REPUBLIC SERVICES, INC.
Form 10-K
February 17, 2017
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UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K
(Mark One)
þ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2016
OR
¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to
Commission file number: 1-14267
REPUBLIC SERVICES, INC.
(Exact Name of Registrant as Specified in its Charter)

Delaware	65-0716904
(State or Other Jurisdiction of Incorporation or Organization)	(IRS Employer Identification No.)
18500 North Allied Way	85054
Phoenix, Arizona	(Zip Code)
(Address of Principal Executive Offices)	

Registrant's telephone number, including area code: (480) 627-2700
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on which Registered
Common Stock, par value $0.01 per share	The New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:
None
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes þ No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No þ
Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes þ No ¨
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes þ No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. þ
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.
Large accelerated filer þ Accelerated filer o Non-accelerated filer o Smaller reporting company o
(Do not check if a smaller reporting company)

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

As of June 30, 2016, the aggregate market value of the shares of the Common Stock held by non-affiliates of the registrant was $17.6 billion.

As of February 6, 2017, the registrant had outstanding 339,128,998 shares of Common Stock (excluding treasury shares of 9,308,560).

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Proxy Statement relative to the 2017 Annual Meeting of Shareholders are incorporated by reference in Part III hereof.

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Unless the context requires otherwise, all references in this Form 10-K to “Republic,” “the Company,” “we,” “us” and “our” re to Republic Services, Inc. and its consolidated subsidiaries.

PART I

ITEM 1. BUSINESS

Overview

Republic is the second largest provider of non-hazardous solid waste collection, transfer, disposal, recycling, and energy services in the United States, as measured by revenue. As of December 31, 2016, we operated in 39 states and Puerto Rico through 333 collection operations, 204 transfer stations, 192 active landfills, 64 recycling centers, 7 treatment, recovery and disposal facilities, and 10 salt water disposal wells. We also operated 71 landfill gas and renewable energy projects and had post-closure responsibility for 124 closed landfills. We were incorporated in Delaware in 1996.

Based on an industry trade publication, the United States non-hazardous solid waste services industry generates annual revenue of approximately $60 billion, of which approximately 45% is generated by publicly owned waste companies. Industry data also indicates that the non-hazardous solid waste services industry in the United States remains fragmented as privately held companies and municipal and other local governmental authorities generate approximately 35% and 20%, respectively, of total industry revenue. We believe growth in the solid waste industry historically has been linked primarily to population growth and growth in the overall economy, including the level of new household and business formation and changes in residential and commercial construction activity.

Our operations are national in scope, but the physical collection and disposal of waste is very much a local business and the dynamics and opportunities differ in each of our markets. By combining local operating management with standardized business practices, we drive greater overall operating efficiency across the Company while maintaining day-to-day operating decisions at the local level, closest to the customer.

The Five Pillars of Our Strategy - Profitable Growth through Differentiation

We believe that our products and services are valuable, and that by developing a superior team and delivering superior products, we can differentiate ourselves from our competitors. Differentiation allows us to attract and retain the best talent, win more customers, increase loyalty, and ultimately drive higher revenue and profits. Our strategy of Profitable Growth through Differentiation is built on five key pillars including (1) market position, (2) operating model, (3) people and talent agenda, (4) customer zeal, and (5) digital platform.

Market Position

The goal of our market position pillar is to develop the best vertically integrated market position to enable us to build density and improve returns. We strive to have a number one or number two market position in each of the markets we serve, or have a clear path on how we will achieve a leading market position over time. In situations where we cannot establish a leading market position, or where operations are not generating acceptable returns, we may decide to divest certain assets and reallocate resources to other markets.

We have a robust market planning process to identify opportunities to grow internally through capital investments and infrastructure development, and externally through acquisitions and public-private partnerships. Additionally, our market planning process allows us to analyze market conditions and proactively adjust to trends as they emerge, including the effects of demographic shifts, market changes and the competitive landscape.

Internal Growth

- Volume Growth - We believe waste volumes are driven by population growth, household formation and new business formation. Volume growth through increases in our customer base and service offerings is the most capital efficient method to grow our business. We seek to obtain long-term contracts for collecting solid waste under residential collection contracts with municipalities, exclusive franchise agreements, and small-container commercial and large-container industrial contracts. By obtaining such long-term agreements, we can grow our contracted revenue base at the same rate as the underlying economic growth in these markets. In addition, by securing a base of long-term recurring revenue, we are better able to protect our market position from competition. We work to increase volumes while ensuring that prices charged for services provide an appropriate return on our capital investment.
- Price Increases - We seek to secure price increases necessary to offset increased costs, improve our operating margins and earn an adequate return on our substantial investments in vehicles, equipment, landfills, transfer stations and

recycling centers.

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- Expansion of Recycling Capabilities - Based on an industry trade publication, we believe approximately 35% of municipal solid waste is recycled. Communities have increasingly committed to enhance and expand their recycling programs for their residents. We continue to focus on innovative waste disposal processes and programs to help our customers achieve their goals related to sustainability and environmentally sound waste practices while also generating an acceptable return. We will continue to look for opportunities to expand our recycling capabilities in markets where these services are desired and provide an appropriate return on our investment.
- Infrastructure Development - We seek to identify opportunities to further our position as an integrated service provider in markets where we are not fully integrated. Our goal is to create market-specific, vertically integrated operations typically consisting of one or more collection operations, transfer stations, landfills and recycling centers. Where appropriate, we obtain permits to build transfer stations, recycling centers and landfills that would vertically integrate our waste services or expand the service areas for our existing disposal sites. Development projects, while generally less capital intensive than acquisitions, typically require extensive permitting efforts that can take years to complete with no assurance of success. We undertake development projects when we believe there is a reasonable probability of success and where reasonably priced acquisition opportunities are not available.

External Growth

- Acquisitions and Public-Private Partnerships - Our acquisition growth strategy focuses primarily on acquiring privately held solid waste and recycling companies that complement our existing business platform. We believe our ability to successfully complete these acquisitions is enhanced by the challenges facing many privately held companies, including increasing competition in the solid waste industry, increasing capital requirements due to changes in solid waste regulatory requirements and the limited number of exit strategies for privately held companies. We also evaluate opportunities to acquire operations and facilities that are being divested by other publicly owned waste companies.

We continue to invest in accretive acquisitions in existing markets. Generally, we expect to maintain a steady pace of tuck-in acquisition investment of approximately $100 million annually. Given our free cash flow, availability under our credit facilities and our ability to access the public capital markets, we have the flexibility to make additional acquisitions that will complement our existing business platform, including larger acquisitions if the right opportunities present themselves.

We also focus on growth through public-private partnerships, which include the waste and recycling operations and facilities of municipal and other local governments. We believe we have an opportunity to acquire operations and facilities from municipalities and other local governments, as they increasingly seek to raise capital and reduce risk. We realize synergies from consolidating businesses into our existing operations, whether through acquisitions or public-private partnerships, which allow us to reduce capital and expense requirements associated with truck routing, personnel, fleet maintenance, inventories and back-office administration.

Operating Model

The goal of our operating model pillar is to deliver a consistent, high quality service to all of our customers through the Republic Way: One Way. Everywhere. Every day. This approach of developing standardized processes with rigorous controls and tracking allows us to leverage our scale and deliver durable operational excellence. The Republic Way is the key to harnessing the best of what we do as operators and translating that across all facets of our business.

A key enabler of the Republic Way is our organizational structure that fosters a high performance culture by maintaining 360 degree accountability and full profit and loss responsibility with local management, supported by a functional structure to provide subject matter expertise. This structure allows us to take advantage of our scale by coordinating functionally across all of our markets, while empowering local management to respond to unique market dynamics.

We have rolled out several productivity and cost control initiatives designed to deliver the best service possible to our customers in the most efficient and environmentally sound way.

Fleet Automation

Approximately 74% of our residential routes have been converted to automated single driver trucks. By converting our residential routes to automated service, we reduce labor costs, improve driver productivity, decrease emissions

and create a safer work environment for our employees. Additionally, communities using automated vehicles have higher participation rates in recycling programs, thereby complementing our initiative to expand our recycling capabilities.

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Fleet Conversion to Compressed Natural Gas (CNG)

Approximately 18% of our fleet operates on natural gas. We expect to continue our gradual fleet conversion to CNG, our preferred alternative fuel technology, as part of our ordinary annual fleet replacement process. We believe a gradual fleet conversion is most prudent to realize the full value of our previous fleet investments. Approximately 36% of our replacement vehicle purchases during 2016 were CNG vehicles. We believe using CNG vehicles provides us a competitive advantage in communities with strict clean emission initiatives that focus on protecting the environment. Although upfront capital costs are higher, using CNG reduces our overall fleet operating costs through lower fuel expenses. As of December 31, 2016, we operated 38 CNG fueling stations.

Standardized Maintenance

Based on an industry trade publication, we operate the eighth largest vocational fleet in the United States. As of December 31, 2016, our average fleet age in years, by line of business, was as follows:

	Approximate Number of Vehicles	Approximate Average Age
Residential	7,300	7
Small-container Commercial	4,400	7
Large-container Industrial	4,100	9
Total	15,800	7.5

OneFleet, our standardized vehicle maintenance program, enables us to use best practices for fleet management, truck care and maintenance. Through standardization of core functions, we believe we can minimize variability in our maintenance processes, resulting in higher vehicle quality and a lower environmental footprint, while extending the average service life of our fleet. We believe operating a more reliable, greener, safer and more efficient fleet will lower our operating costs. We have implemented standardized maintenance programs for approximately 92% of our fleet maintenance operations as of December 31, 2016. We expect the entire fleet will be certified under OneFleet by the second quarter of 2017.

Organizational Structure

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. Each field group is organized into several areas and each area contains multiple business units or operating locations. Each of our field groups and all of our areas provide collection, transfer, recycling and landfill services. See Note 14, Segment Reporting, to our consolidated financial statements in Item 8 of this Form 10-K for further discussion of our operating segments.

People and Talent Agenda

The goal of our people and talent agenda pillar is to create an environment to attract and retain the best talent. Our people continue to be the most critical component in successfully executing our strategy. We strive to make Republic a desirable place to work for our approximately 33,000 full-time employees by creating learning experiences, programs, compensation and benefits that attract, develop, train, engage, motivate, reward and retain the best workforce. With a focus on safety, learning and talent development, and diversity and inclusion, we aspire to be a company where the best people want to work and are engaged every day.

Safety

Republic is dedicated to the safety of our employees, customers and the communities we serve. Due to the nature of our industry, we prioritize safety above all else and we recognize and reward employees for outstanding safety records. Over the past nine years, our safety performance (based on OSHA recordable rates) has been 41% better than the industry average. Our Think, Choose, Live slogan encapsulates our everyday safety messaging to our employees to: Think about what you are doing, Choose the safe answer, and Live to go home to your family. With the phrase

printed on numerous items, including hard hats and the equipment our employees touch, there are constant reminders for employees to go home in the same condition that they came to work. Our goal is to ensure every one of our employees returns home safely each night.

We are proud of our two safety incentive programs: Dedicated to Safety and Dedicated to Excellence. For Dedicated to Safety, employees must meet all safety requirements for the year, including no preventable accidents and no safety warnings. For

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Dedicated to Excellence, employees must earn the Dedicated to Safety Award and meet additional criteria for customer service, attendance and other performance metrics. Further, our safety training program, Focus 6, provides employees with tips and techniques to prevent the six most common types of serious accidents: backing, intersections, push-pull-lift, rear collisions, rollover, and pedestrian.

We take pride in recognizing employees who demonstrate a relentless commitment to safety. Employees with the best driving records are eligible for the industry's most prestigious award, the National Waste & Recycling Association's Driver of the Year. Republic drivers have won 75% of the Driver of the Year awards issued for the large truck category since 2009.

Learning and Talent Development

We are committed to developing our employees throughout their careers. Targeted onboarding experiences, including our Driver Training Center, Supervisor Onboarding and Sales Acceleration programs, focus on providing the fundamental skills each employee needs to succeed in his or her role. Our Leadership Trainee Program, an 18-month rotational experience for recent college graduates, is another example of our commitment to providing opportunities for growth.

Developing our leaders is also a critical part of our people and talent agenda. From Leadership Fundamentals, a program for new front line supervisors, to our Leadership Trainee and General Manager Acceleration program for early career leaders, we have developed programs and experiences to help ensure that as our leaders progress, they are accumulating the skills necessary to be successful at each level. Over the last two years, more than 2,000 leaders have completed our Leadership Fundamentals program, creating a common language and toolkit for how we coach and develop employees.

Diversity and Inclusion

We are actively and intentionally creating an environment in which all individuals are welcomed and valued. In 2013, we launched Mosaic as our renewed approach and commitment to diversity and inclusion. Through Mosaic, we have developed new strategies and activities to continue creating a more diverse workforce and inclusive work environment. In this way, we can leverage our best thinking to improve our culture and better serve our customers.

We believe there is no better way to protect our planet than to recruit and hire the heroes who have protected our country. We actively recruit and hire veterans - those transitioning from military life as well as those long discharged from active duty. We value the skills, experience and operational excellence they bring to our organization, as well as their commitment to a better tomorrow. Historically, we have had great success hiring veterans. In 2016, for example, 22% of general managers, 25% of operations managers, and 27% of maintenance managers that we hired self-identified as having served in the U.S. Army, Navy, Marines, Air Force or Coast Guard.

Customer Zeal

The goal of our customer zeal pillar is to drive customer loyalty by offering differentiated products and services specifically designed to meet our customers' needs. We believe this increases customer loyalty and willingness to pay for a higher value service.

To help our sales team with their ability to identify specific customer needs and configure the right offering, we use a Priority Based Selling (PBS) technique and our Capture pricing tool nationwide.

- PBS enables us to identify and segment customers' buying priorities, and attract customers that are willing to pay for enhanced offerings.
- Capture is a cloud-based pricing tool that creates a more professional sales experience, helps realize better pricing levels at the point of sale and provides enhanced controls over the price quoting process.

In response to our customers' requests, we expanded our suite of products to include Electronics Recycling with BlueGuard™, Universal Recycling and All-in-One Office. For those services that we don't provide, we fulfill demand through our alliance partnerships while maintaining the customer facing relationship.

To help ensure a consistent customer experience, we invested in our customer service capabilities and have made continued progress on the consolidation of our over 100 customer service locations into three Customer Resource Centers. The new state-of-the-art facilities and the technology deployed provide our customer service employees with the tools and capabilities they need to provide better levels of service across a myriad of touch points, including voice, email, text, social media channels and live chat. The state-of-the-art centers enhance the customer experience and will

lower the Company's cost structure once the transition is complete by the end of 2017.

To help ensure our efforts are making an impact and building customer loyalty, we also have enhanced the way we receive feedback from our customers, including net promoter score, so that every General Manager receives recent, relevant feedback that allows him or her the ability to reach out to customers directly and address issues immediately.

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Digital Platform

The goal of our digital platform pillar is to allow us to provide a consistent experience across our business while enabling our customers to do business with us through more channels and with better access to information.

We are responding to our customers' requests for options to do business with us digitally. By increasing the ease of use and functionality of our web-based market presence, we believe we enhance customer satisfaction, interaction, and connectivity while lowering our costs. These tools reinforce to our customers that they can rely on us to handle their recycling and waste service needs in a way that is easy and convenient for them.

- Our MyResource customer portal and mobile app are online account management tools, allowing customers access to their accounts and our services. Approximately 1.8 million customers are now enrolled in MyResource, significantly enhancing our interaction and connectivity with those customers.
- Our ecommerce sales channel allows customers to secure services on a real-time basis, provides capabilities to meet our customer's evolving buying preferences, and provides a lower cost sales channel.

We believe that leveraging technology to improve our core business strengthens our existing model and customer relationships, and will serve to solidify our differentiated offering.

Corporate Responsibility and Sustainability

In addition to being committed to our customers and employees, we are also committed to the communities we serve and to the environment. We strive to be America’s preferred recycling and waste services partner. At Republic, we believe in the preservation of our Blue Planet - a cleaner, safer and healthier world.

We believe we have a responsibility to regenerate our planet with the materials we are entrusted to handle every day by driving increased recycling, generating renewable energy, and helping our customers be more resourceful. Additionally, we must lead by example, working diligently to improve our relationship with the environment and society through decreased vehicle emissions, innovative landfill technologies, use of renewable energy, community engagement and employee growth opportunities. Sustainability contributes to a cleaner world, while also providing opportunities to improve brand awareness, to increase customer loyalty, to grow our business, to motivate our employees and to differentiate Republic from our competitors.

To maximize our efforts, we have chosen to focus our sustainability platform around the following five areas:

- Operations. We are working to minimize the effect of our operations around our fleet, our landfills and our buildings. Whenever we reduce waste and inefficiency, we become more sustainable and we reduce our costs.
- Materials Management. We recognize we have an opportunity to extract value from materials in the waste stream in the form of commodities and energy and also reduce greenhouse gas emission from those materials.
- Communities. We are devoted to being a good neighbor through customer engagement, philanthropic giving, and infrastructure investments.
- Safety. We are committed to creating a safe environment for our employees, our customers and the communities we serve.
- People. We employ and develop talented professionals who are committed to our planet, our customers and our Company.

Each of these areas has a significant effect on the environment and society and contributes to preserving our Blue Planet, while forming the foundation of our business going forward. We have developed programs that will enable us to reduce our emissions by 2.5 million tons of carbon dioxide equivalent by 2018, including developing at least two landfill gas-to-energy projects each year, adding at least 150,000 tons per year of recycling capacity, and reducing the greenhouse gas emissions from our fleet by 3% by 2018. We added a safety goal in 2016 to reduce our OHSA recordable rates by 7% per year.

We have been steadily building on our sustainability progress and performance. We were announced as a CDP Climate A List company. Less than 10% of companies worldwide who participate are named to the Climate A List. In addition, we were inducted into both the North American and World Dow Jones Sustainability Indices (DJSI). We believe the DJSI is the gold standard for corporate sustainability. Republic is the only recycling and solid waste collection provider in the Commercial Services and Supplies sector that is included in the 2016 DJSI World Index. These achievements demonstrate our ability to connect financial performance with environmental and social performance. The rankings also highlight Republic's leadership in corporate governance, environmental, social and

financial aspects of sustainability. Finally, we released our second Sustainability Report that follows the GRI G4 protocol which is available on our website at www.republicservices.com.

Republic is one of the few Fortune 500 companies whose board has a Sustainability and Corporate Responsibility Committee. This committee has oversight responsibility with respect to our sustainability performance, our corporate responsibilities, our

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role as a socially responsible organization and our enterprise risk, including cyber security, environmental and reputational risks.

Cash Utilization Strategy

We believe our ability to consistently increase free cash flow drives shareholder value and provides confirmation regarding the recurring cash provided by our operations. Free cash flow also demonstrates our ability to execute our cash utilization strategy, which includes investments in acquisitions and returning a majority of free cash flow to our shareholders through dividends and share repurchases. We are committed to an efficient capital structure and maintaining our investment grade credit ratings on our senior debt, which was rated BBB+ by Standard & Poor's Ratings Services, BBB by Fitch Ratings, Inc. and Baa3 by Moody's Investors Service, Inc. as of December 31, 2016. Such ratings have allowed us, and should continue to allow us, to readily access capital markets at competitive rates. We manage our free cash flow by ensuring that capital expenditures and operating asset levels are appropriate in light of our existing business and growth opportunities, and by closely managing our working capital, which consists primarily of accounts receivable, accounts payable, and accrued landfill and environmental costs.

Dividends

In July 2016, our board of directors approved an increase in the quarterly dividend to $0.32 per share, which represents an increase of approximately 7% over the prior year. Over the last five years, our dividend has increased at a compounded annual growth rate of 7.8%. We expect to continue paying quarterly cash dividends and may consider additional dividend increases if we believe they will enhance shareholder value.

Share Repurchases

In October 2015, our board of directors added $900 million to the existing share repurchase authorization. As of December 31, 2016, there was $451.7 million remaining under our share repurchase authorization. At least annually, our board of directors reviews the intrinsic value of our stock. During 2017, we expect to use all our remaining authorization to repurchase shares of our common stock.

Shareholder Value

We are committed to creating long-term shareholder value by generating consistent earnings and cash flow growth, while continually improving returns on invested capital. Our incentive compensation programs are aligned with these objectives at all levels of management. We have an active shareholder outreach program and routinely interact with shareholders on a number of matters, including governance and executive compensation.

Management Team

We believe we have one of the most experienced management teams in the solid waste industry.

Donald W. Slager became our Chief Executive Officer (CEO) and remained our President on January 1, 2011, after having served as our President and Chief Operating Officer (COO) from the Allied Waste Industries, Inc. (Allied) acquisition in December 2008 until then. Prior to the Allied acquisition, Mr. Slager worked for Allied from 1992 through 2008 and served in various management positions, including President and COO from 2004 through 2008 and Executive Vice President and COO from 2003 to 2004. From 2001 to 2003, Mr. Slager served as Senior Vice President, Operations. Mr. Slager held various management positions at Allied from 1992 to 2003, and was previously General Manager at National Waste Services, where he served in various management positions since 1985.

Mr. Slager has over 35 years of experience in the solid waste industry. Mr. Slager has been a member of our Board of Directors since June 24, 2010.

Catharine D. Ellingsen was named Executive Vice President, Chief Legal Officer, Chief Ethics and Compliance Officer, and Corporate Secretary in June 2016. Ms. Ellingsen joined Allied as Corporate Counsel in August 2001 and has experience in a variety of roles of increasing responsibility. She was named Managing Corporate Counsel in January 2003, Director, Legal and Associate General Counsel in January 2005, and Vice President and Deputy General Counsel in June 2007. Ms. Ellingsen continued as Vice President and Deputy General Counsel at Republic following the Allied acquisition in December 2008. She was then named Senior Vice President, Human Resources in August 2011 and served in that position until June 2016. Before joining Allied, Ms. Ellingsen was an attorney at Steptoe & Johnson LLP from 1996 to 2001 and at Bryan Cave LLP from 1993 to 1996.

Jeffrey A. Hughes was named Executive Vice President, Chief Administrative Officer in December 2008. Before that, Mr. Hughes served as Senior Vice President, Eastern Region Operations for Allied from 2004 until the Allied

acquisition in December 2008. Mr. Hughes served as Assistant Vice President of Operations Support for Allied from 1999 to 2004 and as a District Manager for Allied from 1988 to 1999. Mr. Hughes has over 29 years of experience in the solid waste industry.

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Charles F. Serianni was appointed Executive Vice President, Chief Financial Officer in August 2014. Mr. Serianni has over 30 years of experience in a variety of roles of increasing responsibility. He was named Vice President, Region Controller for the Company's former West Region in July 2013. Before that, Mr. Serianni served as our Assistant Controller starting in June 1998 and progressed to Senior Vice President, Chief Accounting Officer in December 2008. He served as the Accounting Operations Director for Republic Industries, Inc. (AutoNation) from February 1997 to June 1998. Before that, Mr. Serianni served as the Accounting Operations Director for Sunglass Hut International, Inc. from May 1993 to February 1997, and as Manager, Accounting and Auditing Services for Deloitte & Touche from September 1984 to May 1993.

Our local and area management teams have extensive industry experience in growing, operating and managing solid waste companies and have substantial experience in their local geographic markets. This allows us to quickly respond to and meet our customers' needs and stay in touch with local businesses and municipalities. We believe our strong area management teams allow us to effectively and efficiently drive our initiatives and help ensure consistency throughout the organization. Our area management teams and area presidents have extensive authority and responsibility over operations within their respective geographic markets. As a result of retaining experienced managers with extensive knowledge of and involvement in their local communities, we are proactive in anticipating customers' needs and adjusting to changes in our markets. We also seek to implement the best practices of our various business units throughout our operations to continue improving our operations and our operating margins.

Integrated Operations

We believe Republic is a company with a strong, national operating platform that allows us to compete more effectively and efficiently in the local markets in which we operate. We seek to achieve a high rate of internalization by controlling waste streams from the point of collection through processing or disposal. During the year ended December 31, 2016, approximately 68% of the total waste volume we collected was disposed at landfills we own or operate (internalization). Our fully integrated markets generally have a lower cost of operations and more favorable cash flows than our non-integrated markets. Through acquisitions, landfill operating agreements and other market development activities, we create market-specific, integrated operations typically consisting of one or more collection operations, transfer stations and landfills. We also operate recycling centers in markets where diversion of waste is a priority, it is profitable to do so, and we can earn an appropriate return on our investment.

Our operations primarily consist of providing collection, transfer and disposal of non-hazardous solid waste, recovering and recycling of certain materials, and energy services.

Collection Services

We provide residential, small-container commercial, and large-container industrial solid waste collection services through 333 collection operations. In 2016, approximately 76% of our total revenue was derived from our collection business, of which approximately 24% of our total revenue relates to residential services, approximately 31% relates to small-container commercial services, and approximately 21% relates to large-container industrial services.

Our residential collection business involves the curbside collection of waste for transport to transfer stations, or directly to landfills or recycling centers. We typically perform residential solid waste collection services under contracts with municipalities, which we generally secure by competitive bid and which give us exclusive rights to service all or a portion of the homes in the municipalities. These contracts usually range in duration from one to five years, although some of our exclusive franchises are for significantly longer periods. We also perform residential services on a subscription basis, in which individual households contract directly with us. The fees received for subscription residential collection are based primarily on the market, collection frequency, type of service, the distance to the disposal facility and the cost of disposal. In general, subscription residential collection fees are paid quarterly in advance by the customers receiving the service.

In our small-container commercial business, we supply our customers with waste containers of varying sizes. We typically perform commercial collection services under one- to three-year service agreements, and fees are determined based on a number of factors including the market, collection frequency, type of equipment furnished, type and volume or weight of the waste collected, transportation costs and the cost of disposal. Our small-container commercial services are typically offered to small business complexes, multi-family housing and strip malls, and include industries such as restaurants, retail, real-estate, and professional and other services.

Our large-container industrial collection business includes both recurring and temporary customer relationships. For the recurring portion, we supply our customers with waste containers of varying sizes and rent compactors to large waste generators. We typically perform the collection services under one- to three-year service agreements, and fees are determined based on a number of factors including the market, collection frequency, type of equipment furnished, type and volume or weight of the waste collected, transportation costs and the cost of disposal. Our recurring large-container industrial services are typically offered to larger facilities, hotels and office buildings, and include industries such as manufacturing, retail, hospitality and professional and other services.

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For the temporary portion of our large-container industrial collection business, the majority of the waste relates to construction and demolition activities and is typically event-driven. We provide temporary waste collection services on a contractual basis with terms ranging from a single pickup to one-year or longer.

We also provide recycling collection services tailored to our customers' requirements to complete our service offerings.

Transfer Services

We own or operate 204 transfer stations. Revenue at our transfer stations is primarily generated by charging tipping or disposal fees, which accounted for approximately 5% of our revenue during 2016. Our collection operations deposit waste at these transfer stations, as do other private and municipal haulers, for compaction and transfer to disposal sites or recycling centers. Transfer stations provide collection operations with a cost effective means to consolidate waste and reduce transportation costs while providing our landfills with an additional "gate" to extend their geographic reach.

When our own collection operations use our transfer stations, this improves internalization by allowing us to retain fees we would otherwise pay to third-party disposal sites. It also allows us to manage costs associated with waste disposal because: (1) transfer trucks have larger capacities than collection trucks, allowing us to deliver more waste to the landfill in each trip; (2) waste is accumulated and compacted at strategically located transfer stations to increase efficiency; and (3) we can retain volume by managing the waste to one of our own landfills rather than to a competitor’s.

Landfill Services

We own or operate 192 active landfills. Our tipping fees charged to third parties accounted for approximately 12% of our revenue during 2016. As of December 31, 2016, we had approximately 37,400 permitted acres and total available permitted and probable expansion disposal capacity of approximately 5 billion in-place cubic yards. The in-place capacity of our landfills is subject to change based on engineering factors, requirements of regulatory authorities, our ability to continue to operate our landfills in compliance with applicable regulations, and our ability to successfully renew operating permits and obtain expansion permits at our sites. Some of our landfills accept non-hazardous special waste, including utility ash, asbestos and contaminated soils.

Most of our active landfill sites have the potential for expanded disposal capacity beyond the currently permitted acreage. We monitor the availability of permitted disposal capacity at each of our landfills and evaluate whether to pursue an expansion at a given landfill based on estimated future waste volumes and prices, market needs, remaining capacity and the likelihood of obtaining an expansion. To satisfy future disposal demand, we are currently seeking to expand permitted capacity at certain landfills; however, we cannot assure you that all proposed or future expansions will be permitted as designed.

Republic is committed to harnessing landfill gas, the natural byproduct of decomposing waste, and converting it to energy. The use of landfill gas provides our economy with benefits, including reducing air pollution through the capture and use of methane. As of December 31, 2016, we operated 71 landfill gas and renewable energy projects. We also have responsibility for 124 closed landfills, for which we have associated closure and post-closure obligations.

Recycling Services

We own or operate 64 recycling centers. These facilities generate revenue through the processing and sale of old corrugated containers (OCC), old newsprint (ONP), aluminum, glass and other materials, which accounted for approximately 5% of our revenue during 2016. Approximately 74% of our recycling center volume relates to OCC, ONP and other mixed paper. Of the 5.0 million tons we sold during 2016, 2.5 million moved through our recycling centers and 2.5 million we collected and delivered to third parties.

Changing market demand for recycled commodities causes volatility in commodity prices. At current volumes and mix of materials, we believe a $10 per ton change in the price of recycled commodities will change annual revenue and operating income by approximately $27 million and $18 million, respectively.

In certain instances we issue recycling rebates to purchase materials from municipalities or large industrial customers, which can be based on the price we receive upon the final sale of recycled commodities, a fixed contractual rate or other measures. We also receive rebates when we dispose of recycled commodities at third-party facilities.

As consumer demand for recycling services has increased, we have met that demand by integrating recycling components to each of our collection service offerings. Our goal is to provide a complete waste stream management solution to our customers in an environmentally sustainable way.

We continue to invest in proven technologies to control costs and to simplify and streamline recycling for our customers. For example, advanced sorting equipment, such as disk screens, magnets and optical sorters, identifies and separates different kinds of paper, metals, plastics and other materials to increase efficiency and maximize our recycling efforts.

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Energy Services

In addition to certain of our landfill disposal sites, we own or operate 7 treatment, recovery and disposal facilities and 10 salt water disposal wells. Energy services waste is generated from the by-products of oil and natural gas exploration and production activity, including waste created throughout the initial drilling and completion of an oil or natural gas well, production wastes and water produced during a well's operating life, contaminated soils that require treatment during site reclamation, and substances that require clean-up after a spill. Revenue is therefore primarily generated through waste managed from vertical and horizontal drilling, hydraulic fracturing, production and clean-up activity, as well as other services including closed loop collection systems and the sale of recovered products. In 2016, approximately 1% of our revenue was derived from energy services. Energy services activity varies across market areas that are tied to the natural resource basins in which the drilling activity occurs and reflects the regulatory environment, pricing and disposal alternatives available in any given market.

Other Services

Other revenue consists primarily of National Accounts revenue generated from nationwide or regional 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.

Competition

We operate in a competitive industry. Competition in the non-hazardous solid waste industry comes from a few other large, national publicly owned companies, several regional publicly and privately owned companies, and thousands of small privately-owned companies. In any given market, competitors may have larger operations and greater resources. In addition, we compete with municipalities that maintain waste collection or disposal operations. These municipalities may have financial advantages due to the availability of tax revenue and tax-exempt financing.

We compete for collection accounts primarily on the basis of price and the quality of our services. From time-to-time, our competitors reduce the price of their services in an effort to expand market share or to win a competitively bid municipal contract. Our ability to maintain and increase prices in certain markets may be impacted by our competitors' pricing policies. This may have an effect on our future revenue and profitability.

Seasonality and Severe Weather

Our operating revenues tend to be somewhat higher in the summer months, primarily due to higher volumes of construction and demolition waste. The volumes of large-container industrial and residential waste in certain regions of the country also tend to increase during the summer months. Our second and third quarter revenues and results of operations typically reflect this seasonality.

Our operations can be adversely affected by periods of inclement or severe weather, which could increase the volume of waste collected under our existing contracts (without corresponding compensation), delay the collection and disposal of waste, reduce the volume of waste delivered to our disposal sites or delay the construction or expansion of our landfill sites and other facilities. Our operations also can be favorably affected by severe weather, which could increase the volume of waste in situations where we are able to charge for our additional services.

Regulation

Our facilities and operations are subject to a variety of federal, state and local requirements that regulate, among other things, the environment, public health, safety, zoning and land use. Operating and other permits, licenses and other approvals generally are required for landfills and transfer stations, certain solid waste collection vehicles, fuel storage tanks and other equipment and facilities that we own or operate. These permits are subject to denial, revocation, modification and renewal in certain circumstances. Federal, state and local laws and regulations vary, but generally govern wastewater or storm water discharges, air emissions, the handling, transportation, treatment, storage and disposal of hazardous and non-hazardous waste, and the remediation of contamination associated with the release or threatened release of hazardous substances. These laws and regulations provide governmental authorities with strict powers of enforcement, which include the ability to revoke or decline to renew any of our operating permits, obtain injunctions, or impose fines or penalties in the event of violations, including criminal penalties. The U.S. Environmental Protection Agency (EPA) and various other federal, state and local authorities administer these regulations.

We strive to conduct our operations in compliance with applicable laws, regulations and permits. However, from time to time we have been issued citations or notices from governmental authorities that have resulted in the need to expend funds for remedial work and related activities at various landfills and other facilities or in the need to expend funds for fines, penalties or settlements. We cannot assure you that citations and notices will not be issued in the future despite our strong regulatory compliance efforts. We have established final capping, closure, post-closure and remediation reserves that we believe, based on

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currently available information, will be adequate to cover our current estimates of regulatory costs; however, we cannot assure you that actual costs will not exceed our reserves.

Federal Regulation

The following summarizes the primary federal, environmental, and occupational health and safety-related statutes that affect our facilities and operations:

- The Solid Waste Disposal Act, including the Resource Conservation and Recovery Act (RCRA). RCRA establishes a framework for regulating the handling, transportation, treatment, storage and disposal of hazardous and non-hazardous solid waste, and requires states to develop programs to ensure the safe disposal of solid waste in sanitary landfills.

Subtitle D of RCRA establishes a framework for regulating the disposal of municipal solid waste. Regulations under Subtitle D currently include minimum comprehensive solid waste management criteria and guidelines, including location restrictions, facility design and operating criteria, final capping, closure and post-closure requirements, financial assurance standards, groundwater monitoring requirements and corrective action standards. All of the states in which we operate have implemented permit programs pursuant to RCRA and Subtitle D. These state permit programs may include landfill requirements that are more stringent than those of Subtitle D. Our failure to comply with any of these environmental requirements at any of our locations may lead to temporary or permanent loss of an operating permit, which would result in costs in connection with securing new permits and reduced revenue from lost operational time.

All of our planned landfill expansions and new landfill development projects have been engineered to meet or exceed Subtitle D requirements, as applicable. Operating and design criteria for existing operations have been modified to comply with these regulations. Compliance with Subtitle D regulations has resulted in increased costs and may in the future require substantial additional expenditures in addition to other costs normally associated with our waste management activities.

- The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). CERCLA, among other things, provides for the cleanup of sites from which there is a release or threatened release of a hazardous substance into the environment. CERCLA may impose strict joint and several liability for the costs of cleanup and for damages to natural resources upon current owners and operators of a site, parties who were owners or operators of a site at the time the hazardous substances were disposed of, parties who transported the hazardous substances to a site, and parties who arranged for the disposal of the hazardous substances at a site. Under the authority of CERCLA and its implementing regulations, detailed requirements apply to the manner and degree of investigation and remediation of facilities and sites where hazardous substances have been or are threatened to be released into the environment. Liability under CERCLA is not dependent on the existence or disposal of only “hazardous wastes,” but also can be based upon the existence of small quantities of more than 700 “substances” characterized by the EPA as “hazardous,” many of which are found in common household waste. Among other things, CERCLA authorizes the federal government to investigate and remediate sites at which hazardous substances have been or are threatened to be released into the environment, or to order persons potentially liable for the cleanup of the hazardous substances to do so themselves. In addition, the EPA has established a National Priorities List of sites at which hazardous substances have been, or are threatened to be, released and which require investigation or cleanup.

CERCLA liability is strict liability. It can be founded upon the release or threatened release, even as a result of unintentional, non-negligent or lawful action, of hazardous substances, including very small quantities of such substances. Thus, even if we have never knowingly transported or received hazardous substances, it is likely that hazardous substances have been deposited or “released” at landfills or other facilities that we presently or historically have owned or operated, or at properties owned by third parties to which we have transported waste. Therefore, we could be liable under CERCLA for the cost of cleaning up, or protecting against the release of, such hazardous substances at such sites and for damages to natural resources, even if those substances were deposited at our facilities before we acquired or operated them. The costs of a CERCLA cleanup can be very expensive and can include the costs of disposing of hazardous substances at appropriately-licensed facilities. Given the difficulty of obtaining insurance for environmental impairment liability, any such liability could have a material effect on our business, financial condition, results of operations and cash flows.

The Federal Water Pollution Control Act of 1972 (the Clean Water Act). This act regulates the discharge of pollutants from a variety of sources, including solid waste disposal sites, into streams, rivers and other waters of the United States. Runoff from our landfills and transfer stations that is discharged into surface waters through discrete

- conveyances must be covered by discharge permits that generally require us to conduct sampling and monitoring, and, under certain circumstances, to reduce the quantity of pollutants in those discharges. Storm water discharge regulations under the Clean Water Act require a permit for certain construction activities and for runoff from industrial

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operations and facilities, which may affect our operations. If a landfill or transfer station discharges wastewater through a sewage system to a publicly owned treatment works, the facility must comply with discharge limits imposed by that treatment works. In addition, states may adopt groundwater protection programs under the Clean Water Act or the Safe Drinking Water Act that could affect the manner in which our landfills monitor and control their waste management activities. Furthermore, if development at any of our facilities alters or affects wetlands, we may be required to secure permits before such development starts. In these situations, permitting agencies may require mitigation of wetland impacts.

- The Clean Air Act. The Clean Air Act imposes limitations on emissions from various sources, including landfills. In March 1996, the EPA promulgated regulations that require large municipal solid waste landfills to install landfill gas monitoring systems along with landfill gas control systems unless emissions are below established thresholds. These regulations apply to landfills that commenced construction, reconstruction or modification on or after May 30, 1991, and, principally, to landfills that can accommodate 2.5 million cubic meters or more of municipal solid waste. The regulations apply whether the landfills are active or closed. The date by which each affected landfill must have a gas collection and control system installed and made operational varies depending on calculated emission rates at the landfill. On July 14, 2016, the EPA issued final amendments to its regulations that require large landfills that commenced construction, reconstruction, or modification on or after July 17, 2014 to capture additional landfill gas to reduce emissions of methane and certain non-methane gases, which are recognized as greenhouse gases. In a separate rule finalized that same day, the EPA issued updates to its 1996 Emission Guidelines to reduce emissions of landfill gas from existing active landfills. Both actions were part of the Obama Administration's Climate Action Plan - Strategy to Reduce Methane Emissions. These and other efforts to curtail the emission of greenhouse gases and to ameliorate the effect of climate change may require our landfills to deploy more stringent emission controls and monitoring systems, with resulting capital or operating costs. Many state regulatory agencies also currently require monitoring systems for the collection and control of certain landfill gas. Certain of these state agencies are also implementing greenhouse gas control regulations that would also apply to landfill gas emissions. See Item 1A, Risk Factors – “Regulation of greenhouse gas emissions could impose costs on our operations, the magnitude of which we cannot yet estimate,” in this Form 10-K.

In addition, our vehicle fleet also may become subject to higher efficiency standards or other carbon-emission restrictions. Over the past three years, the EPA and the National Highway Traffic Safety Administration (NHTSA) have adopted regulations mandating the reduction of vehicle tail pipe emissions as a means of reducing greenhouse gas emissions. The regulations take the form of fuel economy standards. The EPA and the NHTSA have developed fuel economy standards in two vehicle categories: (1) conventional automobiles and light-duty trucks; and (2) heavy-duty trucks, including solid waste collection vehicles and tractor trailers. We own and operate vehicles in both categories. For conventional automobiles and light-duty trucks, in May 2010 the EPA and the NHTSA finalized fuel economy standards for model years 2012 through 2016. In October 2011, the EPA and the NHTSA initiated a second round of rulemaking for conventional automobiles and light-duty trucks in model years 2017 through 2025. In August 2011, the EPA and the NHTSA finalized standards for heavy-duty trucks, including solid waste collection vehicles and tractor trailers, for model years 2014 through 2018. On August 16, 2016, the EPA and the NHTSA jointly issued additional regulations that would impose more stringent standards for heavy-duty vehicles through model-year 2027. In issuing the proposed fuel economy standards for heavy-duty trucks (including tractor trailers), the government estimated that the increased equipment cost would be recouped over a period of two years for a tractor/trailer combo, and over a period of 6 years for a garbage truck, and each vehicle would continue to save fuel costs over its operating life.

- The Occupational Safety and Health Act of 1970 (OSHA). This act authorizes the Occupational Safety and Health Administration of the U.S. Department of Labor to promulgate occupational safety and health standards. A number of these standards, including standards for notices of hazardous chemicals and the handling of asbestos, apply to our facilities and operations.

State and Local Regulation

Each state in which we operate has its own laws and regulations governing solid waste disposal, water and air pollution, and, in most cases, releases and cleanup of hazardous substances and liabilities for such matters. States also

have adopted regulations governing the design, operation, maintenance and closure of landfills and transfer stations. Some counties, municipalities and other local governments have adopted similar laws and regulations. In addition, our operations may be affected by the trend in many states toward requiring solid waste reduction and recycling programs. For example, several states have enacted laws that require counties or municipalities to adopt comprehensive plans to reduce, through solid waste planning, composting, recycling or other programs, the volume of solid waste deposited in landfills. Additionally, laws and regulations restricting the disposal of certain waste in solid waste landfills, including yard waste, newspapers, beverage containers, unshredded tires, lead-acid batteries, electronic wastes and household appliances, have been adopted in several states and are being considered in others.

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Legislative and regulatory measures to mandate or encourage waste reduction at the source and waste recycling also have been considered, or are under consideration by, the U.S. Congress and the EPA.

To construct, operate and expand a landfill, we must obtain one or more construction or operating permits, as well as zoning and land use approvals. These permits and approvals may be burdensome to obtain and to comply with, are often opposed by neighboring landowners and citizens' groups, may be subject to periodic renewal, and are subject to denial, modification, non-renewal and revocation by the issuing agency. Significant compliance disclosure obligations often accompany these processes. In connection with our acquisition of existing landfills, we may be required to spend considerable time, effort and money to bring the acquired facilities into compliance with applicable requirements and to obtain the permits and approvals necessary to increase their capacity.

Other Regulations

Many of our facilities own and operate underground storage tanks that are generally used to store petroleum-based products. These tanks can be subject to federal, state and local laws and regulations that mandate their periodic testing, upgrading, closure and removal. In the event of leaks or releases from these tanks, these regulations require that polluted groundwater and soils be remediated. If underground storage tanks we own or operate leak, we could be liable for response costs and, if the leakage migrates onto the property of others, we could be liable for damages to third parties. We are unaware of facts indicating that issues of compliance with regulations related to underground storage tanks will have a material adverse effect on our consolidated financial condition, results of operations or cash flows.

With regard to our solid waste transportation operations, we are subject to the jurisdiction of the Surface Transportation Board and are regulated by the Federal Highway Administration, Office of Motor Carriers, and by regulatory agencies in states that regulate such matters. Various state and local government authorities have adopted, or are considering adopting, laws and regulations that would restrict the transportation of solid waste across state, county, or other jurisdictional lines. In 1978, the U.S. Supreme Court ruled that a law that restricts the importation of out-of-state solid waste is unconstitutional; however, states have attempted to distinguish proposed laws from those involved in and implicated by that ruling. In 1994, the U.S. Supreme Court ruled that a flow control law, which attempted to restrict solid waste from leaving its place of generation, imposes an impermissible burden upon interstate commerce and is unconstitutional. In 2007, however, the U.S. Supreme Court upheld the right of a local government to direct the flow of solid waste to a publicly-owned and publicly-operated waste facility. A number of county and other local jurisdictions have enacted ordinances or other regulations restricting the free movement of solid waste across jurisdictional boundaries. Other governments may enact similar regulations in the future. These regulations may cause a decline in volumes of waste delivered to our landfills or transfer stations and may increase our costs of disposal, thereby adversely affecting our operations and our financial results.

Liabilities Established for Landfill and Environmental Costs

We have established reserves for landfill and environmental costs, which include landfill site final capping, closure and post-closure costs. We periodically reassess such costs based on various methods and assumptions regarding landfill airspace and the technical requirements of Subtitle D of RCRA, and we adjust our amortization rates used to expense final capping, closure and post-closure costs accordingly. Based on current information and regulatory requirements, we believe that our recorded reserves for such landfill and environmental expenditures are adequate; however, environmental laws may change, and we cannot assure you that our recorded reserves will be adequate to cover requirements under existing or new environmental laws and regulations, future changes or interpretations of existing laws and regulations, or adverse environmental conditions previously unknown to us. Refer to the "Contractual Obligations" section of our Management's Discussion and Analysis of Financial Condition and Results of Operations contained in Item 7 of this Form 10-K and to Note 2, Summary of Significant Accounting Policies, to our consolidated financial statements in Item 8 of this Form 10-K for further information.

Liability Insurance and Bonding

The nature of our business exposes us to the possible risk of liabilities arising out of our operations, including damages to the environment, property, employees or the general public. Although we focus on operating safely and prudently, we occasionally receive claims, alleging damages, negligence or other wrongdoing in the planning or performance of work, which resulted in harm to the environment, property, employees or the general public. These

liabilities can be significant. We also could be subject to fines and civil and criminal penalties in connection with alleged violations of regulatory requirements. We maintain various policies of insurance that, subject to limitations, exclusions, or deductibles, provide coverage for these types of claims. While we believe the amount of insurance is appropriate for our type of business, we can neither assure you that such insurance would be adequate, in scope or amount, in the event of a major loss, nor that we will not be exposed to uninsured liabilities that could have a material adverse effect on our consolidated financial condition, results of operations or cash flows. We also cannot assure you that we would continue to maintain the insurance should market conditions in the insurance industry make such coverage cost prohibitive.

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Accruals for deductibles are based on claims filed and actuarial estimates of claims development and claims incurred but not reported. Due to the variable condition of the insurance market, we have experienced, and may experience in the future, increased deductible retention levels and increased premiums or unavailability of insurance. As we assume more risk through higher retention levels, we may experience more variability in our insurance reserves and expense. In the normal course of business, we also purchase surety bonds, insurance policies, letters of credit or marketable securities deposits in connection with municipal residential collection contracts, financial assurance for closure and post-closure of landfills, environmental remediation, environmental permits, and business licenses and permits as a financial guarantee of our performance.

Availability of Reports and Other Information

Our corporate website is www.republicservices.com. We make available on that website, free of charge, access to our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, Proxy Statements on Schedule 14A, and amendments to those materials filed or furnished with the Securities and Exchange Commission (SEC) pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934. We make such materials available as soon as reasonably practicable after we electronically submit them to the SEC. Our corporate website also contains our Certificate of Incorporation, Bylaws, Corporate Governance Guidelines, Code of Ethics, Political Contributions Policy, and Charters of the Audit Committee, Management Development and Compensation Committee, Nominating and Corporate Governance Committee, and Sustainability and Corporate Responsibility Committee of the board of directors. In addition, the SEC makes available at its website (www.sec.gov), free of charge, reports, proxy statements, and other information regarding issuers, such as us, that file electronically with the SEC. Information on our website or the SEC website is not part of this Form 10-K. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K and applicable New York Stock Exchange (NYSE) rules regarding amendments to or waivers of our Code of Ethics by posting this information on our website at www.republicservices.com.

ITEM 1A. RISK FACTORS

This Form 10-K contains certain forward-looking information about us that is intended to be covered by the safe harbor for “forward-looking statements” provided by the Private Securities Litigation Reform Act of 1995. Forward-looking statements are statements that are not historical facts. Words such as “guidance,” “expect,” “will,” “may,” “anticipate,” “plan,” “estimate,” “project,” “intend,” “should,” “can,” “likely,” “could,” “believe” and similar expressions are in identify forward-looking statements. These statements include statements about our plans, strategies and prospects. Forward-looking statements are not guarantees of performance. These statements are based upon our management's current beliefs and expectations and are subject to risk and uncertainties, including the risks set forth below in these Risk Factors, which could cause actual results to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot assure you that the expectations will prove to be correct. Accordingly, you should not place undue reliance on the forward-looking statements, which speak only as of the date of this Form 10-K. Except to the extent required by applicable law or regulation, we undertake no obligation to update or publish revised forward-looking statements to reflect events or circumstances after the date of this Form 10-K or to reflect the occurrence of unanticipated events.

General economic conditions can directly and adversely affect our operating results.

Our business is directly affected by changes in national and general economic factors and overall economic activity that are outside of our control, including consumer confidence and interest rates. A weak economy generally results in decreases in volumes of waste generated, which adversely affects our revenues. In addition, we have a relatively high fixed-cost structure, which is difficult to adjust quickly to match declining waste volume levels. Consumer uncertainty and the loss of consumer confidence may decrease overall economic activity and thereby limit the amount of services we provide. Additionally, the decline in waste volumes may result in increased competitive pricing pressure and increased customer turnover, resulting in lower revenue and increased operating costs. Operating in an environment of worsening economic conditions could have a material adverse effect on our consolidated financial condition, results of operations and cash flows. Further, recovery in the solid waste industry historically has lagged behind recovery in the general economy. Accordingly, we cannot assure you that an improvement in general economic conditions will result in an immediate, or any, improvement in our consolidated financial condition, results of operations or cash flows.

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Weakness in the U.S. economy may expose us to credit risk for amounts due from governmental agencies, large national accounts, industrial customers and others.

Weakness in the U.S. economy reduces the amount of taxes collected by various governmental agencies. We provide services to a number of these agencies, including numerous municipalities. These governmental agencies may suffer financial difficulties resulting from a decrease in tax revenue and may ultimately be unable or unwilling to pay amounts owed to us. In addition, weakness in the economy may cause other customers, including our large national accounts, or industrial or energy services clients, to suffer financial difficulties and ultimately to be unable or unwilling to pay amounts owed to us. This could negatively impact our consolidated financial condition, results of operations and cash flows.

The waste industry is highly competitive and includes competitors that may have greater financial and operational resources, flexibility to reduce prices or other competitive advantages that could make it difficult for us to compete effectively.

We principally compete with large national waste management companies, numerous municipalities, and numerous regional and local companies. Competition for collection accounts is primarily based on price and the quality of services. Competition for disposal business is primarily based on price, geographic location and quality of operations. One of our competitors may have greater financial and operational resources than we do. Further, many counties and municipalities that operate their own waste collection and disposal facilities have the benefits of tax revenue or tax-exempt financing. Our ability to obtain solid waste volume for our landfills also may be limited by the fact that some major collection operations also own or operate landfills to which they send their waste. In certain markets in which we do not own or operate a landfill, from time to time our collection operations may have difficulty competing effectively. If we were to lose market share or if we were to lower prices to address competitive issues, it could negatively impact our consolidated financial condition, results of operations and cash flows.

Price increases may not be adequate to offset the effect of increased costs and may cause us to lose volume.

We seek to secure price increases necessary to offset increased costs, improve our operating margins and earn an adequate return on our substantial investments in assets such as our landfills. From time to time, our competitors reduce their prices in an effort to expand their market share. Contractual, general economic or market-specific conditions also may limit our ability to raise prices. For example, many of our contracts have price adjustment provisions that are tied to an index such as the consumer price index. Particularly in a weak U.S. economy, our costs may increase in excess of the increase, if any, in the consumer price index. This may continue to be the case even when the U.S. economy recovers because a recovery in the solid waste industry historically has lagged behind a recovery in the general economy. As a result, we may be unable to offset increases in costs, improve our operating margins and obtain adequate investment returns through price increases. Price increases also might cause us to lose volume to lower-cost competitors.

Increases in the cost of fuel or petrochemicals would increase our operating expenses, and we cannot assure you that we would be able to recover such cost increases from our customers.

We depend on fuel purchased in the open market to operate our collection and transfer trucks and other equipment used for collection, transfer and disposal. Fuel prices are unpredictable and fluctuate significantly based on events beyond our control, including geopolitical developments, actions by the Organization of the Petroleum Exporting Countries and other oil and gas producers, supply and demand for oil and gas, war, terrorism and unrest in oil-producing countries, adverse weather and regional production patterns. Due to contractual or market factors, we may not be able to offset such volatility through fuel recovery fees. 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.

To manage our exposure to volatility in fuel prices, we have entered into multiple swap agreements whereby we receive or make payments to counter-parties should the price of fuel vary from a specified amount. During 2016, approximately 20% of our fuel volume purchases were hedged with swap agreements. Additionally, we are able to collect fuel recovery fees from some customers. At current consumption levels, a twenty-cent per gallon change in the price of diesel fuel changes our fuel costs by approximately $25 million on an annual basis. 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. Accordingly, a substantial rise or drop in fuel costs could result in a material effect to our revenue and cost of operations.

Over the last several years, regulations have been adopted mandating changes in the composition of fuels for motor vehicles. The renewable fuel standards that the EPA sets annually affect the type of fuel our motor vehicle fleet uses. Pursuant to the Energy Independence and Security Act of 2007, the EPA establishes annual renewable fuel volume requirements for four different categories of renewable fuels (renewable fuel, advanced biofuel, cellulosic biofuel, and biomass-based diesel). These volume requirements set standards for the proportion of refiners' or importers' total fuel volume that must contain renewable fuels (as designated by regulation). The total volume metrics for each year vary based upon a number of factors (e.g., the

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availability of such fuels), and it is difficult to predict the ultimate quantity that the EPA will eventually mandate for 2017 and beyond. These regulations are one of many factors that may affect the cost of the fuel we use.

Our operations also require the use of 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. Petrochemical prices, and hence our operating and capital costs, may be further affected by regulatory efforts to reduce greenhouse gases from the industries that produce such petrochemicals. We are also susceptible to increases in indirect fuel recovery fees from our vendors.

Fluctuations in prices for recycled commodities that we sell to customers may adversely affect our consolidated financial condition, results of operations and cash flows.

We purchase or collect and process recyclable materials such as paper, cardboard, plastics, aluminum and other metals for sale to third parties. Our results of operations may be affected by changing prices or market requirements for recyclable materials. The resale and purchase prices of, and market demand for, recyclable materials are volatile due to changes in economic conditions and numerous other factors beyond our control. These fluctuations may affect our consolidated financial condition, results of operations and cash flows. Approximately 74% of our recycling center volume relates to OCC, ONP and other mixed paper.

Historically, to manage our exposure to fluctuations in prices for recycled commodities, we have entered into multiple hedging arrangements whereby we receive or make payments to counter-parties should the price of recycled commodities vary from a specified amount or range. During 2016, we entered into multiple agreements related to forecasted OCC sales. At current volumes and mix of materials, we believe a $10 per ton change in the price of recycled commodities will change annual revenue and operating income by approximately $27 million and $18 million, respectively, on an annual basis. Accordingly, a substantial rise or drop in recycled commodity prices could result in a material effect to our revenue and cost of operations.

Adverse weather conditions, including those brought about by climate change, may limit our operations and increase the costs of collection and disposal.

Our collection and landfill operations could be adversely impacted by extended periods of inclement weather, or by increased severity of weather and climate extremes resulting from climate change, some of which we may already be experiencing. Recent studies suggest that global warming is occurring faster than previously projected, with the EPA projecting a 3° to 12° Fahrenheit temperature increase in the United States by the end of the century. In addition to sea level rise, this temperature increase is expected to result in more severe droughts, floods, and other extreme weather events. Any of these factors could increase the volume of waste collected under our existing contracts (without corresponding compensation), interfere with collection, transfer station and landfill operations, delay the development of landfill capacity or reduce the volume of waste generated by our customers. In addition, adverse weather conditions may result in the temporary suspension of our operations, which can significantly affect our operating results in the affected regions during those periods.

The solid waste industry is a capital-intensive industry and our capital expenditures may exceed current expectations, which could require us to obtain additional funding for our operations or impair our ability to grow our business.

Our ability to remain competitive and to grow our business largely depends on our cash flow from operations and access to capital. If our capital efficiency programs cannot offset the effect of inflation and business growth, it may be necessary to increase the amount we spend. Additionally, if we make acquisitions or further expand our operations, the amount we spend on capital, capping, closure, post-closure, environmental remediation and other items will increase. Our cash needs also will increase if the expenditures for capping, closure, post-closure and remediation activities increase above our current estimates, which may occur over a long period due to changes in federal, state or local government requirements and other factors beyond our control. Increases in expenditures would negatively impact our cash flows.

We may be unable to obtain or maintain required permits or to expand existing permitted capacity of our landfills, which could decrease our revenue and increase our costs.

We cannot assure you that we will be able to obtain or maintain the permits required to operate because permits to operate new landfills and transfer stations, or to expand the permitted capacity of existing landfills, have become more difficult and expensive to obtain and maintain. Permits often take years to obtain as a result of numerous hearings and

compliance requirements with regard to zoning, environmental and other regulations. These permits are also often subject to resistance from citizen or other groups and other political pressures. Local communities and citizen groups, adjacent landowners, governmental agencies and others may oppose the issuance of a permit or approval we may need, allege violations of the permits under which we currently operate or laws or regulations to which we are subject, or seek to impose liability on us for environmental damage. Responding to these challenges has at times increased our costs and extended the time associated with establishing new landfills and transfer stations and expanding existing landfills. In addition, failure to receive regulatory and zoning approval may prohibit us from establishing new landfills or transfer stations or expanding existing landfills. Our failure

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to obtain the required permits to operate our landfills and transfer stations could have a material adverse effect on our consolidated financial condition, results of operations and cash flows. In addition, we may have to dispose collected waste at landfills operated by our competitors or haul the waste long distances at a higher cost to one of our other landfills, either of which could significantly increase our waste disposal costs.

If we do not appropriately estimate landfill capping, closure, post-closure and remediation costs, our financial condition and results of operations may be adversely affected.

A landfill must be closed and capped, and post-closure maintenance commenced, once the landfill's permitted capacity is reached and additional capacity is not authorized. Further, we undertake remediation activities at some of our solid waste facilities. We have significant financial obligations relating to capping, closure, post-closure and remediation costs at our existing owned or operated landfills, and will have material financial obligations with respect to any future owned or operated landfills. We establish accruals for the estimated costs associated with capping, closure, post-closure and remediation obligations. We could underestimate such costs, and our financial obligations for capping, closure, post-closure or remediation costs could exceed the amounts accrued or amounts otherwise receivable pursuant to trust funds established for this purpose. Additionally, if a landfill must be closed earlier than expected or its remaining airspace is reduced for any other reason, the accruals for capping, closure, post-closure and remediation could be required to be accelerated. If our capping, closure, post-closure or remediation costs exceed the amounts accrued, or if such accruals are required to be accelerated, this could have a material adverse effect on our consolidated financial condition, results of operations and cash flows.

Alternatives to landfill disposal could reduce our disposal volumes and cause our revenues and operating results to decline.

Most of the states in which we operate landfills require counties and municipalities to formulate comprehensive plans to reduce the volume of solid waste deposited in landfills through waste planning, composting, recycling or other programs. Some state and local governments mandate waste reduction at the source and prohibit the disposal of certain types of wastes, such as yard waste, at landfills. Further, many of our customers voluntarily are diverting waste to alternatives to landfill disposal, such as recycling and composting, while also working to reduce the amount of waste they generate. Many of the largest companies in the U.S. are setting zero-waste goals in which they strive to send no waste to landfills. Although such actions help to protect our environment, they have reduced, and will in the future reduce, the volume of waste going to landfills and may affect the prices that we can charge for landfill disposal. Accordingly, we cannot assure you that we will be able to operate our landfills at their current volumes or charge current prices for landfill disposal services due to possible decreases in demand for such services. If we cannot expand our service offerings and grow lines of business to service waste streams that do not go to landfills and to provide services for customers that wish to reduce waste entirely, this could have a negative effect on our consolidated financial condition, results of operations and cash flows. Further, even if we can develop such service offerings and lines of business, disposal alternatives nonetheless could have a negative effect on our consolidated financial condition, results of operations and cash flows.

The possibility of landfill and transfer station site development projects, or expansion projects not being completed or certain other events could result in material charges to income.

In accordance with U.S. GAAP, we capitalize certain expenditures relating to development, expansion and other projects. If a facility or operation is permanently shut down or determined to be impaired, or a development, expansion or other project is not completed or is determined to be impaired, we will charge against earnings any unamortized capitalized expenditures relating to such facility or project that we are unable to recover through sale, transfer or otherwise. We also carry a significant amount of goodwill on our consolidated balance sheets, which we must assess for impairment annually, and more frequently in the case of certain triggering events. We may incur charges against earnings in accordance with this policy, or other events may cause impairments. Such charges could have a material adverse effect on our results of operations.

The business and assets we operate expose us to safety, operational and other risks, including the risk of personal injury to our employees or third parties.

The provision of waste collection, transfer, disposal, recycling and energy services, including the operation of landfills, CNG fueling stations, a substantial fleet of trucks and other waste-related assets, involves risks. These risks

include, among others, the risk of truck accidents, equipment defects, malfunctions and failures, improper use of dangerous equipment, the release of hazardous substances, fire and explosion, any of which could result in environmental liability, personal injury, loss of life, business interruption or property damage or destruction. While we carry insurance to cover many contingencies, and seek to minimize our exposure to these risks through maintenance, training and compliance programs, any substantial losses could have a material adverse effect on our business, results of operations and financial condition.

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We are subject to costly environmental regulations and flow-control regulations that may affect our operating margins, restrict our operations and subject us to additional liability.

Complying with laws and regulations governing the collection, treatment, storage, transfer and disposal of solid and hazardous wastes and materials, air quality and emissions of greenhouse gases, water quality and the remediation of contamination associated with the release of hazardous substances is costly. Laws and regulations often require us to enhance or replace our equipment and to modify landfill operations or initiate final closure of a landfill. We cannot assure you that we will be able to implement price increases sufficient to offset the costs of complying with these laws and regulations. In addition, environmental regulatory changes could accelerate or increase expenditures for capping, closure, post-closure and environmental and remediation activities at solid waste facilities and obligate us to spend sums in addition to those presently accrued for such purposes.

Our collection, transfer, and landfill operations are and will continue to be affected by state or local laws or regulations that restrict the transportation of solid waste across state, county or other jurisdictional lines or that direct the flow of waste to a specified facility or facilities. Such laws and regulations could negatively affect our operations, resulting in declines in landfill volumes and increased costs of alternate disposal.

Regulation of greenhouse gas emissions could impose costs on our operations, the magnitude of which we cannot yet estimate.

Efforts to curtail the emission of greenhouse gases and to ameliorate the effects of climate change continue to progress. Our landfill operations emit anthropogenic methane, identified as a greenhouse gas, and our vehicle fleet emits, among other things, carbon dioxide, which also is a greenhouse gas. Conventional wisdom still suggests that passage of comprehensive, federal climate change legislation is highly unlikely. Nonetheless, should comprehensive federal climate change legislation be enacted, we expect it to impose costs on our operations, the materiality of which we cannot predict.

Absent comprehensive federal legislation to control greenhouse gas emissions, the EPA is moving ahead administratively under its existing Clean Air Act authority. The EPA is compelled to issue rules by the U.S. Supreme Court's April 2007 Massachusetts v. EPA ruling that greenhouse gases are “pollutants” for purposes of the Clean Air Act and the EPA's December 2009 finding that continued emissions of greenhouse gases endanger human health and welfare. With respect to our light- and heavy-duty vehicle fleet, the EPA has since finalized regulations limiting greenhouse gas emissions and increasing fuel economy standards. The EPA and the NHTSA have finalized such regulations applicable to heavy-duty vehicles through model-year 2018 and to light-duty vehicles through model-year 2025. On August 16, 2016, the EPA and the NHTSA issued additional regulations that would impose more stringent standards for heavy-duty vehicles through model-year 2027. Federal efforts to curtail greenhouse gas emissions and to increase the fuel efficiency of light-duty and heavy-duty vehicles could have a material adverse effect on our consolidated financial condition, results of operations and cash flows.

With regard to greenhouse gas emissions from our landfills, on July 14, 2016, the EPA issued amendments to its regulations that require large landfills that commenced construction, reconstruction or modification on or after July 17, 2014 to capture additional landfill gas to reduce emissions of methane and certain non-methane gases, which are recognized as greenhouse gases. In a separate action finalized that same day, the EPA issued updates to its 1996 Emission Guidelines to reduce emissions of landfill gas from existing active landfills. Both actions are part of the Obama Administration's Climate Action Plan - Strategy to Reduce Methane Emissions. These regulations may require our landfills to deploy more stringent emission controls and monitoring systems, with resulting capital or operating costs. The application of these or other greenhouse gas regulations to our landfills could have a material adverse effect on our landfill operations and on our consolidated financial condition, results of operations and cash flows.

We may have environmental liabilities that are not covered by our insurance. Changes in insurance markets also may impact our financial results.

We may incur environmental liabilities arising from our operations or properties. We maintain high deductibles for our environmental liability insurance coverage. If we were to incur substantial liability for environmental damage, our insurance coverage may be inadequate to cover such liability. This could have a material adverse effect on our consolidated financial condition, results of operations and cash flows.

Also, due to the variable condition of the insurance market, we have experienced, and may experience in the future, increased insurance retention levels and increased premiums or unavailability of insurance. As we assume more risk for insurance through higher retention levels, we may experience more variability in our insurance reserves and expense.

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Despite our efforts, we may incur additional liability under environmental laws in excess of amounts presently known and accrued.

We are a potentially responsible party at many sites under CERCLA, which provides for the remediation of contaminated facilities and imposes strict, joint and several liability for the cost of remediation on current owners and operators of a facility at which there has been a release or a threatened release of a "hazardous substance." CERCLA liability also extends to parties who were site owners and operators at the time hazardous substances were disposed, and on persons who arrange for the disposal of such substances at the facility (e.g., generators of the waste and transporters who selected the disposal site). Hundreds of substances are defined as "hazardous" under CERCLA and their presence, even in minute amounts, can result in substantial liability.

Notwithstanding our efforts to comply with applicable environmental laws, we may have additional liability under environmental laws in excess of our current reserves because, among other things, hazardous substances may be present in waste collected by us or disposed of in our landfills (or in waste collected, transported or disposed of in the past by companies we have acquired), environmental laws may change, or there may be adverse environmental conditions that develop or were otherwise previously unknown to us. For example, during 2012 through 2014, we recorded an aggregate of approximately $400 million in charges relating to environmental remediation at our closed landfill in Bridgeton, Missouri. Actual costs for liabilities at Bridgeton or other sites could be significantly greater than amounts we have accrued for these purposes. Environmental liabilities in excess of our current reserves could have a material adverse effect on our consolidated financial position, results of operations and cash flows.

We have substantial indebtedness, which may limit our financial flexibility.

As of December 31, 2016, we had approximately $7.7 billion in principal value of debt and capital leases outstanding. This amount of indebtedness and our debt service requirements may limit our financial flexibility to access additional capital and make capital expenditures and other investments in our business, to withstand economic downturns and interest rate increases, to plan for or react to changes in our business and our industry, and to comply with the financial and other covenants of our debt instruments. Further, our ability to comply with these financial and other covenants may be affected by changes in economic or business conditions or other events that are beyond our control. If we do not comply with these covenants, we may be required to take actions such as reducing or delaying capital expenditures, reducing or eliminating dividends or stock repurchases, selling assets, restructuring or refinancing all or part of our existing debt, or seeking additional equity capital.

We may be unable to maintain our credit ratings or execute our financial strategy.

Our ability to execute our financial strategy depends in part on our ability to maintain investment grade ratings on our debt. The credit rating process is contingent upon a number of factors, many of which are beyond our control. We cannot assure you that we will be able to maintain our investment grade ratings in the future. If we were unable to do so, our interest expense would increase and our ability to obtain financing on favorable terms may be adversely affected.

Our financial strategy also depends on our ability to generate sufficient cash flow to reinvest in our existing business, fund internal growth, acquire other solid waste businesses, pay dividends, repurchase stock, and take other actions to enhance shareholder value. We cannot assure you that we will succeed in executing our broad-based pricing initiatives, that we will generate sufficient cash flow to execute our financial strategy, that we will be able to pay cash dividends at our present rate, or increase them, or that we will be able to continue our share repurchase program.

Currently pending or future litigation or governmental proceedings could result in material adverse consequences, including judgments or settlements.

We are and will continue to be involved in lawsuits, regulatory inquiries, and governmental and other legal proceedings arising out of the ordinary course of our business. Many of these matters raise complicated factual and legal issues and are subject to uncertainties. The timing of the final resolutions to lawsuits, regulatory inquiries, and governmental and other legal proceedings is uncertain. Further, the possible outcomes or resolutions to these matters could include adverse judgments or settlements, either of which could require substantial payments and adversely affect our consolidated financial condition, results of operations and cash flows.

For example, we incur costs to defend against litigation brought by government agencies and private parties who allege we are in violation of our permits and applicable environmental laws and regulations, or who assert claims

alleging nuisance, environmental damage, personal injury or property damage. As a result, we may be required to pay fines or judgments or implement corrective measures, or we may have our permits and licenses modified or revoked. A significant judgment against us, the loss of a significant permit or license, or the imposition of a significant fine could have a material adverse effect on our consolidated financial condition, results of operations and cash flows. We establish accruals for our estimates of the costs

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associated with lawsuits, regulatory, governmental and other legal proceedings. We could underestimate such accruals. Such shortfalls could result in significant unanticipated charges to income.

We may be unable to manage our growth effectively.

Our growth strategy places significant demands on our financial, operational and management resources. To continue our growth, we may need to add administrative, managerial and other personnel, and may need to make additional investments in operations and systems. We cannot assure you that we will be able to find and train qualified personnel, or do so on a timely basis, or to expand or otherwise modify our operations and systems to the extent, and in the time, required.

We may be unable to execute our acquisition growth strategy.

Our ability to execute our growth strategy depends in part on our ability to identify and acquire desirable acquisition candidates and on our ability to successfully integrate acquired operations into our business. The integration of our operations with those of acquired companies may present significant challenges to our management. In addition, competition for acquisition candidates may prevent us from acquiring certain acquisition candidates. Thus, we cannot assure you that:

- desirable acquisition candidates exist or will be identified;
- we will be able to acquire any of the candidates identified;
- we will effectively integrate and manage companies we acquire; or
- any acquisitions will be profitable or accretive to our earnings.

If any of these factors force us to alter our growth strategy, our growth prospects could be adversely affected.

Businesses we acquire may have undisclosed liabilities.

Our due diligence investigations of acquisition candidates may fail to discover certain undisclosed liabilities. If we acquire a company having undisclosed liabilities such as environmental, remediation or contractual liabilities, as a successor owner we may be responsible for such undisclosed liabilities. We try to minimize our exposure to such liabilities by conducting due diligence, by obtaining indemnification from each seller of the acquired companies, by deferring payment of a portion of the purchase price as security for the indemnification and by acquiring only specified assets. However, we cannot assure you that we will be able to obtain indemnification or that any indemnification obtained will be enforceable, collectible or sufficient in amount, scope or duration to fully offset any undisclosed liabilities arising from our acquisitions.

Our consolidated financial statements are based on estimates and assumptions that may differ from actual results.

Our consolidated financial statements have been prepared in accordance with U.S. GAAP and necessarily include amounts based on management's estimates. Actual results may differ from these amounts. Significant items requiring management to make subjective or complex judgments that are inherently uncertain include the recoverability of long-lived assets, the depletion and amortization of landfill development costs, accruals for final capping, closure and post-closure costs, valuation allowances for accounts receivable and deferred tax assets, liabilities for potential litigation, claims and assessments, and liabilities for environmental remediation, multiemployer pension plans, employee benefit plans, deferred taxes, uncertain tax positions, insurance and our estimates of the fair values of assets acquired and liabilities assumed in any acquisition. We cannot assure you that the liabilities recorded for items such as these will be adequate to cover the costs we ultimately will face.

The introduction of new accounting rules, laws or regulations could adversely impact our reported results of operations.

Complying with new accounting rules, laws or regulations could adversely impact our results of operations or cause unanticipated fluctuations in our results of operations or financial conditions in future periods.

We may be subject to workforce influences, including work stoppages, which could increase our operating costs and disrupt our operations.

As of December 31, 2016, approximately 27% of our workforce was represented by various local labor unions. If our unionized workers were to engage in strikes, work stoppages or other slowdowns, we could experience a significant disruption of our operations and an increase in our operating costs, which could have an adverse effect on our consolidated financial condition, results of operations and cash flows. Additional groups of employees may seek union representation in the future and, if successful, the negotiation of collective bargaining agreements could divert

management's attention and result in increased operating costs. If a greater percentage of our workforce becomes unionized, our consolidated financial condition, results of operations and cash flows could be adversely impacted due to the potential for increased operating costs.

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Our obligation to fund multiemployer pension plans to which we contribute, or our withdrawal from such plans, may have an adverse effect on us.

We contribute to 26 multiemployer pension plans under collective bargaining agreements (CBAs) covering union-represented employees. Approximately 20% of our total current employees participate in such multiemployer plans. We do not administer these plans and generally are not represented on the boards of trustees of these plans. The Pension Protection Act enacted in 2006 (the PPA) requires under-funded pension plans to improve their funding ratios. 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 PPA. We cannot presently determine the amount of additional funding, if any, we may be required to make to these plans. However, plan assessments could have a material adverse effect on our results of operations or cash flows for a given period.

Further, under current law, upon the termination of a multiemployer pension plan, or in the event of a withdrawal by us (which we consider from time to time) or a mass withdrawal of contributing employers (each, a Withdrawal Event), we would be required to make payments to the plan for our proportionate share of the plan's unfunded vested liabilities. We cannot assure you that there will not be a Withdrawal Event with respect to any of the multiemployer pension plans to which we contribute or that, in the event of such a Withdrawal Event, the amounts we would be required to contribute would not have a material adverse effect on our consolidated financial condition, results of operations and cash flows.

For additional discussion and detail regarding multiemployer pension plans see, Note 11, Employee Benefit Plans, to our consolidated financial statements in Item 8 of this Form 10-K.

The costs of providing for pension benefits and related funding requirements are subject to changes in pension fund values and fluctuating actuarial assumptions, and may have a material adverse effect on our results of operations and cash flows.

We sponsor a defined benefit pension plan that is funded with trustee assets invested in a diversified portfolio of debt and equity securities. Our costs for providing such benefits and related funding requirements are subject to changes in the market value of plan assets. Our pension expenses and related funding requirements are also subject to various actuarial calculations and assumptions, which may differ materially from actual results due to changing market and economic conditions, interest rates and other factors. A significant increase in our pension obligations and funding requirements could have a material adverse effect on our consolidated financial condition, results of operations and cash flows.

The loss of key personnel could have a material adverse effect on our consolidated financial condition, results of operations, cash flows and growth prospects.

Our future success depends on the continued contributions of several key employees and officers. The loss of the services of key employees and officers, whether such loss is through resignation or other causes, or the inability to attract additional qualified personnel, could have a material adverse effect on our consolidated financial condition, results of operations, cash flows and growth prospects.

Our strategy includes an increasing dependence on technology in our operations; if any of our key technology fails, our business could be adversely affected.

Our operations are increasingly dependent on technology. Our information technology systems are critical to our ability to drive profitable growth through differentiation, continue the implementation of standardized processes and deliver a consistent customer experience. One of the five pillars of our strategy is to grow through enabling our customers to do business with us through more channels and with better access to information and, accordingly, we have made substantial investment in our e-commerce platform. Problems with the operation of the information or communication technology systems we use could adversely affect, or temporarily disable, all or a portion of our operations. Inabilities and delays in implementing new systems can also affect our ability to realize projected or expected revenue or cost savings. Additionally, any systems failures could impede our ability to timely collect and report financial results in accordance with applicable laws.

A cyber security incident could negatively impact our business and our relationships with customers.

We use computers in substantially all aspects of our business operations. We also use mobile devices, social networking and other online activities to connect with our employees and our customers. Such uses give rise to cyber

security risks, including security breach, espionage, system disruption, theft and inadvertent release of information. Our business involves the storage and transmission of numerous classes of sensitive and/or confidential information and intellectual property, including customers' personal information, private information about employees, and financial and strategic information about the Company and its business partners. We also rely on a Payment Card Industry compliant third party to protect our customers' credit card information. While the Company pursues its strategy to grow through acquisitions and to pursue new initiatives that improve our operations and cost structure, the Company is also expanding and improving its information technologies,

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resulting in a larger technological presence and corresponding exposure to cyber security risk. If we fail to assess and identify cyber security risks associated with acquisitions and new initiatives, we may become increasingly vulnerable to such risks. Additionally, while we have implemented measures to prevent security breaches and cyber incidents, our preventive measures and incident response efforts may not be entirely effective. The theft, destruction, loss, misappropriation, or release of sensitive and/or confidential information or intellectual property, or interference with our information technology systems or the technology systems of third parties on which we rely, could result in business disruption, negative publicity, brand damage, violation of privacy laws, loss of customers, potential liability and competitive disadvantage.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our corporate office is located at 18500 North Allied Way, Phoenix, Arizona 85054, where we currently lease approximately 145,000 square feet of office space.

Our principal property and equipment consists of land, landfills, buildings, vehicles and equipment. We own or lease real property in the states in which we conduct operations. As of December 31, 2016, we owned or operated 333 collection operations, 204 transfer stations, 192 active landfills, 64 recycling centers, 7 treatment, recovery and disposal facilities, and 10 salt water disposal wells in 39 states and Puerto Rico. In the aggregate, our active solid waste landfills total approximately 107,500 acres, including approximately 37,400 permitted acres. We also have post-closure responsibility for 124 closed landfills. We believe that our property and equipment are adequate for our current needs.

ITEM 3. LEGAL PROCEEDINGS

General 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 self-insured employee health care costs, are discussed in Note 7, Other Liabilities, to our consolidated financial statements in Item 8 of this Form 10-K; and (2) environmental remediation liabilities, which are discussed in Note 8, Landfill and Environmental Costs, to our consolidated financial statements in Item 8 of this Form 10-K.

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 are able to reasonably estimate a range of losses we may incur with respect to such a matter, we record an accrual for the amount within the range that constitutes our best estimate. If we are able to 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.

Legal Proceedings over Certain Environmental Matters Involving Governmental Authorities with Possible Sanctions of $100,000 or More

Item 103 of the SEC's Regulation S-K requires disclosure of certain environmental matters when a governmental authority is a party to the proceedings and the proceedings involve potential monetary sanctions unless we reasonably believe the monetary sanctions will not equal or exceed $100,000. We are disclosing the following matters in accordance with that requirement:

Bridgeton Landfill Matters - Regulatory

On July 23, 2012, the Missouri Department of Natural Resources (MDNR) issued a notice of violation (NOV) to the closed Bridgeton Landfill in Bridgeton, Missouri after it determined that a sub-surface smoldering event (SSE) was occurring at the landfill. The NOV specified required actions intended to prevent the spread of the SSE, offsite odors, and environmental pollution. On March 27, 2013, the Missouri Attorney General's Office, on behalf of MDNR, sued Republic Services, Inc., and our subsidiaries Allied Services, LLC, and Bridgeton Landfill, LLC in the Circuit Court of St. Louis County in connection with

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odors and leachate from the landfill. The action alleges, among other things, violations of the Missouri Solid Waste Management, Hazardous Waste Management, Clean Water, and Air Conservation Laws, and claims for nuisance, civil penalties, costs, and natural resource damages. The suit seeks a preliminary and permanent injunction requiring us to take measures to remedy the alleged resulting nuisance, civil penalties of approximately $37 million, and other relief. On May 13, 2013, the court entered a stipulated preliminary injunction under which Bridgeton Landfill, LLC agreed, among other things, to continue remedial work plans previously approved by MDNR and to continue reporting to MDNR. On June 19, 2014, the court entered an agreed amendment to the injunction providing for increased frequency in some carbon monoxide monitoring, three new rounds of air sampling, implementation of an Odor Management Plan, and cost reimbursement to MDNR. On October 1, 2015, we removed the case to the United States District Court for the Eastern District of Missouri. The Missouri Attorney General’s motion to remand the case to the Circuit Court of St. Louis County was granted on April 26, 2016. The case is presently set for trial beginning October 31, 2017. On April 28, 2016, Bridgeton Landfill, LLC and the United States Environmental Protection Agency entered into an Administrative Settlement Agreement and Order on Consent addressing certain remedial actions in the north quarry of the Bridgeton Landfill, including a heat extraction barrier, an expanded landfill cover, and additional temperature monitoring probes.

Sunshine Canyon Landfill Matter

The Sunshine Canyon Landfill in Sylmar, California entered into settlement agreements with the South Coast Air Quality Management District (SCAQMD) in 2012 and 2013. The settlement agreements resolved claims for excess emission charges, civil penalties, and investigative and administrative costs relating to odor-related and surface emissions NOVs received from SCAQMD. Since the end of the period covered by the 2013 settlement agreement, which was September 6, 2013, and through February 10, 2017, Sunshine Canyon has received an additional 122 NOVs from SCAQMD for odors. We have received a $2.2 million civil penalty demand from the SCAQMD, and the SCAQMD's Executive Officer filed a Petition before the Hearing Board of the SCAQMD for an abatement order. We have entered into a Stipulated Abatement Order with the Hearing Board providing for certain abatement measures to be implemented at the landfill. We expect to contest the penalty amount.

Hunt County Matter

On July 15, 2015, Hunt County, Texas (the County) and the State of Texas Commission on Environmental Quality filed suit against Republic Services, Inc. and our subsidiaries, Republic Waste Services of Texas, Ltd. and Republic Waste Services of Texas GP, Inc., alleging violations of the Texas Water Code and Texas Health and Safety Code due to allegedly improper and unpermitted storage and disposal of waste on our surplus property adjacent to the Maloy Landfill. The parties have reached an agreement to resolve the dispute, which includes $400,000 in civil penalties. The agreement has been approved by the County and is pending final approval by the Texas Attorney General's Office.

Arbor Hills Landfill Matter

BFI Waste Systems of North America, LLC (BFIWS) formerly owned a landfill gas collection and control system (GCCS) at the Arbor Hills Landfill in Salem Township, Michigan. The Michigan Department of Environmental Quality issued NOVs to BFIWS on February 2, March 15, April 29, and December 14, 2016 and the EPA issued a Finding of Violation (FOV) to BFIWS on September 29, 2016. The NOVs and FOV, which were issued prior to the transfer of ownership of the GCCS, relate to alleged off site odors and operation conditions at the landfill. BFIWS has not yet received a civil penalty demand from either agency.

Pine Avenue Landfill Matter

On December 20, 2016, the EPA issued an FOV to Allied Waste Niagara Falls Landfill, LLC (Allied-Niagara). The FOV alleges violations of the Clean Air Act and associated regulations relating to operation of Allied-Niagara’s Pine Avenue Landfill in Niagara Falls, New York. Allied-Niagara has not yet received a civil penalty demand from the agency.

ITEM 4. MINE SAFETY DISCLOSURES

None.

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PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information, Holders and Dividends

The principal market for our common stock is the New York Stock Exchange, and it is traded under the symbol RSG. The following table sets forth the range of the high and low sale prices per share of our common stock on the New York Stock Exchange and the cash dividends declared per share of common stock for the periods indicated:

	High	Low	Dividends Declared
Year Ended December 31, 2016:			
First quarter	$48.76	$41.82	$ 0.30
Second quarter	51.31	45.56	0.30
Third quarter	52.92	49.42	0.32
Fourth quarter	58.00	49.18	0.32
Year Ended December 31, 2015:			
First quarter	$42.05	$38.95	$ 0.28
Second quarter	41.46	38.99	0.28
Third quarter	43.71	39.17	0.30
Fourth quarter	45.35	40.67	0.30

There were 639 holders of record of our common stock at February 6, 2017, which does not include beneficial owners for whom Cede & Co. or others act as nominees.

In February 2017, our board of directors declared a regular quarterly dividend of $0.32 per share for shareholders of record on April 3, 2017. We expect to continue to pay quarterly cash dividends, and we may consider increasing our dividends if we believe it will enhance shareholder value.

We have the ability under our credit facilities to pay dividends and repurchase our common stock if we are in compliance with the financial covenants in our credit facilities. As of December 31, 2016, we were in compliance with those financial covenants.

Issuer Purchases of Equity Securities

The following table provides information relating to our purchases of shares of our common stock during the three months ended December 31, 2016:

	Total Number of Shares Purchased (a)	Average Price Paid per Share (a)	Total Number of Shares Purchased as Part of Publicly Announced Program (b)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program (c)
October 1 - 31	1,330,907	$ 50.08	1,330,907	$ 482,274,256
November 1 - 30	452,326	52.39	452,326	458,574,918
December 1 - 31	122,326	56.02	122,326	451,722,360
	1,905,559		1,905,559	

(a) In October 2015, our board of directors added $900.0 million to the existing share repurchase authorization that 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 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, there were no repurchased shares pending settlement.

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(b) The total number of shares purchased as part of the publicly announced program were all purchased pursuant to the October 2013 and October 2015 authorizations.

(c) Shares that may be purchased under the program exclude shares of common stock that may be surrendered to satisfy statutory minimum tax withholding obligations in connection with the vesting of restricted stock units issued to employees.

Recent Sales of Unregistered Securities

There were no sales of unregistered securities during the three months ended December 31, 2016.

Performance Graph

The following graph compares the performance of our common stock to the Standard & Poor's 500 Stock Index (S&P 500 Index) and the Dow Jones Waste & Disposal Services Index (DJ W&DS Index). The graph covers the period from December 31, 2011 to December 31, 2016 and assumes that the value of the investment in our common stock and in each index was $100 as of December 31, 2011 and that all dividends were reinvested.

	Indexed Returns for the Years Ended December 31,					
	2011	2012	2013	2014	2015	2016
Republic Services, Inc.	$100.00	$110.01	$128.30	$160.05	$181.21	$240.73
S&P 500 Index	100.00	116.00	153.57	174.60	177.01	198.18
DJ W&DS Index	100.00	108.50	135.56	154.20	160.66	194.63

ITEM 6. SELECTED FINANCIAL DATA

You should read the following Selected Financial Data in conjunction with Item 8, Financial Statements and Supplementary Data, which includes our consolidated financial statements and notes thereto as of December 31, 2016 and 2015 and for each of the three years ended December 31, 2016, 2015 and 2014 and Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, in this Form 10-K.

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See Notes 1, 2, 3, 8, 9, 10 and 12 to our consolidated financial statements in Item 8, Financial Statements and Supplementary Data, of this Form 10-K for a discussion of basis of presentation, significant accounting policies, business acquisitions and divestitures, landfill and environmental costs, debt, income taxes and stockholders' equity and their effect on comparability of year-to-year data. These historical results are not necessarily indicative of the results to be expected in the future. Amounts are in millions, except per share data.

	Years Ended December 31,				
	2016	2015	2014	2013	2012
Statement of Operations Data:					
Revenue	$9,387.7	$9,115.0	$8,803.3	$8,417.2	$8,118.3
Expenses:					
Cost of operations	5,764.0	5,518.6	5,643.1	5,234.7	5,005.7
Depreciation, amortization and depletion	991.1	970.6	906.9	877.4	848.5
Accretion	79.1	79.4	78.0	76.6	78.4
Selling, general and administrative	969.8	983.1	918.9	853.8	820.9
Withdrawal costs - multiemployer pension funds	5.6	4.5	1.5	157.7	—
(Gain) loss on disposition of assets and impairments, net	(0.1)	—	20.0	(1.9)	(2.7)
Restructuring charges	40.7	—	1.8	8.6	11.1
Operating income	1,537.5	1,558.8	1,233.1	1,210.3	1,356.4
Interest expense	(371.3)	(364.9)	(348.7)	(360.0)	(388.5)
Loss on extinguishment of debt	(196.2)	—	(1.4)	(2.1)	(112.6)
Interest income	0.9	0.8	0.6	0.7	1.0
Loss from unconsolidated equity method investment	(6.1)	—	—	—	—
Other income, net	1.1	1.2	1.7	2.3	3.4
Income before income taxes	965.9	1,195.9	885.3	851.2	859.7
Provision for income taxes	352.7	445.5	337.4	262.1	251.8
Net income	613.2	750.4	547.9	589.1	607.9
Net income attributable to noncontrolling interests in consolidated subsidiary	(0.6)	(0.5)	(0.3)	(0.2)	(0.3)
Net income attributable to Republic Services, Inc.	$612.6	$749.9	$547.6	$588.9	$607.6
Basic earnings per share attributable to Republic Services, Inc. stockholders:					
Basic earnings per share	$1.79	$2.14	$1.54	$1.63	$1.56
Weighted average common shares outstanding	343.0	350.0	356.7	362.1	366.9
Diluted earnings per share attributable to Republic Services, Inc. stockholders:					
Diluted earnings per share	$1.78	$2.13	$1.53	$1.62	$1.55
Weighted average common and common equivalent shares outstanding	344.4	351.4	358.1	363.4	368.0
Cash dividends per common share	$1.24	$1.16	$1.08	$0.99	$0.91
Other Operating Data:					
Cash provided by operating activities	$1,847.8	$1,679.7	$1,529.8	$1,513.8	$1,766.7
Purchases of property and equipment	927.8	945.6	862.5	903.5	936.5
Proceeds from sales of property and equipment	9.8	21.2	35.7	28.7	34.6
Balance Sheet Data:					
Cash and cash equivalents	$67.8	$32.4	$75.2	$213.3	$67.6
Restricted cash and marketable securities	90.5	100.3	115.6	169.7	164.2
Total assets	20,629.6	20,535.9	20,052.4	19,949.2	19,616.9
Total debt	7,658.9	7,532.9	7,018.1	7,070.5	6,921.8
Total stockholders' equity	7,693.7	7,776.6	7,747.8	7,906.1	7,705.7

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ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion in conjunction with our audited consolidated financial statements and the notes thereto included elsewhere in Item 8 of this Form 10-K. This discussion may contain forward-looking statements that anticipate results that are subject to uncertainty. We discuss in more detail various factors that could cause actual results to differ from expectations in Item 1A, Risk Factors in this Form 10-K.

Overview

Republic is the second largest provider of services in the domestic non-hazardous solid waste industry, as measured by revenue. As of December 31, 2016, we operated in 39 states and Puerto Rico through 333 collection operations, 204 transfer stations, 192 active landfills, 64 recycling centers, 7 treatment, recovery and disposal facilities, and 10 salt water disposal wells. We also operated 71 landfill gas and renewable energy projects and had post-closure responsibility for 124 closed landfills.

Revenue for the year ended December 31, 2016 increased by 3.0% to $9,387.7 million compared to $9,115.0 million in 2015. This change in revenue is due to increases in average yield of 2.1%, volume of 1.0%, acquisitions, net of divestitures of 0.6%, and recycled commodities of 0.5%, partially offset by decreases in fuel recovery fees of 0.8% and energy services of 0.4%.

The following table summarizes our revenue, costs and expenses for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars and as a percentage of revenue):

	2016		2015		2014	
Revenue	$9,387.7	100.0 %	$9,115.0	100.0%	$8,803.3	100.0%
Expenses:						
Cost of operations	5,764.0	61.4	5,518.6	60.5	5,643.1	64.1
Depreciation, amortization and depletion of property and equipment	919.8	9.8	898.7	9.9	838.5	9.5
Amortization of other intangible assets and other assets	71.3	0.8	71.9	0.8	68.4	0.8
Accretion	79.1	0.8	79.4	0.9	78.0	0.9
Selling, general and administrative	969.8	10.3	983.1	10.8	918.9	10.4
Withdrawal costs - multiemployer pension funds	5.6	0.1	4.5	—	1.5	—
(Gain) loss on disposition of assets and impairments, net	(0.1)	—	—	—	20.0	0.3
Restructuring charges	40.7	0.4	—	—	1.8	—
Operating income	$1,537.5	16.4 %	$1,558.8	17.1 %	$1,233.1	14.0 %

Our pre-tax income was $965.9 million, $1,195.9 million and $885.3 million for 2016, 2015 and 2014, respectively. Our net income attributable to Republic Services, Inc. was $612.6 million, or $1.78 per diluted share for 2016, compared to $749.9 million, or $2.13 per diluted share, for 2015, and $547.6 million, or $1.53 per diluted share, for 2014.

During each of 2016, 2015 and 2014, we recorded a number of charges, other expenses and benefits that impacted our pre-tax income, net income attributable to Republic Services, Inc. (net income – Republic) and diluted earnings per share as noted in the following table (in millions, except per share data). Additionally, see our "Cost of Operations," "Selling, General and Administrative Expenses" and "Income Taxes" discussions contained in the Results of Operations section of this Management's Discussion and Analysis of Financial Condition and Results of Operations for a discussion of other items that impacted our earnings.

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	Year Ended December 31, 2016			Year Ended December 31, 2015			Year Ended December 31, 2014		
	Pre-tax Income	Net Income - Republic	Diluted Earnings per Share	Pre-tax Income	Net Income - Republic	Diluted Earnings per Share	Pre-tax Income	Net Income - Republic	Diluted Earnings per Share
As reported	$965.9	$ 612.6	$ 1.78	$1,195.9	$749.9	$ 2.13	$885.3	$ 547.6	$ 1.53
Withdrawal costs - multiemployer pension funds[1]	5.6	3.4	0.01	4.5	2.7	0.01	1.5	0.9	—
Restructuring charges[1]	40.7	24.6	0.07	—	—	—	1.8	1.0	—
Loss on extinguishment of debt[1]	203.4	122.7	0.36	—	—	—	1.4	0.9	—
(Gain) loss on disposition of assets and impairments, net	(0.1)	—	—	—	—	—	20.0	12.6	0.04
Bridgeton (insurance recovery) / remediation charge and other	—	—	—	(50.0)	(30.3)	(0.08)	227.1	137.6	0.38
Total adjustments	249.6	150.7	0.44	(45.5)	(27.6)	(0.07)	251.8	153.0	0.43
As adjusted	$1,215.5	$ 763.3	$ 2.22	$1,150.4	$722.3	$ 2.06	$1,137.1	$ 700.6	$ 1.96

(1) The aggregate effect of the noted items to adjusted diluted earnings per share totals to $0.01 for the year ended December 31, 2014.

We believe that presenting adjusted pre-tax income, adjusted net income – Republic, and adjusted diluted earnings per share, which are not measures determined in accordance with accounting principles generally accepted in the United States (U.S. GAAP), provides an understanding of operational activities before the financial effect of certain items. We use these measures, and believe investors will find them helpful, in understanding the ongoing performance of our operations separate from items that have a disproportionate effect on our results for a particular period. We have incurred comparable charges and costs and have recorded similar recoveries in prior periods, and similar types of adjustments can reasonably be expected to be recorded in future periods. In the case of the Bridgeton remediation charges and insurance recovery, we are adjusting such amounts due to their significant effect on our operating results; however, in the ordinary course of our business, we often incur remediation charges and recoveries that we do not adjust from our operating results. Our definition of adjusted pre-tax income, adjusted net income – Republic, and adjusted diluted earnings per share may not be comparable to similarly titled measures presented by other companies.

Withdrawal costs - Multiemployer Pension Funds. During 2016 and 2015, we recorded charges to earnings of $5.6 million and $4.5 million, respectively, for withdrawal events at the multiemployer pension plan to which we contribute related to our operations in Puerto Rico. During 2014, we recorded charges to earnings of $1.5 million, primarily related to costs associated with our 2013 withdrawal from the Central States, Southeast and Southwest Areas Pension Fund (the Fund).

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, 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.

During 2014, we incurred costs of $1.8 million due to a change in estimate of amounts recoverable from sublet income associated with abandoned office space with non-cancellable lease terms.

Loss on extinguishment of debt. During 2016, we priced cash tender offers to purchase $575.4 million of outstanding notes and debentures with coupons ranging from 5.7% to 7.4% (the Existing Notes). Additionally, we issued $500.0 million of 2.90% senior notes due 2026 (the 2.90% Notes) and used the net proceeds of the offering, together with borrowing under our credit facilities, to purchase the $575.4 million of the combined aggregate principal amount of the Existing Notes. We also used the net proceeds to pay a premium due of $148.1 million and early tender consideration of $28.7 million. The tender of the Existing Notes and sale of the 2.90% Notes closed on July 5, 2016. In 2014, we refinanced our credit facilities and certain of our tax-exempt financings, resulting in non-cash charges for deferred issuance costs of $1.4 million. For a more detailed discussion of

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the components of these costs and the debt series to which they relate, see our “Loss on Extinguishment of Debt” discussion contained in the Results of Operations section of this Management's Discussion and Analysis of Financial Condition and Results of Operations.

(Gain) loss on disposition of assets and impairments, net. During 2016, we recorded a charge to earnings of $4.6 million primarily related to environmental costs associated with one of our divested landfills. During 2016, we also recorded a net gain on disposition of assets and impairments related to a business divestiture of $4.7 million. During 2014, we recorded a charge to earnings of $20.0 million primarily related to environmental costs associated with one of our divested landfills, of which $14.1 million is related to closure and post-closure costs and $5.9 million is related to remediation expenditures.

Bridgeton (insurance recovery) / remediation charge and other. During 2015, we collected an insurance recovery of $50.0 million related to our closed Bridgeton Landfill in Missouri. As such, we recorded a reduction of remediation expenses included in our cost of operations. During 2014, we updated our cost and timeline estimates to build and operate a leachate management facility and related infrastructure, manage the remediation area and monitor the site. Accordingly, we recorded environmental remediation charges of $210.6 million. Additionally, we recorded certain remediation charges for the adjacent superfund site and ongoing litigation costs.

Recent Developments

2017 Financial Guidance

In 2017, we will continue to focus on managing the controllable aspects of our business by enhancing the quality of our revenue, investing in profitable growth opportunities and reducing costs. Our team remains focused on executing our strategy to deliver consistent earnings and free cash flow growth, and improve return on invested capital. We are committed to an efficient capital structure, maintaining our investment grade credit ratings and increasing cash returns to our shareholders.

Our guidance is based on current economic conditions and does not assume any significant changes in the overall economy in 2017. Specific guidance follows:

Revenue

We expect 2017 revenue to increase by approximately 4.5 to 5.0% comprised of the following:

	Increase (Decrease)
Average yield	2.0%
Volume	1.0 to 1.25
Energy services	0.25
Fuel recovery fees	0.25
Recycled commodities	0.50 to 0.75
Acquisitions	0.50
Total change	4.5 to 5.0%

Changes in price are restricted on approximately 50% of our annual service revenue. Of these restricted pricing arrangements:

- approximately 60% of the revenue has price changes based on fluctuations in a specific index (primarily a consumer price index) as defined in the contract;
- approximately 25% of the revenue has fixed price increases based on stated contract terms; and
- approximately 15% of the revenue has price changes based on a cost plus a specific profit margin or other measurement.

The consumer price index varies from a single historical stated period of time or an average of trailing historical rates over a stated period of time. In addition, the initial effect of pricing resets typically lags 6 to 12 months from the end of the index measurement period to the date the revised pricing goes into effect. As a result, current changes in a specific index may not manifest themselves in our reported pricing for several quarters into the future.

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Adjusted Diluted Earnings per Share

The following is a summary of anticipated adjusted diluted earnings per share for the year ending December 31, 2017 compared to the actual adjusted diluted earnings per share for the year ended December 31, 2016. Adjusted diluted earnings per share is not a measure determined in accordance with U.S. GAAP:

	(Anticipated) Year Ending December 31, 2017	(Actual) Year Ended December 31, 2016
Diluted earnings per share	$ 2.29 - 2.33	$ 1.78
Withdrawal costs - multiemployer pension funds	—	0.01
Restructuring charges	0.03	0.07
Loss on extinguishment of debt	—	0.36
(Gain) loss on disposition of assets and impairments, net	—	—
Adjusted diluted earnings per share	$ 2.32 - 2.36	$ 2.22

The 2017 anticipated adjusted diluted earnings per share assumes an effective tax rate of approximately 39.5%.

We believe that the presentation of adjusted diluted earnings per share, which excludes withdrawal costs - multiemployer pension funds, restructuring charges, loss on extinguishment of debt, and (gain) loss on business dispositions and impairments, net, provides an understanding of operational activities before the financial effect of certain items. We use this measure, and believe investors will find it helpful, in understanding the ongoing performance of our operations separate from items that have a disproportionate effect on our results for a particular period. We have incurred comparable charges and costs in prior periods, and similar types of adjustments can reasonably be expected to be recorded in future periods. Our definition of adjusted diluted earnings per share may not be comparable to similarly titled measures presented by other companies.

Property and Equipment, Net

In 2017, we anticipate receiving approximately $975 million of property and equipment, net of proceeds from sales of property and equipment, as follows:

Trucks and equipment	$350
Landfill	330
Containers	160
Facilities and other	150
Property and equipment received during 2017	990
Proceeds from sales of property and equipment	(15)
Property and equipment received, net of proceeds, during 2017	$975

Results of Operations

Revenue

We generate revenue primarily from our solid waste collection operations. Our remaining revenue is from other services, including transfer station, landfill disposal, recycling, and energy services. Our residential and small-container commercial collection operations in some markets are based on long-term contracts with municipalities. Certain of our municipal contracts have annual price escalation clauses that are tied to changes in an underlying base index such as a consumer price index. We generally provide small-container commercial and large-container industrial collection services to customers under contracts with terms up to three years. Our transfer stations, landfills and, to a lesser extent, our recycling facilities generate revenue from disposal or tipping fees charged to third parties. In general, we integrate our recycling operations with our collection operations and obtain revenue from the sale of recycled commodities. Our revenue from energy services consists mainly of fees we charge for the treatment of liquid and solid waste derived from the production of oil and natural gas. Other revenue consists primarily of revenue from National Accounts, which represents the portion of revenue generated from nationwide or regional 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.

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The following table reflects our revenue by service line for the years ended December 31, 2016, 2015 and 2014 (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%

The following table reflects changes in components of our revenue, as a percentage of total revenue, for the years ended December 31, 2016, 2015 and 2014:

	2016	2015	2014
Average yield	2.1 %	2.3 %	1.4%
Fuel recovery fees	(0.8)	(1.4)	0.1
Total price	1.3	0.9	1.5
Volume	1.0	1.1	2.0
Recycled commodities	0.5	(0.7)	0.1
Energy Services	(0.4)	—	—
Total internal growth	2.4	1.3	3.6
Acquisitions / divestitures, net	0.6	2.2	0.8
Total	3.0 %	3.5 %	4.4%
Core price	3.3 %	3.6 %	3.1%

Average yield is defined as revenue growth from the change in average price per unit of service, expressed as a percentage. Core price is defined as price increases to our customers and fees, excluding fuel recovery, net of price decreases to retain customers. We also measure changes in average yield and core price as a percentage of related-business revenue, defined as total revenue excluding recycled commodities and fuel recovery fees, to determine the effectiveness of our pricing strategies. Average yield as a percentage of related-business revenue was 2.3%, 2.6%, and 1.5% for 2016, 2015 and 2014, respectively. Core price as a percentage of related-business revenue was 3.7%, 4.0%, and 3.4% for 2016, 2015 and 2014, respectively.

Revenue – 2016 compared to 2015

During 2016, we experienced the following changes in our revenue as compared to 2015:

- Average yield increased revenue by 2.1% due to positive pricing in all lines of business.

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- The fuel recovery fee program, which mitigates our exposure to increases in fuel prices, decreased revenue by 0.8%. These fees fluctuate with the price of fuel and, consequently, any decrease in fuel prices results in a decrease in our revenue. Lower fuel recovery fees for 2016 resulted primarily from the decrease in fuel prices.
- Volume increased revenue by 1.0% primarily due to volume growth in our large-container industrial collection, landfill and transfer station lines of business, which were partially offset by volume declines in our residential collection line of business. The volume increase in our landfill line of business is primarily attributable to increased municipal solid waste and construction and demolition volumes offset by declines in our special waste volume.
- Recycled commodities increased revenue by 0.5% primarily due to increased commodity prices and processing fees. The average price for old corrugated containers for 2016 was $114 per ton compared to $103 per ton for 2015. The average price of old newsprint for 2016 was $99 per ton compared to $80 per ton for 2015. Our processed recycled commodity volume was approximately 2.5 million tons sold for both 2016 and 2015.
- Changing market demand for recycled commodities causes volatility in commodity prices. At current volumes and mix of materials, we believe a $10 per ton change in the price of recycled commodities will change annual revenue and operating income by approximately $27 million and $18 million, respectively.
- Acquisitions increased revenue by 0.6% due to our continued acquisition growth strategy of acquiring privately held solid waste and recycling companies that complement our existing business platform.

Revenue – 2015 compared to 2014

During 2015, we experienced the following changes in our revenue as compared to 2014:

- Average yield increased revenue by 2.3% due to positive pricing in all lines of business.
- The fuel recovery fee program, which mitigates our exposure to increases in fuel prices, decreased revenue by 1.4%. These fees fluctuate with the price of fuel and, consequently, any decrease in fuel prices results in a decrease in our revenue. Lower fuel recovery fees for 2015 resulted primarily from the decrease in fuel prices.
- Volume increased revenue by 1.1% due to volume growth in all lines of business. The volume increase in our landfill line of business is primarily attributable to increased municipal solid waste and construction and demolition volumes, partially offset by a decline in energy services volumes.
- Recycled commodities decreased revenue by 0.7% primarily due to lower commodity prices, partially offset by an increase in production volumes. The average price for old corrugated containers for 2015 was $103 per ton compared to $116 per ton for 2014. The average price of old newsprint for 2015 was $80 per ton compared to $89 per ton for 2014. Our processed recycled commodity volume for 2015 of 2.5 million tons sold was approximately 11% higher than the volume in 2014, primarily due to acquisitions of recycling facilities.
- Acquisitions increased revenue by 2.2% primarily due to the acquisitions of Rainbow Disposal Co., Inc. in October 2014, Tervita, LLC (Tervita) in February 2015, and our waste management contract with the County of Sonoma, California that was executed in April 2015.

Cost of Operations

Cost of operations includes labor and related benefits, which consists of salaries and wages, health and welfare benefits, incentive compensation and payroll taxes. It also includes transfer and disposal costs representing tipping fees paid to third party disposal facilities and transfer stations; maintenance and repairs relating to our vehicles, equipment and containers, including related labor and benefit costs; transportation and subcontractor costs, which include costs for independent haulers that transport our waste to disposal facilities and costs for local operators who provide waste handling services associated with our National Accounts in markets outside our standard operating areas; fuel, which includes the direct cost of fuel used by our vehicles, net of fuel tax credits; disposal franchise fees and taxes, consisting of landfill taxes, municipal franchise fees, host community fees and royalties; landfill operating costs, which includes financial assurance, leachate disposal, remediation charges and other landfill maintenance costs; risk management costs, which includes casualty insurance premiums and claims; cost of goods sold, which includes material costs paid to suppliers associated with recycled commodities; and other, which includes expenses such as facility operating costs, equipment rent and gains or losses on sale of assets used in our operations.

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The following table summarizes the major components of our cost of operations for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars and as a percentage of revenue):

	2016		2015		2014	
Labor and related benefits	$1,919.4	20.4%	$1,848.9	20.3 %	$1,724.1	19.6%
Transfer and disposal costs	759.7	8.1	724.4	7.9	685.3	7.8
Maintenance and repairs	894.9	9.5	853.3	9.3	786.7	8.9
Transportation and subcontract costs	537.1	5.7	510.7	5.6	500.0	5.7
Fuel	317.0	3.4	362.4	4.0	500.0	5.7
Franchise fees and taxes	451.0	4.8	443.6	4.9	427.7	4.9
Landfill operating costs	175.2	1.9	151.5	1.7	145.1	1.6
Risk management	184.7	2.0	167.7	1.8	179.4	2.0
Cost of goods sold	183.2	2.0	168.0	1.8	170.9	1.9
Other	341.8	3.6	338.1	3.7	306.8	3.5
Subtotal	5,764.0	61.4	5,568.6	61.0	5,426.0	61.6
Bridgeton (insurance recovery) / remediation charge	—	—	(50.0)	(0.5)	217.1	2.5
Total cost of operations	$5,764.0	61.4%	$5,518.6	60.5 %	$5,643.1	64.1%

These cost categories may change from time to time and may not be comparable to similarly titled categories used by other companies. As such, you should take care when comparing our cost of operations by cost component to that of other companies.

Cost of Operations - 2016 compared to 2015

Our cost of operations increased for 2016 compared to 2015, primarily as a result of the following:

- Labor and related benefits increased due to increased hourly and salaried wages as a result of merit increases, increased headcount, higher collection volumes and acquisitions. Additionally, there was an increase in health care costs.
- Transfer and disposal costs increased primarily due to higher collection volumes. During both 2016 and 2015, approximately 68% of the total waste volume we collected was disposed at landfill sites that we own or operate (internalization).
- Maintenance and repairs expense increased due to higher collection volumes, cost of parts, internal labor, third party truck repairs, vehicle complexity and costs associated with our fleet maintenance initiative.
- Transportation and subcontract costs increased primarily due to higher collection and transfer station volumes, partially offset by lower fuel surcharges due to the decline in diesel fuel.
- Our fuel costs decreased due to lower prices of diesel fuel and our continued conversion to lower cost compressed natural gas (CNG). The national average fuel cost per gallon for 2016 was $2.30 compared to $2.71 for 2015, a decrease of $0.41 or approximately 15%.

At current consumption levels, we believe a twenty-cent per gallon change in the price of diesel fuel would change 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.

- Franchise fees and taxes increased primarily due to volume increases in our landfill line of business.
- Landfill operating expenses increased due to volume increases in our landfill line of business and increased leachate transportation and disposal costs. Additionally, during 2015 we recorded favorable remediation adjustments that did not recur for the same period in 2016.
- Risk management expenses increased primarily due to favorable actuarial developments in our workers' compensation program recorded during 2015 that were less favorable for 2016, coupled with continued unfavorable actuarial development in our vehicle liability insurance program.

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- During 2016, cost of goods sold increased primarily due to higher rebates paid for volumes delivered to our recycling facilities as a result of the increase in commodity prices.
- During 2015, we collected an insurance recovery of $50.0 million related to our closed Bridgeton Landfill in Missouri. As such, we recorded a reduction of remediation expenses which did not recur in 2016.

Cost of Operations – 2015 compared to 2014

Excluding the effect of the Bridgeton insurance recovery, our cost of operations increased for 2015 compared to 2014, primarily as a result of the following:

- Labor and related benefits increased due to increased hourly and salaried wages as a result of merit increases, increased headcount, higher collection volumes and acquisitions. Additionally, there was an increase in health care costs.
- Transfer and disposal costs increased primarily due to higher collection volumes. During both 2015 and 2014, approximately 68% of the total waste volume we collected was disposed at landfill sites that we own or operate (internalization).
- Maintenance and repairs expense increased due to higher collection volume, cost of parts, internal labor, third party truck repairs, vehicle complexity and costs associated with our fleet maintenance initiative.
- Our fuel costs decreased due to lower prices of diesel fuel, our continued conversion to lower cost compressed natural gas (CNG), and higher alternative fuel tax credits recognized in 2015. The national average fuel cost per gallon for 2015 was $2.71 compared to $3.83 for 2014, a decrease of $1.12 or approximately 29%.
- Franchise fees and taxes increased primarily due to changes in the relative mix of landfill volumes.
- Risk management expenses decreased primarily due to favorable actuarial developments in our workers' compensation program, partially offset by unfavorable developments in our vehicle liability insurance program.
- Other expenses increased primarily due to higher facility operating costs, including outside facility maintenance repairs, a lower net gain on sale of operating assets, and property taxes.
- During 2015, we collected an insurance recovery of $50.0 million related to our closed Bridgeton Landfill in Missouri. As such, we recorded a reduction of remediation expenses. During 2014, we updated our cost and timeline estimates to build and operate a leachate management facility and related infrastructure, manage the remediation area and monitor our Bridgeton Landfill. Accordingly, we recorded environmental remediation charges of $210.6 million. Additionally, we recorded certain remediation charges for the adjacent superfund site and ongoing litigation costs.

Depreciation, Amortization and Depletion of Property and Equipment

The following table summarizes depreciation, amortization and depletion of property and equipment for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars and as a percentage of revenue):

	2016		2015		2014	
Depreciation and amortization of property and equipment	$629.6	6.7%	$613.4	6.8%	$575.5	6.5%
Landfill depletion and amortization	290.2	3.1	285.3	3.1	263.0	3.0
Depreciation, amortization and depletion expense	$919.8	9.8%	$898.7	9.9%	$838.5	9.5%

Depreciation, Amortization and Depletion of Property and Equipment - 2016 compared to 2015

Depreciation and amortization of property and equipment increased primarily due to higher acquisition costs of replacement vehicles, increased trucks to support volume growth, additional assets acquired with our acquisitions, and an increased number of CNG vehicles in our fleet, which are more expensive to purchase than diesel vehicles.

Landfill depletion and amortization expense increased primarily due to increased landfill disposal volumes and an overall increase in our average depletion and amortization rate. The increase in expense was partially offset by favorable amortization adjustments recorded during 2016 of $6.5 million relative to asset retirement obligations, compared to favorable amortization adjustments of $0.7 million during 2015.

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Depreciation, Amortization and Depletion of Property and Equipment - 2015 compared to 2014

Depreciation and amortization of property and equipment increased primarily due to higher acquisition costs of replacement vehicles, increased trucks to support volume growth, additional assets acquired with our acquisitions, and an increased number of CNG vehicles in our fleet, which are more expensive to purchase than diesel vehicles. In addition, we made increased investments in new and upgraded recycling infrastructure projects that became operational over the past several quarters.

Landfill depletion and amortization expense increased primarily due to increased landfill disposal volumes and an overall increase in our average depletion and amortization rate. Additionally, during 2015, we recorded favorable amortization adjustments of $0.7 million relative to asset retirement obligations, compared to favorable amortization adjustments of $13.3 million during 2014.

Amortization of Other Intangible Assets and Other Assets

Expenses for amortization of other intangible assets and other assets were $71.3 million, $71.9 million and $68.4 million for the years ended December 31, 2016, 2015 and 2014, respectively, or 0.8% of revenue for each of 2016, 2015 and 2014. Our other intangible assets and other assets primarily relate to customer relationships, franchise agreements, other municipal agreements, and, to a lesser extent, non-compete agreements and trade names. The changes in amortization expense are the result of assets acquired in the acquisitions of various waste businesses throughout the year, offset by certain intangible assets now being fully amortized.

Accretion Expense

Accretion expense was $79.1 million, $79.4 million and $78.0 million, or 0.8% of revenue, for the year ended December 31, 2016, and 0.9% of revenue for the years ended December 31, 2015 and 2014. Accretion expense has remained relatively unchanged as our asset retirement obligations remained relatively consistent period over period.

Selling, General and Administrative Expenses

Selling, general and administrative expenses include salaries, health and welfare benefits, and incentive compensation for corporate and field general management, field support functions, sales force, accounting and finance, legal, management information systems, and clerical and administrative departments. Other expenses include rent and office costs, fees for professional services provided by third parties, legal settlements, marketing, investor and community relations services, directors' and officers' insurance, general employee relocation, travel, entertainment and bank charges. Restructuring charges are excluded from selling, general and administrative expenses and are discussed separately below.

The following table summarizes our selling, general and administrative expenses for the years ended December 31, 2016, 2015 and 2014 (in millions of dollars and as a percentage of revenue):

	2016		2015		2014	
Salaries	$646.3	6.9 %	$636.6	7.0 %	$579.8	6.6 %
Provision for doubtful accounts	20.4	0.2	22.7	0.2	22.6	0.3
Other	303.1	3.2	323.8	3.6	316.5	3.5
Total selling, general and administrative expenses	$969.8	10.3%	$983.1	10.8%	$918.9	10.4%

These cost categories may change from time to time and may not be comparable to similarly titled categories used by other companies. As such, you should take care when comparing our selling, general and administrative expenses by cost component to those of other companies.

Selling, General and Administrative Expenses – 2016 compared to 2015

Salaries increased primarily due to higher wages, benefits, and other payroll related items resulting from merit increases and increased headcount.

Other selling, general and administrative expenses decreased primarily due to a reduction in acquisition-related transaction and integration costs associated with our acquisition of Tervita in February 2015 that did not recur in 2016 and favorable legal settlement results.

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Selling, General and Administrative Expenses – 2015 compared to 2014

Salaries increased primarily due to higher wages, benefits, and other payroll related items resulting from merit increases and increased headcount, as well as higher management incentive compensation.

Other selling, general and administrative expenses increased primarily due to costs associated with strategic growth initiatives, as well as acquisition-related transaction and integration costs primarily associated with our acquisition of Tervita in February 2015. This increase was partially offset by favorable litigation results during 2015.

Withdrawal Costs - Multiemployer Pension Funds

During 2016, we recorded charges to earnings of $5.6 million for withdrawal events at the multiemployer pension plan to which we contribute related to our operations in Puerto Rico. As we obtain updated information regarding the multiemployer pension plan, the factors used in deriving our estimated withdrawal liability will be subject to change, which may adversely impact our reserves for withdrawal costs.

During 2015, we recorded charges to earnings 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 legal charges. During 2014, we recorded charges to earnings of $1.5 million, primarily related to costs associated with our 2013 withdrawal from the Fund.

For additional discussion and detail regarding our settlement with the Fund, see our Central States, Southeast and Southwest Areas Pension Fund discussion in Note 11, Employee Benefit Plans, to our consolidated financial statements in Item 8 of this Form 10-K.

(Gain) Loss on Disposition of Assets and Impairments, Net

During 2016, we recorded a charge to earnings of $4.6 million primarily related to environmental costs associated with one of our divested landfills. During 2016, we also recorded a net gain on a business divestiture of $4.7 million. There were no charges to earnings related to disposition of assets and impairments in 2015. During 2014, we recorded a charge to earnings of $20.0 million, primarily related to environmental costs associated with one of our divested landfills, of which $14.1 million is related to closure and post-closure costs and $5.9 million is related to remediation expenditures.

We strive to have a number one or number two market position in each of the markets we serve, or have a clear path on how we will achieve a leading market position over time. In situations where we cannot establish a leading market position, or where operations are not generating acceptable returns, we may decide to divest certain assets and reallocate resources to other markets. Asset or business divestitures could result in gains, losses or asset impairment charges that may be material to our results of operations in a given period.

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, 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.

During 2014, we incurred costs of $1.8 million due to a change in estimate of amounts recoverable from sublet income associated with abandoned office space with non-cancellable lease terms.

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Interest Expense

The following table provides the components of interest expense, including accretion of debt discounts and accretion of discounts primarily associated with environmental and risk insurance liabilities assumed in acquisitions (in millions of dollars):

	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

As a result of the debt that was extinguished in 2016, total interest expense for 2016 increased primarily due to $7.2 million of unamortized cash flow hedges reclassified to earnings as non-cash interest expense. Total interest expense increased during 2015 due to the issuance of $500.0 million of 3.20% notes in March 2015, as well as borrowings under our Credit Facilities.

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. These swap agreements, which were designated as fair value hedges, have a total notional value of $300.0 million and resulted in a $6.3 million reduction in interest expense during 2016, compared to a $7.5 million reduction in interest expense during 2015 and a $7.7 million reduction in interest expense during 2014. Additionally, during 2014, there were lower variable rates on our tax-exempt financings, which also contributed to the increase in 2015 interest expense.

During 2016, 2015 and 2014, cash paid for interest was $330.2 million, $327.6 million and $320.2 million, respectively.

Loss on Extinguishment of Debt

During 2016, we incurred a loss on the early extinguishment of debt. We paid a cash premium of $148.1 million, early tender consideration of $28.7 million and $1.6 million of associated 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.

The following table summarizes the loss on extinguishment of debt and other related costs 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

During 2014, we refinanced our credit facilities and certain of our tax-exempt financings, resulting in non-cash charges for deferred issuance costs of $1.4 million.

Income Taxes

Our provision for income taxes was $352.7 million, $445.5 million and $337.4 million for 2016, 2015 and 2014, respectively. Our effective income tax rate was 36.5%, 37.3% and 38.1% for 2016, 2015 and 2014, respectively. We

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

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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. During 2016, we reduced the carrying value of this investment by $6.1 million as a result of the tax credits allocated to us, cash distributions, and our share of income and loss pursuant to the terms of the limited liability company agreement.

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.

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 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.

For additional discussion and detail regarding our income taxes, see Note 10, Income Taxes, to our consolidated financial statements in Item 8 of this Form 10-K.

Reportable Segments

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.

The two field groups, Group 1 and Group 2, 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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Summarized financial information concerning our reportable segments for the years ended December 31, 2016, 2015 and 2014 is shown in the following table (in millions of dollars and as a percentage of revenue in the case of operating margin):

	Net Revenue	Depreciation, Amortization, Depletion and Accretion Before Adjustments for Asset Retirement Obligations	Adjustments to Amortization Expense for Asset Retirement Obligations	Depreciation, Amortization, Depletion and Accretion	(Loss) Gain on Disposition of Assets and Impairments, Net	Operating Income (Loss)	Operating Margin
2016:							
Group 1	$4,185.3	$ 416.7	$ (2.3)	$ 414.4	$ —	$895.5	21.4 %
Group 2	5,013.5	542.6	(3.9)	538.7	—	1,026.9	20.5
Corporate entities	188.9	117.4	(0.3)	117.1	0.1	(384.9)	
Total	$9,387.7	$ 1,076.7	$ (6.5)	$ 1,070.2	$ 0.1	$1,537.5	16.4 %
2015:							
Group 1	$4,025.9	$ 397.5	$ 1.4	$ 398.9	$ —	$857.2	21.3 %
Group 2	4,924.5	544.2	(1.6)	542.6	—	953.5	19.4
Corporate entities	164.6	109.0	(0.5)	108.5	—	(251.9)	
Total	$9,115.0	$ 1,050.7	$ (0.7)	$ 1,050.0	$ —	$1,558.8	17.1 %
2014:							
Group 1	$3,835.9	$ 375.1	$ (6.2)	$ 368.9	$ —	$826.0	21.5 %
Group 2	4,789.2	516.1	(8.8)	507.3	—	938.6	19.6
Corporate entities	178.2	107.0	1.7	108.7	(20.0)	(531.5)	
Total	$8,803.3	$ 998.2	$ (13.3)	$ 984.9	$ (20.0)	$1,233.1	14.0 %

Corporate entities include legal, tax, treasury, information technology, risk management, human resources, closed landfills and other administrative functions. National Accounts revenue included in corporate entities represents the portion of revenue generated from nationwide and regional 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.

Significant changes in the revenue and operating margins of our reportable segments for 2016 compared to 2015, and 2015 compared to 2014, are discussed below.

2016 compared to 2015

Group 1

Revenue for 2016 increased 4.0% from 2015 primarily due to increases in average yield in all lines of business, and volume increases in all lines of business. Additionally, we recognized increased recycled commodity revenue due to the increase in commodity prices.

Operating income for Group 1 increased from $857.2 million for 2015, or a 21.3% operating margin, to $895.5 million for 2016, or a 21.4% operating margin. The following cost categories impacted our operating income:

- Cost of operations favorably impacted operating income margin during 2016, primarily due to lower fuel costs resulting from lower prices of diesel fuel and lower risk management expenses. These favorable items were partially offset by higher cost of goods sold, landfill operating costs, labor and related benefits costs, and repair and maintenance costs.
- Landfill depletion and amortization unfavorably impacted operating income margin during 2016, primarily due to an overall increase in the average depletion and amortization rate and increased landfill disposal volumes. The increase was partially offset by favorable amortization adjustments during 2016 compared to unfavorable amortization adjustments in 2015.
- Selling, general and administrative expenses had a favorable impact on operating income margin during 2016 primarily due to net favorable litigation adjustments and reduced acquisition-related transaction costs.

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Group 2

Revenue for 2016 increased 1.8% from 2015 primarily due to increases in average yield in all lines of business and volume increases in our large-container industrial collection and disposal lines of business. Volume increases in our landfill line of business were primarily attributable to increased construction and demolition and municipal solid waste volumes. These increases were partially offset by declines in our energy services business, as well as volume declines primarily in our residential collection and small-container commercial collection lines of business and special waste volume declines in our landfill line of business.

Operating income in Group 2 increased from $953.5 million, or a 19.4% operating margin, to $1,026.9 million, or a 20.5% operating margin. The following cost categories impacted our operating income:

- Cost of operations favorably impacted operating income margin during 2016, primarily due to lower fuel costs resulting from lower prices of diesel fuel and lower risk management expenses. These favorable items were partially offset by higher cost of goods sold, repair and maintenance costs, and transfer and disposal costs.
- Landfill depletion and amortization favorably impacted operating income margin during 2016, primarily due to a decrease in the average depletion and amortization rate. Landfill depletion and amortization also was impacted by favorable amortization adjustments during 2016 compared to unfavorable amortization adjustments in 2015.
- Selling, general and administrative costs had a favorable impact on operating income margin during 2016 primarily due to lower labor and related benefit costs.

Corporate Entities

Operating loss in our Corporate Entities increased from $251.9 million for 2015 to $384.9 million for 2016 primarily due to an insurance recovery of $50.0 million related to our Bridgeton Landfill that was recorded during 2015, restructuring charges of $40.7 million related to our 2016 restructuring and $5.6 million for withdrawal events at our multiemployer pension plan in Puerto Rico. During 2016, we also recognized increased risk management expenses primarily due to favorable actuarial developments in our workers' compensation program recorded during 2015 that were less favorable for the same period in 2016 as well as unfavorable claims experience in our employee-related health care benefits programs in 2016 as compared to 2015. Partially offsetting these unfavorable items were reduced acquisition-related transaction costs for 2016 compared to the costs associated with our acquisition of Tervita in February 2015. Additionally, during 2016, we recognized net favorable legal settlements from matters occurring in the ordinary course of business that were more favorable compared to net legal settlements in 2015.

2015 compared to 2014

Group 1

Revenue for 2015 increased 5.0% from 2014 primarily due to acquisitions, including a waste management contract with the County of Sonoma, California that was executed in April 2015. Excluding the effect of acquisitions, revenue increased due to increases in average yield in all lines of business and volume increases in all collection lines of business. Additionally, revenue increased due to volume increases in our landfill municipal solid waste and construction and demolition lines of business. Partially offsetting these revenue increases was lower recycled commodity revenue due to the decline in commodity prices.

Operating income in Group 1 increased from $826.0 million for 2014, or a 21.5% operating margin, to $857.2 million for 2015, or a 21.3% operating margin. The following cost categories impacted our operating income:

- Cost of operations favorably impacted operating income margin primarily due to lower fuel costs resulting from lower prices of diesel fuel, partially offset by higher labor and related benefits, repair and maintenance costs, and transfer and disposal costs.
- Depreciation and amortization of property and equipment unfavorably impacted operating income margin primarily due to higher asset acquisition costs. Landfill depletion and amortization also was impacted by an unfavorable amortization adjustment of $1.4 million in 2015, compared to a favorable amortization adjustment of $6.2 million that occurred during 2014 primarily due to an increase in deemed airspace at one of our active landfills.
- For 2015, the selling, general and administrative expenses margin impact was flat for Group 1.

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Group 2

Revenue for 2015 increased 2.8% from 2014 primarily due to acquisitions. Excluding the effect of acquisitions, revenue increased due to increases in average yield in all collection lines of business, and volume increases in our large-container industrial and residential collection and transfer station lines of business. These increases were partially offset by declines in volume in our landfill line of business resulting from lower base energy services waste volumes. Additionally, we recognized lower recycled commodity revenue due to the decline in commodity prices.

Operating income in Group 2 increased from $938.6 million for 2014, or a 19.6% operating margin, to $953.5 million for 2015, or a 19.4% operating margin. Overall, our operating margins were unfavorably impacted due to the effect of commodity prices on our recycling business and higher integration, transition and operating costs in our acquired energy services business.

The following cost categories impacted our operating income:

- Cost of operations favorably impacted operating income margin primarily due to lower fuel costs resulting from lower prices of diesel fuel. These favorable items were partially offset by higher labor and related benefits and repair and maintenance costs.
- Depreciation and amortization of property and equipment unfavorably impacted operating income margin due to higher acquisition costs of replacement vehicles. Landfill depletion and amortization also unfavorably impacted operating income margin due to higher favorable amortization adjustments in 2014. During 2015, we recognized favorable amortization adjustments of $1.6 million, compared to favorable amortization adjustments of $8.8 million during 2014.
- Selling, general and administrative expenses unfavorably impacted operating income margin primarily due to higher wages and payroll related items resulting from merit increases and increased headcount, as well as higher management incentive compensation. This unfavorable impact was partially offset by favorable legal settlement from matters occurring in the ordinary course of business, compared to unfavorable legal settlement charges during 2014.

Corporate Entities

Operating loss in our Corporate Entities decreased from $531.5 million for 2014 to $251.9 million for 2015 primarily due to an insurance recovery of $50.0 million related to our closed Bridgeton Landfill during 2015, compared to unfavorable remediation and litigation adjustments in 2014 of $227.1 million.

Landfill and Environmental Matters

Our landfill costs include daily operating expenses, costs of capital for cell development, costs for final capping, closure and post-closure, and the legal and administrative costs of ongoing environmental compliance. Daily operating expenses include leachate treatment and disposal, methane gas and groundwater monitoring and system maintenance, interim cap maintenance, and costs associated with applying daily cover materials. We expense all indirect landfill development costs as they are incurred. We use life cycle accounting and the units-of-consumption method to recognize certain direct landfill costs related to landfill development. In life cycle accounting, certain direct costs are capitalized and charged to depletion expense based on the consumption of cubic yards of available airspace. These costs include all costs to acquire and construct a site, including 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 acquiring and developing the site. Obligations associated with final capping, closure and post-closure are capitalized and amortized on a units-of-consumption basis as airspace is consumed.

Cost and airspace estimates are developed at least annually by engineers. Our operating and accounting personnel use these estimates to adjust the rates we use to expense capitalized costs. Changes in these estimates primarily relate to changes in costs, available airspace, inflation and applicable regulations. Changes in available airspace include changes in engineering estimates, changes in design and changes due to the addition of airspace lying in expansion areas that we believe have a probable likelihood of being permitted.

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Available Airspace

	Balance as of December 31, 2015	New Expansions Undertaken	Landfills Acquired, Net of Divestitures	Permits Granted, Net of Closures	Airspace Consumed	Changes in Engineering Estimates	Balance as of December 31, 2016
Cubic yards (in millions):							
Permitted airspace	4,676.5	—	—	107.2	(78.9)	2.8	4,707.6
Probable expansion airspace	290.1	63.9		(63.3)	—	(3.9)	286.8
Total cubic yards (in millions)	4,966.6	63.9	—	43.9	(78.9)	(1.1)	4,994.4
Number of sites:							
Permitted airspace	193		—	(1)			192
Probable expansion airspace	12	4		(3)			13

	Balance as of December 31, 2014	New Expansions Undertaken	Landfills Acquired, Net of Divestitures	Permits Granted, Net of Closures	Airspace Consumed	Changes in Engineering Estimates	Balance as of December 31, 2015
Cubic yards (in millions):							
Permitted airspace	4,584.1	—	7.2	61.6	(77.0)	100.6	4,676.5
Probable expansion airspace	261.7	56.4	—	(23.7)	—	(4.3)	290.1
Total cubic yards (in millions)	4,845.8	56.4	7.2	37.9	(77.0)	96.3	4,966.6
Number of sites:							
Permitted airspace	189		4	—			193
Probable expansion airspace	10	4		(2)			12

	Balance as of December 31, 2013	New Expansions Undertaken	Landfills Acquired, Net of Divestitures	Permits Granted, Net of Closures	Airspace Consumed	Changes in Engineering Estimates	Balance as of December 31, 2014
Cubic yards (in millions):							
Permitted airspace	4,650.6	—	—	79.8	(74.6)	(71.7)	4,584.1
Probable expansion airspace	222.9	66.5	—	(59.4)	—	31.7	261.7
Total cubic yards (in millions)	4,873.5	66.5	—	20.4	(74.6)	(40.0)	4,845.8
Number of sites:							
Permitted airspace	190			(1)			189
Probable expansion airspace	9	4		(3)			10

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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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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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

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

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.

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

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

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

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.

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.

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

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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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				
	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	Other Intangible Assets, Net 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				
	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	Other Intangible Assets, Net 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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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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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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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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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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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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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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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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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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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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.

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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.

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

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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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.

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

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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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