary. As of December 31, 2016 and 2015, the Plan was overfunded by $6.2 million and underfunded by $5.4 million, respectively.

Residual risk:

- Changes in the plan's investment mix and performance of the equity and bond markets and fund managers could impact the amount of pension income or expense recorded, the funded status of the plan and the need for future cash contributions.

Assumptions. The benefit obligation and associated income or expense related to the Plan are determined based on assumptions concerning items such as discount rates, mortality rates, expected rates of return and average rates of compensation increases. Our assumptions are reviewed annually and adjusted as deemed necessary.

We determine the discount rate based on a model that matches the timing and amount of expected benefit payments to maturities of high quality bonds priced as of the Plan measurement date. Where that timing does not correspond to a published high-quality bond rate, our model uses an expected yield curve to determine an appropriate current discount rate. The yield on the bonds is used to derive a discount rate for the liability. If the discount rate were to increase by 1%, our benefit obligation would decrease by approximately $21 million. If the discount rate were to decrease by 1%, our benefit obligation would increase by approximately $25 million.

In developing our expected rate of return assumption, we evaluate long-term expected and historical returns on the Plan assets, giving consideration to our asset mix and the anticipated duration of the Plan obligations. The average rate of compensation increase reflects our expectations of average pay increases over the periods benefits are earned. There are no participants in the Plan that continue to earn service benefits.

Residual risks:

- Our assumed discount rate is sensitive to changes in market-based interest rates. A decrease in the discount rate will increase our related benefit plan obligation.
- Our annual pension expense would be impacted if the actual return on plan assets were to vary from the expected return.

New Accounting Standards

For a description of new accounting standards that may affect us, see Note 2, Summary of Significant Accounting Policies, to our consolidated financial statements in Item 8 of this Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Risk

Our major market risk exposure of our financial instruments is changing interest rates in the United States and fluctuations in LIBOR. We intend to manage interest rate risk through the use of a combination of fixed and floating rate debt. The carrying value of our variable rate debt approximates fair value because interest rates are variable and, accordingly, approximates current market rates for instruments with similar risk and maturities. The fair value of our debt is determined as of the balance sheet date and is subject to change. The table below provides information about certain of our market-sensitive financial instruments and constitutes a "forward-looking statement."

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	Expected Maturity Date							
	2017	2018	2019	2020	2021	Thereafter	Total	Fair Value as of December 31, 2016
Fixed rate debt:								
Amount outstanding (in millions)	$5.1	$705.7	$654.9	$855.1	$640.5	$3,709.9	$6,571.2	$7,206.4
Average interest rates	7.2 %	3.8 %	5.5 %	5.0 %	5.5 %	4.5 %	4.7 %	
Variable rate debt:								
Amount outstanding (in millions)	$—	$—	$175.0	$71.2	$197.0	$734.1	$1,177.3	$1,177.3
Average interest rates	— %	— %	0.2 %	1.0 %	0.6 %	0.9 %	0.8 %	

The fixed and variable rate debt amounts above exclude the remaining non-cash discounts, premiums and adjustments to fair value totaling $89.6 million. Additionally, during the second half of 2013, we entered into various interest rate swap agreements relative to our 4.750% fixed rate senior notes due in May 2023. The goal was to reduce overall borrowing costs and rebalance our debt portfolio's ratio of fixed to floating interest rates. These swap agreements, which were designated as fair value hedges, have a total notional value of $300.0 million as of December 31, 2016. Our interest rate swap contracts have been authorized pursuant to our policies and procedures. We do not use financial instruments for trading purposes and are not a party to any leveraged derivatives.

During 2016, we also entered into a number of interest rate lock agreements having an aggregate notional amount of $525.0 million with fixed interest rates ranging from 1.900% to 2.280% to manage exposure to fluctuations in interest rates in anticipation of a planned future issuance of senior notes. Upon the expected issuance of senior notes, we will terminate the interest rate locks and settle with our counterparties.

As of December 31, 2016, we had $1,177.3 million of floating rate debt and $300.0 million of floating interest rate swap contracts. If interest rates increased or decreased by 100 basis points on our variable rate debt, annualized interest expense and net cash payments for interest would increase or decrease by approximately $15 million. This analysis does not reflect the effect that interest rates would have on other items, such as new borrowings and the impact on the economy. See Note 9, Debt, of the notes to our consolidated financial statements in Item 8 of this Form 10-K for further information regarding how we manage interest rate risk.

Fuel Price Risk

Fuel costs represent a significant operating expense. When economically practical, we may enter into new fuel hedges, renew contracts, or engage in other strategies to mitigate market risk. Where appropriate, we have implemented a fuel recovery fee that is designed to recover our fuel costs. While we charge fuel recovery fees to a majority of our customers, we are unable to charge such fees to all customers.

At current consumption levels, we believe a twenty-cent per gallon change in the price of diesel fuel changes our fuel costs by approximately $25 million per year. Offsetting these changes in fuel expense would be changes in our fuel recovery fee charged to our customers. At current participation rates, we believe a twenty-cent per gallon change in the price of diesel fuel changes our fuel recovery fee by approximately $25 million per year.

Our operations also require the use of certain petrochemical-based products (such as liners at our landfills) whose costs may vary with the price of petrochemicals. An increase in the price of petrochemicals could increase the cost of those products, which would increase our operating and capital costs. We also are susceptible to increases in indirect fuel recovery fees from our vendors.

Our fuel costs were $317.0 million in 2016, or 3.4% of revenue, compared to $362.4 million in 2015, or 4.0% of revenue, and $500.0 million in 2014, or 5.7% of revenue.

For additional discussion and detail of our fuel hedges, see Note 16, Financial Instruments, to our consolidated financial statements in Item 8 of this Form 10-K.

Commodities Prices

We market recycled products such as old corrugated containers and old newsprint from our recycling centers. Market demand for recycled commodities causes volatility in commodity prices. At current volumes and mix of materials, we believe a $10 per

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ton change in the price of recycled commodities will change annual revenue and operating income by approximately $27 million and $18 million, respectively.
Revenue from sales of these products in 2016, 2015 and 2014 was $420.4 million, $372.0 million and $405.8 million, respectively.

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ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders of Republic Services, Inc.:

We have audited the accompanying consolidated balance sheets of Republic Services, Inc. as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2016. These financial statements are the responsibility of Republic Services, Inc.'s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Republic Services, Inc. at December 31, 2016 and 2015, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2016, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Republic Services, Inc.'s internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 16, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP
Phoenix, Arizona
February 16, 2017

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The Board of Directors and Stockholders of Republic Services, Inc.:

We have audited Republic Services, Inc.'s internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). Republic Services, Inc.'s management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Report of Management on Republic Services, Inc.'s Internal Control over Financial Reporting. Our responsibility is to express an opinion on the company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed 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. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, Republic Services, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Republic Services, Inc. as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2016 of Republic Services, Inc. and our report dated February 16, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP
Phoenix, Arizona
February 16, 2017

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REPUBLIC SERVICES, INC.
CONSOLIDATED BALANCE SHEETS
(in millions, except per share data)

	December 31, 2016	December 31, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	$67.8	$32.4
Accounts receivable, less allowance for doubtful accounts and other of $44.0 and $46.7, respectively	994.8	962.9
Prepaid expenses and other current assets	221.9	235.0
Total current assets	1,284.5	1,230.3
Restricted cash and marketable securities	90.5	100.3
Property and equipment, net	7,588.6	7,552.8
Goodwill	11,163.2	11,145.5
Other intangible assets, net	182.3	246.4
Other assets	320.5	260.6
Total assets	$20,629.6	$20,535.9
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$553.8	$577.4
Notes payable and current maturities of long-term debt	5.8	5.5
Deferred revenue	312.9	313.9
Accrued landfill and environmental costs, current portion	142.7	149.8
Accrued interest	71.8	71.6
Other accrued liabilities	725.0	716.6
Total current liabilities	1,812.0	1,834.8
Long-term debt, net of current maturities	7,653.1	7,527.4
Accrued landfill and environmental costs, net of current portion	1,684.8	1,677.9
Deferred income taxes and other long-term tax liabilities, net	1,210.2	1,131.8
Insurance reserves, net of current portion	274.6	278.1
Other long-term liabilities	301.2	309.3
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, par value $0.01 per share; 50 shares authorized; none issued	—	—
Common stock, par value $0.01 per share; 750 shares authorized; 348.2 and 346.0 issued including shares held in treasury, respectively	3.5	3.5
Additional paid-in capital	4,764.5	4,677.7
Retained earnings	3,324.0	3,138.3
Treasury stock, at cost (8.8 and 0.4 shares, respectively)	(414.9)	(14.9)
Accumulated other comprehensive income (loss), net of tax	14.2	(30.5)
Total Republic Services, Inc. stockholders' equity	7,691.3	7,774.1
Noncontrolling interests in consolidated subsidiary	2.4	2.5
Total stockholders' equity	7,693.7	7,776.6
Total liabilities and stockholders' equity	$20,629.6	$20,535.9

The accompanying notes are an integral part of these financial statements.

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Explanation of Responses:

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REPUBLIC SERVICES, INC.
CONSOLIDATED STATEMENTS OF INCOME
(in millions, except per share data)

	Years Ended December 31,		
	2016	2015	2014
Revenue	$9,387.7	$9,115.0	$8,803.3
Expenses:			
Cost of operations	5,764.0	5,518.6	5,643.1
Depreciation, amortization and depletion	991.1	970.6	906.9
Accretion	79.1	79.4	78.0
Selling, general and administrative	969.8	983.1	918.9
Withdrawal costs - multiemployer pension funds	5.6	4.5	1.5
(Gain) loss on disposition of assets and impairments, net	(0.1)	—	20.0
Restructuring charges	40.7	—	1.8
Operating income	1,537.5	1,558.8	1,233.1
Interest expense	(371.3)	(364.9)	(348.7)
Loss on extinguishment of debt	(196.2)	—	(1.4)
Interest income	0.9	0.8	0.6
Loss from unconsolidated equity method investment	(6.1)	—	—
Other income, net	1.1	1.2	1.7
Income before income taxes	965.9	1,195.9	885.3
Provision for income taxes	352.7	445.5	337.4
Net income	613.2	750.4	547.9
Net income attributable to noncontrolling interests in consolidated subsidiary	(0.6)	(0.5)	(0.3)
Net income attributable to Republic Services, Inc.	$612.6	$749.9	$547.6
Basic earnings per share attributable to Republic Services, Inc. stockholders:			
Basic earnings per share	$1.79	$2.14	$1.54
Weighted average common shares outstanding	343.0	350.0	356.7
Diluted earnings per share attributable to Republic Services, Inc. stockholders:			
Diluted earnings per share	$1.78	$2.13	$1.53
Weighted average common and common equivalent shares outstanding	344.4	351.4	358.1
Cash dividends per common share	$1.24	$1.16	$1.08

The accompanying notes are an integral part of these financial statements.

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REPUBLIC SERVICES, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in millions)

	Years Ended December 31,		
	2016	2015	2014
Net income	$613.2	$750.4	$547.9
Other comprehensive income (loss), net of tax			
Hedging activity:			
Settlements	(20.6)	(16.4)	0.3
Realized loss reclassified into earnings	26.5	18.7	1.2
Unrealized gain (loss)	32.4	(2.0)	(24.1)
Pension activity:			
Change in funded status of pension plan obligations	6.4	(1.9)	(9.3)
Other comprehensive income (loss), net of tax	44.7	(1.6)	(31.9)
Comprehensive income	657.9	748.8	516.0
Comprehensive income attributable to noncontrolling interests in consolidated subsidiary	(0.6)	(0.5)	(0.3)
Comprehensive income attributable to Republic Services, Inc.	$657.3	$748.3	$515.7

The accompanying notes are an integral part of these financial statements.

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REPUBLIC SERVICES, INC.
CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY
(in millions)

	Republic Services, Inc. Stockholders' Equity								
	Common Stock				Treasury Stock				
	Shares	Amount	Additional Paid-In Capital	Retained Earnings	Shares	Amount	Accumulated Other Comprehensive (Loss) Income, Net of Tax	Noncontrolling Interests In Consolidated Subsidiary	Total
Balance as of December 31, 2013	411.0	$ 4.1	$ 6,764.9	$ 2,632.7	(50.6)	$ (1,501.2)	$ 3.0	$ 2.6	$ 7,906.1
Net income	—	—	—	547.6	—	—	—	0.3	547.9
Change in the value of derivative instruments, net of tax of $15.1	—	—	—	—	—	—	(22.6)	—	(22.6)
Employee benefit plan liability adjustments, net of tax of $6.3	—	—	—	—	—	—	(9.3)	—	(9.3)
Cash dividends declared	—	—	—	(383.6)	—	—	—	—	(383.6)
Issuances of common stock	3.4	—	92.9	—	—	—	—	—	92.9
Stock-based compensation	—	—	19.1	(1.7)	—	—	—	—	17.4
Purchase of common stock for treasury	—	—	—	—	(11.1)	(400.6)	—	—	(400.6)
Distributions paid	—	—	—	—	—	—	—	(0.4)	(0.4)
Balance as of December 31, 2014	414.4	4.1	6,876.9	2,795.0	(61.7)	(1,901.8)	(28.9)	2.5	7,747.8
Net income	—	—	—	749.9	—	—	—	0.5	750.4
Change in the value of derivative instruments, net of tax of $0.6	—	—	—	—	—	—	0.3	—	0.3
Employee benefit plan liability adjustments, net of tax of $1.2	—	—	—	—	—	—	(1.9)	—	(1.9)
Cash dividends declared	—	—	—	(404.3)	—	—	—	—	(404.3)
Issuances of common stock	2.8	—	74.3	—	—	—	—	—	74.3
Stock-based compensation	—	—	21.2	(2.3)	—	—	—	—	18.9
Purchase of common stock for treasury	—	—	—	—	(9.9)	(408.4)	—	—	(408.4)
Shares returned to unissued status	(71.2)	(0.6)	(2,294.7)	—	71.2	2,295.3	—	—	—
Distributions paid	—	—	—	—	—	—	—	(0.5)	(0.5)
Balance as of December 31, 2015	346.0	3.5	4,677.7	3,138.3	(0.4)	(14.9)	(30.5)	2.5	7,776.6
Net income	—	—	—	612.6	—	—	—	0.6	613.2

Change in the value of derivative instruments, net of tax of $22.4	—	—	—	—	—	—	38.3	—	38.3
Employee benefit plan liability adjustments, net of tax of $4.1	—	—	—	—	—	—	6.4	—	6.4
Cash dividends declared	—	—	—	(423.8)	—	—	—	—	(423.8)
Issuances of common stock	2.2	—	60.5	—	—	—	—	—	60.5
Stock-based compensation	—	—	26.3	(3.1)	—	—	—	—	23.2
Purchase of common stock for treasury	—	—	—	—	(8.4)	(400.0)	—	—	(400.0)
Shares returned to unissued status	—	—	—		—	—	—	—	—
Distributions paid	—	—	—	—	—	—	—	(0.7)	(0.7)
Balance as of December 31, 2016	348.2	$ 3.5	$ 4,764.5	$ 3,324.0	(8.8)	$ (414.9)	$ 14.2	$ 2.4	$ 7,693.7

The accompanying notes are an integral part of these financial statements.

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REPUBLIC SERVICES, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)

	Years Ended December 31,		
	2016	2015	2014
Cash provided by operating activities:			
Net income	$613.2	$750.4	$547.9
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation, amortization, depletion and accretion	1,070.2	1,050.0	984.9
Non-cash interest expense	53.4	47.1	44.8
Restructuring related charges	40.7	—	1.8
Stock-based compensation	23.2	18.9	17.4
Deferred tax provision (benefit)	47.2	116.7	(9.0)
Provision for doubtful accounts, net of adjustments	20.4	22.7	22.6
Loss on extinguishment of debt	196.2	—	1.4
Gain on disposition of assets, net and asset impairments	(4.6)	(1.6)	(14.7)
Withdrawal liability - multiemployer pension funds	5.6	4.5	—
Environmental adjustments	2.0	(1.6)	233.2
Loss from unconsolidated equity method investment	6.1	—	—
Excess income tax benefit from stock-based compensation activity and other non-cash items	(20.6)	(10.7)	(4.9)
Change in assets and liabilities, net of effects from business acquisitions and divestitures:			
Accounts receivable	(52.3)	(15.7)	(54.3)
Prepaid expenses and other assets	(1.1)	(8.7)	(41.3)
Accounts payable	(9.8)	35.6	3.3
Restructuring expenditures	(32.5)	—	(1.3)
Capping, closure and post-closure expenditures	(77.4)	(88.4)	(54.6)
Remediation expenditures	(66.8)	(80.0)	(99.4)
Withdrawal expenditures - multiemployer pension funds	—	(153.5)	(15.9)
Other liabilities	34.7	(6.0)	(32.1)
Cash provided by operating activities	1,847.8	1,679.7	1,529.8
Cash used in investing activities:			
Purchases of property and equipment	(927.8)	(945.6)	(862.5)
Proceeds from sales of property and equipment	9.8	21.2	35.7
Cash used in business acquisitions and investments, net of cash acquired	(62.4)	(572.7)	(195.7)
Cash proceeds from business divestitures, net of cash divested	15.0	—	—
Change in restricted cash and marketable securities	5.2	15.3	70.8
Other	(1.0)	(1.0)	(8.1)
Cash used in investing activities	(961.2)	(1,482.8)	(959.8)
Cash used in financing activities:			
Proceeds from notes payable and long-term debt	3,911.4	918.4	1,383.3
Proceeds from issuance of senior notes, net of discount	498.9	497.9	—
Payments of notes payable and long-term debt	(4,307.1)	(915.7)	(1,398.4)
Premiums paid on extinguishment of debt	(176.9)	—	—
Fees paid to retire and issue senior notes and retire certain hedging relationships	(9.5)	(3.2)	(4.0)
Issuances of common stock	49.7	65.9	88.6
Excess income tax benefit from stock-based compensation activity	10.8	8.5	4.3
Purchases of common stock for treasury	(403.8)	(404.7)	(400.6)

Cash dividends paid	(418.9)	(399.3)	(378.6)
Distributions paid to noncontrolling interests in consolidated subsidiary	(0.7)	(0.5)	(0.4)
Other	(5.1)	(7.0)	(2.3)
Cash used in financing activities	(851.2)	(239.7)	(708.1)
Increase (decrease) in cash and cash equivalents	35.4	(42.8)	(138.1)
Cash and cash equivalents at beginning of year	32.4	75.2	213.3
Cash and cash equivalents at end of year	$67.8	$32.4	$75.2

The accompanying notes are an integral part of these financial statements.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. BASIS OF PRESENTATION

Republic Services, Inc., a Delaware corporation, and its consolidated subsidiaries (also referred to collectively as Republic, the Company, we, us, or our), is the second largest provider of non-hazardous solid waste collection, transfer, recycling, disposal and energy services in the United States, as measured by revenue. During 2016, we managed and evaluated our operations through two field groups, Group 1 and Group 2, that we have identified as our reportable segments.

The consolidated financial statements include the accounts of Republic and its wholly owned and majority owned subsidiaries in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP). We account for investments in entities in which we do not have a controlling financial interest under either the equity method or cost method of accounting, as appropriate. All material intercompany accounts and transactions have been eliminated in consolidation.

For comparative purposes, certain prior year amounts have been reclassified to conform to the current year presentation. All dollar amounts in tabular presentations are in millions, except per share amounts and unless otherwise noted.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Management's Estimates and Assumptions

In preparing our financial statements, we make numerous estimates and assumptions that affect the amounts reported in these financial statements and accompanying notes. We must make these estimates and assumptions because certain information we use is dependent on future events, cannot be calculated with a high degree of precision from data available or simply cannot be readily calculated based on generally accepted methodologies. In preparing our financial statements, the more critical and subjective areas that deal with the greatest amount of uncertainty relate to our accounting for our long-lived assets, including recoverability, landfill development costs, and final capping, closure and post-closure costs; our valuation allowances for accounts receivable and deferred tax assets; our liabilities for potential litigation, claims and assessments; our liabilities for environmental remediation, multiemployer pension plans, employee benefit plans, deferred taxes, uncertain tax positions, and insurance reserves; and our estimates of the fair values of assets acquired and liabilities assumed in any acquisition. Each of these items is discussed in more detail elsewhere in these Notes to Consolidated Financial Statements. Our actual results may differ significantly from our estimates.

Cash and Cash Equivalents

We consider liquid investments with a maturity at the date of acquisition of three months or less to be cash equivalents.

We may have net book credit balances in our primary disbursement accounts at the end of a reporting period. We classify such credit balances as accounts payable in our consolidated balance sheets as checks presented for payment to these accounts are not payable by our banks under overdraft arrangements, and, therefore, do not represent short-term borrowings. As of December 31, 2016 and 2015, there were net book credit balances of $67.9 million and $84.4 million, respectively, in our primary disbursement accounts that were classified as accounts payable on our consolidated balance sheets.

Concentration of Credit Risk

Financial instruments that potentially subject us to concentrations of credit risk consist of cash and cash equivalents, trade accounts receivable and derivative instruments. We place our cash and cash equivalents with high quality financial institutions. Such balances may be in excess of FDIC insured limits. To manage the related credit exposure, we continually monitor the credit worthiness of the financial institutions where we have deposits. Concentrations of credit risk with respect to trade accounts receivable are limited due to the wide variety of customers and markets in which we provide services, as well as the dispersion of our operations across many geographic areas. We provide services to small-container commercial, large-container industrial, municipal and residential customers in the United States and Puerto Rico. We perform ongoing credit evaluations of our customers, but generally do not require collateral to support customer receivables. We establish an allowance for doubtful accounts based on various factors including the credit risk of specific customers, age of receivables outstanding, historical trends, economic conditions and other information.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Accounts Receivable, Net

Accounts receivable represent receivables from customers for collection, transfer, recycling, disposal, energy services and other services. Our receivables are recorded when billed or when the related revenue is earned, if earlier, and represent claims against third parties that will be settled in cash. The carrying value of our receivables, net of the allowance for doubtful accounts and customer credits, represents their estimated net realizable value. Provisions for doubtful accounts are evaluated on a monthly basis and are recorded based on our historical collection experience, the age of the receivables, specific customer information and economic conditions. We also review outstanding balances on an account-specific basis. In general, reserves are provided for accounts receivable in excess of 90 days outstanding. Past due receivable balances are written-off when our collection efforts have been unsuccessful in collecting amounts due.

The following table reflects the activity in our allowance for doubtful accounts for the years ended December 31:

	2016	2015	2014
Balance at beginning of year	$46.7	$38.9	$38.3
Additions charged to expense	20.4	22.7	22.6
Accounts written-off	(23.1)	(14.9)	(22.0)
Balance at end of year	$44.0	$46.7	$38.9

Restricted Cash and Marketable Securities

As of December 31, 2016, we had $90.5 million of restricted cash and marketable securities of which $62.6 million supports our insurance programs for workers' compensation, commercial general liability, and commercial auto liability. Additionally, we obtain funds through the issuance of tax-exempt bonds for the purpose of financing qualifying expenditures at our landfills, transfer stations, collection and recycling centers. The funds are deposited directly into trust accounts by the bonding authorities at the time of issuance. As the use of these funds is contractually restricted, and we do not have the ability to use these funds for general operating purposes, they are classified as restricted cash and marketable securities in our consolidated balance sheets.

In the normal course of business, we may be required to provide financial assurance to governmental agencies and a variety of other entities in connection with municipal residential collection contracts, closure or post-closure of landfills, environmental remediation, environmental permits, and business licenses and permits as a financial guarantee of our performance. At several of our landfills, we satisfy financial assurance requirements by depositing cash into restricted trust funds or escrow accounts.

Property and Equipment

We record property and equipment at cost. Expenditures for major additions and improvements to facilities are capitalized, while maintenance and repairs are charged to expense as incurred. When property is retired or otherwise disposed, the related cost and accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in the consolidated statements of income.

We revise the estimated useful lives of property and equipment acquired through business acquisitions to conform with our policies. We depreciate assets over their estimated useful lives using the straight-line method. We assume no salvage value for our depreciable property and equipment. The estimated useful lives of our property and equipment are as follows:

Buildings and improvements	7 - 40 years
Vehicles	5 - 12 years
Landfill equipment	5 - 7 years
Other equipment	3 - 20 years
Furniture and fixtures	10 years

Landfill development costs also are included in property and equipment. Landfill development costs include direct costs incurred to obtain landfill permits and direct costs incurred to acquire, construct and develop sites, as well as final capping, closure and post-closure assets. These costs are amortized or depleted based on consumed airspace. All indirect landfill development costs are expensed as incurred. For additional information, see Note 8, Landfill and Environmental Costs.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Capitalized Interest
We capitalize interest on landfill cell construction and other construction or development projects if they meet the following criteria:
- Total construction costs are $50,000 or greater;
- The construction phase is one month or longer; and
- The assets have a useful life of one year or longer.

Interest is capitalized on qualified assets while they undergo activities to ready them for their intended use. Capitalization of interest ceases once an asset is placed into service or if construction activity is suspended for more than a brief period of time. Our interest capitalization rate is based on our weighted average cost of indebtedness. Interest capitalized was $6.2 million, $6.8 million and $6.4 million for the years ended December 31, 2016, 2015 and 2014, respectively.
Fair Value of Financial Instruments
Our financial instruments include cash and cash equivalents, restricted cash and marketable securities, fuel, commodity and interest rate hedges, long-term debt, and assets in our defined benefit pension plan. Accounting standards include disclosure requirements around fair values used for certain financial instruments and establish a fair value hierarchy. The hierarchy prioritizes valuation inputs into three levels based on the extent to which inputs used in measuring fair value are observable in the market. Each fair value measurement is reported in one of three levels:
- Level 1 – inputs are based upon unadjusted quoted prices for identical instruments traded in active markets.
- Level 2 – inputs are based upon quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3 – inputs are generally unobservable and typically reflect management’s estimates of assumptions that market participants would use in pricing the asset or liability. The fair values are therefore determined using model-based techniques that include option pricing models, discounted cash flow models, and similar techniques.

See Note 11, Employee Benefit Plans, and Note 16, Financial Instruments, for fair value disclosures related to our defined benefit pension plan investments and financial instruments, respectively.
Investments Other Than Derivatives
Investments other than derivatives primarily include money market funds, common stock, mutual funds, real estate investment trusts, U.S. government and agency securities, municipal and corporate bonds, and foreign government bonds. In general, and where applicable, we use quoted prices in active markets for identical assets or liabilities to determine fair value. This pricing methodology applies to our Level 1 investments, such as money market funds, common stock and certain mutual funds. If quoted prices in active markets for identical assets or liabilities are not available to determine fair value, then we use quoted prices for similar assets and liabilities or inputs other than the quoted prices that are observable either directly or indirectly. These investments are included in Level 2 and consist primarily of corporate bonds, foreign government bonds, real estate investment trusts and certain agency securities.
Derivative Financial Instruments
We use derivative financial instruments to manage our risk associated with changing interest rates and changing prices for commodities we frequently purchase or sell by creating offsetting market exposures. We use interest rate swap agreements to manage risk associated with fluctuations in interest rates. We have entered into multiple agreements designated as cash flow hedges to mitigate some of our exposure to changes in diesel fuel prices and prices of certain recycling commodities.
All derivatives are measured at fair value and recognized in the balance sheet as assets or liabilities, as appropriate. For derivatives designated as cash flow hedges, changes in fair value of the effective portions of derivative instruments are reported in stockholders’ equity as components of other comprehensive income until the forecasted transaction occurs or is not probable of occurring. When the forecasted transaction occurs or is not probable of occurring, the realized net gain or loss is then recognized in the consolidated statements of income. Changes in fair

value of the ineffective portions of derivative instruments are recognized currently in earnings.
The fair values of our diesel fuel and recycling commodity hedges are determined using standard valuation models with assumptions about prices and other relevant information based on those observed in the underlying markets (Level 2 in the fair

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

value hierarchy). The estimated fair values of derivatives used to hedge risks fluctuate over time and should be viewed in relation to the underlying hedged transactions.

Landfill and Environmental Costs

Life Cycle Accounting

We use life-cycle accounting and the units-of-consumption method to recognize certain landfill costs over the life of the site. In life cycle accounting, all current and future capitalized costs to acquire and construct a site are calculated, and charged to expense based on the consumption of cubic yards of available airspace.

Costs and airspace estimates are developed at least annually by engineers. We use these estimates to adjust the rates we use to deplete capitalized costs. Changes in these estimates primarily relate to changes in available airspace, inflation and applicable regulations. Changes in available airspace include, but are not limited to, changes due to the addition of airspace lying in probable expansion areas, airspace consumed and changes in engineering estimates.

Probable Expansion Airspace

We classify landfill disposal capacity as either permitted (having received the final permit from the applicable regulatory agency) or as probable expansion airspace. Before airspace included in an expansion area is determined to be probable expansion airspace and, therefore, is included in our calculation of total available disposal capacity, all of the following criteria must be met:

- We own the land associated with the expansion airspace or control it pursuant to an option agreement;
- We are committed to supporting the expansion project financially and with appropriate resources;
- There are no identified fatal flaws or impediments associated with the project, including political impediments;
- Progress is being made on the project;
- The expansion is attainable within a reasonable time frame; and
- We believe it is likely the expansion permit will be received.

Upon meeting our expansion criteria, the rates used at each applicable landfill to expense costs to acquire, construct, cap, close and maintain a site during the post-closure period are adjusted to include both the probable expansion airspace and the additional costs to be capitalized or accrued associated with that expansion airspace.

We have identified three steps that landfills generally follow to obtain expansion permits. These steps are as follows:

- Obtaining approval from local authorities;
- Submitting a permit application to state authorities; and
- Obtaining permit approval from state authorities.

We continually monitor our progress toward obtaining permits for each of our sites with probable airspace. If we determine that a landfill expansion area no longer meets our criteria, the probable expansion airspace is removed from the landfill’s total available capacity and the rates used at the landfill to deplete costs to acquire, construct, cap, close and maintain a site during the post-closure period are adjusted accordingly. In addition, any amounts capitalized for the probable expansion airspace are charged to expense in the period in which it is determined that the criteria are no longer met.

Capitalized Landfill Costs

Capitalized landfill costs include expenditures for land, permitting, cell construction and environmental structures. Capitalized permitting and cell construction costs are limited to direct costs relating to these activities, including legal, engineering and construction costs associated with excavation, natural and synthetic liners, construction of leachate collection systems, installation of methane gas collection and monitoring systems, installation of groundwater monitoring wells and other costs associated with the development of the site. Interest is capitalized on landfill construction projects while the assets are undergoing activities to ready them for their intended use. Capitalized landfill costs also include final capping, closure and post-closure assets and are depleted as airspace is consumed using the units-of-consumption method.

Costs related to acquiring land, excluding the estimated residual value of unpermitted, non-buffer land, and costs related to permitting and cell construction are depleted as airspace is consumed using the units-of-consumption method.

Capitalized landfill costs also may include an allocation of purchase price paid for landfills. For landfills purchased as part of a group of assets, the purchase price assigned to the landfill is determined based on the estimated fair value of the landfill. If the landfill meets our expansion criteria, the purchase price is further allocated between permitted airspace and expansion airspace

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

based on the respective ratios to total available airspace. Landfill purchase price is amortized using the units-of-consumption method over the total available airspace, including probable expansion airspace, where appropriate.

Final Capping, Closure and Post-Closure Costs

Final capping

We have future obligations for final capping, closure and post-closure costs with respect to the landfills we own or operate as set forth in applicable landfill permits. The permit requirements are based on the Subtitle C and Subtitle D regulations of the Resource Conservation and Recovery Act, as implemented and applied on a state-by-state basis. We define final capping as activities required to permanently cover a portion of a landfill that has been completely filled with waste. Final capping typically includes installing flexible membrane and geosynthetic clay liners, drainage and compact soil layers, and topsoil, and is constructed over an area of the landfill where total airspace capacity has been consumed and waste disposal operations have ceased. These final capping activities occur in phases as needed throughout the operating life of a landfill as specific areas are filled to capacity and the final elevation for that specific area is reached in accordance with the provisions of the operating permit. We consider final capping events to be discrete activities that are recognized as asset retirement obligations separately from other closure and post-closure obligations. As a result, we use a separate rate per ton for recognizing the principal amount of the liability and related asset associated with each capping event. We amortize the asset recorded pursuant to this approach as waste volume related to the capacity covered by the capping event is placed into the landfill based on the consumption of cubic yards of available airspace.

Closure and post-closure

Closure and post-closure activities occur after the entire landfill ceases to accept waste and closes. These activities involve methane gas control, leachate management and groundwater monitoring, surface water monitoring and control, and other operational and maintenance activities that occur after the site ceases to accept waste. Obligations associated with monitoring and controlling methane gas migration and emissions are set forth in applicable landfill permits and these requirements are based on the provisions of the Clean Air Act. The post-closure period generally runs for 30 years after final site closure for municipal solid waste landfills and a shorter period for construction and demolition landfills and inert landfills. We recognize asset retirement obligations and the related amortization expense for closure and post-closure (excluding obligations for final capping) using the units-of-consumption method over the total remaining capacity of the landfill, including probable expansion airspace.

Estimated future expenditures

Estimates of future expenditures for final capping, closure and post-closure are developed at least annually by engineers. Management reviews these estimates and our operating and accounting personnel use them to adjust the rates used to capitalize and amortize these costs. These estimates involve projections of costs that will be incurred during the remaining life of the landfill for final capping activities, after the landfill ceases operations and during the legally required post-closure monitoring period. As of December 31, 2016, we had post-closure responsibility for 124 closed landfills.

Fair value measurements

In general, we engage third parties to perform most of our final capping, closure and post-closure activities. Accordingly, the fair value of these activities is based on quoted and actual prices paid for similar work. We also perform some of our final capping, closure and post-closure activities using internal resources. Where we expect internal resources to be used to fulfill an asset retirement obligation, we add a profit margin to the estimated cost of such services to better reflect their fair value. If we perform these services internally, the added profit margin is recognized as a component of operating income in the period the obligation is settled.

Our estimates of costs to discharge asset retirement obligations for landfills are developed in today’s dollars. These costs are inflated each year to reflect a normal escalation of prices up to the year they are expected to be paid. We use a 1.8% inflation rate, which is based on the ten-year historical moving average increase of the U.S. Consumer Price Index, and is the rate used by most waste industry participants.

These estimated costs are then discounted to their present values using a credit-adjusted, risk-free interest rate. The credit-adjusted, risk-free interest rate we used for liability recognition was 3.75% and 4.75% for the years ended December 31, 2016 and 2015, respectively, which was based on the estimated all-in yield we would have needed to offer to sell thirty-year debt in the public market. However, as part of the initial application of purchase accounting, our capping, closure and post-closure obligations acquired from Allied Waste Industries, Inc. (Allied) were recorded at their fair values as of the acquisition date, and were discounted using a rate of 9.75% due to market conditions at the time of the acquisition.

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Changes in assets retirement obligations

A liability for an asset retirement obligation is recognized in the period in which it is incurred and is initially measured at fair value. The offset to the liability is capitalized as part of the carrying amount of the related long-lived asset. Changes in the liabilities due to revisions to estimated future cash flows are recognized by increasing or decreasing the liabilities with the offsets adjusting the carrying amounts of the related long-lived assets, and may also require immediate adjustments to amortization expense in the consolidated statement of income. Upward revisions in the amount of undiscounted estimated cash flows used to record a liability are discounted using the credit-adjusted, risk-free interest rate in effect at the time of the change. Downward revisions in the amount of undiscounted estimated cash flows used to record a liability are discounted using the credit-adjusted, risk-free rate that existed when the original liability was recognized.

Changes in asset retirement obligations due to the passage of time are measured by recognizing accretion expense in a manner that results in a constant effective interest rate being applied to the average carrying amount of the liability. The effective interest rate used to calculate accretion expense is our credit-adjusted, risk-free interest rate in effect at the time the liabilities were recorded.

We review our calculations with respect to landfill asset retirement obligations at least annually. If there is a significant change in the facts and circumstances related to a landfill during the year, we will review our calculations for the landfill as soon as practical after the change has occurred.

Landfill operating expenses

Costs associated with daily maintenance activities and environmental compliance during the operating life of the landfill are expensed as incurred. These costs include, among other things, leachate treatment and disposal, methane gas and groundwater monitoring and systems maintenance, interim cap maintenance, costs associated with the application of daily cover materials, and the legal and administrative costs of ongoing environmental compliance.

Environmental Liabilities

We are subject to an array of laws and regulations relating to the protection of the environment, and we remediate sites in the ordinary course of our business. Under current laws and regulations, we may be responsible for environmental remediation at sites that we either own or operate, including sites that we have acquired, or sites where we have (or a company that we have acquired has) delivered waste. Our environmental remediation liabilities primarily include costs associated with remediating groundwater, surface water and soil contamination, as well as controlling and containing methane gas migration and the related legal costs. To estimate our ultimate liability at these sites, we evaluate several factors, including the nature and extent of contamination at each identified site, the required remediation methods, timing of expenditures, the apportionment of responsibility among the potentially responsible parties and the financial viability of those parties. We accrue for costs associated with environmental remediation obligations when such costs are probable and reasonably estimable in accordance with accounting for loss contingencies. We periodically review the status of all environmental matters and update our estimates of the likelihood of and future expenditures for remediation as necessary. Changes in the liabilities resulting from these reviews are recognized currently in earnings in the period in which the adjustment is known. Adjustments to estimates are reasonably possible in the near term and may result in changes to recorded amounts. With the exception of those obligations assumed in the acquisition of Allied, environmental obligations are recorded on an undiscounted basis. Environmental obligations assumed in the acquisition of Allied, which were initially estimated on a discounted basis, are accreted to full value over time through charges to interest expense. Adjustments arising from changes in amounts and timing of estimated costs and settlements may result in increases or decreases in these obligations and are calculated on a discounted basis as they were initially estimated on a discounted basis. These adjustments are charged to operating income when they are known. We perform a comprehensive review of our environmental obligations annually and also review changes in facts and circumstances associated with these obligations at least quarterly. We have not reduced the liabilities we have recorded for recoveries from other potentially responsible parties or insurance companies.

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Business Combinations
We acquire businesses in the waste industry, including non-hazardous waste collection, transfer, recycling, disposal and energy services operations, as part of our growth strategy. Businesses are included in the consolidated financial statements from the date of acquisition.
We recognize, separately from goodwill, the identifiable assets acquired and liabilities assumed at their estimated acquisition-date fair values. We measure and recognize goodwill as of the acquisition date as the excess of: (1) the aggregate of the fair value of consideration transferred, the fair value of any noncontrolling interest in the acquiree (if any) and the acquisition date fair value of our previously held equity interest in the acquiree (if any), over (2) the fair value of assets acquired and liabilities assumed. If information about facts and circumstances existing as of the acquisition date is incomplete by the end of the reporting period in which a business combination occurs, we report provisional amounts for the items for which the accounting is incomplete. The measurement or allocation period ends once we receive the information we are seeking; however, this period will generally not exceed one year from the acquisition date. Any material adjustments recognized during the measurement period will be reflected retrospectively in the consolidated financial statements of the subsequent period. We recognize third-party transaction related costs as expense currently in the period in which they are incurred.
Goodwill and Other Intangible Assets
We have historically evaluated goodwill for impairment annually as of December 31, or when an indicator of impairment exists. During 2015 we changed the date of our annual goodwill impairment assessment for our reporting units to October 1st. This voluntary change in the annual goodwill testing date is a change in accounting principle, which we believe is preferable as it better aligns the timing of the assessment with our planning and forecasting process and also provides additional time to complete our annual assessment in advance of our year-end reporting. This change in assessment date was applied prospectively and did not delay, accelerate or avoid a potential impairment charge.
In January 2016, we realigned our field support functions by combining our three regions into two field groups, consolidating our areas and streamlining select operational support roles at our Phoenix headquarters. Following our restructuring, our senior management now evaluates, oversees and manages the financial performance of our operations through two field groups, referred to as Group 1 and Group 2. We determined that our 2016 reportable segments are Group 1 and Group 2 and that our 2016 reporting units are our reportable segments. We allocated goodwill to the new reporting units and considered the implications of our restructuring on our reporting units used to measure for goodwill impairment, and we noted no indicators of goodwill impairment.
We test goodwill for impairment using a two-step process. The first step is a screen for potential impairment, while the second step measures the amount of the impairment, if any. The first step compares the fair value of a reporting unit with its carrying amount, including goodwill.
During 2016, we managed and evaluated our operations through the two noted field groups: Group 1 and Group 2. In determining fair value, we primarily use discounted future cash flows and operating results based on a comparative multiple of earnings or revenues.
Significant estimates used in our fair value calculation using discounted future cash flows include: (1) estimates of future revenue and expense growth by reporting unit, which we estimate to range from 3% to 5% annually; (2) future estimated effective tax rates, which we estimate to be 40%; (3) future estimated capital expenditures and future required investments in working capital; (4) estimated discount rates, which we estimate to range between 7% and 8%; and (5) the future terminal value of the reporting unit, which is based on its ability to exist into perpetuity.
Significant estimates used in the fair value calculation utilizing market value multiples include: (a) estimated future growth potential of the reporting unit; (b) estimated multiples of revenue or earnings a willing buyer is likely to pay; and (c) the estimated control premium a willing buyer is likely to pay.
In addition, we evaluate a reporting unit for impairment if events or circumstances change between annual tests, indicating a possible impairment. Examples of such events or circumstances include: (1) a significant adverse change in legal factors or in the business climate; (2) an adverse action or assessment by a regulator; (3) a more likely than

not expectation that a reporting unit or a significant portion thereof will be sold; (4) continued or sustained losses at a reporting unit; (5) a significant decline in our market capitalization as compared to our book value; or (6) the testing for recoverability of a significant asset group within the reporting unit.

We assign assets and liabilities from our corporate operating segment to our two reporting units to the extent that such assets or liabilities relate to the cash flows of the reporting unit and would be included in determining the reporting unit’s fair value.

In preparing our annual test for impairment as of October 1, 2016, we determined that our indicated fair value of total invested capital exceeded our total market capitalization. We believe one of the primary reconciling differences between the indicated

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fair value of total invested capital and our total market capitalization is due to a control premium. We believe the control premium represents the value a market participant could extract as savings or synergies by obtaining control. As of October 1, 2016, we determined that the indicated fair value of our reporting units exceeded their carrying value by approximately 80% on average and, therefore, we noted no indicators of impairment at our reporting units.

Our operating segments, which also represent our reporting units, are comprised of several vertically integrated businesses. When an individual business within an integrated operating segment is divested, goodwill is allocated to that business based on its fair value relative to the fair value of its operating segment.

Other intangible assets include values assigned to customer relationships, franchise agreements, other municipal agreements, non-compete agreements and trade names and are amortized generally on a straight-line basis over periods ranging from 1 to 20 years.

Asset Impairments

We continually consider whether events or changes in circumstances have occurred that may warrant revision of the estimated useful lives of our long-lived assets (other than goodwill) or whether the remaining balances of those assets should be evaluated for possible impairment. Long-lived assets include, for example, capitalized landfill costs, other property and equipment, and identifiable intangible assets. Events or changes in circumstances that may indicate that an asset may be impaired include the following:

- A significant decrease in the market price of an asset or asset group;
- A significant adverse change in the extent or manner in which an asset or asset group is being used or in its physical condition;
- A significant adverse change in legal factors or in the business climate that could affect the value of an asset or asset group, including an adverse action or assessment by a regulator;
- An accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset;
- A current period operating or cash flow loss combined with a history of operating or cash flow losses or a projection or forecast that demonstrates continuing losses associated with the use of a long-lived asset or asset group;
- A current expectation that, more likely than not, a long-lived asset or asset group will be sold or otherwise disposed of significantly before the end of its previously estimated useful life; or
- An impairment of goodwill at a reporting unit.

There are certain indicators listed above that require significant judgment and understanding of the waste industry when applied to landfill development or expansion. For example, a regulator may initially deny a landfill expansion permit application though the expansion permit is ultimately granted. In addition, management may periodically divert waste from one landfill to another to conserve remaining permitted landfill airspace. Therefore, certain events could occur in the ordinary course of business and not necessarily be considered indicators of impairment due to the unique nature of the waste industry.

If indicators of impairment exist, the asset or asset group is reviewed to determine whether its recoverability is impaired. We assess the recoverability of the asset or asset group by comparing its carrying value to an estimate (or estimates) of its undiscounted future cash flows over its remaining life. If the estimated undiscounted cash flows are not sufficient to recover the carrying value of the asset or asset group, we measure an impairment loss as the amount by which the carrying amount of the asset exceeds its fair value. The loss is recorded in the consolidated statement of income in the period in which such impairment is identified. Estimating future cash flows requires significant judgment, and our projections of future cash flows and remaining useful lives may vary materially from actual results.

Insurance Reserves

Our insurance programs for workers' compensation, commercial general and auto liability, environmental and remediation liability, and employee-related health care benefits are subject to high deductible insurance policies. Accruals for insurance reserves are based on claims filed and estimates of claims incurred but not reported. We consider our past claims experience, including both frequency and settlement amount of claims, in determining these estimates. It is possible that recorded reserves may not be adequate to cover the future payment of claims. Adjustments, if any, to estimates recorded resulting from ultimate claim payments will be reflected in the consolidated statements of income in the periods in which such adjustments are known. In general, our insurance reserves are recorded on an undiscounted basis; however, the insurance liabilities we acquired in the

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Allied acquisition have been recorded at estimated fair value, and therefore have been discounted to present value based on our estimate of the timing of the related cash flows.

Costs Associated with Exit Activities

We record costs associated with exit activities such as employee termination benefits that represent a one-time benefit when management approves and commits to a plan of termination, and communicates the termination arrangement to the employees, or over the future service period, if any. Other costs associated with exit activities may include contract termination costs, including costs related to leased facilities to be abandoned or subleased, and facility and employee relocation costs.

Contingent Liabilities

We are subject to various legal proceedings, claims and regulatory matters, the outcomes of which are subject to significant uncertainty. In general, we determine whether to disclose or accrue for loss contingencies based on an assessment of whether the risk of loss is remote, reasonably possible or probable, and whether it can be reasonably estimated. We assess our potential liability relating to litigation and regulatory matters based on information available to us. Management develops its assessment based on an analysis of possible outcomes under various strategies. We accrue for loss contingencies when such amounts are probable and reasonably estimable. If a contingent liability is only reasonably possible, we disclose the potential range of the loss, if estimable. Contingent liabilities recorded in purchase accounting are recorded at their fair values. These fair values may be different from the values we would have otherwise recorded, had the contingent liability not been assumed as part of an acquisition of a business.

Accumulated Other Comprehensive Income

Accumulated other comprehensive income is a component of stockholders' equity and includes the effective portion of the net changes in fair value of our cash flow hedges that consist of prices for diesel fuel and recycled commodities, net of tax, settlement and amortization of our interest rate locks and certain adjustments to liabilities associated with our employee defined benefit pension plan liabilities, net of tax.

Revenue Recognition

We generally provide services under contracts with municipalities or individual customers. Municipal and small-container commercial contracts are generally long-term and often have renewal options. Advance billings are recorded as deferred revenue, and revenue is recognized over the period services are provided.

We recognize revenue when all four of the following criteria are met:

- Persuasive evidence of an arrangement exists such as a service agreement with a municipality, a hauling customer or a disposal customer;
- Services have been performed such as the collection and hauling of waste or the disposal of waste at a disposal facility we own or operate;
- The price of the services provided to the customer is fixed or determinable; and
- Collectibility is reasonably assured.

Income Taxes

We account for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, we record deferred income taxes to reflect the effects of temporary differences between the carrying amounts of assets and liabilities and their tax bases using enacted tax rates that we expect to be in effect when the taxes are actually paid or recovered. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

We record net deferred tax assets to the extent we believe these assets will more likely than not be realized. In making these determinations, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, tax planning strategies, projected future taxable income and recent financial operating results. The weight given to the positive and negative evidence is commensurate with the extent such evidence can be objectively verified. If we determine that we would be able to realize a deferred income tax asset in the future in excess of its net recorded amount, we would make an adjustment to the valuation allowance, which would reduce the provision for income taxes.

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We record uncertain tax positions in accordance with ASC 740. A tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits. Income tax positions must meet a more-likely-than-not recognition threshold at the effective date to be recognized.

We recognize interest and penalties related to uncertain tax positions in the provision for income taxes in the accompanying consolidated statements of income. Accrued interest and penalties are included in other accrued liabilities, deferred income taxes and other long-term tax liabilities in the consolidated balance sheets.

We use the flow-through method to account for investment tax credits earned on eligible development expenditures. Under this method, the investment tax credits are recognized as a reduction to income tax expense in the year they are earned.

Defined Benefit Pension Plan

We currently have one qualified defined benefit pension plan, the BFI Retirement Plan (the Plan). The Plan covers certain current and former employees of Allied in the United States, including some employees subject to collective bargaining agreements. The Plan's benefit formula is based on a percentage of compensation as defined in the Plan document. However, the benefits of all current plan participants are frozen.

Our pension contributions are made in accordance with funding standards established by the Employee Retirement Income Security Act of 1974 and the Internal Revenue Code, as amended by the Pension Protection Act of 2006. The Plan's assets have been invested as determined by our Employee Benefits Committee. The Employee Benefits Committee reviews and adjusts the Plan's asset allocation as deemed necessary.

The benefit obligation and associated income or expense related to the Plan are determined using annually established assumptions for discount rates, expected rates of return, mortality rates and average rates for compensation increases. We determine the discount rate based on a model that matches the timing and amount of expected benefit payments to maturities of high quality bonds priced as of the pension plan measurement date. When that timing does not correspond to a published high-quality bond rate, our model uses an expected yield curve to determine an appropriate current discount rate. The yields on the bonds are used to derive a discount rate for the liability. In developing our expected rate of return assumption, we evaluate long-term expected and historical actual returns on the Plan assets, giving consideration to the asset mix and the anticipated duration of our Plan obligations. The average rate of compensation increase reflects our expectations of average pay increases over the period benefits are earned. Our assumptions are reviewed annually and adjusted as deemed necessary.

Equity-Based Compensation Plans

We recognize equity-based compensation expense on the estimated grant-date fair value of stock options and restricted stock units issued as compensation to employees over the requisite service periods for each separately vesting portion of the award, or to the employee's retirement-eligible date, if earlier.

The fair value of each option on the date of grant is estimated using a lattice binomial option-pricing model based on certain valuation assumptions. Expected volatility is based on the weighted average of the most recent one year volatility and a historical rolling average volatility of our stock over the expected life of the option. The risk-free interest rates are based on the published U.S. Treasury yield curve in effect at the time of the grant for instruments with a similar life. The dividend yield reflects our dividend yield at the date of grant. The expected life represents the period that the stock options are expected to be outstanding, taking into consideration the contractual terms of the options and our employees' historical exercise and post-vesting employment termination behavior, weighted to reflect the job level demographic profile of the employees receiving the option grants. The estimated forfeiture rate used to record compensation expense is based on historical forfeitures and is adjusted periodically based on actual results.

Compensation expense associated with our performance shares that vest based on future performance targets is measured using the fair value of our common stock at the grant date for the stock-settled, equity classified awards, and the fair value of our common stock at the end of each reporting period for the cash-settled, liability classified awards. Compensation expense is recognized ratably over the performance period based on our estimated achievement of the established performance criteria. Compensation expense is only recognized for those awards that we expect to vest, which we estimate based on an assessment of the probability that the performance criteria will be achieved.

Cash flows resulting from tax benefits related to tax deductions in excess of those recorded for compensation expense, resulting from the exercise of stock options and the vesting of restricted stock units, are classified as cash flows from financing activities. All other tax benefits related to stock options have been presented as a component of cash flows from operating activities.

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Stock Repurchases

Share repurchases under our share repurchase authorization may be made through open market purchases or privately negotiated transactions at the current market prices. From time-to-time, we return treasury shares acquired through share repurchases to the status of authorized but unissued. Our accounting policy is to deduct the par value from common stock and to reflect any excess of cost over par value as a deduction from additional paid-in capital.

Leases

We lease property and equipment in the ordinary course of our business. Our most significant lease obligations are for property and equipment specific to our industry, including real property operated as a landfill or transfer station and operating equipment. Our leases have varying terms. Some may include renewal or purchase options, escalation clauses, restrictions, penalties or other obligations that we consider in determining minimum lease payments. Leases are classified as either operating leases or capital leases, as appropriate.

Operating Leases

Many of our leases are operating leases. This classification generally can be attributed to either (1) relatively low fixed minimum lease payments (including, for example, real property lease payments that are not fixed and vary based on the volume of waste we receive or process), or (2) minimum lease terms that are much shorter than the assets' economic useful lives. We expect that, in the normal course of business, our operating leases will be renewed, replaced by other leases, or replaced with fixed asset expenditures. We record rental expense over the lease term as it becomes payable.

Capital Leases

We capitalize assets acquired under capital leases at the inception of each lease and amortize them to depreciation expense over the lesser of the useful life of the asset or the lease term on either a straight-line or a units-of-consumption basis, depending on the asset leased. We record the present value of the related lease payments as a debt obligation. Our capital lease liability relates primarily to certain long-term landfill operating agreements that require minimum lease payments with offsetting capital lease assets recorded as part of the landfill development costs.

Related Party Transactions

It is our policy that transactions with related parties must be on terms that, on the whole, are no less favorable than those that would be available from unaffiliated parties.

New Accounting Pronouncements

Revenue Recognition

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2014-09, which created Topic 606, Revenue from Contracts with Customers, and Subtopic 340-40, Other Assets and Deferred Costs - Contracts with Customers. The new standard requires the use of a five step methodology to depict the transfer of promised goods and services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The standard also requires enhanced disclosures regarding revenue recognition. Due to the complexity of the new standard, the FASB subsequently issued several amendments intended to clarify ASU 2014-09. In July 2015, the FASB voted to amend the guidance by approving a one-year deferral of the effective date. As such, Republic will adopt the standard beginning January 1, 2018. As we progress to adopt the standard we continually monitor clarifying interpretations.

The new standard must be adopted using either a full retrospective approach for all periods presented in the period of adoption or a modified retrospective approach. We currently plan to adopt the standard using the modified retrospective approach and recognize a cumulative effect adjustment to Retained Earnings as of the date of adoption. Under ASU 2014-09, we will record revenue when control is transferred to the customer, generally at the time we provide waste collection services. We have begun to assess our 2016 operating results under ASU 2014-09 for our residential, small-container commercial, and large-container industrial collection businesses, and we do not anticipate a significant change to the pattern or timing of revenue recognition as a result of adopting the new standard. We are currently evaluating the effect of adopting this guidance on our transfer, landfill, recycling and energy services lines of business, and we expect our 2016 operating results to remain significantly unchanged. In addition, we are assessing the effect this guidance may have on the recognition of costs we incur to obtain and fulfill our contracts, certain of which we currently expense as incurred.

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Other Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842), which increases transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. This guidance requires lessees to recognize lease assets and liabilities for most leases classified as operating leases under previous U.S. GAAP. The standard is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted for financial statements that have not been previously issued. We are currently assessing the potential effect this guidance may have on our consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. This guidance requires that excess tax benefits and tax deficiencies be recognized as income tax benefit or expense in the consolidated statement of earnings. Previously, these amounts were recognized directly to shareholders' equity to the extent of previous excess tax benefits or windfalls. In the consolidated statement of cash flows, the excess tax benefit from equity-based compensation, previously classified as a financing activity, is now classified as an operating activity. The standard is effective for fiscal years beginning after December 15, 2016 and interim periods within those annual periods. Early adoption is permitted for financial statements that have not been previously issued, however, Republic will adopt the standard beginning January 1, 2017.

Had we adopted ASU 2016-09 as of January 1, 2016, our tax provision would have decreased by approximately $10.8 million for the year ended December 31, 2016. As this section of the ASU permits only prospective adoption, there would have been no effect on our 2015 or 2014 Consolidated Financial Statements. The sections of the ASU that relate to the Consolidated Statement of Cash Flows will also be adopted prospectively. Had we adopted as of January 1, 2016 our cash provided by operating activities in our Consolidated Statement of Cash Flows would have increased by $10.8 million for the year ended December 31, 2016 with a corresponding decrease in cash provided by financing activities for the same period. The other aspects of the ASU will not have a material effect on our results of operations, financial condition or cash flows.

In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flows (Topic 230) - Classification of Certain Cash Receipts and Cash Payments. This ASU provides guidance on debt prepayment or debt extinguishment costs, settlement of zero-coupon debt instruments or other debt instruments with coupon interest rates that are insignificant in relation to the effective interest rate of the borrowing, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims, proceeds from the settlement of corporate-owned life insurance policies, including bank-owned life insurance policies, distributions received from equity method investees, beneficial interests in securitization transactions, and separately identifiable cash flows and application of the predominance principle. This guidance is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. The ASU will be applied using a retrospective transition method to each period presented. We are currently assessing the potential effect this guidance may have on our consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 230) - Restricted Cash. This guidance clarifies how entities should present restricted cash and restricted cash equivalents in the statement of cash flows. The guidance requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. The guidance is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those years. The ASU will be applied using a retrospective transition method to each period presented. We are currently assessing the potential effect this guidance may have on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-01, Business Combinations (Topic 805) - Clarifying the Definition of Business. This guidance assists entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The new guidance provides a screen that when substantially all of the fair value of the gross assets acquired (or disposed of) is concentrated in a single identifiable asset or a group of similar identifiable assets, the set is not a business. If the screen is not met, the entity then evaluates whether the set meets the requirement that a business include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs. The guidance is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those years. The ASU will be applied prospectively to any transactions occurring within the period of adoption. Early adoption is permitted, including for interim or annual periods in which the financial statements have not been issued or made available for issuance. We are currently assessing the potential effect this guidance may have on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, Intangibles - Goodwill and Other (Topic 350) - Simplifying the Test for Goodwill Impairment. Under this guidance, entities should perform their annual, or interim, goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. Entities should recognize an impairment charge for the

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amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. Additionally, entities should consider income tax effects from any tax deductible goodwill on the carrying amount of the reporting unit when measuring the goodwill impairment loss, if applicable. The guidance is effective for public business entities for fiscal years beginning after December 15, 2019, and interim periods within those years. The ASU will be applied prospectively. Early adoption is permitted for interim and annual goodwill impairment tests performed on testing dates after January 1, 2017. We are currently assessing the potential effect this guidance may have on our consolidated financial statements.

3. BUSINESS ACQUISITIONS, INVESTMENTS AND RESTRUCTURING CHARGES

We acquired various waste businesses during the years ended December 31, 2016 and 2015. The purchase price paid for these acquisitions and the allocations of the purchase price follow:

	2016	2015
Purchase price:		
Cash used in acquisitions, net of cash acquired	$41.6	$572.7
Contingent consideration	—	70.6
Holdbacks	3.7	5.1
Fair value, future minimum lease payments	2.0	1.5
Total	$47.3	$649.9
Allocated as follows:		
Accounts receivable	0.9	39.2
Landfill airspace	—	173.1
Property and equipment	18.1	158.4
Other assets	0.1	1.8
Accounts payable	—	(7.1)
Environmental remediation liabilities	(0.1)	(5.3)
Closure and post-closure liabilities	(0.2)	(27.0)
Other liabilities	(1.1)	(10.3)
Fair value of tangible assets acquired and liabilities assumed	17.7	322.8
Excess purchase price to be allocated	$29.6	$327.1
Excess purchase price to be allocated as follows:		
Other intangible assets	$6.9	$14.8
Goodwill	22.7	312.3
Total allocated	$29.6	$327.1

The purchase price allocations are preliminary and are based on information existing at the acquisition dates. Accordingly, the purchase price allocations are subject to change. Substantially all of the goodwill and intangible assets recorded for these acquisitions are deductible for tax purposes. These acquisitions are not material to the Company's results of operations, individually or in the aggregate. As a result, no pro forma financial information is provided.

In April 2015, we entered into a waste management contract with the County of Sonoma, California (Sonoma). Under the agreement, Sonoma grants us the exclusive right to use and operate the county's waste management facilities. We will operate and manage the Sonoma County Landfill for the remaining life of the site, which we estimate to be approximately 27 years. We also have assumed all closure and post-closure obligations for the site. In addition to the landfill, we will operate five transfer stations and a gas-to-energy plant. By entering this agreement, we have effectively obtained control of the business through contract. In exchange, we have agreed to pay a contingent concession fee per ton of waste disposed at the landfill. The potential undiscounted amount of all future contingent payments that we could be required to make under the agreement is estimated to be between approximately $88 million and $177 million. For the fair value of the contingent consideration, see Note 16, Financial Instruments, to our consolidated financial statements.

In February 2015, we acquired all of the equity interests of Tervita, LLC (Tervita) in exchange for a cash payment of $476.6 million. Tervita provides waste services to a diverse customer base serving oil and natural gas producers and operates three types of waste management and disposal facilities: treatment, recovery and disposal facilities, engineered landfills and salt water disposal injection wells. We allocated $109.3 million of the purchase price to property and equipment, $85.5 million to

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landfill airspace, and $7.2 million to intangible assets, and $21.0 million to net working capital. We also assumed $6.9 million of closure and post-closure obligations and $7.6 million of environmental remediation and other liabilities. Approximately $268 million of the remaining purchase price was allocated to goodwill.

Investments

In December 2016, we acquired a noncontrolling equity interest in a limited liability company that qualifies for a federal investment tax credit under Section 48 of the Internal Revenue Code. In exchange for our noncontrolling interest, we made a one-time capital contribution of $20.8 million, which was recorded to other long-term assets in our consolidated balance sheet. During 2016, we reduced the carrying value of this investment by $6.1 million as a result of tax credits allocated to us, cash distributions, and our share of income and loss pursuant to the terms of the limited liability company agreement. For further discussion of the income tax benefits, see Note 10, Income Taxes.

Restructuring Charges

In January 2016, we realigned our field support functions by combining our three regions into two field groups, consolidating our areas and streamlining select operational support roles at our Phoenix headquarters. These changes included reducing administrative staffing levels, relocating office space and closing certain office locations. Additionally, in the second quarter, we began the redesign of our back-office functions as well as the consolidation of over 100 customer service locations into three Customer Resource Centers. The savings realized from these restructuring efforts will be reinvested in our customer-focused programs and initiatives. We expect our consolidation efforts to continue through 2017.

During 2016, we incurred $40.7 million of restructuring charges that consisted of severance and other employee termination benefits, employee relocation benefits, and the closure of offices with lease agreements with non-cancelable terms. We paid $32.5 million related to these restructuring efforts. We expect to incur additional charges of approximately $15 million over the next year related to our field realignment, the consolidation of our customer service locations, and the redesign of our back-office functions. Substantially all of these restructuring charges will be recorded in our corporate segment.

4. PROPERTY AND EQUIPMENT, NET

A summary of property and equipment, net as of December 31 follows:

	2016	2015
Land	$430.2	$425.4
Non-depletable landfill land	166.8	165.6
Landfill development costs	6,386.7	6,078.1
Vehicles and equipment	6,551.8	6,211.8
Buildings and improvements	1,160.1	1,098.6
Construction-in-progress - landfill	221.2	191.6
Construction-in-progress - other	35.7	25.5
	$14,952.5	$14,196.6
Less: accumulated depreciation, depletion and amortization		
Landfill development costs	$(3,016.5)	$(2,723.0)
Vehicles and equipment	(3,931.4)	(3,555.0)
Buildings and improvements	(416.0)	(365.8)
	(7,363.9)	(6,643.8)
Property and equipment, net	$7,588.6	$7,552.8

Depreciation, amortization and depletion of property and equipment was $919.8 million, $898.7 million and $838.5 million for the years ended December 31, 2016, 2015 and 2014, respectively.

5. GOODWILL AND OTHER INTANGIBLE ASSETS, NET

In January 2016, we realigned our field support functions by combining our three regions into two field groups, consolidating our areas and streamlining select operational support roles at our Phoenix headquarters. Following our restructuring, our senior management now evaluates, oversees and manages the financial performance of our operations through two field groups, referred to as Group 1 and Group 2.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Goodwill

A summary of the activity and balances in goodwill accounts by reporting segment follows:

	Balance as of December 31, 2015	Acquisitions	Divestitures	Adjustments to Acquisitions	Balance as of December 31, 2016
Group 1	$5,248.1	$ 10.2	$ —	$ (0.1)	$5,258.2
Group 2	5,897.4	12.5	(5.8)	0.9	5,905.0
Total	$11,145.5	$ 22.7	$ (5.8)	$ 0.8	$11,163.2

	Balance as of December 31, 2014	Acquisitions	Divestitures	Adjustments to Acquisitions	Balance as of December 31, 2015
Group 1	$5,235.4	$ 9.7	$ —	$ 3.0	$5,248.1
Group 2	5,595.5	302.6	—	(0.7)	5,897.4
Total	$10,830.9	$ 312.3	$ —	$ 2.3	$11,145.5

Adjustments to acquisitions during the years ended December 31, 2016 and 2015 primarily related to working capital and deferred taxes, which were recorded to goodwill in purchase accounting.

Other intangible assets, net, include values assigned to customer relationships, franchise agreements, other municipal agreements, non-compete agreements and trade names, and are amortized over periods ranging from 1 to 20 years. A summary of the activity and balances by intangible asset type follows:

	Gross Intangible Assets				Accumulated Amortization				Other Intangible Assets, Net as of December 31, 2016
	Balance as of December 31, 2015	Acquisitions	Divestitures	Balance as of December 31, 2016	Balance as of December 31, 2015	Additions Charged to Expense	Divestitures	Balance as of December 31, 2016	
Customer relationships, franchise and other municipal agreements	$651.6	$ 4.2	$ (5.0)	$ 650.8	$(431.0)	$ (62.4)	$ 0.9	$ (492.5)	$ 158.3
Non-compete agreements	30.8	1.3	—	32.1	(22.1)	(3.2)	—	(25.3)	6.8
Other intangible assets	65.6	1.4	—	67.0	(48.5)	(1.3)	—	(49.8)	17.2
Total	$748.0	$ 6.9	$ (5.0)	$ 749.9	$(501.6)	$ (66.9)	$ 0.9	$ (567.6)	$ 182.3

	Gross Intangible Assets				Accumulated Amortization				Other Intangible Assets, Net as of December 31, 2015
	Balance as of December 31, 2014	Acquisitions	Divestitures	Balance as of December 31, 2015	Balance as of December 31, 2014	Additions Charged to Expense	Divestitures	Balance as of December 31, 2015	
Customer relationships, franchise and other municipal agreements	$641.2	$ 10.4	$ —	$ 651.6	$(369.1)	$ (61.9)	—	$ (431.0)	$ 220.6
Non-compete agreements	26.8	4.0	—	30.8	(18.2)	(3.9)	—	(22.1)	8.7
Other intangible assets	65.2	0.4	—	65.6	(47.0)	(1.5)	—	(48.5)	17.1
Total	$733.2	$ 14.8	$ —	$ 748.0	$(434.3)	$ (67.3)	$ —	$ (501.6)	$ 246.4

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Based on the amortizable intangible assets recorded in the consolidated balance sheet as of December 31, 2016, amortization expense for each of the next five years is estimated as follows:

2017	$65.0
2018	52.5
2019	9.8
2020	7.5
2021	6.4

6. OTHER ASSETS

Prepaid Expenses and Other Current Assets

A summary of prepaid expenses and other current assets as of December 31 follows:

	2016	2015
Inventories	$44.0	$38.8
Prepaid expenses	74.5	66.1
Other non-trade receivables	31.4	34.6
Reinsurance receivable	15.0	12.5
Income tax receivable	51.5	78.5
Other current assets	5.5	4.5
Total	$221.9	$235.0

Other Assets

A summary of other assets as of December 31 follows:

	2016	2015
Deferred compensation plan	87.9	90.5
Amounts recoverable for capping, closure and post-closure obligations	27.7	25.9
Reinsurance receivable	69.7	44.0
Interest rate swaps and locks	32.4	16.5
Investments	24.8	10.1
Other	78.0	73.6
Total	$320.5	$260.6

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

7. OTHER LIABILITIES

Other Accrued Liabilities

A summary of other accrued liabilities as of December 31 follows:

	2016	2015
Accrued payroll and benefits	$195.4	$187.8
Accrued fees and taxes	131.2	126.5
Insurance reserves, current portion	143.9	127.7
Ceded insurance reserves, current portion	15.0	12.5
Accrued dividends	108.6	103.7
Current tax liabilities	1.4	0.5
Commodity and fuel hedge liabilities	5.9	41.0
Accrued professional fees and legal settlement reserves	49.2	44.2
Other	74.4	72.7
Total	$725.0	$716.6

Other Long-Term Liabilities

A summary of other long-term liabilities as of December 31 follows:

	2016	2015
Deferred compensation plan	$88.3	$83.3
Pension and other post-retirement liabilities	6.7	12.1
Legal settlement reserves	1.7	24.7
Ceded insurance reserves	69.7	44.0
Withdrawal liability - multiemployer pension funds	11.7	6.1
Contingent consideration and acquisition holdbacks	66.0	78.0
Other	57.1	61.1
Total	$301.2	$309.3

Insurance Reserves

Our liabilities for unpaid and incurred but not reported claims as of December 31, 2016 and 2015 (which include claims for workers’ compensation, commercial general and auto liability, and employee-related health care benefits) were $418.5 million and $405.8 million, respectively, under our risk management program and are included in other accrued liabilities and insurance reserves, net of current portion, in our consolidated balance sheets. While the ultimate amount of claims incurred depends on future developments, we believe the recorded reserves are adequate to cover the future payment of claims; however, it is possible that these recorded reserves may not be adequate to cover the future payment of claims. Adjustments, if any, to estimates recorded resulting from ultimate claim payments will be reflected in our consolidated statements of income in the periods in which such adjustments are known.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following table summarizes the activity in our insurance reserves for the years ended December 31:

	2016	2015	2014
Balance at beginning of year	$405.8	$416.6	$431.5
Additions charged to expense	410.3	360.4	354.8
Payments	(400.5)	(373.1)	(372.2)
Accretion expense	1.5	1.9	2.5
Premium written for third party risk assumed	23.4	—	—
Reclassified to ceded insurance reserves	(22.0)	—	—
Balance at end of year	418.5	405.8	416.6
Less: current portion	(143.9)	(127.7)	(118.6)
Long-term portion	$274.6	$278.1	$298.0

8. LANDFILL AND ENVIRONMENTAL COSTS

As of December 31, 2016, we owned or operated 192 active landfills with total available disposal capacity of approximately 5.0 billion in-place cubic yards. Additionally, we had post-closure responsibility for 124 closed landfills.

A summary of our accrued landfill and environmental liabilities as of December 31 follows:

	2016	2015
Landfill final capping, closure and post-closure liabilities	$1,224.6	$1,181.6
Environmental remediation	602.9	646.1
Total accrued landfill and environmental costs	1,827.5	1,827.7
Less: current portion	(142.7)	(149.8)
Long-term portion	$1,684.8	$1,677.9

Final Capping, Closure and Post-Closure Costs

The following table summarizes the activity in our asset retirement obligation liabilities, which includes liabilities for final capping, closure and post-closure, for the years ended December 31:

	2016	2015	2014
Asset retirement obligation liabilities, beginning of year	$1,181.6	$1,144.3	$1,091.3
Non-cash additions	41.0	39.4	38.6
Acquisitions and other adjustments	0.8	27.1	3.8
Asset retirement obligation adjustments	(0.5)	(20.2)	(12.8)
Payments	(77.4)	(88.4)	(54.6)
Accretion expense	79.1	79.4	78.0
Asset retirement obligation liabilities, end of year	1,224.6	1,181.6	1,144.3
Less: current portion	(64.8)	(87.4)	(87.9)
Long-term portion	$1,159.8	$1,094.2	$1,056.4

We review our landfill asset retirement obligations at least annually. As a result, we recorded a net decrease in amortization expense of $6.5 million, $0.7 million and $13.3 million for 2016, 2015 and 2014, respectively, primarily related to changes in estimates and assumptions concerning the anticipated waste flow, cost and timing of future final capping, closure and post-closure activities.

The fair value of assets that are legally restricted for purposes of settling final capping, closure and post-closure obligations was approximately $27.9 million as of December 31, 2016 and is included in restricted cash and marketable securities in our consolidated balance sheet.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The expected future payments for final capping, closure and post-closure as of December 31, 2016 follows:

2017	$64.8
2018	95.0
2019	89.8
2020	78.1
2021	75.0
Thereafter	5,833.1
	$6,235.8

The estimated remaining final capping, closure and post-closure expenditures presented above are not inflated and not discounted and reflect the total estimated future payments for liabilities which include those incurred and recorded as of December 31, 2016 as well as liabilities yet to be incurred over the remaining life of our landfills.

Environmental Remediation Liabilities

We accrue for remediation costs when they become probable and can be reasonably estimated. There can sometimes be a range of reasonable estimates of the costs associated with remediation of a site. In these cases, we use the amount within the range that constitutes our best estimate. If no amount within the range appears to be a better estimate than any other, we use the amount that is at the low end of such range. It is reasonably possible that we will need to adjust the liabilities recorded for remediation to reflect the effects of new or additional information, to the extent such information impacts the costs, timing or duration of the required actions. If we used the reasonably possible high ends of our ranges, our aggregate potential remediation liability as of December 31, 2016 would be approximately $377 million higher than the amounts recorded. Future changes in our estimates of the cost, timing or duration of the required actions could have a material adverse effect on our consolidated financial position, results of operations and cash flows.

The following table summarizes the activity in our environmental remediation liabilities for the years ended December 31:

	2016	2015	2014
Environmental remediation liabilities, beginning of year	$646.1	$697.5	$551.7
Net additions charged to expense	(1.6)	(1.6)	219.1
Payments	(66.8)	(80.0)	(99.4)
Accretion expense (non-cash interest expense)	23.4	24.9	25.3
Acquisitions and other	1.8	5.3	0.8
Environmental remediation liabilities, end of year	602.9	646.1	697.5
Less: current portion	(77.9)	(62.4)	(76.4)
Long-term portion	$525.0	$583.7	$621.1

The expected undiscounted future payments for remediation costs as of December 31, 2016 follows:

2017	$77.9
2018	74.9
2019	65.9
2020	63.7
2021	46.3
Thereafter	493.0
	$821.7

It is reasonably possible that we will need to adjust our liabilities to reflect the effects of new or additional information, to the extent that such information impacts the costs, timing or duration of the required actions. Future changes in our estimates of the costs, timing or duration of the required actions could have a material adverse effect on our consolidated financial position, results of operations and cash flows.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following is a discussion of certain of our significant remediation matters:
Bridgeton Landfill. During the year ended December 31, 2016, we paid $23.0 million related to management and monitoring of the remediation area for our closed Bridgeton Landfill in Missouri. We continue to work with state and federal regulatory agencies on our remediation efforts. From time to time, this may require us to modify our future operating timeline and procedures, which could result in changes to our expected liability. As of December 31, 2016, the remediation liability recorded for this site is $197.2 million, of which $26.4 million is expected to be paid during 2017. We believe the remaining reasonably possible high end of our range would be approximately $156 million higher than the amount recorded as of December 31, 2016.
During 2015, we collected an insurance recovery of $50.0 million related to our Bridgeton Landfill. As such, we recorded a reduction of remediation expenses included in our cost of operations during the year ended December 31, 2015.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

9. DEBT
The carrying value of our notes payable, capital leases and long-term debt as of December 31, 2016 and 2015 is listed in the following table, and is adjusted for the fair value of interest rate swaps, unamortized discounts, deferred issuance costs and the unamortized portion of adjustments to fair value recorded in purchase accounting. Original issue discounts and adjustments to fair value recorded in purchase accounting are amortized to interest expense over the term of the applicable instrument using the effective interest method.

		2016			2015		
Maturity	Interest Rate	Principal	Adjustments	Carrying Value	Principal	Adjustments	Carrying Value
Credit facilities:							
Uncommitted Credit Facility	Variable	$—	$ —	$ —	$19.0	$ —	$ 19.0
Puerto Rico Uncommitted Facility	Variable	—	—	—	—	—	—
June 2019	Variable	140.0	—	140.0	—	—	—
May 2021	Variable	70.0	—	70.0	—	—	—
Senior notes:							
May 2018	3.800	700.0	(1.2)	698.8	700.0	(2.0)	698.0
September 2019	5.500	650.0	(3.3)	646.7	650.0	(4.4)	645.6
March 2020	5.000	850.0	(2.6)	847.4	850.0	(3.4)	846.6
November 2021	5.250	600.0	(1.9)	598.1	600.0	(2.3)	597.7
June 2022	3.550	850.0	(5.6)	844.4	850.0	(6.5)	843.5
May 2023	4.750	550.0	3.5	553.5	550.0	9.4	559.4
March 2025	3.200	500.0	(5.4)	494.6	500.0	(6.0)	494.0
June 2026	2.900	500.0	(5.5)	494.5	—	—	—
March 2035	6.086	181.9	(15.4)	166.5	275.7	(23.9)	251.8
March 2040	6.200	399.9	(3.9)	396.0	650.0	(6.6)	643.4
May 2041	5.700	385.7	(5.6)	380.1	600.0	(8.9)	591.1
Debentures:							
May 2021	9.250	35.3	(1.1)	34.2	35.3	(1.4)	33.9
September 2035	7.400	148.1	(35.2)	112.9	165.2	(39.9)	125.3
Tax-exempt:							
2019 - 2044	0.750 - 5.625	1,079.1	(6.4)	1,072.7	1,079.1	(7.0)	1,072.1
Capital leases:							
2017 - 2046	3.980 - 12.203	108.5	—	108.5	111.5	—	111.5
Total Debt		$7,748.5	$ (89.6)	7,658.9	$7,635.8	$ (102.9)	7,532.9
Less: current portion				(5.8)			(5.5)
Long-term portion				$ 7,653.1			$ 7,527.4

Loss on Extinguishment of Debt and Other Related Costs
During 2016, we incurred a loss on the early extinguishment of debt and other related costs. We paid a cash premium of $148.1 million, early tender consideration of $28.7 million and $1.6 million of legal and other fees. We also incurred a non-cash charge related to the proportional share of unamortized discounts and deferred issuance costs of $17.8 million. The unamortized proportional share of certain cash flow hedges reclassified to earnings as non-cash interest expense was $7.2 million.

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REPUBLIC SERVICES, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following table summarizes the charges incurred during the year ended December 31, 2016:

		Loss on Extinguishment of Debt			
	Principal Repaid	Cash Paid in Loss on Extinguishment of Debt	Non-cash Loss on Extinguishment of Debt	Total Loss on Extinguishment of Debt	Non-cash Interest Expense
$275.7 million 6.09% senior notes due March 2035	$ 93.8	$ 26.1	$ 8.0	$ 34.1	$ (1.1)
$165.2 million 7.40% debentures due September 2035	17.2	7.3	4.1	11.4	—
$650.0 million 6.20% senior notes due March 2040	250.1	85.3	2.6	87.9	1.0
$600.0 million 5.70% senior notes due May 2041	214.3	59.7	3.1	62.8	7.3
Total		$ 178.4	$ 17.8	$ 196.2	$ 7.2

Credit Facilities

In May 2016, we entered into a $1.0 billion unsecured revolving credit facility (the Replacement Credit Facility), which replaced our $1.0 billion credit facility maturing in May 2017. The Replacement Credit Facility matures in May 2021 and includes a feature that allows us to increase availability, at our option, by an aggregate amount up to $500.0 million through increased commitments from existing lenders or the addition of new lenders. At our option, borrowings under the Replacement Credit Facility bear interest at a Base Rate, or a Eurodollar Rate, plus an applicable margin based on our Debt Ratings (all as defined in the agreements).

Contemporaneous with the execution of the Replacement Credit Facility, we entered into Amendment No. 1 to our existing $1.25 billion unsecured credit facility (the Existing Credit Facility and, together with the Replacement Credit Facility, the Credit Facilities), to conform certain terms of the Existing Credit Facility with those of the Replacement Credit Facility. Amendment No. 1 does not extend the maturity date of the Existing Credit Facility, which matures in June 2019. The Existing Credit Facility also maintains the feature that allows us to increase availability, at our option, by an aggregate amount of up to $500.0 million through increased commitments from existing lenders or the addition of new lenders.

Our Credit Facilities are subject to facility fees based on applicable rates defined in the credit facility agreements and the aggregate commitments, regardless of usage. Availability under our Credit Facilities totaled $1,543.1 million and $1,727.7 million as of December 31, 2016 and 2015, respectively, and can be used for working capital, capital expenditures, acquisitions, letters of credit and other general corporate purposes. The credit agreements require us to comply with financial and other covenants. We may pay dividends and repurchase common stock if we are in compliance with these covenants. As of December 31, 2016, we had $210.0 million of borrowings under our Credit Facilities and no borrowings as of December 31, 2015. We had $478.4 million and $503.3 million of letters of credit outstanding under our Credit Facilities, as of December 31, 2016 and 2015, respectively.

During 2016, we amended our existing unsecured credit facility agreement (the Uncommitted Credit Facility), to increase the size to $135.0 million, with all other terms remaining unchanged. Our Uncommitted Credit Facility bears interest at LIBOR, plus an applicable margin and is subject to facility fees defined in the agreement, regardless of usage. We can use borrowings under the Uncommitted Credit Facility for working capital and other general corporate purposes. The agreement governing our Uncommitted Credit Facility requires us to comply with covenants. The Uncommitted Credit Facility may be terminated by either party at any time. As of December 31, 2016, we had no borrowings and as of December 31, 2015, we had $19.0 million of borrowings under our Uncommitted Credit Facility.

In January 2015, we entered into a $20.0 million uncommitted credit facility agreement (the Puerto Rico Uncommitted Facility) that matured in January 2016.

Senior Notes and Debentures

During 2016, we priced cash tender offers to purchase up to $575.4 million combined aggregate principal amount of the 6.20% Notes due March 2040, 5.70% Notes due May 2041, 7.40% Debentures due September 2035 and 6.09% Notes due March 2035 (collectively "Existing Notes"), subject to priority levels and the other terms and conditions set forth in the Offer to Purchase. During 2016, we priced an offering of $500.0 million of 2.90% senior notes due 2026 (the 2.90% Notes). The sale of the

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2.90% Notes closed on July 5, 2016. We used the net proceeds of the offering, together with borrowing under our credit facilities, to purchase $575.4 million of the combined aggregate principal amount of the Existing Notes tendered as well as premium due of $148.1 million and early tender consideration of $28.7 million.

During 2015, we issued $500.0 million of 3.20% notes due 2025 (the 3.20% Notes). We used the net proceeds from the 3.20% Notes to refinance debt incurred in connection with our acquisition of all of the equity interests of Tervita during 2015.

Our senior notes are general senior unsecured obligations. Interest is payable semi-annually. These senior notes have a make-whole provision that is exercisable at any time prior to the respective maturity dates per the debt table above at a stated redemption price.

Tax-Exempt Financings

As of December 31, 2016 and 2015, we had $1,072.7 million and $1,072.1 million, respectively, of fixed and variable rate tax-exempt financings outstanding with maturities ranging from 2019 to 2044. Approximately 90% of our tax-exempt financings are remarketed quarterly by remarketing agents to effectively maintain a variable yield. The holders of the bonds can put them back to the remarketing agents at the end of each interest period. To date, the remarketing agents have been able to remarket our variable rate unsecured tax-exempt bonds. These bonds have been classified as long-term because of our ability and intent to refinance them using availability under our Credit Facilities, if necessary.

Capital Leases

We had capital lease liabilities of $108.5 million and $111.5 million as of December 31, 2016 and 2015, respectively, with maturities ranging from 2017 to 2046.

Future Maturities of Debt

Aggregate principal maturities of notes payable, capital leases and other long-term debt as of December 31, 2016 follow:

2017	$5.1
2018	705.7
2019	829.9
2020	926.3
2021	837.5
Thereafter	4,444.0
	$7,748.5

Interest Expense and Interest Paid

Interest paid was $330.2 million, $327.6 million and $320.2 million for the years ended December 31, 2016, 2015 and 2014, respectively. The components of interest expense follow:

	2016	2015	2014
Interest expense on debt and capital lease obligations	$324.1	$324.6	$310.3
Accretion of debt discounts	7.6	7.4	6.6
Accretion of remediation liabilities and other	45.8	39.7	38.2
Less: capitalized interest	(6.2)	(6.8)	(6.4)
Total interest expense	$371.3	$364.9	$348.7

Interest Rate Swap and Lock Agreements

Our ability to obtain financing through the capital markets is a key component of our financial strategy. Historically, we have managed risk associated with executing this strategy, particularly as it relates to fluctuations in interest rates, by using a combination of fixed and floating rate debt. From time to time, we also have entered into interest rate swap and lock agreements to manage risks associated with interest rates, either to effectively convert specific fixed rate debt to a floating rate (fair value hedges), or to lock interest rates in anticipation of future debt issuances (cash flow hedges).

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Fair Value Hedges

During the second half of 2013, we entered into various interest rate swap agreements relative to our 4.750% fixed rate senior notes due in May 2023. The goal was to reduce overall borrowing costs and rebalance our debt portfolio's ratio of fixed to floating interest rates. As of December 31, 2016, these swap agreements have a total notional value of $300.0 million and mature in May 2023, which is identical to the maturity of the hedged senior notes. We pay interest at floating rates based on changes in LIBOR and receive interest at a fixed rate of 4.750%. These transactions were designated as fair value hedges because the swaps hedge against the changes in fair value of the fixed rate senior notes resulting from changes in interest rates.

As of December 31, 2016 and 2015, the interest rate swap agreements are reflected at their fair value of $12.1 million and $16.5 million, respectively, and are included in other assets in our consolidated balance sheets. To the extent they are effective, these interest rate swap agreements are included as an adjustment to long-term debt in our consolidated balance sheets. We recognized net interest income of $6.3 million, $7.5 million and $7.7 million, respectively, during 2016, 2015 and 2014 related to net swap settlements for these interest rate swap agreements, which is included as an offset to interest expense in our consolidated statements of income.

For the years ended December 31, 2016, 2015 and 2014, we recognized a (gain) loss of $(6.3) million, $0.8 million and $12.6 million, respectively, on the change in fair value of the hedged senior notes attributable to changes in the benchmark interest rate, with an offsetting loss (gain) of $4.4 million, $(2.3) million and $(14.1) million, respectively, on the related interest rate swaps. The difference of these fair value changes represents hedge ineffectiveness, which is recorded directly in earnings as other income, net.

Cash Flow Hedges

During 2016, we entered into a number of interest rate lock agreements having an aggregate notional amount of $525.0 million with fixed interest rates ranging from 1.900% to 2.280% to manage exposure to fluctuations in interest rates in anticipation of a planned future issuance of senior notes. Upon the expected issuance of the senior notes, we will terminate the interest rate locks and settle with our counterparties. These transactions were accounted for as cash flow hedges. The fair value of our interest rate locks as of December 31, 2016 was determined using standard valuation models with assumptions about interest rates being based on those observed in underlying markets (Level 2 in the fair value hierarchy). The aggregate fair value of the outstanding interest rate locks as of December 31, 2016 was $20.2 million and was recorded in other long-term assets in our consolidated balance sheet. As of December 31, 2016, the effective portion of the interest rate locks recorded as a component of accumulated other comprehensive income (loss), net of tax, was $12.2 million.

During 2015, we entered into a number of interest rate lock agreements having an aggregate notional amount of $200.0 million with fixed interest rates ranging from 2.155% to 2.270% to manage exposure to fluctuations in interest rates in anticipation of the planned issuance of the 3.20% Notes. Upon issuance of the 3.20% Notes, we terminated the interest rate locks and received $1.2 million from the counterparties. This transaction was accounted for as a cash flow hedge.

As of December 31, 2016 and 2015, the effective portion of our previously terminated interest rate locks, recorded as a component of accumulated other comprehensive loss, net of tax, was $13.4 million and $19.4 million as of December 31, 2016 and 2015, respectively. The effective portion of the interest rate locks is amortized as an adjustment to interest expense over the life of the issued debt using the effective interest method. We expect to amortize $1.6 million of net interest expense over the next twelve months as a yield adjustment of our senior notes. The effective portion of the interest rate locks amortized as a net increase to interest expense during the years ended December 31, 2016, 2015 and 2014 was $9.8 million, $2.5 million and $2.7 million, respectively.

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10. INCOME TAXES

The components of the provision for income taxes for the years ended December 31 follow:

	2016	2015	2014
Current:			
Federal	$299.5	$337.6	$328.1
State	34.6	38.4	39.7
Deferred:			
Federal	44.9	91.5	(13.3)
State	2.3	25.2	7.5
State deferred benefit - change in valuation allowance	(1.4)	(10.5)	(3.2)
Uncertain tax positions and interest, and other	(27.2)	(36.7)	(21.4)
Provision for income taxes	$352.7	$445.5	$337.4

The reconciliations of the statutory federal income tax rate to our effective tax rate for the years ended December 31 follow:

	2016	2015	2014
Federal statutory rate	35.0 %	35.0 %	35.0 %
State income taxes, net of federal benefit	3.1	4.3	3.0
Change in valuation allowance	(0.1)	(0.9)	(0.4)
Non-deductible expenses	0.9	0.6	0.9
Uncertain tax position taxes and interest	(0.1)	(1.5)	(0.4)
Investment tax credits	(1.1)	—	—
Other, net	(1.2)	(0.2)	—
Effective income tax rate	36.5 %	37.3 %	38.1 %

Our 2016 tax provision was reduced by approximately $13 million due to the resolution of various state and federal tax matters as well as the realization of tax credits and lower state rates due to changes in estimates.

In addition, during 2016 we acquired a noncontrolling interest in a limited liability company that qualifies for a federal investment tax credit under Section 48 of the Internal Revenue Code. Our 2016 tax provision was reduced by approximately $10 million mostly due to a federal tax credit related to this investment, which was recognized currently and not deferred. We account for this investment using the equity method of accounting and recognize our share of income or loss and other reductions in the value of our investment in “Loss from unconsolidated equity method investment” within our Consolidated Statements of Income.

Our 2015 tax provision was reduced by approximately $17 million due to the resolution of outstanding tax matters in various states and Puerto Rico. Our 2014 tax provision was reduced by approximately $5 million due to the realization of tax credits and lower state rates due to changes in estimates.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The components of the net deferred income tax asset and liability as of December 31 follow:

	2016	2015
Deferred tax liabilities relating to:		
Differences between book and tax basis of property and equipment	$(1,058.7)	$(1,050.9)
Difference between book and tax basis of intangible assets	(711.6)	(713.4)
Basis difference due to redemption of partnership interests	(130.1)	(128.9)
Total liabilities	$(1,900.4)	$(1,893.2)
Deferred tax assets relating to:		
Environmental reserves	$449.2	$461.7
Accruals not currently deductible	177.8	210.8
Net operating loss carryforwards	103.3	103.5
Difference between book and tax basis of other assets	44.5	71.3
Other	17.4	14.8
Total assets	792.2	862.1
Valuation allowance	(62.3)	(63.7)
Net deferred tax asset	729.9	798.4
Net deferred tax liabilities	$(1,170.5)	$(1,094.8)

Changes in the deferred tax valuation allowance for the years ended December 31 follow:

	2016	2015	2014
Valuation allowance, beginning of year	$63.7	$73.9	$76.9
Additions charged to provision for income taxes	0.3	0.3	0.2
Deferred tax assets realized or written-off	(1.4)	(10.5)	(3.2)
Other, net	(0.3)	—	—
Valuation allowance, end of year	$62.3	$63.7	$73.9

We have deferred tax assets related to state net operating loss carryforwards. We provide a partial valuation allowance due to uncertainty surrounding the future utilization of these carryforwards in the taxing jurisdictions where the loss carryforwards exist. When determining the need for a valuation allowance, we consider all positive and negative evidence, including recent financial results, scheduled reversals of deferred tax liabilities, projected future taxable income and tax planning strategies. The weight given to the positive and negative evidence is commensurate with the extent such evidence can be objectively verified. We adjust the valuation allowance in the period management determines it is more likely than not that deferred tax assets will or will not be realized.

During 2015, we completed a tax restructuring between two of our subsidiaries that possess the majority of our state loss carryforwards. This resulted in a reduction to the valuation allowance of $10.2 million. This reduction was offset by a corresponding decrease to our deferred tax asset related to those same state loss carryforwards.

Substantially all of our valuation allowance is associated with state loss carryforwards. The realization of our deferred tax asset for state loss carryforwards ultimately depends upon the existence of sufficient taxable income in the appropriate state taxing jurisdictions in future periods. We continue to regularly monitor both positive and negative evidence in determining the ongoing need for a valuation allowance.

We have deferred tax assets related to state net operating loss carryforwards with an estimated tax effect of $100.5 million available as of December 31, 2016. These state net operating loss carryforwards expire at various times between 2017 and 2036. We believe that it is more likely than not that the benefit from some of our state net operating loss carryforwards will not be realized due to limitations on these loss carryforwards in certain states. In recognition of this risk, as of December 31, 2016, we have provided a valuation allowance of $59.8 million. Also as of December 31, 2016, we have provided a valuation allowance of $2.5 million for certain other deferred tax assets.

Deferred income taxes have not been provided on the undistributed earnings of our Puerto Rican subsidiaries of approximately $48 million as of December 31, 2016 as such earnings are considered to be permanently reinvested. This amount would

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become taxable upon a repatriation of assets or a sale or liquidation of the subsidiaries. If such an event were to occur, we would incur approximately $17 million of federal income taxes.

We made income tax payments (net of refunds received) of approximately $265 million, $321 million and $382 million for 2016, 2015 and 2014, respectively.

Income taxes paid in 2016 and 2015 reflect the favorable tax depreciation provisions of the Protecting Americans from Tax Hikes Act signed into law in December 2015. This legislation extends bonus depreciation for property placed in service through 2019. Bonus depreciation deductions for assets placed in service in 2015 to 2017 is 50% of the capitalized value and later decreases to 40% in 2018 and 30% in 2019.

Income taxes paid in 2014 reflect the favorable tax depreciation provisions of the Tax Increase Protection Act of 2014, signed into law in December 2014. This legislation extended 50% bonus depreciation for property placed in service during 2014.

We are subject to income tax in the United States and Puerto Rico, as well as income tax in multiple state jurisdictions. Our compliance with income tax rules and regulations is periodically audited by tax authorities. These authorities may challenge the positions taken in our tax filings. Thus, to provide for certain potential tax exposures, we maintain liabilities for uncertain tax positions for our estimate of the final outcome of the examinations. Our federal statute of limitations is closed for all years prior to 2013. We are currently under state examination or administrative review in various jurisdictions for tax years 2003 to 2015.

The following table summarizes the activity in our gross unrecognized tax benefits for the years ended December 31:

	2016	2015	2014
Balance at beginning of year	$47.0	$70.1	$72.0
Additions based on tax positions related to current year	—	0.2	0.8
Additions for tax positions of prior years	0.1	1.4	5.0
Reductions for tax positions of prior years	(0.7)	(10.2)	(6.0)
Reductions for tax positions resulting from lapse of statute of limitations	(0.3)	(0.6)	(0.2)
Settlements	—	(13.9)	(1.5)
Balance at end of year	$46.1	$47.0	$70.1

During 2016, we resolved tax matters in various states which reduced our gross unrecognized tax benefits by $1.0 million.

During 2015, we settled tax matters in various states and Puerto Rico which reduced our gross unrecognized tax benefits by $13.9 million.

During 2014, we settled tax matters in various jurisdictions and reduced our gross unrecognized tax benefits by $1.5 million.

Included in our gross unrecognized tax benefits as of December 31, 2016 and 2015 are $30.0 million and $30.5 million, respectively, of unrecognized tax benefits (net of the federal benefit on state matters) that, if recognized, would affect our effective income tax rate in future periods.

We recognize interest and penalties as incurred within the provision for income taxes in our consolidated statements of income. Related to the unrecognized tax benefits previously noted, we recorded interest expense of approximately $1.0 million during 2016 and, in total as of December 31, 2016, have recognized a liability for penalties of $0.5 million and interest of $11.6 million.

During 2015, we recorded interest expense of approximately $1.2 million and, in total as of December 31, 2015, had recognized a liability for penalties of $0.5 million and interest of $10.3 million. During 2014, we accrued interest of approximately $1.5 million and, in total as of December 31, 2014, had recognized a liability for penalties of $0.5 million and interest of $18.7 million.

Gross unrecognized benefits that we expect to settle in the following twelve months are in the range of $0 to $10 million; however, it is reasonably possible that the amount of unrecognized tax benefits may either increase or decrease in the next twelve months.

We are currently under examination or administrative review by state and local taxing authorities for various tax years. These state audits are ongoing.

We believe the recorded liabilities for uncertain tax positions are adequate. However, a significant assessment against us in excess of the liabilities recorded could have a material adverse effect on our consolidated financial position, results of operations and cash flows.

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11. EMPLOYEE BENEFIT PLANS

Stock-Based Compensation

In February 2007, our board of directors approved the 2007 Stock Incentive Plan (the 2007 Plan), and in May 2007 our shareholders ratified the 2007 Plan. In March 2011, our board of directors approved the Amended and Restated 2007 Stock Incentive Plan (the Amended and Restated 2007 SIP), and in May 2011 our shareholders ratified the Amended and Restated 2007 SIP. In March 2013, our board of directors approved the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (the Republic Amended and Restated 2007 SIP), and in May 2013 our shareholders ratified the Republic Amended and Restated 2007 SIP (the 2007 Plan, the Amended and Restated 2007 SIP, and the Republic Amended and Restated 2007 SIP are collectively referred to in this Form 10-K as the Amended and Restated 2007 Stock Incentive Plan). We currently have approximately 14.9 million shares of common stock reserved for future grants under the Amended and Restated 2007 Stock Incentive Plan.

Options granted under the Amended and Restated 2007 Stock Incentive Plan are non-qualified and are granted at a price equal to the fair market value of our common stock at the date of grant. Generally, options granted have a term of seven to ten years from the date of grant, and vest in increments of 25% per year over a period of four years beginning on the first anniversary date of the grant. Options granted to non-employee directors have a term of ten years and are fully vested at the grant date.

In December 2008, the board of directors amended and restated the Republic Services, Inc. 2006 Incentive Stock Plan (formerly known as the Allied Waste Industries, Inc. 2006 Incentive Stock Plan) (the 2006 Plan). Allied's shareholders approved the 2006 Plan in May 2006. The 2006 Plan was amended and restated in December 2008 to reflect Republic as the new sponsor of the 2006 Plan, to reflect that any references to shares of common stock are to shares of common stock of Republic, and to adjust outstanding awards and the number of shares available under the 2006 Plan to reflect the Allied acquisition. The 2006 Plan, as amended and restated, provided for the grant of non-qualified stock options, incentive stock options, shares of restricted stock, shares of phantom stock, stock bonuses, restricted stock units, stock appreciation rights, performance awards, dividend equivalents, cash awards, or other stock-based awards. Awards granted under the 2006 Plan prior to December 5, 2008 became fully vested and nonforfeitable upon the closing of the Allied acquisition. No further awards will be made under the 2006 Plan.

Stock Options

We use a lattice binomial option-pricing model to value our stock option grants. We recognize compensation expense on a straight-line basis over the requisite service period for each separately vesting portion of the award, or to the employee's retirement eligible date, if earlier. Expected volatility is based on the weighted average of the most recent one year volatility and a historical rolling average volatility of our stock over the expected life of the option. The risk-free interest rate is based on Federal Reserve rates in effect for bonds with maturity dates equal to the expected term of the option. We use historical data to estimate future option exercises, forfeitures (at 3.0%) and expected life of the options. When appropriate, separate groups of employees that have similar historical exercise behavior are considered separately for valuation purposes. We did not grant stock options during the years ended December 31, 2016 and 2015. The weighted-average estimated fair value of stock options granted during the year ended December 31, 2014 was $5.74 per option, which was calculated using the following weighted-average assumptions:

	2014
Expected volatility	27.5 %
Risk-free interest rate	1.4 %
Dividend yield	3.2 %
Expected life (in years)	4.6
Contractual life (in years)	7.0

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The following table summarizes stock option activity for the years ended December 31, 2016, 2015 and 2014:

	Number of Shares (in millions)	Weighted Average Exercise Price per Share	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in millions)
Outstanding as of December 31, 2013	10.5	$ 28.91		
Granted	0.5	33.76		
Exercised	(3.0)	27.98		$ 24.5
Forfeited or expired	(0.4)	31.02		
Outstanding as of December 31, 2014	7.6	29.49		
Granted	—	—		
Exercised	(2.4)	28.14		$ 31.2
Forfeited or expired	(0.2)	30.39		
Outstanding as of December 31, 2015	5.0	30.08		
Granted	—	—		
Exercised	(1.7)	29.45		$ 33.0
Forfeited or expired	(0.1)	31.46		
Outstanding as of December 31, 2016	3.2	$ 30.35	2.4	$ 85.2
Exercisable as of December 31, 2016	2.5	$ 29.97	2.2	$ 69.0

Compensation Expense

During the years ended December 31, 2016, 2015 and 2014, compensation expense for stock options was $0.6 million, $2.5 million and $6.3 million, respectively.

As of December 31, 2016, total unrecognized compensation expense related to outstanding stock options was $0.1 million, which will be recognized over a weighted average period of 0.5 years. The total fair value of stock options that vested in 2016, 2015 and 2014 was $5.7 million, $9.0 million and $12.5 million, respectively.

We classified excess tax benefits of $10.8 million, $8.5 million and $4.3 million as cash flows from financing activities for 2016, 2015 and 2014, respectively. All other tax benefits related to stock options have been presented as a component of cash flows from operating activities.

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Restricted Stock Units
The following table summarizes restricted stock unit (RSU) activity for the years ended December 31, 2016, 2015 and 2014:

	Number of RSUs (in thousands)	Weighted-Average Grant Date Fair Value per Share	Weighted-Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in millions)
Unissued as of December 31, 2013	997.0	$ 28.48		
Granted	784.9	33.38		
Vested and issued	(258.4)	28.07		
Forfeited	(67.3)	33.14		
Unissued as of December 31, 2014	1,456.2	24.07		
Granted	722.5	39.12		
Vested and issued	(405.1)	30.56		
Forfeited	(46.3)	36.44		
Unissued as of December 31, 2015	1,727.3	34.15		
Granted	640.4	45.01		
Vested and issued	(370.6)	30.03		
Forfeited	(173.3)	38.77		
Unissued as of December 31, 2016	1,823.8	$ 37.49	0.9	$ 104.0
Vested and unissued as of December 31, 2016	628.2	$ 31.25		

During 2016, we awarded our non-employee directors 49,823 RSUs, which vested immediately. During 2016, we awarded 543,664 RSUs to executives and employees that vest in four equal annual installments beginning on the anniversary date of the original grant or cliff vest after four years. In addition, 46,881 RSUs were earned as dividend equivalents. The RSUs do not carry any voting or dividend rights, except the right to receive additional RSUs in lieu of dividends.

During 2015, we awarded our non-employee directors 75,000 RSUs, which vested immediately. During 2015, we awarded 599,356 RSUs to executives and employees that vest in four equal annual installments beginning on the anniversary date of the original grant or cliff vest after four years. In addition, 48,163 RSUs were earned as dividend equivalents.

During 2014, we awarded our non-employee directors 86,425 RSUs, which vested immediately. During 2014, we awarded 657,476 RSUs to executives that vest in four equal annual installments beginning on the anniversary date of the original grant. In addition, 41,032 RSUs were earned as dividend equivalents.

Compensation Expense
The fair value of RSUs is based on the closing market price on the date of the grant. The compensation expense related to RSUs is amortized ratably over the vesting period, or to the employee's retirement eligible date, if earlier. During 2016, 2015 and 2014, compensation expense related to RSUs totaled $17.4 million, $15.6 million and $11.1 million, respectively. As of December 31, 2016, total unrecognized compensation expense related to outstanding RSUs was $32.2 million, which will be recognized over a weighted average period of 2.6 years.

Performance Shares
During the years ended December 31, 2016 and 2015, we awarded 168,786 and 140,443 performance shares (PSUs) to our named executive officers, respectively. These awards are performance-based as the number of shares ultimately earned depends on performance against pre-determined targets for return on invested capital (ROIC), cash flow value creation (CFVC), and total shareholder return relative to the S&P 500 index (RTSR). The PSUs are payable 50% in shares of common stock and 50% in cash after the end of a three-year performance period, when our financial performance for the entire performance period is reported, typically in February of the succeeding year. At the end of

the performance period, the number of PSUs awarded can range from 0% to 150% of the targeted amount, depending on the performance against the pre-determined targets.

During the year ended December 31, 2016, we awarded 221,958 PSUs to our employees other than our named executive officers. The PSUs are payable 100% in shares of common stock after the end of a three-year performance period, when our financial performance for the entire performance period is reported, typically in February of the succeeding year. At the end of the performance period, the number of PSUs awarded can range from 0% to 150% of the targeted amount, depending on the performance against the pre-determined targets.

The following table summarizes PSU activity for the year ended December 31, 2016:

	Number of PSUs (in thousands)	Weighted Average Grant Date Fair Value per Share
Outstanding as of December 31, 2014	—	$ —
Granted	143.4	38.69
Vested and issued	—	—
Forfeited	—	—
Outstanding as of December 31, 2015	143.4	$ 38.69
Granted	401.2	46.27
Vested and issued	—	—
Forfeited	(39.8)	43.60
Outstanding as of December 31, 2016	504.8	$ 44.40

During 2016, 10,454 PSUs accumulated as dividend equivalents and are included in the table above as granted. The PSUs do not carry any voting or dividend rights, except the right to accumulate additional PSUs in lieu of dividends.

Compensation Expense

For the stock-settled portion of the award that vests based on future ROIC and CFVC performance, compensation expense is measured using the fair value of our common stock at the grant date. For the cash-settled portion of the award that vests based on future ROIC and CFVC performance, compensation expense is recorded based on the fair value of our common stock at the end of each reporting period. Compensation expense is recognized ratably over the performance period based on our estimated achievement of the established performance criteria. Compensation expense is only recognized for the portion of the award that we expect to vest, which we estimate based on an assessment of the probability that the performance criteria will be achieved.

For the stock-settled portion of the award that vests based on RTSR, the grant date fair value is based on a Monte Carlo valuation and compensation expense is recognized on a straight-line basis over the vesting period. For the cash-settled portion of the award that vests based on RTSR, compensation expense also incorporates the fair value of our PSUs at the end of each reporting period. Compensation expense is recognized for the RTSR portion of the award whether or not the market conditions are achieved.

During 2016 and 2015, compensation expense related to PSUs totaled $8.6 million and $1.8 million, respectively. As of December 31, 2016, total unrecognized compensation expense related to outstanding PSUs was $14.3 million, which will be recognized over a weighted average period of 1.7 years.

Defined Benefit Pension Plan

We currently have one qualified defined benefit pension plan, the BFI Retirement Plan (the Plan). The Plan covers certain employees in the United States, including some employees subject to collective bargaining agreements.

The Plan benefits are frozen. Interest credits continue to be earned by participants in the Plan, and participants whose collective bargaining agreements provide for additional benefit accruals under the Plan continue to receive those credits in accordance with the terms of their bargaining agreements. The Plan was converted from a traditional defined benefit plan to a cash balance plan in 1993.

Prior to the conversion to the cash balance design, benefits payable as a single life annuity under the Plan were based on the participant's highest five years of earnings out of the last ten years of service. Upon conversion to the cash balance plan, the existing accrued benefits were converted to a lump-sum value using the actuarial assumptions in effect at the time. Participants' cash balance accounts are increased until retirement by certain benefit and interest credits under the terms of their bargaining agreements. Participants may elect early retirement with the attainment of age 55 and completion of ten years of credited service at reduced benefits. Participants with 35 years of service may retire at age 62 without any reduction in benefits.

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Our pension contributions are made in accordance with funding standards established by the Employee Retirement Income Security Act of 1974 and the Internal Revenue Code, as amended by the Pension Protection Act enacted in 2006 (the PPA). No contributions were made in 2016 or 2015.

We must separately recognize the overfunded or underfunded status of the Plan as an asset or liability. The funded status represents the difference between the projected benefit obligation (PBO) and the fair value of the Plan assets. The PBO is the present value of benefits earned to date by Plan participants, including the effect of assumed future salary increases, if any. The PBO is equal to the accumulated benefit obligation (ABO) as the plan is frozen, and the present value of liabilities are not affected by future salary increases. We use a measurement date that coincides with our year end of December 31.

The following table presents the ABO and reconciliations of the changes in the PBO, the Plan assets and the accounting funded status of our defined benefit pension plan for the years ended December 31:

	Defined Benefit Pension Plan	
	2016	2015
Accumulated benefit obligation	$239.1	$251.6
Change in projected benefit obligation:		
Projected benefit obligation at beginning of year	$251.6	$276.8
Interest cost	10.1	9.9
Actuarial (gain) loss	(4.9)	(17.1)
Benefits paid	(17.7)	(18.0)
Projected benefit obligation at end of year	$239.1	$251.6
Change in plan assets:		
Fair value of plan assets at beginning of year	$246.2	$272.6
Actual return on plan assets	18.3	(5.5)
Estimated expenses	(1.5)	(2.9)
Benefits paid	(17.7)	(18.0)
Fair value of plan assets at end of year	$245.3	$246.2
Over (under) funded status	$6.2	$(5.4)
Amounts recognized in the statement of financial position consist of:		
Noncurrent assets (liabilities)	$6.2	$(5.4)
Net amount recognized	$6.2	$(5.4)
Weighted average assumptions used to determine benefit obligations:		
Discount rate	4.07 %	4.19 %
Rate of compensation increase	N/A	N/A

The amounts included in accumulated other comprehensive loss on the consolidated balance sheets that have not yet been recognized as components of net periodic benefit cost as of December 31, 2016 and 2015 were $27.3 million and $16.9 million, respectively.

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The components of the net periodic benefit cost for the years ended December 31 are summarized below:

	2016		2015		2014	
Components of net periodic benefit cost:						
Service cost	$ 1.5		$ 2.9		$ 2.8	
Interest cost	10.1		9.9		11.3	
Expected return on plan assets	(13.0	)	(14.7	)	(16.4	)
Recognized net actuarial gain	—		—		(1.0	)
Amortization of prior service cost	0.1		0.1		0.1	
Settlement income	—		—		—	
Net periodic benefit cost	$ (1.3	)	$ (1.8	)	$ (3.2	)
Weighted average assumptions used to determine net periodic benefit cost:						
Discount rate	4.19	%	3.70	%	4.50	%
Expected return on plan assets	5.56	%	5.64	%	6.35	%
Rate of compensation increase	N/A		N/A		N/A	

We determine the discount rate used in the measurement of our obligations based on a model that matches the timing and amount of expected benefit payments to maturities of high quality bonds priced as of the Plan measurement date. When that timing does not correspond to a published high-quality bond rate, our model uses an expected yield curve to determine an appropriate current discount rate. The yields on the bonds are used to derive a discount rate for the liability. The term of our obligation, based on the expected retirement dates of our workforce, is approximately eight years.

In developing our expected rate of return assumption, we have evaluated the actual historical performance and long-term return projections of the Plan assets, which give consideration to the asset mix and the anticipated timing of the Plan outflows. We employ a total return investment approach whereby a mix of equity and fixed income investments are used to maximize the long-term return of Plan assets for what we consider a prudent level of risk. The intent of this strategy is to minimize Plan expenses by outperforming Plan liabilities over the long run. Risk tolerance is established through careful consideration of Plan liabilities, Plan funded status and our financial condition. The investment portfolio contains a diversified blend of equity and fixed income investments. Furthermore, equity investments are diversified across U.S. and non-U.S. stocks as well as growth, value, and small and large capitalizations. Derivatives may be used to gain market exposure in an efficient and timely manner; however, derivatives may not be used to leverage the portfolio beyond the market value of the underlying investments. Investment risk is measured and monitored on an ongoing basis through annual liability measurements, periodic asset and liability studies, and quarterly investment portfolio reviews.

The following table summarizes our target asset allocation for 2016 and actual asset allocation as of December 31, 2016 and 2015 for our Plan:

	Target Asset Allocation	2016 Actual Asset Allocation	2015 Actual Asset Allocation
Debt securities	72 %	72 %	72 %
Equity securities	28	28	28
Total	100 %	100 %	100 %

For 2017, the investment strategy for pension plan assets is to maintain a broadly diversified portfolio designed to achieve our target of an average long-term rate of return of 5.56%. While we believe we can achieve a long-term average return of 5.56%, we cannot be certain that the portfolio will perform to our expectations. Assets are strategically allocated among debt and equity portfolios to achieve a diversification level that reduces fluctuations in investment returns. Asset allocation target ranges and strategies are reviewed periodically with the assistance of an independent external consulting firm.

The pension assets are measured at fair value. The following table summarizes, by level, within the fair value hierarchy, the investments of the Plan at fair value as of December 31, 2016 and 2015:

	Total as of December 31, 2016	Fair Value Measurements Using Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market accounts	$ 5.0	$5.0	$ —	$ —
Mutual funds	240.3	—	240.3	—
Total assets	$ 245.3	$5.0	$ 240.3	$ —

	Total as of December 31, 2015	Fair Value Measurements Using Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market accounts	$ 2.9	$2.9	$ —	$ —
Mutual funds	242.7	—	242.7	—
Limited partnerships	0.6	—	—	0.6
Total assets	$ 246.2	$2.9	$ 242.7	$ 0.6

Estimated future benefit payments for the next ten years under the Plan follow:

2017	$19.3
2018	18.6
2019	18.1
2020	17.4
2021	17.7
2022 through 2026	80.8

Collective Bargaining Agreements

As of December 31, 2016, approximately 27% of our workforce was represented by various labor unions, and approximately 8% of our workforce was covered by collective bargaining agreements (CBAs) that are set to expire during 2017.

Multiemployer Pension Plans

We contribute to 26 multiemployer pension plans under CBAs covering union-represented employees. As of December 31, 2016, approximately 20% of our total current employees were participants in such multiemployer plans. These plans generally provide retirement benefits to participants based on their service to contributing employers. We do not administer these plans. In general, these plans are managed by a board of trustees with the unions appointing certain trustees and other contributing employers of the plan appointing certain members. We generally are not represented on the board of trustees.

Based on the information available to us, we believe that some of the multiemployer plans to which we contribute are either "critical" or "endangered" as those terms are defined in the Pension Protection Act (PPA). The PPA requires underfunded pension plans to improve their funding ratios within prescribed intervals based on the level of their underfunding. Until the plan trustees develop the funding improvement plans or rehabilitation plans as required by the

PPA, we cannot determine the amount of assessments we may be subject to, if any. Accordingly, we cannot presently determine the effect that the PPA may have on our consolidated financial position, results of operations or cash flows. Furthermore, under current law regarding multiemployer benefit plans, a plan's termination, our voluntary withdrawal (which we consider from time to time), or the mass withdrawal of all contributing employers from any under-funded multiemployer pension plan would require us to make payments to the plan for our proportionate share of the multiemployer plan's unfunded vested liabilities. It is possible that there may be a mass withdrawal of employers contributing to these plans or plans may

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terminate in the near future. We could have adjustments to our estimates for these matters in the near term that could have a material effect on our consolidated financial position, results of operations and cash flows.

Republic's participation in individually significant multiemployer pension plans for the year ended December 31, 2016 is outlined in the table below. Only with respect to multiemployer pension plans, we considered contributions in excess of $2.0 million in any period disclosed to be individually significant. The most recent PPA zone status available in 2016 and 2015 is for the plans' year ended September 30 or December 31, 2015 and 2014, respectively. The status is based on information that Republic received from the plans and is certified by the plans' actuary. Among other factors, plans in the "critical" red zone are generally less than 65% funded, plans in the "endangered" yellow zone are less than 80% funded, and plans in the "safe" green zone are at least 80% funded. The last column lists the expiration dates of the CBAs to which the plans are subject. There have been no significant changes that affect the comparability of the 2016, 2015 and 2014 contributions.

		Pension Protection Act Zone Status		Funding Improvement or Rehabilitation Plan Status	Republic Contributions to Plan			Surcharge	Expiration Dates
Legal Plan Name	EIN	2015	2014	Pending / Implemented	2016	2015	2014	Imposed	of CBAs
Local 731 Private Scavengers and Garage Attendants Pension Trust Fund	36-6513567	Safe	Safe	Implemented	9.3	10.2	9.2	No	Various dates through 1/31/19
Western Conference of Teamsters Pension Plan	91-6145047	Safe	Safe	No	36.3	33.4	30.8	No	Various dates through 9/30/21
New England Teamsters & Trucking Industry Pension	04-6372430	Critical	Critical	Implemented	2.8	2.4	1.8	No	6/30/2020
Midwest Operating Engineers Pension Fund	36-6140097	Endangered	Endangered	Implemented	2.0	2.0	1.9	No	Various dates through 11/30/17
Individually significant plans					50.4	48.0	43.7		
All other plans	N/A	N/A	N/A	N/A	9.3	8.9	8.1	N/A	
Total					$59.7	$56.9	$51.8		

We are listed in the Form 5500 for Local 731 Private Scavengers and Garage Attendants Pension Trust Fund as providing more than 5% of the total contributions. At the date these financial statements were issued, Forms 5500 were not available for the plan years ended in 2016.

Central States, Southeast and Southwest Areas Pension Fund

Before September 30, 2013, we had CBAs with local bargaining units of the Teamsters under which we contributed to the Central States, Southeast and Southwest Areas Pension Fund (the Fund). These CBAs were under negotiation during 2012 and 2013. As part of our CBA negotiations, we partially withdrew from participation in the Fund in 2012 and completely withdrew from the Fund in 2013. Accordingly, we were required to make payments to the Fund for our allocated share of its unfunded vested liabilities.

In December 2015 we settled outstanding liabilities with respect to the withdrawal events and paid $139.0 million to the Fund. The settlement of the withdrawal liability was based on negotiations and discussions between Republic and the Fund. As of December 31, 2016, the settlement has been paid and we have no remaining liability for our withdrawal from the Fund.

Defined Contribution Plan

We maintain the Republic Services 401(k) Plan (401(k) Plan), which is a defined contribution plan covering all eligible employees. Under the 401(k) Plan, participants may direct us to defer a portion of their compensation to the 401(k) Plan, subject to Internal Revenue Code limitations. We provide for an employer matching contribution equal to 100% of the first 3% of eligible compensation and 50% of the next 2% of eligible compensation contributed by each employee, which is funded in cash. All contributions vest immediately.

Total expense recorded for matching 401(k) contributions in 2016, 2015 and 2014 was $40.9 million, $37.3 million and $32.1 million, respectively.

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Deferred Compensation Plan
We provide eligible Republic employees, officers and directors with the opportunity to voluntarily defer base salary, bonus payments, long-term incentive awards and other compensation, as applicable, on a pre-tax basis through the Republic Services, Inc. Deferred Compensation Plan (the DCP). The DCP is a nonqualified deferred compensation plan that conforms to Section 409A of the Internal Revenue Code. Eligible participants can defer up to 80% of base salary and up to 100% of bonus, long-term compensation and directors' fees. Under the DCP, some participants also are eligible for matching contributions. The matching contribution under the DCP is equal to the lesser of 2% of the participant's compensation over established 401(k) limits or 50% of the amount the participant has deferred. The DCP participants have no ownership or security interest in any of the amounts deferred or the measurement funds under the DCP. The right of each participant in the DCP is solely that of a general, unsecured creditor of Republic with respect to his or her own interest under the DCP. Deferred amounts may be subject to forfeiture and are deemed invested among investment funds offered under the DCP, as directed by each participant. Payments of deferred amounts are payable following separation from service or at a date or dates elected by the participant when the deferral is elected. Payments of deferred amounts are made in either a lump sum or in annual installments over a period not exceeding 15 years.
Republic invested in corporate-owned life insurance policies to satisfy future obligations under the DCP. These corporate-owned life insurance policies are held in a Rabbi Trust and are recorded at the amount that can be realized under insurance contracts at the balance sheet date, which is the cash surrender value adjusted for other charges or other amounts due that are probable at settlement. The aggregate cash surrender value of these life insurance policies was $87.9 million and $90.5 million as of December 31, 2016 and 2015, respectively, and is classified in other assets in our consolidated balance sheets. The DCP liability was $88.3 million and $83.3 million as of December 31, 2016 and 2015, respectively, and is classified in other long-term liabilities in our consolidated balance sheets.
Employee Stock Purchase Plan
Republic employees are eligible to participate in an employee stock purchase plan. The plan allows participants to purchase our common stock for 95% of its quoted market price on the last day of each calendar quarter. For the years ended December 31, 2016, 2015 and 2014, issuances under this plan totaled 130,085 shares, 141,055 shares and 139,941 shares, respectively. As of December 31, 2016, shares reserved for issuance to employees under this plan totaled 0.5 million and Republic held employee contributions of approximately $1.5 million for the purchase of common stock.

12. STOCK REPURCHASES AND DIVIDENDS
Stock Repurchases
Stock repurchase activity during the years ended December 31, 2016 and 2015 follows (in millions except per share amounts):

	2016	2015
Number of shares repurchased	8.4	9.8
Amount paid	$403.8	$404.7
Weighted average cost per share	$48.56	$41.39

As of December 31, 2016, there were no repurchased shares pending settlement.
In October 2015, our board of directors added $900.0 million to the existing share repurchase authorization, which now extends through December 31, 2017. Share repurchases under the program may be made through open market purchases or privately negotiated transactions in accordance with applicable federal securities laws. While the board of directors has approved the program, the timing of any purchases, the prices and the number of shares of common stock to be purchased will be determined by our management, at its discretion, and will depend upon market conditions and other factors. The share repurchase program may be extended, suspended or discontinued at any time. As of December 31, 2016, the October 2015 repurchase program had remaining authorized purchase capacity of $451.7 million.

In December 2015, our board of directors changed the status of 71,272,964 treasury shares to authorized and unissued. In doing so, the number of our issued shares was reduced by the stated amount. Our accounting policy is to deduct the par value from common stock and to reflect the excess of cost over par value as a deduction from additional paid-in capital. The change in unissued shares resulted in a reduction of $2,295.3 million in treasury stock, $0.6 million in common stock, and $2,294.7 million in additional paid-in capital. There was no effect on our total stockholders' equity position as a result of the change.

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Dividends

In October 2016, our board of directors approved a quarterly dividend of $0.32 per share. Cash dividends declared were $423.8 million, $404.3 million and $383.6 million for the years ended December 31, 2016, 2015 and 2014, respectively. As of December 31, 2016, we recorded a quarterly dividend payable of $108.6 million to shareholders of record at the close of business on January 3, 2017.

13. EARNINGS PER SHARE

Basic earnings per share is computed by dividing net income attributable to Republic Services, Inc. by the weighted average number of common shares (including vested but unissued RSUs) outstanding during the period. Diluted earnings per share is based on the combined weighted average number of common shares and common share equivalents outstanding, which include, where appropriate, the assumed exercise of employee stock options, unvested RSUs and unvested PSUs at the expected attainment levels. We use the treasury stock method in computing diluted earnings per share.

Earnings per share for the years ended December 31, 2016, 2015, and 2014 are calculated as follows (in thousands, except per share amounts):

	2016	2015	2014
Basic earnings per share:			
Net income attributable to Republic Services, Inc.	$612,588	$749,906	$547,600
Weighted average common shares outstanding	343,024	349,984	356,673
Basic earnings per share	$1.79	$2.14	$1.54
Diluted earnings per share:			
Net income attributable to Republic Services, Inc.	$612,588	$749,906	$547,600
Weighted average common shares outstanding	343,024	349,984	356,673
Effect of dilutive securities:			
Options to purchase common stock	1,076	1,255	1,350
Unvested RSU awards	190	137	84
Unvested PSU awards	100	12	—
Weighted average common and common equivalent shares outstanding	344,390	351,388	358,107
Diluted earnings per share	$1.78	$2.13	$1.53
Antidilutive securities not included in the diluted earnings per share calculations:			
Options to purchase common stock	—	9	274

14. SEGMENT REPORTING

In January 2016, we realigned our field support functions by combining our three regions into two field groups, consolidating our areas and streamlining select operational support roles at our Phoenix headquarters. Following our restructuring, our senior management now evaluates, oversees and manages the financial performance of our operations through two field groups, referred to as Group 1 and Group 2. Group 1 primarily consists of geographic areas located in the western and portions of the mid-western United States, and Group 2 primarily consists of geographic areas located in Texas, the southeastern and portions of the mid-western United States, and the eastern seaboard of the United States.

We manage and evaluate our operations through the two field groups, Group 1 and Group 2. These two groups are presented below as our reportable segments, which provide integrated waste management services consisting of non-hazardous solid waste collection, transfer, recycling, disposal and energy services.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Summarized financial information concerning our reportable segments for the years ended December 31, 2016, 2015 and 2014 follows:

	Gross Revenue	Intercompany Revenue	Net Revenue	Depreciation, Amortization, Depletion and Accretion	Operating Income (Loss)	Capital Expenditures	Total Assets
2016:							
Group 1	$5,222.9	$ (1,037.6)	$4,185.3	$ 414.4	$895.5	$ 446.0	$ 9,163.3
Group 2	5,930.0	(916.5)	5,013.5	538.7	1,026.9	346.4	9,901.3
Corporate entities	202.5	(13.6)	188.9	117.1	(384.9)	135.4	1,565.0
Total	$11,355.4	$ (1,967.7)	$9,387.7	$ 1,070.2	$1,537.5	$ 927.8	$ 20,629.6
2015:							
Group 1	$5,032.3	$ (1,006.4)	$4,025.9	$ 398.9	$857.2	$ 430.7	$ 9,183.7
Group 2	5,803.4	(878.9)	4,924.5	542.6	953.5	352.2	9,909.0
Corporate entities	177.8	(13.2)	164.6	108.5	(251.9)	162.7	1,443.2
Total	$11,013.5	$ (1,898.5)	$9,115.0	$ 1,050.0	$1,558.8	$ 945.6	$ 20,535.9
2014:							
Group 1	$4,795.0	$ (959.1)	$3,835.9	$ 368.9	$826.0	$ 475.2	$ 9,237.8
Group 2	5,638.5	(849.3)	4,789.2	507.3	938.6	329.7	9,504.2
Corporate entities	192.8	(14.6)	178.2	108.7	(531.5)	57.6	1,310.4
Total	$10,626.3	$ (1,823.0)	$8,803.3	$ 984.9	$1,233.1	$ 862.5	$ 20,052.4

Intercompany revenue reflects transactions within and between segments that generally are made on a basis intended to reflect the market value of such services. Capital expenditures for corporate entities primarily include vehicle inventory acquired but not yet assigned to operating locations and facilities. Corporate functions include legal, tax, treasury, information technology, risk management, human resources, closed landfills and other administrative functions. During 2016 and 2014, we completed various refinancing transactions that resulted in cash paid for premiums and professional fees to repurchase outstanding debt, as well as non-cash charges for unamortized debt discounts and deferred issuance costs. See Note 9, Debt. During the years ended December 31, 2015 and 2014, environmental remediation charges and recoveries were incurred at our closed Bridgeton Landfill in Missouri. During 2014, we recorded charges related to our withdrawal from the Central States, Southeast and Southwest Areas Pension Fund and reached a settlement during 2015.

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REPUBLIC SERVICES, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following table reflects our revenue by service line for the years ended December 31 (in millions of dollars and as a percentage of revenue):

	2016		2015		2014	
Collection:						
Residential	$2,239.7	23.9 %	$2,242.3	24.6 %	$2,193.6	24.9 %
Small-container commercial	2,877.5	30.7	2,799.9	30.7	2,723.3	30.9
Large-container industrial	1,975.8	21.0	1,890.2	20.7	1,784.0	20.3
Other	38.2	0.4	39.8	0.4	37.2	0.4
Total collection	7,131.2	76.0	6,972.2	76.4	6,738.1	76.5
Transfer	1,157.6		1,112.7		1,062.6	
Less: intercompany	(694.1)		(682.3)		(654.4)	
Transfer, net	463.5	4.9	430.4	4.7	408.2	4.6
Landfill	2,083.6		2,036.4		1,975.8	
Less: intercompany	(962.4)		(951.9)		(928.1)	
Landfill, net	1,121.2	11.9	1,084.5	11.9	1,047.7	11.9
Energy services	76.4	0.8	95.8	1.1	38.7	0.5
Other:						
Sale of recycled commodities	420.4	4.5	372.0	4.1	405.8	4.6
Other non-core	175.0	1.9	160.1	1.8	164.8	1.9
Total other	595.4	6.4	532.1	5.9	570.6	6.5
Total revenue	$9,387.7	100.0%	$9,115.0	100.0%	$8,803.3	100.0%

Other non-core revenue consists primarily of revenue from National Accounts, which represents the portion of revenue generated from nationwide contracts in markets outside our operating areas where the associated waste handling services are subcontracted to local operators. Consequently, substantially all of this revenue is offset with related subcontract costs, which are recorded in cost of operations.

15. CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS) BY COMPONENT

A summary of changes in accumulated other comprehensive loss (income), net of tax, by component, for the years ended December 31, 2016, 2015 and 2014 follows:

	Cash Flow Hedges	Defined Benefit Pension Plan	Total
Balance as of December 31, 2013	$ 19.3	$ (22.3)	$ (3.0)
Other comprehensive loss before reclassifications	23.8	9.3	33.1
Amounts reclassified from accumulated other comprehensive income	(1.2)	—	(1.2)
Net current-period other comprehensive loss	22.6	9.3	31.9
Balance as of December 31, 2014	41.9	(13.0)	28.9
Other comprehensive loss before reclassifications	18.4	1.9	20.3
Amounts reclassified from accumulated other comprehensive loss	(18.7)	—	(18.7)
Net current-period other comprehensive loss (income)	(0.3)	1.9	1.6
Balance as of December 31, 2015	41.6	(11.1)	30.5
Other comprehensive income before reclassifications	(11.8)	(6.4)	(18.2)
Amounts reclassified from accumulated other comprehensive income	(26.5)	—	(26.5)
Net current-period other comprehensive income	(38.3)	(6.4)	(44.7)

Balance as of December 31, 2016	$ 3.3	$ (17.5)	$ (14.2)

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A summary of reclassifications out of accumulated other comprehensive loss (income) for the years ended December 31, 2016, 2015 and 2014 follows:

Details about Accumulated Other Comprehensive Loss (Income) Components	2016	2015	2014	Affected Line Item in the Statement Where Net Income is Presented
	Amount Reclassified from Accumulated Other Comprehensive Loss (Income)			
Gain (loss) on cash flow hedges:				
Fuel hedges	$(34.1)	$(28.5)	$0.7	Cost of operations
Interest rate contracts	(9.8)	(2.5)	(2.7)	Interest expense
	(43.9)	(31.0)	(2.0)	Total before tax
	17.4	12.3	0.8	Tax benefit (expense)
	(26.5)	(18.7)	(1.2)	Net of tax
Total loss reclassified into earnings	$(26.5)	$(18.7)	$(1.2)	

16. FINANCIAL INSTRUMENTS

Fuel Hedges

We have entered into multiple swap agreements designated as cash flow hedges to mitigate some of our exposure related to changes in diesel fuel prices. These swaps qualified for, and were designated as, effective hedges of changes in the prices of forecasted diesel fuel purchases (fuel hedges).

The following table summarizes our outstanding fuel hedges as of December 31, 2016:

Year	Gallons Hedged	Weighted Average Contract Price per Gallon
2017	12,000,000	$2.92
2018	3,000,000	2.61

If the national U.S. on-highway average price for a gallon of diesel fuel as published by the Department of Energy exceeds the contract price per gallon, we receive the difference between the average price and the contract price (multiplied by the notional gallons) from the counterparty. If the average price is less than the contract price per gallon, we pay the difference to the counterparty.

The fair values of our fuel hedges are determined using standard option valuation models with assumptions about commodity prices based on those observed in underlying markets (Level 2 in the fair value hierarchy). The aggregate fair values of our outstanding fuel hedges as of December 31, 2016 and 2015 were current liabilities of $2.7 million and $37.8 million, respectively, and have been recorded in other accrued liabilities in our consolidated balance sheets.

The ineffective portions of the changes in fair values resulted in a gain of $0.8 million for the year ended December 31, 2016, and a loss of $0.4 million and $0.5 million for the years ended December 31, 2015 and 2014, respectively, and have been recorded in other income, net in our consolidated statements of income.

Total gain (loss) recognized in other comprehensive income (loss) for fuel hedges (the effective portion) was $20.7 million, $(2.0) million and $(24.2) million, for the years ended December 31, 2016, 2015 and 2014, respectively. We classify cash inflows and outflows from our fuel hedges within operating activities in the unaudited consolidated statements of cash flows.

Recycling Commodity Hedges

Revenue from the sale of recycled commodities is primarily from sales of old corrugated containers and old newsprint. From time to time we use derivative instruments such as swaps and costless collars designated as cash flow hedges to manage our exposure to changes in prices of these commodities. During 2016, we entered into multiple agreements related to the forecasted OCC sales. The agreements qualified for, and were designated as, effective hedges of changes in the prices of certain forecasted recycling commodity sales (commodity hedges).

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REPUBLIC SERVICES, INC.
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We entered into costless collar agreements on forecasted sales of OCC. The agreements involve combining a purchased put option giving us the right to sell OCC at an established floor strike price with a written call option obligating us to deliver OCC at an established cap strike price. The puts and calls have the same settlement dates, are net settled in cash on such dates and have the same terms to expiration. The contemporaneous combination of options resulted in no net premium for us and represents costless collars. Under these agreements, we will make or receive no payments as long as the settlement price is between the floor price and cap price; however, if the settlement price is above the cap, we will pay the counterparty an amount equal to the excess of the settlement price over the cap times the monthly volumes hedged. If the settlement price is below the floor, the counterparty will pay us the deficit of the settlement price below the floor times the monthly volumes hedged. The objective of these agreements is to reduce variability of cash flows for forecasted sales of OCC between two designated strike prices.
The following table summarizes our outstanding costless collar hedges for OCC as of December 31, 2016:

Year	Tons Hedged	Weighted Average Floor Strike Price per Ton	Weighted Average Cap Strike Price per Ton
2017	120,000	$81.50	$120.00
2018	120,000	81.50	120.00

Costless collar hedges are recorded in our consolidated balance sheets at fair value. Fair values of costless collars are determined using standard option valuation models with assumptions about commodity prices based upon forward commodity price curves in underlying markets (Level 2 in the fair value hierarchy). We had no outstanding recycling commodity hedges as of December 31, 2015.
The aggregated fair values of the outstanding recycling commodity hedges as of December 31, 2016 were current liabilities of $0.8 million, and have been recorded in other accrued liabilities in our consolidated balance sheets. No amounts were recognized in other income, net in our consolidated statements of income for the ineffective portion of the changes in fair values during the years ended December 31, 2016, 2015 and 2014.
Total loss recognized in other comprehensive income for recycling commodity hedges (the effective portion) was $(0.5) million for the year ended December 31, 2016. No amount was recognized in other comprehensive income for 2015. Total gain recognized in other comprehensive income for recycling commodity hedges (the effective portion) was $0.1 million for the year ended December 31, 2014.
Fair Value Measurements
In measuring fair values of assets and liabilities, we use valuation techniques that maximize the use of observable inputs (Level 1) and minimize the use of unobservable inputs (Level 3). We also use market data or assumptions that we believe market participants would use in pricing an asset or liability, including assumptions about risk when appropriate.
The carrying value for certain of our financial instruments, including cash, accounts receivable, accounts payable and certain other accrued liabilities, approximates fair value because of their short-term nature.

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As of December 31, 2016 and 2015, our assets and liabilities that are measured at fair value on a recurring basis include the following:

	December 31, 2016				
		Fair Value			
	Carrying Amount	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:					
Money market mutual funds	$23.8	$23.8	$ 23.8	$ —	$ —
Bonds - restricted cash and marketable securities and other assets	57.6	57.6	—	57.6	—
Interest rate swaps - other assets	12.1	12.1	—	12.1	—
Total assets	$93.5	$93.5	$ 23.8	$ 69.7	$ —
Liabilities:					
Fuel hedges - other accrued liabilities	$2.7	$2.7	$ —	$ 2.7	$ —
Commodity hedges - other accrued liabilities	0.8	0.8	—	0.8	—
Contingent consideration - other long-term liabilities	68.9	$68.9	$ —	$ —	$ 68.9
Total liabilities	$72.4	$72.4	$ —	$ 3.5	$ 68.9

	December 31, 2015				
		Fair Value			
	Carrying Amount	Total	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:					
Money market mutual funds	$43.0	$43.0	$ 43.0	$ —	$ —
Bonds - restricted cash and marketable securities and other assets	56.3	56.3	—	56.3	—
Interest rate swaps - other assets	16.5	16.5	—	16.5	—
Total assets	$115.8	$115.8	$ 43.0	$ 72.8	$ —
Liabilities:					
Fuel hedges - other accrued liabilities	$37.8	$37.8	$ —	$ 37.8	$ —
Contingent consideration - other long-term liabilities	69.6	69.6	—	—	69.6
Total liabilities	$107.4	$107.4	$ —	$ 37.8	$ 69.6

Total Debt

As of December 31, 2016, the carrying value of our total debt was $7.7 billion and the fair value of our total debt was $8.3 billion. As of December 31, 2015, the carrying value of our total debt was $7.5 billion and the fair value of our total debt was $8.2 billion. The estimated fair value of our fixed rate senior notes and debentures is based on quoted market prices. The fair value of our remaining notes payable, tax-exempt financings and borrowings under our credit facilities approximates the carrying value because the interest rates are variable. The fair value estimates are based on Level 2 inputs of the fair value hierarchy as of December 31, 2016 and 2015. See Note 9, Debt, for further information related to our debt.

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Contingent Consideration

In April 2015, we entered into a waste management contract with the County of Sonoma, California to operate the county's waste management facilities. See Note 3, Business Acquisitions, for further information related to our acquisition. As of December 31, 2016, the Sonoma contingent consideration represents the fair value of $68.9 million payable to the County of Sonoma based on the achievement of future annual tonnage targets through the expected remaining capacity of the landfill, which we estimate to be approximately 27 years. The potential undiscounted amount of all future contingent payments that we could be required to make under the waste management contract is estimated to be between approximately $88 million and $177 million. During 2016, the activity in the contingent consideration liability included accretion, which was offset by concession payments made in the ordinary course of business. There were no changes to the estimate of fair value.

The fair value of the contingent consideration was determined using probability assessments of the expected future consideration payments over the remaining useful life of the landfill, and applying a discount rate of 4.0%. The future consideration payments are based on significant inputs that are not observable in the market. Key assumptions include volume of annual tons disposed at the landfill, price paid per annual ton, and the discount rate that represent the best estimates of management, which are subject to remeasurement at each reporting date. The contingent consideration liability is classified within Level 3 of the fair value hierarchy.

17. COMMITMENTS AND CONTINGENCIES

Legal Proceedings

We are subject to extensive and evolving laws and regulations and have implemented safeguards to respond to regulatory requirements. In the normal course of our business, we become involved in legal proceedings. Some may result in fines, penalties or judgments against us, which may impact earnings and cash flows for a particular period. Although we cannot predict the ultimate outcome of any legal matter with certainty, we do not believe the outcome of any of our pending legal proceedings will have a material adverse effect on our consolidated financial position, results of operations or cash flows.

As used herein, the term legal proceedings refers to litigation and similar claims against us and our subsidiaries, excluding: (1) ordinary course accidents, general commercial liability and workers' compensation claims, which are covered by insurance programs, subject to customary deductibles, and which, together with insured employee health care costs, are discussed in Note 7, Other Liabilities; and (2) environmental remediation liabilities, which are discussed in Note 8, Landfill and Environmental Costs.

We accrue for legal proceedings when losses become probable and reasonably estimable. We have recorded an aggregate accrual of approximately $48 million relating to our outstanding legal proceedings as of December 31, 2016. As of the end of each applicable reporting period, we review each of our legal proceedings and, where it is probable that a liability has been incurred, we accrue for all probable and reasonably estimable losses. Where we can reasonably estimate a range of losses we may incur regarding such a matter, we record an accrual for the amount within the range that constitutes our best estimate. If we can reasonably estimate a range but no amount within the range appears to be a better estimate than any other, we use the amount that is the low end of such range. If we had used the high ends of such ranges, our aggregate potential liability would be approximately $45 million higher than the amount recorded as of December 31, 2016.

Lease Commitments

We and our subsidiaries lease real property, equipment and software under various operating leases with remaining terms from one month to 30 years. Rent expense during the years ended December 31, 2016, 2015 and 2014 was $56.8 million, $53.6 million and $49.1 million, respectively.

Future minimum lease obligations under non-cancelable operating leases with initial terms in excess of one year as of December 31, 2016 are as follows:

2017	$34.7
2018	32.2

2019	29.6
2020	27.3
2021	25.1
Thereafter	85.5
	$234.4

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Unconditional Purchase Commitments

Royalties

We have entered into agreements to pay royalties to prior landowners, lessors or host communities, based on, among other things, revenue received and waste tonnage disposed at specified landfills. These royalties are generally payable quarterly and amounts incurred, but not paid, are accrued in our consolidated balance sheets. Royalties are accrued as revenue is received or tonnage is disposed of, as applicable, in the landfills.

Disposal Agreements

We have several agreements that require us to dispose of a minimum number of tons at third-party disposal facilities. Under these put-or-pay agreements, we must pay for agreed-upon minimum volumes regardless of the actual number of tons placed at the facilities.

Our unconditional purchase commitments have varying expiration dates, with some extending through the remaining life of the respective landfill. Future minimum payments under unconditional purchase commitments, consisting primarily of (1) disposal related agreements, which include fixed or minimum royalty payments, host agreements, and take-or-pay and put-or-pay agreements, and (2) other obligations including committed capital expenditures and consulting service agreements as of December 31, 2016 are as follows:

2017	$224.0
2018	73.1
2019	57.1
2020	35.3
2021	24.3
Thereafter	348.2
	$762.0

Restricted Cash and Other Financial Guarantees

We must provide financial assurance to governmental agencies and a variety of other entities under applicable environmental regulations relating to our landfill operations for capping, closure and post-closure costs, and our performance under certain collection, landfill and transfer station contracts. We satisfy our financial assurance requirements by providing surety bonds, letters of credit, insurance policies or trust deposits. The amount of the financial assurance requirements for capping, closure and post-closure costs is determined by applicable state environmental regulations, which vary by state. The financial assurance requirements for capping, closure and post-closure costs can either be for costs associated with a portion of the landfill or the entire landfill. Generally, states will require a third-party engineering specialist to determine the estimated capping, closure and post-closure costs that are used to determine the required amount of financial assurance for a landfill. The amount of financial assurance required can, and generally will, differ from the obligation determined and recorded under U.S. GAAP. The amount of the financial assurance requirements related to contract performance varies by contract. Additionally, we are required to provide financial assurance for our insurance program and collateral for certain performance obligations.

We had the following financial instruments and collateral in place to secure our financial assurances as of December 31:

	2016	2015
Letters of credit	$503.4	$548.1
Surety bonds	3,109.3	3,055.8

The outstanding letters of credit used $478.4 million and $503.3 million as of December 31, 2016 and 2015, respectively, of availability under our Credit Facilities. Surety bonds subject to expiration will expire on various dates through 2024.

These financial instruments are issued in the normal course of business and are not debt. Because we currently have no liability for this financial assurance, it is not reflected in our consolidated balance sheets. However, we have recorded capping, closure and post-closure obligations and insurance reserves as they are incurred.

Our restricted cash and marketable securities include, among other things, restricted cash and marketable securities held for capital expenditures under certain debt facilities, restricted cash pursuant to a holdback arrangement, restricted cash and marketable securities pledged to regulatory agencies and governmental entities as financial guarantees of our performance

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related to our final capping, closure and post-closure obligations at our landfills, and restricted cash and marketable securities related to our insurance obligations.

The following table summarizes our restricted cash and marketable securities as of December 31:

	2016	2015
Financing proceeds	$—	$2.1
Holdback escrow	—	16.8
Capping, closure and post-closure obligations	27.9	27.3
Insurance	62.6	54.1
Total restricted cash and marketable securities	$90.5	$100.3

We own a 19.9% interest in a company that, among other activities, issues financial surety bonds to secure capping, closure and post-closure obligations for companies operating in the solid waste industry. We account for this investment under the cost method of accounting. There have been no identified events or changes in circumstances that may have a significant adverse effect on the recoverability of this investment. This investee company and the parent company of the investee had written surety bonds for us relating primarily to our landfill operations for capping, closure and post-closure, of which $1,225.5 million were outstanding as of December 31, 2016. Our reimbursement obligations under these bonds are secured by an indemnity agreement with the investee and letters of credit. There were no letters of credit outstanding as of December 31, 2016 and 2015 associated with these reimbursement obligations.

Off-Balance Sheet Arrangements

We have no off-balance sheet debt or similar obligations, other than operating leases and the financial assurances discussed above, which are not classified as debt. We have no transactions or obligations with related parties that are not disclosed, consolidated into or reflected in our reported financial position or results of operations. We have not guaranteed any third-party debt.

Guarantees

We enter into contracts in the normal course of business that include indemnification clauses. Indemnifications relating to known liabilities are recorded in the consolidated financial statements based on our best estimate of required future payments. Certain of these indemnifications relate to contingent events or occurrences, such as the imposition of additional taxes due to a change in the tax law or adverse interpretation of the tax law, and indemnifications made in divestiture agreements where we indemnify the buyer for liabilities that relate to our activities prior to the divestiture and that may become known in the future. We do not believe that these contingent obligations will have a material effect on our consolidated financial position, results of operations or cash flows.

We have entered into agreements with property owners to guarantee the value of property that is adjacent to certain of our landfills. These agreements have varying terms. We do not believe that these contingent obligations will have a material effect on our consolidated financial position, results of operations or cash flows.

Other Matters

Our business activities are conducted in the context of a developing and changing statutory and regulatory framework. Governmental regulation of the waste management industry requires us to obtain and retain numerous governmental permits to conduct various aspects of our operations. These permits are subject to revocation, modification or denial. The costs and other capital expenditures that may be required to obtain or retain the applicable permits or comply with applicable regulations could be significant. Any revocation, modification or denial of permits could have a material adverse effect on us.

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REPUBLIC SERVICES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

18. SELECTED QUARTERLY FINANCIAL DATA (unaudited)
The following table summarizes our unaudited consolidated quarterly results of operations as reported for 2016 and 2015:

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2016:				
Revenue	$2,248.6	$2,350.7	$2,409.3	$2,379.1
Operating income	345.5	382.1	417.9	392.0
Net income	156.9	181.0	85.7	189.6
Net income attributable to Republic Services, Inc.	156.7	180.8	85.6	189.5
Diluted earnings per common share(1)	0.45	0.52	0.25	0.55
2015:				
Revenue	$2,169.4	$2,311.4	$2,344.0	$2,290.2
Operating income	372.8	389.2	442.9	353.9
Net income	172.5	190.3	215.2	172.4
Net income attributable to Republic Services, Inc.(1)	172.4	190.3	215.0	172.3
Diluted earnings per common share	0.49	0.54	0.61	0.49

(1) Line items in these rows do not total to amounts reported in the consolidated statements of income due to rounding.

During the third quarter of 2016, we incurred a loss on the early extinguishment of debt and other related costs of $203.4 million. See Note 9, Debt, for a summary of these charges. During the first quarter of 2016, we recorded charges of $5.6 million for withdrawal events at the multiemployer pension plan to which we contribute related to our operations in Puerto Rico.

During the fourth quarter of 2015, we recorded charges of $4.1 million for withdrawal events at the multiemployer pension plan to which we contribute related to our operations in Puerto Rico, as well as $0.4 million of related legal charges. During the third quarter of 2015, we recorded a reduction to remediation expenses of $50.0 million related to an insurance recovery at our closed Bridgeton Landfill.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

REPORT OF MANAGEMENT ON REPUBLIC SERVICES, INC.'S INTERNAL CONTROL OVER FINANCIAL REPORTING

We, as members of management of Republic Services, Inc., are responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Internal control over financial reporting is a process designed 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. Internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of our assets; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, our internal control systems and procedures may not prevent or detect misstatements. An internal control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Also, projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies and procedures may deteriorate.

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We, under the supervision of and with the participation of our management, including the Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer, assessed the effectiveness of our internal control over financial reporting as of December 31, 2016, based on criteria for effective internal control over financial reporting described in "Internal Control — Integrated Framework (2013)" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, we concluded that we maintained effective internal control over financial reporting as of December 31, 2016, based on the specified criteria.

Our internal control over financial reporting has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their attestation report which is included herein.

Disclosure Controls and Procedures

We carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e), and 15d-15(e)) as of the end of the period covered by this Annual Report. Based upon that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by this Annual Report.

Changes in Internal Control Over Financial Reporting

Based on an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, there has been no change in our internal control over financial reporting during the period covered by this Form 10-K identified in connection with that evaluation, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information required by this item is incorporated by reference to the material appearing under the headings “Proposal 1 - Election of Directors,” “Biographical Information Regarding Directors/Nominees and Executive Officers,” “Board of Directors and Corporate Governance Matters,” “Section 16(a) Beneficial Ownership Reporting Compliance” and “Executive Officers” in the Proxy Statement for the 2017 Annual Meeting of Shareholders.

ITEM 11. EXECUTIVE COMPENSATION

Information required by this item is incorporated by reference to the material appearing under the headings “Executive Compensation” and “Director Compensation” in the Proxy Statement for the 2017 Annual Meeting of Shareholders.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information required by this item is incorporated by reference to the material appearing under the headings “Security Ownership of Five Percent Shareholders” and “Security Ownership of the Board of Directors and Management” in the Proxy Statement for the 2017 Annual Meeting of Shareholders.

The following table sets forth certain information regarding equity compensation plans as of December 31, 2016 (number of securities in millions):

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options and Rights (b)	Weighted Average Exercise Price of Outstanding Options and Rights (c)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in the first column) (d)
Equity compensation plans approved by security holders (a)	5.5	$ 30.56	30.9
Equity compensation plans not approved by security holders	—	—	—
Total	5.5	$ 30.56	30.9

(a) Includes our 2006 Plan, Amended and Restated 2007 Stock Incentive Plan and our 2009 Employee Stock Purchase Plan (ESPP).

(b) Includes 3.2 million stock options, 1.8 million shares underlying restricted stock units, 0.5 million shares underlying performance shares, and less than 0.1 million shares underlying purchase rights that accrue under the ESPP.

(c) Excludes restricted stock units and performance shares as these awards do not have exercise prices.

(d) The shares remaining available for future issuances include 14.9 million shares under our Amended and Restated 2007 Stock Incentive Plan and 0.5 million shares under our ESPP.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information required by this item is incorporated by reference to the material appearing under the heading “Board of Directors and Corporate Governance Matters” in the Proxy Statement for the 2017 Annual Meeting of Shareholders.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information required by this item is incorporated by reference to the material appearing under the heading “Audit and Related Fees” in the Proxy Statement for the 2017 Annual Meeting of Shareholders.

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PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this report:

1. Financial Statements

Our consolidated financial statements are set forth under Item 8 of this Form 10-K.

2. Financial Statement Schedules

All schedules are omitted as the required information is not applicable or the information is presented in the consolidated financial statements and notes thereto in Item 8 of this Form 10-K.

3. Exhibits

The following exhibits are filed herewith or are incorporated by reference to exhibits previously filed with the Commission, as indicated in the description of each, File No. 1-14267 in the case of Republic and File No. 1-14705 and No. 0-19285 in the case of Allied.

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation (incorporated by reference to Exhibit 3.1 of the Company’s Quarterly Report on Form 10-Q for the period ended June 30, 1998).
3.2	Certificate of Amendment of Amended and Restated Certificate of Incorporation of Republic Services, Inc. (incorporated by reference to Exhibit 4.2 of the Company’s Registration Statement on Form S-8, Registration No. 333-81801, filed with the Commission on June 29, 1999).
3.3	Amended and Restated Bylaws of Republic Services, Inc. (incorporated by reference to Exhibit 3.3 of the Company's Current Report on Form 8-K dated May 6, 2016).
4.1	Republic Services, Inc. Common Stock Certificate (incorporated by reference to Exhibit 4.4 of the Company’s Registration Statement on Form S-8, Registration No. 333-81801, filed with the Commission on June 29, 1999).
4.2	Second Supplemental Indenture, dated as of March 21, 2005, to the Indenture dated as of August 15, 2001, by and between Republic Services, Inc. and The Bank of New York, as trustee, including the form of 6.086% Note due March 15, 2035 (incorporated by reference to Exhibit 4.1 of the Company’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2005).
4.3	Indenture, dated as of September 8, 2009, by and between Republic Services, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 of the Company’s Current Report on Form 8-K dated September 9, 2009).
4.4	First Supplemental Indenture, dated as of September 8, 2009, to the Indenture dated as of September 8, 2009, by and among Republic Services, Inc., the guarantors named therein and The Bank of New York Mellon Trust Company, N.A., as trustee, including the form of 5.500% Notes due 2019 (incorporated by reference to Exhibit 4.2 of the Company’s Current Report on Form 8-K dated September 9, 2009).
4.5	Second Supplemental Indenture, dated as of May 9, 2011, to the Indenture dated as of September 8, 2009, by and among Republic Services, Inc., the guarantors named therein and The Bank of New York Mellon Trust Company, N.A., as trustee, including the form of 3.800% Notes due 2018 (incorporated by reference to Exhibit 4.1 of the Company’s Current Report on Form 8-K dated May 9, 2011).
4.6	Third Supplemental Indenture, dated as of May 9, 2011, to the Indenture dated as of September 8, 2009, by and among Republic Services, Inc., the guarantors named therein and The Bank of New York Mellon Trust Company, N.A., as trustee, including the form of 4.750% Notes due 2023 (incorporated by reference to Exhibit 4.2 of the Company’s Current Report on Form 8-K dated May 9, 2011).
4.7	Fourth Supplemental Indenture, dated as of May 9, 2011, to the Indenture dated as of September 8, 2009, by and among Republic Services, Inc., the guarantors named therein and The Bank of New York Mellon Trust Company, N.A., as trustee, including the form of 5.700% Notes due 2041 (incorporated by reference to Exhibit 4.3 of the Company’s Current Report on Form 8-K dated May 9, 2011).
4.8	

Indenture, dated as of November 25, 2009, by and between Republic Services, Inc. and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated November 25, 2009).

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Exhibit Number	Description
4.9	First Supplemental Indenture, dated as of November 25, 2009, to the Indenture dated as of November 25, 2009, by and among Republic Services, Inc., the guarantors named therein and U.S. Bank National Association, as trustee, including the form of 5.25% Notes due 2021 (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K dated November 25, 2009).
4.10	Second Supplemental Indenture, dated as of March 4, 2010, to the Indenture dated as of November 25, 2009, by and among Republic Services, Inc., the guarantors named therein and U.S. Bank National Association, as trustee, including the form of 5.00% Notes due 2020 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated March 4, 2010).
4.11	Third Supplemental Indenture, dated as of March 4, 2010, to the Indenture dated as of November 25, 2009, by and among Republic Services, Inc., the guarantors named therein and U.S. Bank National Association, as trustee, including the form of 6.20% Notes due 2040 (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K dated March 4, 2010).
4.12	Indenture, dated as of May 21, 2012, by and between Republic Services, Inc. and Wells Fargo Bank, National Association, as trustee (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated May 21, 2012).
4.13	First Supplemental Indenture, dated as of May 21, 2012, to the Indenture dated as of May 21, 2012, by and between Republic Services, Inc. and Wells Fargo Bank, National Association, including the form of 3.55% Notes due 2022 (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K dated May 21, 2012).
4.14	Restated Indenture, dated as of September 1, 1991, by and between Browning-Ferris Industries, Inc. and First City, Texas-Houston, National Association, as trustee (incorporated by reference to Exhibit 4.22 of Allied's Registration Statement on Form S-4/A (No. 333-61744)).
4.15	First Supplemental Indenture, dated as of July 30, 1999, to the Restated Indenture dated as of September 1, 1991, by and among Allied Waste Industries, Inc., Allied Waste North America, Inc., Browning-Ferris Industries, Inc. and Chase Bank of Texas, National Association, as trustee (incorporated by reference to Exhibit 4.23 of Allied's Registration Statement on Form S-4/A (No. 333-61744)).
4.16	First [sic] Supplemental Indenture, dated as of December 31, 2004, to the Restated Indenture dated as of September 1, 1991, by and among Browning-Ferris Industries, Inc., BBCO, Inc. and JP Morgan Chase Bank, National Association as trustee (incorporated by reference to Exhibit 4.33 of Allied's Annual Report on Form 10-K for the year ended December 31, 2004).
4.17	Third Supplemental Indenture, dated as of December 5, 2008, to the Restated Indenture dated as of September 1, 1991, by and among Allied Waste Industries, Inc., Allied Waste North America, Inc., Browning-Ferris Industries, LLC (successor to Browning-Ferris Industries, Inc.), BBCO, Inc., Republic Services, Inc., the guarantors party thereto and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated December 10, 2008).
4.18	Credit Agreement, dated as of June 30, 2014, by and among Republic Services, Inc., as Borrower, Bank of America, N.A., as Administrative Agent, Swing Line Lender and L/C Issuer, and the other lenders party thereto (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated July 2, 2014).
4.19	The Company is a party to other agreements for unregistered long-term debt securities, which do not exceed 10% of the Company's total assets. The Company agrees to furnish a copy of such agreements to the Commission upon request.
4.20	Fourth Supplemental Indenture, dated as of March 11, 2015, to the Indenture, dated as of November 25, 2009, between Republic Services, Inc. and U.S. Bank National Association, as trustee, including the form of 3.20% Notes due 2025 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated March 11, 2015).

4.21	Fifth Supplemental Indenture, dated as of July 5, 2016, to the Indenture, dated as of November 25, 2009, between Republic Services, Inc. and U.S. Bank National Association, as trustee, including the form of 2.900% Notes due 2026 (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated July 5, 2016).
4.22	Second Amended and Restated Credit Agreement, dated as of May 2, 2016, by and among Republic Services, Inc., as Borrower, Bank of America, N.A., as Administrative Agent, Swing Line Lender and L/C Issuer, and the other lenders party thereto (incorporated by reference to Exhibit 4.1 of the Company's Current Report on Form 8-K dated May 3, 2016).
4.23	Amendment No. 1 to Credit Agreement, dated as of May 2, 2016, by and among Republic Services, Inc., as Borrower, Bank of America, N.A., as Administrative Agent, and each of the lenders party thereto (incorporated by reference to Exhibit 4.2 of the Company's Current Report on Form 8-K dated May 3, 2016).

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Exhibit Number	Description
4.24	Form of Browning-Ferris Industries, Inc. 7.4% Debentures due 2035 (incorporated by reference to Exhibit 4 of Browning-Ferris Industries, Inc.'s Current Report on Form 8-K dated September 15, 1995).
10.1+	Republic Services, Inc. 2007 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 of the Company’s Quarterly Report on Form 10-Q for the period ended June 30, 2007).
10.2+	Amendment to the Republic Services, Inc. 2007 Stock Incentive Plan (incorporated by reference to Exhibit 10.8 of the Company’s Annual Report on Form 10-K for the year ended December 31, 2008).
10.3+	Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan effective May 12, 2011 (incorporated by reference to Appendix A of the Company’s Proxy Statement on Schedule 14A filed on April 1, 2011).
10.4+	Form of Stock Option Agreement under the Republic Services, Inc. 2007 Stock Incentive Plan (for awards prior to October 28, 2011) (incorporated by reference to Exhibit 10.9 of the Company’s Annual Report on Form 10-K for the year ended December 31, 2008).
10.5+	Form of Non-NEO Stock Option Agreement under the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (for awards on or after October 28, 2011) (incorporated by reference to Exhibit 10.1 of the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2011).
10.6+	Form of NEO Stock Option Agreement under the Republic Services, Inc. 2007 Amended and Restated Stock Incentive Plan (for awards on or after October 28, 2011) (incorporated by reference to Exhibit 10.2 of the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2011).
10.7+	Form of Non-NEO Restricted Stock Agreement under the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (for awards on or after October 28, 2011) (incorporated by reference to Exhibit 10.3 of the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2011).
10.8+	Form of NEO Restricted Stock Agreement under the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (for awards on or after October 28, 2011) (incorporated by reference to Exhibit 10.4 of the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2011).
10.9+	Form of Employee Restricted Stock Unit Agreement under the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (for awards on or after December 27, 2011) (incorporated by reference to Exhibit 10.1 of the Company’s Current Report on Form 8-K dated December 27, 2011).
10.10+	Form of Non-Employee Director Restricted Stock Unit Agreement (annual vesting) under the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (for awards on or after December 27, 2011) (incorporated by reference to Exhibit 10.2 of the Company’s Current Report on Form 8-K dated December 27, 2011).
10.11+	Form of Non-Employee Director Restricted Stock Unit Agreement (3 year vesting) under the Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan (for awards on or after December 27, 2011) (incorporated by reference to Exhibit 10.3 of the Company’s Current Report on Form 8-K dated December 27, 2011).
10.12+	Republic Services, Inc. Deferred Compensation Plan, as amended and restated effective January 1, 2010 (incorporated by reference to Exhibit 4.4 of the Company’s Registration Statement on Form S-8, Registration No. 333-170174, filed with the Commission on October 27, 2010).
10.13+	Amendment No. 1 to Republic Services, Inc. Deferred Compensation Plan, effective January 6, 2011 (incorporated by reference to Exhibit 10.17 of the Company’s Annual Report on Form 10-K for the year ended December 31, 2010).
10.14+	Republic Services, Inc. Amended and Restated Executive Incentive Plan, effective February 4, 2014 (incorporated by reference to Appendix A of the Company’s Proxy Statement on Schedule 14A filed on March 26, 2014).
10.15+	Employment Agreement, effective as of October 29, 2013, by and between Republic Services, Inc. and Donald W. Slager (incorporated by reference to Exhibit 10.1 of the Company’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2013).

10.16+	Amended and Restated Employment Agreement, effective December 8, 2008, by and between Jeffrey A. Hughes and Republic Services, Inc. (incorporated by reference to Exhibit 10.61 of the Company's Annual Report on Form 10-K for the year ended December 31, 2012).
10.17+	Allied Waste Industries, Inc. 2006 Incentive Stock Plan (incorporated by reference to Exhibit 10.2 of Allied's Quarterly Report on Form 10-Q for the period ended June 30, 2006).
10.18+	First Amendment to the Allied Waste Industries, Inc. 2006 Incentive Stock Plan, dated as of July 27, 2006 (incorporated by reference to Exhibit 10.1 of Allied's Quarterly Report on Form 10-Q for the period ended September 30, 2006).

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Exhibit Number	Description
10.19+	Amended and Restated Allied Waste Industries, Inc. 2006 Incentive Stock Plan, dated as of July 27, 2006 (incorporated by reference to Exhibit 10.2 of Allied's Quarterly Report on Form 10-Q for the period ended September 30, 2006).
10.20+	First Amendment, dated as of December 5, 2006, to the Amended and Restated Allied Waste Industries, Inc. 2006 Incentive Stock Plan, dated as of July 27, 2006 (incorporated by reference to Exhibit 10.47 of Allied's Annual Report on Form 10-K for the year ended December 31, 2006).
10.21+	Amended and Restated Allied Waste Industries, Inc. 2006 Incentive Stock Plan, effective October 24, 2007 (incorporated by reference to Exhibit 10.122 of Allied's Annual Report on Form 10-K for the year ended December 31, 2007).
10.22+	Republic Services, Inc. 2006 Incentive Stock Plan (f/k/a Amended and Restated Allied Waste Industries, Inc. 2006 Incentive Stock Plan), as amended and restated effective December 5, 2008 (incorporated by reference to Exhibit 10.51 of the Company's Annual Report on Form 10-K for the year ended December 31, 2008).
10.23+	Form of Nonqualified Stock Option Agreement under the Allied Waste Industries, Inc. 2006 Incentive Stock Plan (incorporated by reference to Exhibit 10.3 of Allied's Quarterly Report on Form 10-Q for the period ended September 30, 2006).
10.24+	Form of Indemnity Agreement between Allied Waste Industries, Inc. and legacy Allied directors (incorporated by reference to Exhibit 10.19 of Allied's Quarterly Report on Form 10-Q for the quarter ended March 31, 2004).
10.25+	Republic Services, Inc. Executive Separation Policy, as amended as of March 29, 2012 (incorporated by reference to Exhibit 10.2 of the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).
10.26+	Amendment No. 2 to Republic Services, Inc. Deferred Compensation Plan, effective February 7, 2012 (incorporated by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).
10.27+	Republic Services, Inc. Amended and Restated 2007 Stock Incentive Plan effective May 9, 2013(incorporated by reference to Exhibit 10.1 of the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2013).
10.28+	Amendment No. 3 to Republic Services, Inc. Deferred Compensation Plan, effective October 29, 2013 (incorporated by reference to Exhibit 10.3 of the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2013).
10.29+	Offer Letter, dated August 22, 2014, by and between Charles F. Serianni and Republic Services, Inc. (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K dated August 25, 2014).
10.30+	Clawback Policy, dated October 29, 2014 (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K dated October 30, 2014).
10.31+	First Amendment to the Employment Agreement, dated December 23, 2014, by and between Donald W. Slager and Republic Services, Inc. (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K dated December 24, 2014).
10.32+	Form of Performance Share Agreement, adopted January 7, 2015 (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K dated January 9, 2015).
10.33+	Form of Employee Restricted Stock Unit Agreement - Senior Executive, adopted January 7, 2015 (incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K dated January 9, 2015).
10.34+	Amendment No. 4 to Republic Services, Inc. Deferred Compensation Plan, effective January 1, 2015 (incorporated by reference to Exhibit 10.53 of the Company's Annual Report on Form 10-K for the year ended December 31, 2014).
10.35+	

	Agreement, entered into July 11, 2016, by and between Michael P. Rissman and Republic Services, Inc. (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K dated July 12, 2016).
10.36+	Separation agreement, entered into June 23, 2016, by and between Robert A. Maruster and Republic Services, Inc. (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K dated June 24, 2016).
10.37+*	Offer Letter, dated July 25, 2016, by and between Catharine D. Ellingsen and Republic Services, Inc.
10.38+*	Non-Competition, Non-Solicitation, Confidentiality and Arbitration Agreement, effective June 13, 2016, by and between Catharine D. Ellingsen and Republic Services, Inc.

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Exhibit Number	Description
21.1*	Subsidiaries of the Company.
23.1*	Consent of Ernst & Young LLP.
31.1*	Rule 13a-14(a)/15d-14(a) Certification of Chief Executive Officer.
31.2*	Rule 13a-14(a)/15d-14(a) Certification of Chief Financial Officer.
32.1**	Section 1350 Certification of Chief Executive Officer.
32.2**	Section 1350 Certification of Chief Financial Officer.
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB*	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document

* Filed herewith

** This exhibit is being furnished rather than filed, and shall not be deemed incorporated by reference into any filing, in accordance with Item 601 of Regulation S-K.

+ Indicates a management or compensatory plan or arrangement.

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Signatures

Pursuant to the requirements of Sections 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.

Date: February 16, 2017 REPUBLIC SERVICES, INC.

By: /s/ DONALD W. SLAGER
Donald W. Slager
President and
Chief Executive Officer
(Principal Executive Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ DONALD W. SLAGER Donald W. Slager	President, Chief Executive Officer and Director (Principal Executive Officer)	February 16, 2017
/s/ CHARLES F. SERIANNI Charles F. Serianni	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 16, 2017
/s/ BRIAN A. GOEBEL Brian A. Goebel	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 16, 2017
/s/ RAMON A. RODRIGUEZ Ramon A. Rodriguez	Chairman of the Board of Directors	February 16, 2017
/s/ TOMAGO COLLINS Tomago Collins	Director	February 16, 2017
/s/ JAMES W. CROWNOVER James W. Crownover	Director	February 16, 2017
/s/ ANN E. DUNWOODY Ann E. Dunwoody	Director	February 16, 2017
/s/ WILLIAM J. FLYNN William J. Flynn	Director	February 16, 2017
/s/ THOMAS W. HANDLEY Thomas W. Handley	Director	February 16, 2017

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/s/ MANUEL KADRE Manuel Kadre	Director	February 16, 2017
/s/ JENNIFER M. KIRK Jennifer M. Kirk	Director	February 16, 2017
/s/ MICHAEL LARSON Michael Larson	Director	February 16, 2017
/s/ W. LEE NUTTER W. Lee Nutter	Director	February 16, 2017
/s/ JOHN M. TRANI John M. Trani	Director	February 16, 2017
/s/ SANDRA M. VOLPE Sandra M. Volpe	Director	February 16, 2017