ITRON INC /WA/
Form 10-K
February 28, 2019

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

FORM 10-K

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

For the fiscal year ended December 31, 2018

OR

o **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 000-22418

ITRON, INC.

(Exact name of registrant as specified in its charter)

Washington	**91-1011792**
(State of Incorporation)	**(I.R.S. Employer Identification Number)**

2111 N Molter Road, Liberty Lake, Washington 99019

(509) 924-9900

(Address and telephone number of registrant's principal executive offices)

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

Title of each class	**Name of each exchange on which registered**
Common stock, no par value	NASDAQ Global Select Market

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 ¨ No x

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 x

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 x No ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Website, 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 x 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. ¨

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 x	Accelerated filer ¨
Non-accelerated filer o (Do not check if a smaller reporting company)	Smaller reporting company ¨
	Emerging growth company ¨

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

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

As of June 30, 2018 (the last business day of the registrant's most recently completed second fiscal quarter), the aggregate market value of the shares of common stock held by non-affiliates of the registrant (based on the closing price for the common stock on the NASDAQ Global Select Market) was $2,336,765,884.

As of January 31, 2019, there were outstanding 39,535,326 shares of the registrant's common stock, no par value, which is the only class of common stock of the registrant.

DOCUMENTS INCORPORATED BY REFERENCE

The information called for by Part III is incorporated by reference to the definitive Proxy Statement for the Annual Meeting of Shareholders of the Company to be held on May 9, 2019.

Itron, Inc.
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Table of Contents

In this Annual Report on Form 10-K, the terms "we," "us," "our," "Itron," and the "Company" refer to Itron, Inc.

Certain Forward-Looking Statements

This document contains forward-looking statements concerning our operations, financial performance, revenues, earnings growth, liquidity, and other items. This document reflects our current plans and expectations and is based on information currently available as of the date of this Annual Report on Form 10-K. When we use the words "expect," "intend," "anticipate," "believe," "plan," "project," "estimate," "future," "objective," "may," "will," "will continue," and similar expressions, they are intended to identify forward-looking statements. Forward-looking statements rely on a number of assumptions and estimates. These assumptions and estimates could be inaccurate and cause our actual results to vary materially from expected results. You should not solely rely on these forward-looking statements as they are only valid as of the date of this Annual Report on Form 10-K. We do not have any obligation to publicly update or revise any forward-looking statement in this document. For a complete description of risks and uncertainties, refer to Item 1A: "Risk Factors" included in this Annual Report on Form 10-K.

PART I

ITEM 1: BUSINESS

Available Information

Documents we provide to the Securities and Exchange Commission (SEC) are available free of charge under the Investors section of our website at *www.itron.com* as soon as practicable after they are filed with or furnished to the SEC. In addition, these documents are available at the SEC's website (*http://www.sec.gov*) and at the SEC's Headquarters at 100 F Street, NE, Washington, DC 20549, or by calling 1-800-SEC-0330.

General

Itron enables utilities and cities to safely, securely and reliably deliver critical infrastructure services to communities in more than 100 countries. Our proven portfolio of smart networks, software, services, devices, and sensors helps our customers better manage their operations in the energy, water, and smart city space. We are among the leading technology and services companies offering end-to-end device solutions, networked solutions, and outcomes-based products and services. Our comprehensive offerings measure, manage, and provide data analytics and services to utilities and municipalities that enable them to responsibly and efficiently manage resources.

We have over 40 years of experience in supporting utilities and municipalities in the management of their data and critical infrastructure needs. Incorporated in 1977 with a focus on meter reading technology, we entered the electricity meter manufacturing business with the acquisition of Schlumberger Electricity Metering in 2004. In 2007, we expanded our presence in global meter manufacturing and systems with the acquisition of Actaris Metering Systems SA. In 2017, we completed our acquisition of Comverge by purchasing the stock of its parent, Peak Holding Corp. (Comverge), which enabled us to offer integrated cloud-based demand response, energy efficiency, and customer engagement solutions. In 2018, we strengthened our ability to deliver a broader set of solutions and to increase the pace of growth and innovation in the utility, smart city, and Industrial Internet of Things markets with the acquisition of Silver Spring Networks, Inc. (SSNI).

The following is a discussion of our major products, our markets, and our operating segments. Refer to Item 7: "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8: "Financial Statements and Supplementary Data" for specific segment results.

Our Business

We are a technology and service company, who is a leader in the Industrial Internet of Things, offering solutions that enable utilities and municipalities to safely, securely and reliably operate their critical infrastructure. Our solutions include the deployment of smart networks, software, services, devices, sensors, and data analytics that allow our customers to manage assets, secure revenue, lower operational costs, improve customer service, improve safety, and enable efficient management of valuable resources. Our comprehensive solutions and data analytics address the unique challenges facing the energy, water, and municipality sectors, including increasing demand on resources, non-technical loss, leak detection, environmental and regulatory compliance, and improved operational reliability.

We offer a portfolio of products, software, and services to our customers that can be a standalone, one-time purchase or an end-to-end solution that can be reoccurring over multiple years. The portfolio includes hardware products used for measurement, control, or sensing with and without communications capability; a combination of endpoints and network infrastructure designed

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and sold as a complete solutions for the purpose of robustly acquiring and transporting application specific data; value added services, software, and products that organize, analyze and interpret data for the purpose of gaining insights, making decisions, and informing actions. We offer managed services, software-as-a-service (SaaS), technical support services, licensing hardware technology, and consulting services.

Industry Drivers

Utility and municipalities are in the middle of an evolution of how they operate critical infrastructure, manage scarce resources, and interact with their customers. Efficiently managing resources within energy, water, and cities is a top priority globally, as increasing populations and resource consumption continues to stress an aging infrastructure. The growing demand for energy, water, and municipal services coupled with the proliferation of renewable energy sources, smart communicating devices, sensors, and multiple data producing technologies is forcing providers to rethink how they operate and service their communities. This evolution comes at a time when utilities and municipalities are challenged by cost constraints, regulatory requirements, environmental concerns, safety, and resource scarcity. Itron provides its customers with a solution-based offering to safely, securely, and reliably optimize their critical infrastructure to improve the efficiency of their services and to better understand their customers with near real-time knowledge of their resource usage. An added benefit of our solutions is the utility or municipality can empower their customers to understand and have control over their resource usage, allowing for better management and conservation of valuable resources.

Our Operating Segments

We operate under the Itron brand worldwide and manage and report under three operating segments. Effective October 1, 2018, we reorganized our operational reporting segmentation from Electricity, Gas, Water, and Networks to Device Solutions, Networked Solutions, and Outcomes. As part of our reorganization, we actively integrated recent acquisitions and implementing an organizational structure that aligns with the new segments. In conjunction with the rollout of our new operating segments, we unified our go-to-market strategy with a single, global sales force, which sells the full portfolio of Itron solutions, products, and services. We manage our product development, service delivery, and manufacturing operations on a worldwide basis to promote global, integrated oversight of our operations and to ensure consistency and interoperability between our operating segments. The reorganization of the business segments allows us to more effectively serve our customers and compete in our industry. The following discussion provides a description of each of the three segments:

Device Solutions - includes hardware products used for measurement, control, or sensing that do not have communications capability embedded for use with our broader Itron systems, i.e., products where Itron is not offering the complete "end-to-end" solution, but only the hardware elements. Examples of the Device Solutions portfolio include basic meters that are shipped without Itron communications, such as our standard gas meters, electricity IEC meters, and water meters, in addition to our heat and allocation products; communicating meters that are not a part of an Itron solution such as the Linky meter; and the implementation and installation of non-communicating devices, such as gas regulators.

Networked Solutions - includes a combination of communicating devices (smart meters, modules, endpoints, and sensors), network infrastructure, and associated application software designed and sold as a complete solution for acquiring and transporting robust application-specific data. Networked Solutions combines, into one operating segment, the majority of the assets from the recently acquired SSNI organization with our legacy Itron networking products and software and the implementation and installation of communicating devices into one segment. This includes: communicating measurement, control, or sensing endpoints such as our Itron® and OpenWay® Riva meters, Itron traditional ERT® technology, Intelis smart gas or water meters, 500G gas communication modules, 500W water communication modules; GenX networking products, network modules and interface cards; and specific network control and management software applications. Solutions supported by this segment include automated meter reading (AMR), advanced metering infrastructure (AMI), smart grid and distribution automation (DA), and smart street lighting and smart city solutions.

Outcomes - includes our value-added, enhanced software and services operating segment in which we manage, organize, analyze, and interpret data to improve decision making, maximize operational profitability, drive resource efficiency, and deliver results for consumers, utilities, and smart cities. Outcomes places an emphasis on delivering to Itron customers high-value, turn-key, digital experiences by leveraging the footprint of our Device Solutions and Networked Solutions segments. The revenues from these offerings are primarily recurring in nature and would include any direct management of Device Solutions, Networked Solutions, and other products on behalf of our end customers. Examples of these offerings include our meter data management and analytics offerings; our managed service solutions including network-as-a-service and platform-as-a-service, forecasting software and services; and any consulting-based engagement. Within the Outcomes segment, we also identify new business models, including performance-based contracting, to drive broader portfolio offerings across utilities and cities.

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Bookings and Backlog of Orders

Bookings for a reported period represent customer contracts and purchase orders received during the period for hardware, software, and services that have met certain conditions, such as regulatory and/or contractual approval. Total backlog represents committed but undelivered products and services for contracts and purchase orders at period-end. Twelve-month backlog represents the portion of total backlog that we estimate will be recognized as revenue over the next 12 months. Backlog is not a complete measure of our future revenues as we also receive significant book-and-ship orders, as well as frame contracts. Bookings and backlog may fluctuate significantly due to the timing of large project awards. In addition, annual or multi-year contracts are subject to rescheduling and cancellation by customers due to the long-term nature of the contracts. Beginning total backlog, plus bookings, minus revenues, will not equal ending total backlog due to miscellaneous contract adjustments, foreign currency fluctuations, and other factors. Total bookings and backlog include certain contracts with termination for convenience clause, which will not agree to the total transaction price allocated to remaining performance obligations disclosed in Item 8: "Financial Statements and Supplementary Data, Note 18: Revenues".

Year Ended	**Total Bookings**	**Total Backlog**	**12-Month Backlog**
	(in millions)		
December 31, 2018	$2,515	$ 3,173	$ 1,349
December 31, 2017	1,993	1,750	931
December 31, 2016	2,066	1,652	761

Sales and Distribution

We use a combination of direct and indirect sales channels in our operating segments. A direct sales force is utilized for large electric, natural gas, and water utilities, with which we have long-established relationships. For smaller utilities, we typically use an indirect sales force that consists of distributors, sales representatives, partners, and meter manufacturer representatives.

No single customer represented more than 10% of total revenues for the years ended December 31, 2018, 2017, and 2016. Our 10 largest customers in each of the years ended December 31, 2018, 2017, and 2016, accounted for approximately 31%, 33%, and 31% of total revenues, respectively.

Manufacturing

Our products require a wide variety of components and materials, which are subject to price and supply fluctuations. We enter into standard purchase orders in the ordinary course of business, which can include purchase orders for specific quantities based on market prices, as well as open-ended agreements that provide for estimated quantities over an extended shipment period, typically up to one year at an established unit cost. Although we have multiple sources of supply for many of our material requirements, certain components and raw materials are supplied by limited or sole-source vendors, and our ability to perform certain contracts depends on the availability of these materials. Refer to Item 1A: "Risk Factors," for further discussion related to supply risks.

Our manufacturing facilities are located throughout the world, an overview of which is presented in Item 2: "Properties". While we manufacture and assemble a portion of our products, we outsource the manufacturing of certain products to various manufacturing partners. This approach allows us to reduce our costs as it reduces our manufacturing overhead and inventory and also allows us to adjust more quickly to changing end-customer demand. These partners assemble our products using design specifications, quality assurance programs, and standards that we establish and procure components and assemble our products based on demand forecasts. These forecasts represent our estimates of future demand for our products based upon historical trends and analysis from our sales and product management functions, as adjusted for overall market conditions.

Partners

In connection with delivering products and systems to our customers, we may partner with third-party vendors to provide hardware, software, or services, e.g., meter installation and communication network equipment and infrastructure. Our ability to perform on our contractual obligations with our customers is dependent on these partners meeting their obligations to us. Refer to Item 1A: "Risk Factors," for further discussion related to third-party vendors and strategic partners.

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Product Development

Our product development is focused on both improving existing technology and developing innovative new technology for electricity, natural gas, water and heat meters, sensing and control devices, data collection software, communication technologies, data warehousing, software applications, and the Industrial Internet of Things. We invested approximately $208 million, $169 million, and $168 million in product development in 2018, 2017 and 2016, which represented 9% of total revenues for 2018, 8% of total revenues for 2017 and 2016.

Workforce

As of December 31, 2018, we had approximately 8,000 people in our workforce, including 6,700 permanent employees. We have not experienced significant employee work stoppages and consider our employee relations to be good.

Competition

We enable utilities and cities to safely, securely, and reliably deliver critical infrastructure services to communities in more than 100 countries. Our portfolio of smart networks, software, services, meters, and sensors help our customers better manage electricity, gas, water, and city infrastructure resources for the people they serve. Consequently, we operate within a large and complex competitive landscape. Some of our competitors have diversified product portfolios and participate in multiple geographic markets, while others focus on specific regional markets and/or certain types of products, including some low-cost suppliers based in China and India. Our competitors in China have an increasing presence in other markets around the world; however, excluding the Asia Pacific region this competition does not represent a major market share in our global operating regions. Our competitors range from small to large established companies.

We believe that our competitive advantage is based on our in-depth knowledge of the industries we serve, our capacity to innovate, and our ability to provide complete end-to-end integrated solutions. We are a global leader in the Industrial Internet of Things category, a leader the industry in communication modules deployed, a leading industry innovator, a leader in electricity, gas and water end-to-end solutions, and a global leader in meters under managed services. We continue to serve our established customer relationships, and expand upon our track record of delivering reliable, accurate, and long-lived products and services. Refer to Item 1A: "Risk Factors" for a discussion of the competitive pressures we face.

Our primary competitors include the following:

Global Competitors	*Regional Competitors*
Aclara (Hubbell Inc.)	Apator
AT&T [(a)]	Badger Meter
Cisco Systems Inc. [(a)]	Endesa (Enel SpA)
Diehl Metering (Diehl Stiftung & Co. KG)	Kamstrup Water Metering L.L.C.
Elster (Honeywell International Inc.)	LAO Industria
Hexing Electrical Co. Ltd	Master Meter (ARAD, Ltd.)
Landis+Gyr	Mueller Water Products
Sensus (Xylem, Inc.)	Neptune Technologies (Roper Technologies, Inc.)
Verizon Communications Inc. [(a)]	Pietro Fiorentini
Vodafone Group PLC [(a)]	Sagemcom Energy & Telecom (Charterhouse Capital Partners)
Zenner Performance (Zenner International GmbH & Co. KG)	

[a] Due to the fragmented nature of the Industrial Internet of Things and Smart Cities markets, we often partner with these vendors to collaboratively deliver end-to-end solutions to our customers.

Strategic Alliances

We pursue strategic alliances with other companies in areas where collaboration can produce product advancement and acceleration of entry into new markets. The objectives and goals of a strategic alliance can include one or more of the following: technology exchange, product development, joint sales and marketing, or access to new geographic markets. Refer to Item 1A: "Risk Factors" for a discussion of risks associated with strategic alliances.

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Intellectual Property

Our patents and patent applications cover a range of technologies, which relate to standard metering, smart metering solutions and technology, meter data management software, knowledge application solutions, and Industrial Internet of Things. We also rely on a combination of copyrights, patents, and trade secrets to protect our products and technologies. Disputes over the ownership, registration, and enforcement of intellectual property rights arise in the ordinary course of our business. While we believe patents and trademarks are important to our operations and, in aggregate, constitute valuable assets, no single patent or trademark, or group of patents or trademarks, is critical to the success of our business. We license some of our technology to other companies, some of which are our competitors.

Environmental Regulations

In the ordinary course of our business we use metals, solvents, and similar materials that are stored on-site. We believe that we are in compliance with environmental laws, rules, and regulations applicable to the operation of our business.

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EXECUTIVE OFFICERS

Set forth below are the names, ages, and titles of our executive officers as of February 28, 2019.

Name	Age	Position
Philip C. Mezey	59	President and Chief Executive Officer
Thomas L. Deitrich	52	Executive Vice President and Chief Operating Officer
Joan S. Hooper	61	Senior Vice President and Chief Financial Officer
Michel C. Cadieux	61	Senior Vice President, Human Resources
Sarah E. Hlavinka	54	Senior Vice President, General Counsel and Corporate Secretary

Philip C. Mezey is President and Chief Executive Officer and a member of our Board of Directors. Mr. Mezey was appointed to his current position and to the Board of Directors in January 2013. Mr. Mezey joined Itron in March 2003, and in 2007 Mr. Mezey became Senior Vice President and Chief Operating Officer, Itron North America. Mr. Mezey served as President and Chief Operating Officer, Energy from March 2011 through December 2012. On January 22, 2019, Mr. Mezey informed the Itron Board of his intention to retire from his positions. By mutual agreement with the Board, Mr. Mezey will continue to lead Itron as President and Chief Executive Officer and serve as a member of its Board of Directors until August 31, 2019. or until a successor is appointed. Upon the appointment of a successor, Mr. Mezey will remain with Itron, Inc. as an advisor through December 31, 2019, to help facilitate a seamless transition.

Thomas L. Deitrich is Executive Vice President and Chief Operating Officer. Mr. Deitrich joined Itron in October 2015. From 2012 to September 2015, Mr. Deitrich was Senior Vice President and General Manager for Digital Networking at Freescale Semiconductor, Inc. (Freescale), and he served as the Senior Vice President and General Manager of Freescale's RF, Analog, Sensor, and Cellular Products Group from 2009 to 2012. Mr. Deitrich had other roles of increasing responsibility at Freescale from 2006 to 2009. Prior to Freescale, Mr. Deitrich worked for Flextronics, Sony-Ericsson/Ericsson, and GE.

Joan S. Hooper is Senior Vice President and Chief Financial Officer. Ms. Hooper was appointed to this role in June 2017. Prior to joining Itron, Ms. Hooper was Chief Financial Officer of CHC Helicopter from 2011 to July 2015. Following Ms. Hooper's departure from CHC, CHC filed a voluntary petition of relief under Chapter 11 of the U.S. Bankruptcy Code in May 2016, and CHC emerged from bankruptcy in March 2017. Prior to CHC, she held several finance executive positions at Dell, Inc. from 2003 to 2010, including Vice President and Chief Financial Officer for its Global Public and Americas business units, Vice President of Corporate Finance and Chief Accounting Officer.

Michel C. Cadieux is Senior Vice President, Human Resources and has been so since joining Itron in February 2014. From 2008 to 2012, Mr. Cadieux was Senior Vice President of Human Resources and Security at Freescale Semiconductor, Inc. (Freescale). Mr. Cadieux has more than 30 years leading HR organizations in global technology and manufacturing companies including Betz Laboratories, the Hudson Bay Company, ING Bank of Canada, Advanced Micro Devices/ATI, and Freescale.

Sarah E. Hlavinka is Senior Vice President, General Counsel and Corporate Secretary. Ms. Hlavinka was appointed to this role in August 2018. Prior to joining Itron, Ms. Hlavinka served as Executive Vice President, General Counsel and Secretary at Xerox Corporation from 2017 to 2018. Prior to Xerox Corporation, Ms. Hlavinka was Executive Vice President, General Counsel and Secretary at ABM Industries Incorporated, a leading provider of integrated facility services from 2007 to 2017.

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ITEM 1A: RISK FACTORS

We are dependent on the utility industry, which has experienced volatility in capital spending.

We derive the majority of our revenues from sales of products and services to utilities. Purchases of our products may be deferred as a result of many factors, including economic downturns, slowdowns in new residential and commercial construction, customers' access to capital upon acceptable terms, the timing and availability of government subsidies or other incentives, utility specific financial circumstances, mergers and acquisitions, regulatory decisions, weather conditions, and fluctuating interest rates. We have experienced, and may in the future experience, variability in operating results on an annual and a quarterly basis as a result of these factors.

We depend on our ability to develop competitive products.

Our future success will depend, in part, on our ability to continue to design and manufacture competitive products, and to enhance and sustain our existing products, keep pace with technological advances and changing customer requirements, gain international market acceptance, and manage other factors in the markets in which we sell our products. Product development will require continued investment in order to maintain our competitive position, and the periods in which we incur significant product development costs may drive variability in our quarterly results. We may not have the necessary capital, or access to capital at acceptable terms, to make these investments. We have made, and expect to continue to make, substantial investments in technology development. However, we may experience unforeseen problems in the development or performance of our technologies or products, which can prevent us from meeting our product development schedules. New products often require certifications or regulatory approvals before the products can be used and we cannot be certain that our new products will be approved in a timely manner. Finally, we may not achieve market acceptance of our new products and services.

We depend on certain key vendors, strategic partners, and other third parties.

Certain of our products, subassemblies, and system components including most of our circuit boards are procured from limited or sole sources. We cannot be certain that we will not experience operational difficulties with these sources, including reductions in the availability of production capacity, errors in complying with product specifications, insufficient quality control, failures to meet production deadlines, increases in manufacturing costs, vendors' access to capital and increased lead times. Additionally, our manufacturers may experience disruptions in their manufacturing operations due to equipment breakdowns, labor strikes or shortages, natural disasters, component or material shortages, cost increases or other similar problems. Further, in order to minimize their inventory risk, our manufacturers might not order components from third-party suppliers with adequate lead time, thereby impacting our ability to meet our demand forecast. Therefore, if we fail to manage our relationship with our manufacturers effectively, or if they experience operational difficulties, our ability to ship products to our customers and distributors could be impaired and our competitive position and reputation could be harmed. In the event that we receive shipments of products that fail to comply with our technical specifications or that fail to conform to our quality control standards, and we are not able to obtain replacement products in a timely manner, we risk revenue losses from the inability to sell those products, increased administrative and shipping costs, and lower profitability. Additionally, if defects are not discovered until after consumers purchase our products, they could lose confidence in the technical attributes of our products and our business could be harmed. Although arrangements with these partners may contain provisions for warranty expense reimbursement, we may remain responsible to the consumer for warranty service in the event of product defects and could experience an unanticipated product defect or warranty liability. While we rely on partners to adhere to its supplier code of conduct, material violations of the supplier code of conduct could occur.

Delays in the availability of or shortages in raw materials and component parts used in the manufacture of our products could unfavorably impact our revenues and results of operations.

We are impacted by the availability and prices of raw materials and component parts used in the manufacturing process of our products. The inability to obtain adequate supplies of raw materials and component parts at favorable prices could have a material adverse effect on our business, financial condition, or results of operations by reducing revenue, decreasing profit margins, and by unfavorably impacting timely deliveries to customers, which could result in damages or penalties to be paid under the terms of some of the contracts with our customers. Since we do not control the actual production of these raw materials and component parts, there may be delays caused by an interruption in the production or transportation of these materials for reasons that are beyond our control. World commodity markets, inflation, and tariffs may also affect raw material and component part prices.

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Utility industry sales cycles can be lengthy and unpredictable.

The utility industry is subject to substantial government regulation. Regulations have often influenced the frequency of meter replacements. Sales cycles for standalone meter products have typically been based on annual or biennial bid-based agreements. Utilities place purchase orders against these agreements as their inventories decline, which can create fluctuations in our sales volumes.

Sales cycles for smart metering solutions are generally long and unpredictable due to several factors, including budgeting, purchasing, and regulatory approval processes that can take several years to complete. Our utility customers typically issue requests for quotes and proposals, establish evaluation processes, review different technical options with vendors, analyze performance and cost/benefit justifications, and perform a regulatory review, in addition to applying the normal budget approval process. Today, governments around the world are implementing new laws and regulations to promote increased energy efficiency, slow or reverse growth in the consumption of scarce resources, reduce carbon dioxide emissions, and protect the environment. Many of the legislative and regulatory initiatives encourage utilities to develop a smart grid infrastructure, and some of these initiatives provide for government subsidies, grants, or other incentives to utilities and other participants in their industry to promote transition to smart grid technologies. If government regulations regarding the smart grid and smart metering are delayed, revised to permit lower or different investment levels in metering infrastructure, or terminated altogether, this could have a material adverse effect on our results of operation, cash flow, and financial condition.

Our customer contracts are complex and contain provisions that could cause us to incur penalties, be liable for damages, and/or incur unanticipated expenses with respect to the functionality, deployment, operation, and availability of our products and services.

In addition to the risk of unanticipated warranty or recall expenses, our customer contracts may contain provisions that could cause us to incur penalties, be liable for damages, including liquidated damages, or incur other expenses if we experience difficulties with respect to the functionality, deployment, operation, and availability of our products and services. Some of these contracts contain long-term commitments to a set schedule of delivery or performance. If we failed in our estimated schedule or we fail in our management of the project, this may cause delays in completion. In the event of late deliveries, late or improper installations or operations, failure to meet product or performance specifications or other product defects, or interruptions or delays in our managed service offerings, our customer contracts may expose us to penalties, liquidated damages, and other liabilities. In the event we were to incur contractual penalties, such as liquidated damages or other related costs that exceed our expectations, our business, financial condition, and operating results could be materially and adversely affected. Further, we could be required to recognize a current-period reduction of revenue related to a specific component of a customer contract at the time we determine the products and/or services to be delivered under that component would result in a loss due to expected revenues estimated to be less than expected costs. Depending on the amounts of the associated revenues (if any) and the costs, this charge could be material to our results of operations in the period it is recognized.

We face increasing competition.

We face competitive pressures from a variety of companies in each of the markets we serve. Some of our present and potential future competitors have, or may have, substantially greater financial, marketing, technical, or manufacturing resources and, in some cases, have greater name recognition, customer relationships, and experience. Some competitors may enter markets we serve and sell products at lower prices in order to gain or grow market share. Our competitors may be able to respond more quickly to new or emerging technologies and changes in customer requirements. They may also be able to devote greater resources to the development, promotion, and sale of their products and services than we can. Some competitors have made, and others may make, strategic acquisitions or establish cooperative relationships among themselves or with third parties that enhance their ability to address the needs of our prospective customers. It is possible that new competitors or alliances among current and new competitors may emerge and rapidly gain significant market share. Other companies may also drive technological innovation and develop products that are equal in quality and performance or superior to our products, which could put pressure on our market position, reduce our overall sales, and require us to invest additional funds in new technology development. In addition, there is a risk that low-cost providers will expand their presence in our markets, improve their quality, or form alliances or cooperative relationships with our competitors, thereby contributing to future price erosion. Some of our products and services may become commoditized, and we may have to adjust the prices of some of our products to stay competitive. Further, some utilities may purchase meters separately from the communication devices. The specifications for such meters may require interchangeability, which could lead to further commoditization of the meter, driving prices lower and reducing margins. Should we fail to compete successfully with current or future competitors, we could experience material adverse effects on our business, financial condition, results of operations, and cash flows.

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Our current and expected level and terms of indebtedness could adversely affect our ability to raise additional capital to fund our operations and take advantage of new business opportunities and prevent us from meeting our obligations under our debt instruments, and our ability to service our indebtedness is dependent on our ability to generate cash, which is influenced by many factors beyond our control.

In December 2017, we issued $300 million aggregate principal amount of 5.00% senior notes due 2026 (December Notes). The December Notes were issued pursuant to an indenture, dated as of December 22, 2017 (Indenture), among Itron, the guarantors from time to time party thereto and U.S. Bank National Association, as trustee. In January 2018, we issued an additional $100 million aggregate principal amount of 5.00% senior notes due 2026 pursuant to the Indenture (January Notes; collectively with the December Notes, the Senior Notes). Proceeds from the Senior Notes were used to finance the Silver Spring Networks, Inc. (SSNI) acquisition, refinance existing indebtedness related to the SSNI acquisition, pay related fees and expenses, and for general corporate purposes.

Also in January 2018, we entered into a credit agreement providing for committed credit facilities in the amount of $1.15 billion (the 2018 credit facility). The 2018 credit facility consists of a U.S. dollar term loan in the amount of $650 million and a multicurrency revolving credit facility in the committed amount of $500 million.

This substantial indebtedness could have important consequences to us, including:

- increasing our vulnerability to general economic and industry conditions;
- requiring a substantial portion of our cash flow used in operations to be dedicated to the payment of principal and interest on our indebtedness, therefore reducing our liquidity and our ability to use our cash flow to fund our operations, capital expenditures and future business opportunities;
- exposing us to the risk of increased interest rates, and corresponding increased interest expense, as borrowings under the 2018 credit facility would be at variable rates of interest;
- limiting our ability to obtain additional financing for working capital, capital expenditures, debt service requirements, acquisitions, and general corporate or other purposes; and
- limiting our ability to adjust to changing marketplace conditions and placing us at a competitive disadvantage compared with our competitors who may have less debt.

Our ability to make scheduled payments on and to refinance our indebtedness depends on, and is subject to, our financial and operating performance, which is influenced, in part, by general economic, financial, competitive, legislative, regulatory, counterparty business, and other risks that are beyond our control, including the availability of financing in the U.S. banking and capital markets. We cannot assure you that our business will generate sufficient cash flow from operations or that future borrowings will be available to us in an amount sufficient to enable us to service our debt to refinance our debt or to fund our other liquidity needs on commercially reasonable terms or at all. If we are unable to meet our debt service obligations or to fund our other liquidity needs, we will need to restructure or refinance all or a portion of our debt which could cause us to default on our debt obligations and impair our liquidity. Our ability to restructure or refinance our debt will depend on the condition of the capital markets and our financial condition at such time. Even if refinancing indebtedness is available, any refinancing of our indebtedness could be at higher interest rates and may require us to comply with more onerous covenants that could further restrict our business operations.
Moreover, in the event of a default under any of our indebtedness the holders of the defaulted debt could elect to declare all the funds borrowed to be due and payable, together with accrued and unpaid interest, which in turn could result in cross defaults under our other indebtedness. The lenders under the 2018 credit facility could also elect to terminate their commitments thereunder and cease making further loans, and such lenders could institute foreclosure proceedings against their collateral, and we could be forced into bankruptcy or liquidation. If we breach our covenants under the 2018 credit facility, we would be in default thereunder. Such lenders could exercise their rights, as described above, and we could be forced into bankruptcy or liquidation.

Our variable rate indebtedness subjects us to interest rate risk, which could cause our debt service obligations to increase significantly.

The 2018 credit facility will bear, and other indebtedness we may incur in the future may bear, interest at a variable rate. As a result, at any given time interest rates on the 2018 credit facility and any other variable rate debt could be higher or lower than current levels. If interest rates increase, our debt service obligations on our variable rate indebtedness may increase even though the amount borrowed remains the same, and therefore net income and associated cash flows, including cash available for servicing our indebtedness, may correspondingly decrease. While we continually monitor and assess our interest rate risk and have entered

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into derivative instruments to manage such risk, these instruments could be ineffective at mitigating all or a part of our risk, including changes to the applicable margin under our 2018 credit facility.

Our 2018 credit facility and Senior Notes limit our ability and the ability of many of our subsidiaries to take certain actions.

Our 2018 credit facility and Senior Notes place restrictions on our ability, and the ability of many of our subsidiaries, dependent on meeting specified financial ratios, to, among other things:

- incur more debt;
- make certain investments;
- enter into transactions with affiliates;
- merge or consolidate;
- pay dividends, make distributions, and repurchase capital stock;
- create liens;
- enter into sale lease-back transactions;
- transfer or sell assets.

Our 2018 credit facility contains other customary covenants, including the requirement to meet specified financial ratios and provide periodic financial reporting. Our ability to borrow will depend on the satisfaction of these covenants. Events beyond our control can affect our ability to meet those covenants. Our failure to comply with obligations under our borrowing arrangements may result in declaration of an event of default. An event of default, if not cured or waived, may permit acceleration of required payments against such indebtedness. We cannot be certain we will be able to remedy any such defaults. If our required payments are accelerated, we cannot be certain that we will have sufficient funds available to pay the indebtedness or that we will have the ability to raise sufficient capital to replace the indebtedness on terms favorable to us or at all. In addition, in the case of an event of default under our secured indebtedness such as our 2018 credit facility, the lenders may be permitted to foreclose on our assets securing that indebtedness. As a result of these restrictions, we will be limited as to how we conduct our business and we may be unable to raise additional debt or equity financing to compete effectively or to take advantage of new business opportunities. The terms of any future indebtedness we may incur could include more restrictive covenants. We cannot assure you that we will be able to maintain compliance with these covenants in the future and, if we fail to do so that we will be able to obtain waivers from the lenders and/or amend the covenants.

Despite our current level of indebtedness, we may be able to incur substantially more debt and enter into other transactions which could further exacerbate the risks to our financial condition described above.

We may be able to incur significant additional indebtedness in the future. Although the credit agreement that currently governs our 2018 credit facility, the Senior Notes, and other debt instruments contain restrictions on the incurrence of additional indebtedness and entering into certain types of other transactions, these restrictions are subject to a number of qualifications and exceptions. Additional indebtedness incurred in compliance with these restrictions could be substantial. These restrictions also do not prevent us from incurring obligations, such as certain trade payables that do not constitute indebtedness as defined under our debt instruments. To the extent we incur additional indebtedness or other obligations, the risks described in the immediately preceding risk factor and others described herein may increase.

Our acquisitions of and investments in third parties have risks.

We have recently completed acquisitions and may make investments in the future, both within and outside of the United States. Acquisitions and investments involve numerous risks such as the diversion of senior management's attention; unsuccessful integration of the acquired entity's personnel, operations, technologies, and products; incurrence of significant expenses to meet an acquiree's customer contractual commitments; lack of market acceptance of new services and technologies; or difficulties in operating businesses in international legal jurisdictions. Failure to adequately address these issues could result in the diversion of resources and adversely impact our ability to manage our business. In addition, acquisitions and investments in third parties may involve the assumption of obligations, significant write-offs, or other charges associated with the acquisition. Impairment of an investment, goodwill, or an intangible asset may result if these risks were to materialize. For investments in entities that are not wholly owned by Itron, such as joint ventures, a loss of control as defined by U.S. generally accepted accounting principles (GAAP) could result in a significant change in accounting treatment and a change in the carrying value of the entity. There can be no assurances that an acquired business will perform as expected, accomplish our strategic objectives, or generate significant revenues, profits, or cash flows.

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We may face adverse publicity, consumer or political opposition, or liability associated with our products.

The safety and security of the power grid and natural gas and water supply systems, the accuracy and protection of the data collected by meters and transmitted via the smart grid, concerns about the safety and perceived health risks of using radio frequency communications, and privacy concerns of monitoring home appliance energy usage have been the focus of recent adverse publicity. Unfavorable publicity and consumer opposition may cause utilities or their regulators to delay or modify planned smart grid initiatives. Smart grid projects may be, or may be perceived as, unsuccessful.

Our products are complex and may contain defects or experience failures due to any number of issues in design, materials, deployment, and/or use. If any of our products contain a defect, a compatibility or interoperability issue, or other types of errors, we may have to devote significant time and resources to identify and correct the issue. We provide product warranties for varying lengths of time and establish allowances in anticipation of warranty expenses. In addition, we recognize contingent liabilities for additional product-failure related costs. These warranty and related product-failure allowances may be inadequate due to product defects and unanticipated component failures, as well as higher than anticipated material, labor, and other costs we may incur to replace projected product failures. A product recall or a significant number of product returns could be expensive; damage our reputation and relationships with utilities, meter and communication vendors, and other third-party vendors; result in the loss of business to competitors; or result in litigation. We may incur additional warranty expenses in the future with respect to new or established products, which could materially and adversely affect our operations and financial position.

We may be subject to claims that there are adverse health effects from the radio frequencies utilized in connection with our products. If these claims prevail, our customers could suspend implementation or purchase substitute products, which could cause a loss of sales.

Changes in tax laws, valuation allowances, and unanticipated tax liabilities could adversely affect our effective income tax rate and profitability.

We are subject to income tax in the United States and numerous foreign jurisdictions. Significant judgment is required in evaluating our tax positions and determining our provision for income taxes. During the ordinary course of business, there are many transactions and calculations for which the ultimate tax determination is uncertain. We establish reserves for tax-related uncertainties based on estimates of whether, and the extent to which, additional taxes will be due. These reserves may be established when we believe that certain positions might be challenged despite our belief that our tax return positions are fully supportable. We adjust these reserves in light of changing facts and circumstances. The provision for income taxes includes the impact of reserve positions and changes to reserves that are considered appropriate, as well as valuation allowances when we determine it is more likely than not that a deferred tax asset cannot be realized. In addition, future changes in tax laws in the jurisdictions in which we operate could have a material impact on our effective income tax rate and profitability. We regularly assess all of these matters to determine the adequacy of our tax provision, which is subject to significant judgment.

The Organization for Economic Cooperation and Development guidance under the Base Erosion and Profit Shifting (BEPS) initiatives aim to minimize perceived tax abuses and modernize global tax policy. The Anti-Tax Avoidance Directives (ATAD), issued by the Council of the European Union, provide further recommendations for legislative changes under these tax policies. More countries are beginning to implement legislative changes based on these BEPS recommendations and ATAD measures.

On December 22, 2017, the United States enacted comprehensive tax reform commonly referred to as the Tax Cuts and Jobs Act (Tax Act). The Tax Act makes significant changes to the way the U.S. taxes corporations. Clarifying proposed Treasury regulations have been issued during 2018, many late in the year, for which we are continuing to evaluate the impact on our business. In addition, a number of U.S. states have not yet updated their laws to take into account the new federal legislation. As a result, there may be further impacts of the new law on our results of operations. It is possible that U.S. tax reform, or interpretations provided, could change and could have an adverse effect on us, and such effect could be material.

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Disruption and turmoil in global credit and financial markets, which may be exacerbated by the inability of certain countries to continue to service their sovereign debt obligations, and the possible unfavorable implications of such events for the global economy, may unfavorably impact our business, liquidity, operating results, and financial condition.

The current economic conditions, including volatility in the availability of credit and foreign exchange rates and extended economic slowdowns, have contributed to the instability in some global credit and financial markets. Additionally, at-risk financial institutions in certain countries may, without forewarning, seize a portion of depositors' account balances. The seized funds would be used to recapitalize the at-risk financial institution and would no longer be available for the depositors' use. If such seizure were to occur at financial institutions where we have funds on deposit, it could have a significant impact on our overall liquidity. While the ultimate outcome of these events cannot be predicted, it is possible that such events may have an unfavorable impact on the global economy and our business, liquidity, operating results, and financial condition.

We are subject to international business uncertainties, obstacles to the repatriation of earnings, and foreign currency fluctuations.

A substantial portion of our revenues is derived from operations conducted outside the United States. International sales and operations may be subjected to risks such as the imposition of government controls, government expropriation of facilities, lack of a well-established system of laws and enforcement of those laws, access to a legal system free of undue influence or corruption, political instability, terrorist activities, restrictions on the import or export of critical technology, currency exchange rate fluctuations, and adverse tax burdens. Lack of availability of qualified third-party financing, generally longer receivable collection periods than those commonly practiced in the United States, trade restrictions, changes in tariffs, labor disruptions, difficulties in staffing and managing international operations, difficulties in imposing and enforcing operational and financial controls at international locations, potential insolvency of international distributors, preference for local vendors, burdens of complying with different permitting standards and a wide variety of foreign laws, and obstacles to the repatriation of earnings and cash all present additional risk to our international operations. Fluctuations in the value of international currencies may impact our operating results due to the translation to the U.S. dollar as well as our ability to compete in international markets. International expansion and market acceptance depend on our ability to modify our technology to take into account such factors as the applicable regulatory and business environment, labor costs, and other economic conditions. In addition, the laws of certain countries do not protect our products or technologies in the same manner as the laws of the United States. Further, foreign regulations or restrictions, e.g., opposition from unions or works councils, could delay, limit, or disallow significant operating decisions made by our management, including decisions to exit certain businesses, close certain manufacturing locations, or other restructuring actions. There can be no assurance that these factors will not have a material adverse effect on our future international sales and, consequently, on our business, financial condition, and results of operations.

We may engage in future restructuring activities and incur additional charges in our efforts to improve profitability. We also may not achieve the anticipated savings and benefits from current or any future restructuring projects.

We have implemented multiple restructuring projects to adjust our cost structure, and we may engage in similar restructuring activities in the future. These restructuring activities reduce our available employee talent, assets, and other resources, which could slow product development, impact ability to respond to customers, increase quality issues, temporarily reduce manufacturing efficiencies, and limit our ability to increase production quickly. In addition, delays in implementing restructuring projects, unexpected costs, unfavorable negotiations with works councils, changes in governmental policies, or failure to meet targeted improvements could change the timing or reduce the overall savings realized from the restructuring project.

Business interruptions could adversely affect our business.

Our worldwide operations could be subject to hurricanes, tornadoes, earthquakes, floods, fires, extreme weather conditions, medical epidemics or pandemics, or other natural or man-made disasters or business interruptions. The occurrence of any of these business disruptions could seriously harm our business, financial condition, and results of operations.

Our key manufacturing facilities are concentrated, and in the event of a significant interruption in production at any of our manufacturing facilities, considerable expense, time, and effort could be required to establish alternative production lines to meet contractual obligations, which would have a material adverse effect on our business, financial condition, and results of operations.

We may encounter strikes or other labor disruptions that could adversely affect our financial condition and results of operations.

We have significant operations throughout the world. In a number of countries outside the U.S., our employees are covered by collective bargaining agreements. As the result of various corporate or operational actions, which our management has undertaken or may be made in the future, we could encounter labor disruptions. These disruptions may be subject to local media coverage, which could damage our reputation. Additionally, the disruptions could delay our ability to meet customer orders and could

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adversely affect our results of operations. Any labor disruptions could also have an impact on our other employees. Employee morale and productivity could suffer, and we may lose valued employees whom we wish to retain.

Asset impairment could result in significant changes that would adversely impact our future operating results.

We have significant inventory, intangible assets, long-lived assets, and goodwill that are susceptible to valuation adjustments as a result of changes in various factors or conditions, which could impact our results of operations or and financial condition. Factors that could trigger an impairment of such assets include the following:

- reduction in the net realizable value of inventory which becomes obsolete or exceeds anticipated demand;
- changes in our organization or management reporting structure, which could result in additional reporting units, requiring greater aggregation or disaggregation in our analysis by reporting unit and potentially alternative methods/assumptions of estimating fair values;
- underperformance relative to projected future operating results;
- changes in the manner or use of the acquired assets or the strategy for our overall business;
- unfavorable industry or economic trends; and
- decline in our stock price for a sustained period or decline in our market capitalization below net book value.

We are subject to a variety of litigation that could adversely affect our results of operations, financial condition, and cash flows.

From time to time, we are involved in litigation that arises from our business. In addition, parties to these lawsuits may bring claims against our customers, which, in some instances, could result in an indemnification of the customer by us. Litigation may also relate to, among other things, product failure or product liability claims, contractual disputes, employment matters, or securities litigation. Litigation can be expensive to defend and can divert the attention of management and other personnel for long periods of time, regardless of the ultimate outcome. We may be required to pay damage awards or settlements or become subject to equitable remedies that could adversely affect our financial condition and results of operations. While we currently maintain insurance coverage, such insurance may not provide adequate coverage against potential claims.

We may face losses associated with alleged unauthorized use of third-party intellectual property.

We may be subject to claims or inquiries regarding alleged unauthorized use of a third-party's intellectual property. An adverse outcome in any intellectual property litigation or negotiation could subject us to significant liabilities to third parties, require us to license technology or other intellectual property rights from others, require us to comply with injunctions to cease marketing or the use of certain products or brands, or require us to redesign, re-engineer, or rebrand certain products or packaging, any of which could affect our business, financial condition, and results of operations. If we are required to seek licenses under patents or other intellectual property rights of others, we may not be able to acquire these licenses at acceptable terms, if at all. In addition, the cost of responding to an intellectual property infringement claim, in terms of legal fees, expenses, and the diversion of management resources, whether or not the claim is valid, could have a material adverse effect on our business, financial condition, and results of operations.

If our products infringe the intellectual property rights of others, we may be required to indemnify our customers for any damages they suffer. We generally indemnify our customers with respect to infringement by our products of the proprietary rights of third parties. Third parties may assert infringement claims against our customers. These claims may require us to initiate or defend protracted and costly litigation on behalf of our customers, regardless of the merits of these claims. If any of these claims succeed, we may be forced to pay damages on behalf of our customers or may be required to obtain licenses for the products they use. If we cannot obtain all necessary licenses on commercially reasonable terms, our customers may be forced to stop using our products.

We are affected by the availability and regulation of radio spectrum and interference with the radio spectrum that we use.

A significant number of our products use radio spectrum, which are subject to regulation by the Federal Communications Commission (FCC) in the United States. The FCC may adopt changes to the rules for our licensed and unlicensed frequency bands that are incompatible with our business. In the past, the FCC has adopted changes to the requirements for equipment using radio spectrum, and it is possible that the FCC or the U.S. Congress will adopt additional changes.

Although radio licenses are generally required for radio stations, Part 15 of the FCC's rules permits certain low-power radio devices (Part 15 devices) to operate on an unlicensed basis. Part 15 devices are designed for use on frequencies used by others. These other users may include licensed users, which have priority over Part 15 users. Part 15 devices cannot cause harmful interference to licensed users and must be designed to accept interference from licensed radio devices. In the United States, our smart metering solutions are typically Part 15 devices that transmit information to (and receive information from, if applicable) handheld, mobile, or fixed network systems pursuant to these rules.

We depend upon sufficient radio spectrum to be allocated by the FCC for our intended uses. As to the licensed frequencies, there is some risk that there may be insufficient available frequencies in some markets to sustain our planned operations. The unlicensed frequencies are available for a wide variety of uses and may not be entitled to protection from interference by other users who operate in accordance with FCC rules. The unlicensed frequencies are also often the subject of proposals to the FCC requesting a change in the rules under which such frequencies may be used. If the unlicensed frequencies become crowded to unacceptable levels, restrictive, or subject to changed rules governing their use, our business could be materially adversely affected.

We have committed, and will continue to commit, significant resources to the development of products that use particular radio frequencies. Action by the FCC could require modifications to our products. The inability to modify our products to meet such requirements, the possible delays in completing such modifications, and the cost of such modifications all could have a material adverse effect on our future business, financial condition, and results of operations.

Outside of the United States, certain of our products require the use of RF and are subject to regulations in those jurisdictions where we have deployed such equipment. In some jurisdictions, radio station licensees are generally required to operate a radio transmitter and such licenses may be granted for a fixed term and must be periodically renewed. In other jurisdictions, the rules permit certain low power devices to operate on an unlicensed basis. Our smart metering solutions typically transmit to (and receive information from, if applicable) handheld, mobile, or fixed network reading devices in license-exempt bands pursuant to rules regulating such use. In Europe, we generally use the 169 megahertz (MHz), 433/4 MHz, and 868 MHz bands. In the rest of the world, we primarily use the 433/4 MHz, 920 MHz and 2.4000-2.4835 gigahertz (GHz) bands, as well as other local license-exempt bands. To the extent we introduce new products designed for use in the United States or another country into a new market, such products may require significant modification or redesign in order to meet frequency requirements and other regulatory specifications. In some countries, limitations on frequency availability or the cost of making necessary modifications may preclude us from selling our products in those countries. In addition, new consumer products may create interference with the performance of our products, which could lead to claims against us.

We may be unable to adequately protect our intellectual property.

While we believe that our patents and other intellectual property have significant value, it is uncertain that this intellectual property or any intellectual property acquired or developed by us in the future will provide meaningful competitive advantages. There can be no assurance that our patents or pending applications will not be challenged, invalidated, or circumvented by competitors or that rights granted thereunder will provide meaningful proprietary protection. Moreover, competitors may infringe our patents or successfully avoid them through design innovation. To combat infringement or unauthorized use of our intellectual property, we may need to commence litigation, which can be expensive and time-consuming. In addition, in an infringement proceeding a court may decide that a patent or other intellectual property right of ours is not valid or is unenforceable, or may refuse to stop the other party from using the technology or other intellectual property right at issue on the grounds that it is non-infringing or the legal requirements for an injunction have not been met. Policing unauthorized use of our intellectual property is difficult and expensive, and we cannot provide assurance that we will be able to prevent misappropriation of our proprietary rights, particularly in countries that do not protect such rights in the same manner as in the United States.

We have pension benefit obligations, which could have a material impact on our earnings, liabilities, and shareholders' equity and could have significant adverse impacts in future periods.

We sponsor both funded and unfunded defined benefit pension plans for our international employees, primarily in Germany, France, Italy, Indonesia, Brazil, and Spain. Our general funding policy for these qualified pension plans is to contribute amounts sufficient to satisfy regulatory funding standards of the respective countries for each plan.

The determination of pension plan expense, benefit obligation, and future contributions depends heavily on market factors such as the discount rate and the actual return on plan assets. We estimate pension plan expense, benefit obligation, and future contributions to these plans using assumptions with respect to these and other items. Changes to those assumptions could have a significant effect on future contributions as well as on our annual pension costs and/or result in a significant change to shareholders' equity.

A number of key personnel are critical to the success of our business.

Our success depends in large part on the efforts of our highly qualified technical and management personnel and highly skilled individuals in all disciplines. The loss of one or more of these employees and the inability to attract and retain qualified replacements could have a material adverse effect on our business.

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If we are unable to protect our information technology infrastructure and network against data corruption, cyber-based attacks or network security breaches, we could be exposed to customer liability and reputational risk.

We rely on various information technology systems to capture, process, store, and report data and interact with customers, vendors, and employees. Despite security steps we have taken to secure all information and transactions, our information technology systems, and those of our third-party providers, may be subject to cyber attacks. Any data breaches could result in misappropriation of data or disruption of operations. In addition, hardware and operating system software and applications that we procure from third parties may contain defects in design or manufacture that could interfere with the operation of the systems. Misuse of internal applications; theft of intellectual property, trade secrets, or other corporate assets; and inappropriate disclosure of confidential information could stem from such incidents.

In addition, we have designed products and services that connect to and are part of the Industrial Internet of Things. While we attempt to provide adequate security measures to safeguard our products from cyber attacks, the potential for an attack remains. A successful attack may result in inappropriate access to information or an inability for our products to function properly.

Any such operational disruption and/or misappropriation of information could result in lost sales, unfavorable publicity, or business delays and could have a material adverse effect on our business.

We may not realize the expected benefits from strategic alliances.

We have several strategic alliances with large and complex organizations and other companies with which we work to offer complementary products and services. There can be no assurance we will realize the expected benefits from these strategic alliances. If successful, these relationships may be mutually beneficial and result in shared growth. However, alliances carry an element of risk because, in most cases, we must both compete and collaborate with the same company from one market to the next. Should our strategic partnerships fail to perform, we could experience delays in product development or experience other operational difficulties.

We rely on information technology systems.

Our industry requires the continued operation of sophisticated information technology systems and network infrastructures, which may be subject to disruptions arising from events that are beyond our control. We are dependent on information technology systems, including, but not limited to, networks, applications, and outsourced services. We continually enhance and implement new systems and processes throughout our global operations.

We offer managed services and software utilizing several data center facilities located worldwide. Any damage to, or failure of, these systems could result in interruptions in the services we provide to our utility customers. As we continue to add capacity to our existing and future data centers, we may move or transfer data. Despite precautions taken during this process, any delayed or unsuccessful data transfers may impair the delivery of our services to our utility customers. We also sell vending and pre-payment systems with security features that, if compromised, may lead to claims against us.

We are completing a phased upgrade of our primary enterprise resource planning (ERP) systems to allow for greater depth and breadth of functionality worldwide. System conversions are expensive and time consuming undertakings that impact all areas for us. While successful implementations of each phase will provide many benefits to us, an unsuccessful or delayed implementation of any particular phase may cost us significant time and resources.

The failure of these systems to operate effectively, problems with transitioning to upgraded or replacement systems, or a breach in security of these systems due to computer viruses, hacking, acts of terrorism, and other causes could materially and adversely affect our business, financial condition, and results of operations by harming our ability to accurately forecast sales demand, manage our supply chain and production facilities, achieve accuracy in the conversion of electronic data and records, and report financial and management information on a timely and accurate basis. In addition, due to the systemic internal control features within ERP systems, we may experience difficulties that could affect our internal control over financial reporting.

Changes in environmental regulations, violations of such regulations, or future environmental liabilities could cause us to incur significant costs and could adversely affect our operations.

Our business and our facilities are subject to numerous laws, regulations, and ordinances governing, among other things, the storage, discharge, handling, emission, generation, manufacture, disposal, remediation of, and exposure to toxic or other hazardous substances, and certain waste products. Many of these environmental laws and regulations subject current or previous owners or operators of land to liability for the costs of investigation, removal, or remediation of hazardous materials. In addition, these laws and regulations typically impose liability regardless of whether the owner or operator knew of, or was responsible for, the presence of any hazardous materials and regardless of whether the actions that led to the presence were conducted in compliance with the law. In the ordinary course of our business, we use metals, solvents, and similar materials, which are stored on-site. The waste created by the use of these materials is transported off-site on a regular basis by unaffiliated waste haulers. Many environmental laws and regulations require generators of waste to take remedial actions at, or in relation to, the off-site disposal location even if the disposal was conducted in compliance with the law. The requirements of these laws and regulations are complex, change frequently, and could become more stringent in the future. Failure to comply with current or future environmental regulations could result in the imposition of substantial fines, suspension of production, alteration of our production processes, cessation of operations, or other actions, which could materially and adversely affect our business, financial condition, and results of operations. There can be no assurance that a claim, investigation, or liability would not arise with respect to these activities, or that the cost of complying with governmental regulations in the future, either for an individual claim or in aggregate of multiple claims, would not have a material adverse effect on us.

We are exposed to counterparty default risks with our financial institutions and insurance providers.

If one or more of the depository institutions in which we maintain significant cash balances were to fail, our ability to access these funds might be temporarily or permanently limited, and we could face material liquidity problems and financial losses.

The lenders of our 2018 credit facility consist of several participating financial institutions. Our revolving line of credit allows us to provide letters of credit in support of our obligations for customer contracts and provides additional liquidity. If our lenders are not able to honor their line of credit commitments due to the loss of a participating financial institution or other circumstance, we would need to seek alternative financing, which may not be under acceptable terms, and therefore could adversely impact our ability to successfully bid on future sales contracts and adversely impact our liquidity and ability to fund some of our internal initiatives or future acquisitions.

Our international sales and operations are subject to complex laws relating to foreign corrupt practices and anti-bribery laws, among many others, and a violation of, or change in, these laws could adversely affect our operations.

The Foreign Corrupt Practices Act in the United States requires United States companies to comply with an extensive legal framework to prevent bribery of foreign officials. The laws are complex and require that we closely monitor local practices of our overseas offices. The United States Department of Justice has recently heightened enforcement of these laws. In addition, other countries continue to implement similar laws that may have extra-territorial effect. In the United Kingdom, where we have operations, the U.K. Bribery Act imposes significant oversight obligations on us and could impact our operations outside of the United Kingdom. The costs for complying with these and similar laws may be significant and could require significant management time and focus. Any violation of these or similar laws, intentional or unintentional, could have a material adverse effect on our business, financial condition, or results of operations.

Changes in accounting principles and guidance could result in unfavorable accounting charges or effects.

We prepare our consolidated financial statements in accordance with GAAP. These principles are subject to interpretation by the Securities and Exchange Commission (SEC) and various bodies formed to create and interpret appropriate accounting principles and guidance. A change in these principles or guidance, or in their interpretations, may have a material effect on our reported results, as well as our processes and related controls, and may retroactively affect previously reported results. For example, in February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-02, *Leases* (Topic 842) (ASU 2016-02), which requires substantially all leases be recognized by lessees on their balance sheet as a right-of-use asset and corresponding lease liability, including leases currently accounted for as operating leases. The new standard also will result in enhanced quantitative and qualitative disclosures, including significant judgments made by management, to provide greater insight into the extent of revenue and expense recognized and expected to be recognized from existing leases. The standard, as amended, requires modified retrospective adoption and will be effective for us on January 1, 2019. We currently believe the most significant impact relates to our real estate leases and the increased financial statement disclosures, with an increase to both total assets and total liabilities between $65 million and $85 million.

If we fail to maintain an effective system of internal controls, we may not be able to accurately report our financial results, prevent fraud, or maintain investor confidence.

Effective internal controls are necessary for us to provide reliable and accurate financial reports and effectively prevent fraud. We have devoted significant resources and time to comply with the internal control over financial reporting requirements of the Sarbanes-Oxley Act. In addition, Section 404 under the Sarbanes-Oxley Act requires that our auditors attest to the design and operating effectiveness of our controls over financial reporting. Our compliance with the annual internal control report requirement

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for each fiscal year will depend on the effectiveness of our financial reporting, data systems, and controls across our operating subsidiaries. Furthermore, an important part of our growth strategy has been, and will likely continue to be, the acquisition of complementary businesses, and we expect these systems and controls to become increasingly complex to the extent that we integrate acquisitions and our business grows. Likewise, the complexity of our transactions, systems, and controls may become more difficult to manage. In addition, new accounting standards may have a significant impact on our financial statements in future periods, requiring new or enhanced controls. We cannot be certain that we will ensure that we design, implement, and maintain adequate controls over our financial processes and reporting in the future, especially for acquisition targets that may not have been required to be in compliance with Section 404 of the Sarbanes-Oxley Act at the date of acquisition. Our acquisition of SSNI will be subject to this risk as they are an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012, and have chosen to be exempt from complying with the internal control over financial reporting auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act.

Failure to implement new controls or enhancements to controls, difficulties encountered in control implementation or operation, or difficulties in the assimilation of acquired businesses into our control system could result in additional errors, material misstatements, or delays in our financial reporting obligations. Inadequate internal controls could also cause investors to lose confidence in our reported financial information, which could have an unfavorable effect on the trading price of our stock and our access to capital.

We are subject to regulatory compliance.

We are subject to various governmental regulations in all of the jurisdictions in which we conduct business. Failure to comply with current or future regulations could result in the imposition of substantial fines, suspension of production, alteration of our production processes, cessation of operations, or other actions, which could materially and adversely affect our business, financial condition, and results of operations.

Regulations related to "conflict minerals" may force us to incur additional expenses, may result in damage to our business reputation, and may adversely impact our ability to conduct our business.

In August 2012, under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the SEC adopted requirements for companies that use certain minerals and derivative metals (referred to as "conflict minerals," regardless of their actual country of origin) in their products. Some of these metals are commonly used in electronic equipment and devices, including our products. These requirements require companies to investigate, disclose and report whether or not such metals originated from the Democratic Republic of Congo or adjoining countries and required due diligence efforts. There may be increased costs associated with complying with these disclosure requirements, including for diligence to determine the sources of conflict minerals used in our products and related components, and other potential changes to products, processes or sources of supply as a consequence of such verification activities. Further interpretation and implementation of these rules could adversely affect the sourcing, supply, and pricing of materials used in our products.

ITEM 1B: UNRESOLVED STAFF COMMENTS

None.

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ITEM 2: PROPERTIES

We own our headquarters facility, which is located in Liberty Lake, Washington.

The following table lists our major manufacturing facilities by location and segment:

Region	Location
North America	Oconee, SC (O) Waseca, MN (L)
Europe, Middle East, and Africa	Argenteuil, France (L) Chasseneuil, France (O) Macon, France (O) Massy, France (L) Reims, France (O) Karlsruhe, Germany (O) Oldenburg, Germany (O) Godollo, Hungary (O) Asti, Italy (O)
Asia/Pacific	Suzhou, China (L) Wujiang, China (L) Dehradun, India (L) Bekasi, Indonesia (O)
Latin America	Americana, Brazil (O)

(O) - Manufacturing facility is owned
(L) - Manufacturing facility is leased

Our principal properties are in good condition, and we believe our current facilities are sufficient to support our operations. Our major manufacturing facilities are owned, while smaller factories are typically leased.

In addition to our manufacturing facilities, we have numerous sales offices, product development facilities, and distribution centers, which are located throughout the world.

ITEM 3: LEGAL PROCEEDINGS

None.

ITEM 4: MINE SAFETY DISCLOSURES

Not applicable.

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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 for Common Stock
Our common stock is traded on the NASDAQ Global Select Market under the symbol "ITRI".

Performance Graph
The following graph compares the five-year cumulative total return to shareholders on our common stock with the five-year cumulative total return of our peer group of companies used for the year ended December 31, 2018 and the NASDAQ Composite Index.
* $100 invested on 12/31/13 in stock or index, including reinvestment of dividends.
Fiscal years ending December 31.
The performance graph above is being furnished solely to accompany this Report pursuant to Item 201(e) of Regulation S-K and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any of our filings, whether made before or after the date hereof, regardless of any general incorporation language in such filing.
The above presentation assumes $100 invested on December 31, 2013 in the common stock of Itron, Inc., the peer group, and the NASDAQ Composite Index, with all dividends reinvested. With respect to companies in the peer group, the returns of each such corporation have been weighted to reflect relative stock market capitalization at the beginning of each annual period plotted. The stock prices shown above for our common stock are historical and not necessarily indicative of future price performance.

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Each year, we reassess our peer group to identify global companies that are either direct competitors or have similar industry and business operating characteristics. Our 2018 peer group includes the following publicly traded companies: Badger Meter, Inc., Landis+Gyr, Mueller Water Products, Inc., Roper Technologies, Inc., and Xylem, Inc (Sensus). The 2018 peer group was created as a result of our change in operating segments. Our 2017 peer group includes the following publicly traded companies: Badger Meter, Inc., Echelon Corporation, Landis+Gyr, National Instruments Corporation, and Roper Technologies, Inc.

Issuer Repurchase of Equity Securities

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs
October 1, 2018 through October 31, 2018	—	$ —	—	—
November 1, 2018 through November 30, 2018	22,280	53.99	—	—
December 1, 2018 through December 31, 2018	4,653	50.22	—	—
Total	26,933	$ 53.34	—	

(1) Shares repurchased represent shares transferred to us by certain employees who vested in restricted stock units and used shares to pay all, or a portion of, the related taxes.

Holders

At January 31, 2019, there were 192 holders of record of our common stock.

Dividends

Since the inception of the Company, we have not declared or paid cash dividends. We intend to retain future earnings for the development of our business and do not anticipate paying cash dividends in the foreseeable future.

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ITEM 6: SELECTED CONSOLIDATED FINANCIAL DATA

The selected consolidated financial data below is derived from our consolidated financial statements as of December 31, 2018 and 2017, and for the three years ended December 31, 2018 in this Annual Report on Form 10-K. The financial data as of December 31, 2016, 2015 and 2014 and for the two years ended December 31, 2015 were derived from financial statements not included herein. You should read this information together with Item 7: "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8: "Financial Statements and Supplementary Data". Historical results are not necessarily indicative of future performance.

	Year Ended December 31,				
	2018[5]	2017[4]	2016[3]	2015	2014[2]
	(in thousands, except per share data)				
Consolidated Statements of Operations Data					
Revenues	$2,376,117	$2,018,197	$2,013,186	$1,883,533	$1,947,616
Cost of revenues	1,645,798	1,341,446	1,350,654	1,326,848	1,333,566
Gross profit	730,319	676,751	662,532	556,685	614,050
Operating income (loss)	(49,692)	154,877	100,993	52,846	480
Net income (loss) attributable to Itron, Inc.	(99,250)	57,298	31,770	12,678	(23,670)
Earnings (loss) per common share - Basic	$(2.53)	$1.48	$0.83	$0.33	$(0.60)
Earnings (loss) per common share - Diluted	$(2.53)	$1.45	$0.82	$0.33	$(0.60)
Weighted average common shares outstanding - Basic	39,244	38,655	38,207	38,224	39,184
Weighted average common shares outstanding - Diluted	39,244	39,387	38,643	38,506	39,184
Consolidated Balance Sheets Data					
Working capital[1]	$243,434	$341,959	$319,420	$281,166	$262,393
Total assets	2,608,982	2,106,147	1,577,811	1,680,316	1,751,085
Total debt, net	1,016,623	613,260	304,523	370,165	323,307
Total Itron, Inc. shareholders' equity	712,663	786,416	631,604	604,758	681,001
Other Financial Data					
Cash provided by operating activities	$109,755	$191,354	$115,842	$73,350	$132,973
Cash used in investing activities	(862,658)	(148,179)	(47,528)	(48,951)	(41,496)
Cash provided by (used in) financing activities	395,821	301,959	(63,023)	7,740	(91,877)
Capital expenditures	(59,952)	(49,495)	(43,543)	(43,918)	(44,495)

(1) Working capital represents current assets less current liabilities.

(2) During 2014, we incurred costs of $49.5 million related to restructuring projects to improve operational efficiencies and reduce expenses.

(3) During 2016, we incurred costs of $49.1 million related to restructuring projects to restructure various company activities in order to improve operational efficiencies, reduce expenses, and improve competitiveness.

(4) During 2017, cash used in investing activities included $100 million paid for the acquisition of Comverge by purchasing the stock of its parent, Peak Holding Corp. In addition, cash provided by financing activities included the issuance of $300 million of senior notes as part of the financing of the acquisition of Silver Spring Networks, Inc.

(5) During 2018, we incurred costs of $77.2 million related to restructuring projects to restructure various company activities in order to improve operational efficiencies, reduce expenses and improve competitiveness. Refer to Item 8: "Financial Statements and Supplementary Data, Note 13: Restructuring" for further disclosures regarding the restructuring charges.

Cash used in investing activities included $803.1 million paid for the acquisition of Silver Spring Networks, Inc. (SSNI). In addition, cash provided by financing activities included the issuance of $100 million of senior notes. We also incurred $91.9 million in acquisition and integration costs in connection with the SSNI acquisition, which are classified in Sales, general and administrative expenses in the Consolidated Statement of Operations.

On January 1, 2018, we adopted Accounting Standards Codification (ASC) 606 using the modified retrospective method. Refer to Item 8: "Financial Statements and Supplementary Data, Note 18: Revenues" for the complete impact of the adoption of ASC 606.

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

The following discussion and analysis should be read in conjunction with Item 8: "Financial Statements and Supplementary Data".

Itron is among the leading technology and services companies offering end-to-end solutions to enhance productivity and efficiency, primarily focused on utilities and municipalities around the globe. We provide comprehensive solutions that measure, manage, and analyze energy and water use. Our broad product portfolio helps utilities and municipalities responsibly and efficiently manage resources.

Through September 30, 2018, we operated under the Itron brand worldwide and managed and reported under four operating segments: Electricity, Gas, Water, and Networks. Our Water operating segment included our global water, and heat and allocation solutions. Networks became a new operating segment with the acquisition of Silver Springs Networks, Inc. (SSNI) in January 2018. Our sales and marketing function was managed under each operating segment. Our research and development, service delivery, supply chain, and manufacturing operations were managed on a worldwide basis to promote a global perspective in our operations and processes and yet still maintains alignment with the operating segments.

Effective October 1, 2018, we reorganized our operational reporting segmentation from Electricity, Gas, Water, and Networks to Device Solutions, Networked Solutions, and Outcomes. Prior period segment results have been recast to conform to the new segment structure. As part of our reorganization, we integrated our recent acquisitions and are making investment decisions and implementing an organizational structure that aligns with the new segments. In conjunction with the rollout of our new operating segments, we unified our go-to-market strategy with a single, global sales force, which sells the full portfolio of Itron solutions, products, and services. We continue to manage our product development, service delivery, supply chain, and manufacturing operations on a worldwide basis to promote global, integrated oversight of our operations and to ensure consistency and interoperability between our operating segments. The reorganization of the business segments allows us to more effectively compete in our industry.

With this reorganization, we operate under the Itron brand worldwide and manage and report under the three operating segments: Device Solutions, Networked Solutions, and Outcomes.

We have three measures of segment performance: revenues, gross profit (gross margin), and operating income (operating margin). Intersegment revenues are minimal. Certain operating expenses are allocated to the operating segments based upon internally established allocation methodologies. Interest income, interest expense, other income (expense), income tax provision, and all corporate operating expenses, including restructuring, acquisition and integration, and amortization of intangible assets expenses, are neither allocated to the segments nor included in the measures of segment performance.

The following discussion includes financial information prepared in accordance with accounting principles generally accepted in the United States (GAAP), as well as certain adjusted or non-GAAP financial measures such as constant currency, free cash flow, non-GAAP operating expenses, non-GAAP operating income, non-GAAP net income, adjusted EBITDA, and non-GAAP diluted earnings per share (EPS). We believe that non-GAAP financial measures, when reviewed in conjunction with GAAP financial measures, can provide more information to assist investors in evaluating current period performance and in assessing future performance. For these reasons, our internal management reporting also includes non-GAAP measures. We strongly encourage investors and shareholders to review our financial statements and publicly-filed reports in their entirety and not to rely on any single financial measure. Non-GAAP measures as presented herein may not be comparable to similarly titled measures used by other companies.

In our discussions of the operating results below, we sometimes refer to the impact of foreign currency exchange rate fluctuations, which are references to the differences between the foreign currency exchange rates we use to convert operating results from local currencies into U.S. dollars for reporting purposes. We also use the term "constant currency," which represents results adjusted to exclude foreign currency exchange rate impacts. We calculate the constant currency change as the difference between the current period results translated using the current period currency exchange rates and the comparable prior period's results adjusted using current period currency exchange rates. We believe the reconciliations of changes in constant currency provide useful supplementary information to investors in light of fluctuations in foreign currency exchange rates.

Refer to the *Non-GAAP Measures* section below on pages 40-42 for information about these non-GAAP measures and the detailed reconciliation of items that impacted free cash flow, non-GAAP operating expenses, non-GAAP operating income, non-GAAP net income, adjusted EBITDA, and non-GAAP diluted EPS in the presented periods.

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Total Company Highlights

Highlights and significant developments for the twelve months ended December 31, 2018

- Revenues were $2.4 billion compared with $2.0 billion in the same period last year, an increase of $357.9 million, or 18%.
- Gross margin was 30.7% compared with 33.5% last year.
- Operating expenses increased $258.1 million, or 49% compared with 2017.
- Net loss attributable to Itron, Inc. was $99.3 million compared with net income of $57.3 million in 2017.
- Adjusted EBITDA increased $5.7 million, or 2% to $235.8 million, compared with 2017.
- GAAP diluted loss per share was $2.53 compared with diluted EPS of $1.45 in 2017.
- Non-GAAP diluted EPS was $2.65 compared with $3.06 in 2017.
- Total backlog was $3.2 billion and twelve-month backlog was $1.3 billion at December 31, 2018.

Silver Spring Networks, Inc. Acquisition
On January 5, 2018, we completed the acquisition of Silver Spring Networks, Inc. (SSNI) by purchasing all outstanding shares for $16.25 per share, resulting in a total purchase price, net of cash, of $809.2 million. SSNI provided standards-based wireless connectivity platforms and solutions to utilities and cities. The acquisition continues our focus on expanding management services and software-as-a-service solutions, which allows us to provide more value to our customers by optimizing devices, network technologies, outcomes and analytics. Upon acquisition, SSNI changed its name to Itron Networked Solutions, Inc. (INS), and initially operated separately as our Networks operating segment. Subsequent to the October 1, 2018 reorganization, the prior Networks operating segment was integrated into the new Networked Solutions and Outcomes operating segments.

In order to facilitate the funding of the acquisition of SSNI, we entered into a $1.2 billion senior secured credit facility (the 2018 credit facility), which amended and restated our existing senior secured credit facility. The 2018 credit facility consists of a $650 million U.S. dollar term loan and a multicurrency revolving line of credit with a principal amount of up to $500 million. We also issued $300 million of 5% senior notes on December 22, 2017 to fund this acquisition. On January 19, 2018, we issued an additional $100 million of 5% senior notes. For additional information regarding our 2018 credit facility and senior notes, refer to Item 8: "Financial Statements and Supplementary Data, Note 6: Debt".

We are also implementing an integration plan associated with this acquisition. For the year ended December 31, 2018, we recognized $91.9 million of acquisition and integration related expenses. We estimate annualized savings of $50 million at the conclusion of the integration plan, which we expect to substantially complete by the end of 2020. For further discussion of the acquisition, refer to Item 8: "Financial Statements and Supplementary Data, Note 17: Business Combinations".

2018 Restructuring Projects
On February 22, 2018, our Board of Directors approved a restructuring plan (2018 Projects) to continue our efforts to optimize our global supply chain and manufacturing operations, research and development, and sales and marketing organizations. We expect to substantially complete the plan by the end of 2020. We recognized restructuring expense

of $78.1 million related to the 2018 Projects during the year ended December 31, 2018, and we anticipate an additional $20.6 million to be recognized in future periods. At the conclusion of the 2018 Projects, we anticipate annualized savings of $45 million to $50 million. For further discussion of restructuring activities, refer to Item 8: "Financial Statements and Supplementary Data, Note 13: Restructuring".

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Total Company GAAP and Non-GAAP Highlights and Unit Shipments

	Year Ended December 31,				
	2018	% Change	2017	% Change	2016
	(in thousands, except margin and per share data)				
GAAP					
Revenues					
Product revenues	$2,095,458	16%	$1,813,925	(1)%	$1,830,070
Service revenues	280,659	37%	204,272	12%	183,116
Total revenues	2,376,117	18%	2,018,197	—%	2,013,186
Gross profit	730,319	8%	676,751	2%	662,532
Operating expenses	780,011	49%	521,874	(7)%	561,539
Operating income (loss)	(49,692)	(132)%	154,877	53%	100,993
Other income (expense)	(59,459)	193%	(20,302)	24%	(16,366)
Income tax benefit (provision)	12,570	(117)%	(74,326)	50%	(49,574)
Net income (loss) attributable to Itron, Inc.	(99,250)	(273)%	57,298	80%	31,770
Non-GAAP[(1)]					
Non-GAAP operating expenses	$539,199	13%	$477,532	(2)%	$487,534
Non-GAAP operating income	191,120	(4)%	199,219	14%	174,998
Non-GAAP net income attributable to Itron, Inc.	105,731	(12)%	120,486	23%	98,284
Adjusted EBITDA	235,826	2%	230,115	9%	211,211
GAAP Margins and Earnings Per Share					
Gross margin					
Product gross margin	29.5%		33.6%		32.4%
Service gross margin	39.7%		32.8%		37.9%
Total gross margin	30.7%		33.5%		32.9%
Operating margin	(2.1)%		7.7%		5.0%
Earnings (loss) per common share - Basic	$(2.53)		$1.48		$0.83
Earnings (loss) per common share - Diluted	$(2.53)		$1.45		$0.82
Non-GAAP Earnings Per Share[(1)]					
Non-GAAP diluted EPS	$2.65		$3.06		$2.54

(1) These measures exclude certain expenses that we do not believe are indicative of our core operating results. See pages 40-42 for information about these non-GAAP measures and reconciliations to the most comparable GAAP measures.

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Endpoints Summary

Our revenue is driven significantly by sales of endpoints. We classify our endpoints into two categories:

- *Standard Endpoints* – an Itron product with no built-in remote reading communication technology, which is delivered primarily via our Device Solutions segment. The majority of our standard devices are used for delivery and metrology in the electricity, water, and gas distribution industries.

- *Networked Endpoints* – an Itron product with one-way communication or two-way communication of data including remote device configuration and upgrade (consisting primarily of our OpenWay® or Gen X technology). This primarily includes Itron devices used in electricity, water, and gas distribution industries that are delivered via our Networked Solutions Segment. Networked endpoints also include smart communication modules and network interface cards (NICs). NICs are communicating modules that can be sold separately from the device directly to our customers or to third party manufacturers for use in endpoints such as electric, water, and gas meters; streetlights and smart city devices; sensors or another standard device that the end customer would like to connect to our OpenWay or Gen X Networked Solutions. These endpoints are primarily delivered via our Networked Solutions segment.

A summary of our endpoints shipped is as follows:

	Year Ended December 31, 2018	2017	2016
	(units in thousands)		
Itron Endpoints			
Standard endpoints	16,360	15,740	15,540
Networked endpoints	21,540	16,640	15,320
Total endpoints	37,900	32,380	30,860

Results of Operations

Revenues and Gross Margin

The actual results and effects of changes in foreign currency exchange rates in revenues and gross profit were as follows:

	Year Ended December 31, 2018	2017	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change(1)	Total Change
	(in thousands)				
Total Company					
Revenues	$2,376,117	$2,018,197	$ 15,886	$342,034	$357,920
Gross profit	730,319	676,751	5,404	48,164	53,568

	Year Ended December 31, 2017	2016	Effect of Changes in Foreign Currency Exchange	Constant Currency Change(1)	Total Change

			Rates		
(in thousands)					
Total Company					
Revenues	$2,018,197	$2,013,186	$ 11,639	$(6,628)	$5,011
Gross profit	676,751	662,532	1,042	13,177	14,219

(1) Constant currency change is a non-GAAP financial measure and represents the total change between periods excluding the effect of changes in foreign currency exchange rates.

Revenues

Revenues increased $357.9 million in 2018, compared with 2017 of which $353.0 million is related to our acquisition of SSNI. Product revenues increased $281.5 million in 2018, primarily in North America as a result of the SSNI acquisition as well as in our Europe, Middle East, and Africa (EMEA) region. This was partially offset by reduced product revenues in our Latin America and Asia Pacific regions during 2018. Service revenues increased $76.4 million in 2018 as compared with 2017, which was

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primarily driven by North America including the addition of SSNI. Changes in currency exchange rates favorably impacted revenues by $15.9 million in 2018.

Revenues increased $5.0 million in 2017 compared with 2016. Product revenues decreased $16.1 million in 2017 primarily in our North America and Europe, Middle East, and Africa (EMEA) regions. This was partially offset by improved product revenues in our Latin America and Asia Pacific regions during 2017. Service revenues increased $21.2 million in 2017 as compared with 2016, which was primarily driven by Comverge service revenues of $19.6 million. Changes in currency exchange rates favorably impacted revenues by $11.6 million in 2017. A more detailed analysis of these fluctuations, including analysis by segment, is provided in *Operating Segment Results.*

No single customer represented more than 10% of total revenues for the years ended December 31, 2018, 2017, and 2016. Our 10 largest customers accounted for 31%, 33%, and 31% of total revenues in 2018, 2017, and 2016, respectively.

Gross Margin

Gross margin was 30.7% for 2018, compared with 33.5% in 2017. Our gross margin associated with product sales decreased to 29.5% in 2018 from 33.6% in 2017 due to lower margin sales in EMEA for Device Solutions and North America for Networked Solutions . Gross margin associated with our service revenues increased to 39.7% from 32.8% in 2017 due to higher margin sales in our North America and EMEA regions.

Gross margin was 33.5% in 2017, compared with 32.9% in 2016. Our gross margin associated with product sales improved to 33.6% in 2017 from 32.4% in 2016 due to improved product mix, particularly in our Networked Solutions segment, and an $8.0 million insurance recovery in 2017 associated with warranty expenses previously recognized as a result of our 2015 communication module product replacement in our Networked Solutions segment. This recovery contributed 40 basis points to the gross margin improvement. Gross margin associated with our service revenues declined to 32.8% from 37.9% in 2016 due to lower margin sales in our EMEA region.

Operating Expenses

The following table shows the components of operating expense:

	Year Ended December 31,		Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change[1]	Total Change
	2018	2017			
	(in thousands)				
Total Company					
Sales, general and administrative	$423,210	$325,264	$ 3,880	$94,066	$97,946
Product development	207,905	169,407	2,573	35,925	38,498
Amortization of intangible assets	71,713	20,785	504	50,424	50,928
Restructuring	77,183	6,418	463	70,302	70,765
Total Operating expenses	$780,011	$521,874	$ 7,420	$250,717	$258,137

	Year Ended December 31,		Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change[1]	Total Change
	2017	2016			

	(in thousands)				
Total Company					
Sales, general and administrative	$325,264	$319,571	$ 4,254	$1,439	$5,693
Product development	169,407	167,766	(1,548)	3,189	1,641
Amortization of intangible assets	20,785	25,112	261	(4,588)	(4,327)
Restructuring	6,418	49,090	1,925	(44,597)	(42,672)
Total Operating expenses	$521,874	$561,539	$ 4,892	$(44,557)	$(39,665)

(1) Constant currency change is a non-GAAP financial measure and represents the total change between periods excluding the effect of changes in foreign currency exchange rates.

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Operating expenses increased $258.1 million for the year ended December 31, 2018 as compared with the same period in 2017. This was primarily due to increased restructuring expense following the announcement of the 2018 Projects in the first quarter of 2018, increased acquisition and integration related expenses included within sales, general and administrative expenses, and increased amortization of intangible asset and research and development expenses associated with the SSNI acquisition. These increases were partially offset by reduced variable compensation expense in 2018. Operating expenses were favorably impacted by $7.4 million due to the effect of changes in foreign currency exchange rates.

Operating expenses decreased $39.7 million for the year ended December 31, 2017 as compared with the same period in 2016. This was primarily related to a decrease of $42.7 million in restructuring expense, partially offset by $5.7 million in higher sales, general and administrative expenses.

Other Income (Expense)

The following table shows the components of other income (expense):

	Year Ended December 31,				
	2018	% Change	2017	% Change	2016
	(in thousands)		(in thousands)		(in thousands)
Interest income	$2,153	1%	$ 2,126	146%	$ 865
Interest expense	(51,157)	300%	(12,778)	3%	(12,445)
Amortization of prepaid debt fees	(7,046)	560%	(1,067)	(1)%	(1,076)
Other income (expense), net	(3,409)	(60)%	(8,583)	131%	(3,710)
Total Other income (expense)	$(59,459)	193%	$ (20,302)	24%	$ (16,366)

Total other income (expense) for the year ended December 31, 2018 was a net expense of $59.5 million compared with $20.3 million in 2017. The increases were related to the increase in interest expense and amortization of prepaid debt fees as a result of the funding from the 2018 credit facility and senior secured notes. In 2018, we had reduced losses, classified within other income (expense), resulting from foreign currency exchange fluctuations from transactions denominated in a currency other than our various subsidiary entities' functional currencies.

Total other income (expense) for the year ended December 31, 2017 was a net expense of $20.3 million compared with an expense of $16.4 million in 2016. The change for the year ended December 31, 2017 as compared with 2016 was due to fluctuations in the recognized foreign currency exchange gains and losses due to transactions denominated in a currency other than an entity's functional currency.

Income Tax Provision

Our income tax provision (benefit) was $(12.6) million, $74.3 million, and $49.6 million for the years ended December 31, 2018, 2017, and 2016, respectively. Our tax rate of 12% for the year ended December 31, 2018 differed from the U.S. federal statutory tax rate of 21% due primarily to the level of profit or losses in domestic and foreign jurisdictions, research and development tax credits, state income taxes, adjustments to valuation allowances, settlement of tax audits, and uncertain tax positions, among other items. Our tax rates of 55%, and 59% for the years ended December 31, 2017, and 2016 differed from the 35% U.S. federal statutory tax rate due to the level of profit or losses in domestic and foreign jurisdictions, new or revised tax legislation and accounting pronouncements, tax credits (including research and development and foreign tax), state income taxes, adjustments to valuation allowances, settlement of tax audits, and uncertain tax positions, among other items.

The tax provision for the year ended December 31, 2017 was significantly impacted by the inclusion of $30.4 million of expense for the provisional determination of the impact to our deferred tax positions of the Tax Cut and Jobs Act.

No material adjustments to these provisional amounts were recognized for the year ended December 31, 2018.

For additional discussion related to income taxes, see Item 8: "Financial Statements and Supplementary Data, Note 11: Income Taxes".

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Operating Segment Results

For a description of our operating segments, refer to Item 8: "Financial Statements and Supplementary Data, Note 16: Segment Information". The following tables and discussion highlight significant changes in trends or components of each operating segment:

	Year Ended December 31,				
	2018	% Change	2017	% Change	2016
Segment revenues	(in thousands)		(in thousands)		(in thousands)
Device Solutions	$933,365	6%	$882,896	(3)%	$913,521
Networked Solutions	1,224,144	29%	947,384	1%	939,681
Outcomes	218,608	16%	187,917	17%	159,984
Total revenues	$2,376,117	18%	$2,018,197	—%	$2,013,186

	Year Ended December 31,					
	2018		2017		2016	
	Gross Profit	*Gross Margin*	*Gross Profit*	*Gross Margin*	*Gross Profit*	*Gross Margin*
Segment gross profit and margin	(in thousands)		(in thousands)		(in thousands)	
Device Solutions	$187,254	20.1%	$216,631	24.5%	$232,896	25.5%
Networked Solutions	482,471	39.4%	412,375	43.5%	378,382	40.3%
Outcomes	60,594	27.7%	47,745	25.4%	51,254	32.0%
Total gross profit and margin	$730,319	30.7%	$676,751	33.5%	$662,532	32.9%

	Year Ended December 31,				
	2018	% Change	2017	% Change	2016
Segment operating expenses	(in thousands)		(in thousands)		(in thousands)
Device Solutions	$56,266	(1)%	$56,990	4%	$54,735
Networked Solutions	121,692	35%	90,008	3%	87,147
Outcomes	43,960	3%	42,830	22%	35,015
Corporate unallocated	558,093	68%	332,046	(14)%	384,642
Total operating expenses	$780,011	49%	$521,874	(7)%	$561,539

	Year Ended December 31,					
	2018		2017		2016	
	Operating Income (Loss)	*Operating Margin*	*Operating Income (Loss)*	*Operating Margin*	*Operating Income (Loss)*	*Operating Margin*
Segment operating income (loss) and operating margin	(in thousands)		(in thousands)		(in thousands)	
Device Solutions	$130,988	14.0%	$159,641	18.1%	$178,161	19.5%
Networked Solutions	360,779	29.5%	322,367	34.0%	291,235	31.0%
Outcomes	16,634	7.6%	4,915	2.6%	16,239	10.2%
Corporate unallocated	(558,093)		(332,046)		(384,642)	
Total operating income (loss) and operating margin	$(49,692)	(2.1)%	$154,877	7.7%	$100,993	5.0%

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Device Solutions:

The effects of changes in foreign currency exchange rates and the constant currency changes in certain Device Solutions segment financial results were as follows:

	Year Ended December 31,		Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change(1)	Total Change
	2018	2017			
	(in thousands)				
Device Solutions Segment					
Revenues	$933,365	$882,896	$ 9,775	$40,694	$50,469
Gross profit	187,254	216,631	1,484	(30,861)	(29,377)
Operating expenses	56,266	56,990	866	(1,590)	(724)

	Year Ended December 31,		Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change(1)	Total Change
	2017	2016			
	(in thousands)				
Device Solutions Segment					
Revenues	$882,896	$913,521	$ 8,847	$(39,472)	$(30,625)
Gross profit	216,631	232,896	(356)	(15,909)	(16,265)
Operating expenses	56,990	54,735	531	1,724	2,255

(1) Constant currency change is a non-GAAP financial measure and represents the total change between periods excluding the effect of changes in foreign currency exchange rates.

Revenues - 2018 vs. 2017
Revenues increased by $50.5 million in 2018, or 6%, compared with 2017. This was a result of an increased meter deployment in EMEA and increased product sales in Latin America. The improvements were partially offset by a decline in product sales in North America.

Revenues - 2017 vs. 2016
Revenues decreased by $30.6 million in 2017, or 3%, compared with 2016. This was a result of completion of various contracts in North America and EMEA partly offset by increased product revenue in EMEA.

Gross Margin - 2018 vs. 2017
Gross margin was 20.1% in 2018, compared with 24.5% in 2017. The 440 basis point deterioration compared with the prior year was due to unfavorable product mix, supply chain transition inefficiencies, increased component costs, as well as higher warranty charges in 2018.

Gross Margin - 2017 vs. 2016
Gross margin was 24.5% in 2017, compared with 25.5% in 2016. The 100 basis point deterioration over the prior year was primarily the result of unfavorable product mix.

Operating Expenses - 2018 vs. 2017
Operating expenses decreased $0.7 million, or 1%. The decrease was primarily due to lower product development expense.

Operating Expenses - 2017 vs. 2016
Operating expenses increased by $2.3 million, or 4%. The increase was primarily due to higher product marketing expense partially offset by lower product development expense.

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Networked Solutions:

The effects of changes in foreign currency exchange rates and the constant currency changes in certain Networked Solutions segment financial results were as follows:

	Year Ended December 31, 2018	2017	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change[1]	Total Change
	(in thousands)				
Networked Solutions Segment					
Revenues	$1,224,144	$947,384	$ 5,003	$ 271,757	$276,760
Gross profit	482,471	412,375	3,820	66,276	70,096
Operating expenses	121,692	90,008	68	31,616	31,684

	Year Ended December 31, 2017	2016	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change[1]	Total Change
	(in thousands)				
Networked Solutions Segment					
Revenues	$947,384	$939,681	$ 3,558	$ 4,145	$7,703
Gross profit	412,375	378,382	1,611	32,382	33,993
Operating expenses	90,008	87,147	(5)	2,866	2,861

(1) Constant currency change is a non-GAAP financial measure and represents the total change between periods excluding the effect of changes in foreign currency exchange rates.

Revenues - 2018 vs. 2017
Revenues increased by $276.8 million, or 29%, in 2018 compared with 2017. This increase in revenues was primarily related to the acquisition of SSNI, partially offset by decrease in product revenue due to completion of significant projects in the prior year.

Revenues - 2017 vs. 2016
Revenues increased by $7.7 million, or 1%, in 2017 compared with 2016. This increase in revenue was primarily driven by increase in smart metering revenues in North America, partially offset by the completion of significant projects in the prior year.

Gross Margin - 2018 vs. 2017
Gross margin was 39.4% in 2018, compared with 43.5% in 2017. The decrease of 410 basis points was driven by unfavorable product mix, as well as higher warranty expenses in 2018 due to the insurance recovery received in 2017.

Gross Margin - 2017 vs. 2016
Gross margin was 43.5% in 2017, compared with 40.3% in 2016. The increase of 320 basis points was primarily driven by favorable product mix as well as lower warranty expenses due to the insurance recovery received in 2017.

Operating Expenses - 2018 vs. 2017
Operating expenses increased by $31.7 million, or 35%, in 2018. The increase was primarily due to higher product development expenses due to our acquisition of SSNI in 2018.

Operating Expenses - 2017 vs. 2016
Operating expenses increased by $2.9 million, or 3% in 2017. The increase in product marketing and product development was related to variable compensation and professional service expenses.

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Outcomes:

The effects of changes in foreign currency exchange rates and the constant currency changes in certain Outcomes segment financial results were as follows:

	Year Ended December 31,		**Effect of Changes in Foreign Currency Exchange Rates**	**Constant Currency Change(1)**	**Total Change**
	2018	**2017**			
	(in thousands)				
Outcomes Segment					
Revenues	$218,608	$187,917	$ 1,109	$ 29,582	$30,691
Gross profit	60,594	47,745	755	12,094	12,849
Operating expenses	43,960	42,830	148	982	1,130

	Year Ended December 31,		**Effect of Changes in Foreign Currency Exchange Rates**	**Constant Currency Change(1)**	**Total Change**
	2017	**2016**			
	(in thousands)				
Outcomes Segment					
Revenues	$187,917	$159,984	$ (766)	$ 28,699	$27,933
Gross profit	47,745	51,254	(865)	(2,644)	(3,509)
Operating expenses	42,830	35,015	(26)	7,841	7,815

(1) Constant currency change is a non-GAAP financial measure and represents the total change between periods excluding the effect of changes in foreign currency exchange rates.

Revenues - 2018 vs. 2017
Revenues increased $30.7 million, or 16%, in 2018. This increase was primarily due to the acquisition of SSNI and a full year of revenue incurred from the acquisition of Peak Holding Corp. (Comverge). This increase was partially offset by decrease in service revenue in EMEA and North America.

Revenues - 2017 vs. 2016
Revenues increased $27.9 million, or 17%, in 2017. This was the result of increased revenue in North America due to the Comverge acquisition. This was partially offset by decline in service revenues in EMEA.

Gross Margin - 2018 vs. 2017
Gross margin increased to 27.7% in 2018, compared with 25.4% in 2017. The 230 basis point increase was driven by the acquisition of SSNI and partially offset by lower margin services in EMEA and North America.

Gross Margin - 2017 vs. 2016
Gross margin decreased to 25.4% in 2017, compared with 32.0% in 2016. The 660 basis point decrease was driven by an increase in investment spending within managed services to support growth initiatives and a decline in services in EMEA.

Operating Expenses - 2018 vs. 2017
Operating expenses increased $1.1 million, or 3%, in 2018. The increase was due to higher product development expense.

Operating Expenses - 2017 vs. 2016
Operating expenses increased by $7.8 million, or 22% in 2017. The increase was primarily due to higher product marketing and product development expense related to the Comverge acquisition.

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Corporate unallocated:

Operating expenses not directly associated with an operating segment are classified as "Corporate unallocated." These expenses increased $226.0 million, or 68%, in 2018 as compared with 2017. The increase was primarily due to higher acquisition and integration expense related to the SSNI acquisition of $74.8 million and restructuring expense for the 2018 Projects of $78.1 million. In addition, as a result of the SSNI acquisition, amortization of intangible assets increased by $50.9 million, as well as higher sales, general and administrative expenses. These increases were partially offset by lower variable compensation expense.

Corporate unallocated expenses decreased $52.6 million, or 14%, in 2017 as compared with 2016. The decrease was primarily in lower restructuring expense for the 2016 Projects of $42.7 million and professional fees associated with audit, accounting, and legal services, partially offset by an increase in acquisition and integration related expenses of $17.3 million.

Financial Condition

Cash Flow Information:

	Year Ended December 31,		
	2018	**2017**	**2016**
	(in thousands)		
Operating activities	$ 109,755	$ 191,354	$ 115,842
Investing activities	(862,658)	(148,179)	(47,528)
Financing activities	395,821	301,959	(63,023)
Effect of exchange rates on cash, cash equivalents, and restricted cash	(7,925)	8,636	(2,744)
(Decrease) increase in cash, cash equivalents, and restricted cash	$ (365,007)	$ 353,770	$ 2,547

Cash, cash equivalents, and restricted cash at December 31, 2018 were $122.3 million, compared with $487.3 million at December 31, 2017. The $365.0 million decrease in cash, cash equivalents, and restricted cash was primarily the result of investing activities related to our acquisition of SSNI and a decrease in cash flows provided by operating activities, due to SSNI acquisition and integration, and restructuring costs, partially offset by increased net proceeds from borrowings associated with financing the acquisition of SSNI of $109.6 million.

Cash, cash equivalents, and restricted cash at December 31, 2017 were $487.3 million compared with $133.6 million at December 31, 2016. The $353.8 million increase in cash, cash equivalents, and restricted cash was primarily the result of our net financing activities in anticipation of our acquisitions of SSNI, as well as an increase in cash flow provided by operating activities. The overall increase was partially offset by the acquisition of Comverge in 2017.

Operating activities

Net cash provided by operating activities in 2018 was $81.6 million lower than in 2017. This decrease was primarily due to a reduction in net income (loss) adjusted for non-cash items and changes in operating asset and liabilities. Net loss for the year ended December 31, 2018 includes $91.9 million of acquisition and integration related expenses, the majority of which were paid in cash. In addition, cash provided from accounts payable decreased $48.9 million primarily due to the timing of payments in 2017. While warranty liabilities increased $25.6 million in 2018, cash paid for claims activity was lower compared with 2017, resulting in a $31.4 million decrease in use of cash.

Net cash provided by operating activities in 2017 was $75.5 million higher than 2016. This increase was due to an improvement in net income adjusted for non-cash items and changes in operating asset and liabilities. Favorable adjustments include a $115.8 million reduction in cash used for accounts payable, other current liabilities, and taxes payable primarily due to the timing of payments and a litigation payment made during the year ended December 31, 2016. Unfavorable adjustments include a $38.6 million increase in use of cash to purchase inventory, primarily related to our strategic sourcing projects and related manufacturing and supplier transitions during the year ended December 31, 2017.

Investing activities

Net cash used in investing activities in 2018 was $714.5 million higher than in 2017. This increased use of cash was primarily related to our acquisition of SSNI during the year ended December 31, 2018, partially offset by reduction of cash used for the Comverge acquisition.

Net cash used in investing activities in 2017 was $100.7 million higher than in 2016. This increase use of cash was primarily related to our acquisition of Comverge during the year ended December 31, 2017.

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Financing activities
Net cash provided by financing activities in 2018 was $93.9 million higher than in 2017. The increase in cash provided by financing activities was primarily caused by $778.9 million of proceeds from borrowings utilized for the acquisition of SSNI in 2018. This was partially offset by $363.4 million use of cash for debt repayment, and $24.0 million use of cash for debt issuance costs.

Net cash provided by financing activities in 2017 was $302.0 million, compared with a net use of cash of $63.0 million in 2016. The increase in cash provided by financing activities was primarily caused by the issuance of $300 million of senior notes at the end of 2017 to finance the acquisition of SSNI. In addition, net debt repayments for the year ended December 31, 2016 were $54.9 million greater than in 2017, as cash provided from operating activities in 2017 was retained and used for the acquisitions of Comverge and SSNI.

Effect of exchange rates on cash and cash equivalents
Changes in exchange rates on the cash balances of currencies held in foreign denominations resulted in a decrease of $7.9 million, an increase of $8.6 million, and a decrease of $2.7 million in 2018, 2017, and 2016, respectively. Our foreign currency exposure relates to non-U.S. dollar denominated balances in our international subsidiary operations, the most significant of which is the Euro.

Free cash flow (Non-GAAP)
To supplement our Consolidated Statements of Cash Flows presented on a GAAP basis, we use the non-GAAP measure of free cash flow to analyze cash flows generated from our operations. The presentation of non-GAAP free cash flow is not meant to be considered in isolation or as an alternative to net income as an indicator of our performance, or as an alternative to cash flows from operating activities as a measure of liquidity. We calculate free cash flows, using amounts from our Consolidated Statements of Cash Flows, as follows:

	Year Ended December 31,		
	2018	**2017**	**2016**
	(in thousands)		
Net cash provided by operating activities	$109,755	$191,354	$115,842
Acquisitions of property, plant, and equipment	(59,952)	(49,495)	(43,543)
Free cash flow	$49,803	$141,859	$72,299

Free cash flow fluctuated primarily as a result of changes in cash provided by operating activities. See the cash flow discussion of operating activities above.

Off-balance sheet arrangements:

We have no off-balance sheet financing agreements or guarantees as defined by Item 303 of Regulation S-K at December 31, 2018 and December 31, 2017 that we believe are reasonably likely to have a current or future effect on our financial condition, results of operations, or cash flows.

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Disclosures about contractual obligations and commitments:

The following table summarizes our known obligations to make future payments pursuant to certain contracts as of December 31, 2018, as well as an estimate of the timing in which these obligations are expected to be satisfied.

	Total	Less than 1 year	1-3 years	3-5 years	Beyond 5 years
	(in thousands)				
Credit facility[1]					
USD denominated term loan	$734,259	$55,795	$154,129	$524,335	$—
Multicurrency revolving line of credit	—	—	—	—	—
Senior notes [5]	550,000	20,000	40,000	40,000	450,000
Operating lease obligations[2]	90,059	17,456	26,241	19,659	26,703
Purchase and service commitments[3]	319,791	306,287	13,220	284	—
Other long-term liabilities reflected on the balance sheet under generally accepted accounting principles[4]	129,913	—	88,786	11,663	29,464
Total	$1,824,022	$399,538	$322,376	$595,941	$506,167

(1) Borrowings are disclosed within Item 8: "Financial Statements and Supplementary Data, Note 6: Debt".

(2) Operating lease obligations are disclosed in Item 8: "Financial Statements and Supplementary Data, Note 12: Commitments and Contingencies" and do not include common area maintenance charges, real estate taxes, and insurance charges for which we are obligated.

(3) We enter into standard purchase orders in the ordinary course of business that typically obligate us to purchase materials and other items. Purchase orders can include open-ended agreements that provide for estimated quantities over an extended shipment period, typically up to one year at an established unit cost. Our long-term executory purchase agreements that contain termination clauses have been classified as less than one year, as the commitments are the estimated amounts we would be required to pay at December 31, 2018 if the commitments were canceled.

(4) Other long-term liabilities consist of warranty obligations, estimated pension benefit payments, and other obligations. Estimated pension benefit payments include amounts from 2019-2027. Long-term unrecognized tax benefits totaling $18.6 million (net of pre-payments), which include accrued interest and penalties, are not included in the above contractual obligations and commitments table as we cannot reliably estimate the period of cash settlement with the respective taxing authorities. Additionally, because the amount and timing of the future cash outflows are uncertain, unearned revenue totaling $35.3 million, which includes unearned revenue related to extended warranty guarantees, is not included in the table. For further information on defined benefit pension plans, income taxes, warranty obligations, and unearned revenue for extended warranties, see Item 8: "Financial Statements and Supplementary Data, Note 8: Defined Benefit Pension Plans, Note 11: Income Taxes, Note 12: Commitments and Contingencies, and Note 18: Revenues," respectively.

(5) Amount includes principal and interest.

Liquidity and Capital Resources:

Our principal sources of liquidity are cash flows from operations, borrowings, and sales of common stock. Cash flows may fluctuate and are sensitive to many factors including changes in working capital and the timing and magnitude of capital expenditures and payments of debt. Working capital, which represents current assets less current liabilities, was $243.4 million at December 31, 2018.

Borrowings

On January 5, 2018, we entered into a credit agreement providing for committed credit facilities in the amount of $1.2 billion U.S. dollars (the 2018 credit facility) which amended and restated in its entirety our credit agreement dated June 23, 2015 and replaced committed facilities in the amount of $725 million. The 2018 credit facility consists of a $650 million U.S. dollar term loan (the term loan) and a multicurrency revolving line of credit (the revolver) with a principal amount of up to $500 million. The revolver also contains a $300 million standby letter of credit sub-facility and a $50 million swingline sub-facility. At December 31, 2018, no amount was outstanding under the 2018 credit facility revolver, and $41 million was utilized by outstanding standby letters of credit, resulting in $459 million available for additional borrowings or standby letters of credit. At December 31, 2018, $259 million was available for additional standby letters of credit under the letter of credit sub-facility and no amounts were outstanding under the swingline sub-facility. Both the term loan and the revolver mature on January 5, 2023 and can be repaid without penalty. Amounts repaid on the term loan may not be reborrowed and amounts borrowed under the revolver may be repaid and reborrowed until the revolver's maturity, at which time all outstanding loans together with all accrued and unpaid interest must be repaid.

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For further description of our borrowings, refer to Item 8: "Financial Statements and Supplementary Data, Note 6: Debt". For a description of our letters of credit and performance bonds, and the amounts available for additional borrowings or letters of credit under our lines of credit, including the revolver that is part of our credit facility, refer to Item 8: "Financial Statements and Supplementary Data, Note 12: Commitments and Contingencies".

Silver Spring Networks, Inc. Acquisition

As part of the acquisition of SSNI, we announced an integration plan to obtain approximately $50 million of annualized savings by the end of 2020. We have recognized $91.9 million of the acquisition and integration related expenses for the year ended December 31, 2018, of which $9.6 million was accrued as a current liability within wages and benefits payable and $3.1 million as a noncurrent liability within other long-term obligations. We also expect to recognize an additional $15 million to $25 million of expenses in future periods, of which approximately 95% will be cash outlays. The majority of the additional expenses are expected to be recognized over the next 12 months.

Restructuring

As of December 31, 2018, $75.6 million was accrued for the restructuring projects, of which $36.0 million is expected to be paid over the next 12 months. We also expect to recognize approximately $22 million in future restructuring costs, which will result in cash expenditures.

For further details regarding our restructuring activities, refer to Item 8: "Financial Statements and Supplementary Data, Note 13: Restructuring".

Income Tax

Our tax provision as a percentage of income before tax typically differs from the U.S. federal statutory rate of 21%. Changes in our actual tax rate are subject to several factors, including fluctuations in operating results, new or revised tax legislation and accounting pronouncements, changes in the level of business in domestic and foreign jurisdictions, research and development tax credits, state income taxes, adjustments to valuation allowances, settlement of tax audits, and uncertain tax positions, among other items. Changes in tax laws, valuation allowances, and unanticipated tax liabilities could significantly impact our tax rate.

Our cash income tax payments were as follows:

	Year Ended December 31,		
	2018	**2017**	**2016**
	(in thousands)		
U.S. federal taxes paid	$1,339	$17,500	$9,000
State income taxes paid	1,534	4,636	4,526
Foreign and local income taxes paid	10,898	6,833	10,761
Total income taxes paid	$13,771	$28,969	$24,287

Based on current projections, we expect to pay, net of refunds, approximately $15 million in foreign and local income taxes in 2019. We do not expect to pay any U.S. federal or state taxes.

As of December 31, 2018, there was $35.6 million of cash and short-term investments held by certain foreign subsidiaries in which we are permanently reinvested for tax purposes. As a result of recent changes in U.S. tax legislation, any repatriation in the future would not result in U.S. federal income tax. Accordingly, there is no provision for U.S. deferred taxes on this cash. If this cash were repatriated to fund U.S. operations, additional withholding tax costs may be incurred. Tax is only one of many factors that we consider in the management of global cash. Accordingly, the amount of taxes that we would need to accrue and pay to repatriate foreign cash could vary significantly.

Other Liquidity Considerations

Among our consolidated international subsidiaries, we have joint venture partners who are minority shareholders. Although these entities are not wholly-owned by Itron, Inc., we consolidate them because we have a greater than 50% ownership interest and/or because we exercise control over the operations. The noncontrolling interest balance in our Consolidated Balance Sheets represents the proportional share of the equity of the joint venture entities which is attributable to the minority shareholders. At December 31, 2018, $10.5 million of our consolidated cash balance is held in our joint venture entities. As a result, the minority shareholders of these entities have rights to their proportional share of this cash balance, and there may be limitations on our ability to repatriate cash to the United States from these entities.

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At December 31, 2018, we have accrued $4.9 million of bonus and profit sharing plans expense for the expected achievement of financial and nonfinancial targets, which we expect to pay in cash during the first quarter of 2019.

General Liquidity Overview

We expect to grow through a combination of internal new product development, licensing technology from and to others, distribution agreements, partnering arrangements, and acquisitions of technology or other companies. We expect these activities to be funded with existing cash, cash flow from operations, borrowings, or the sale of common stock or other securities. We believe existing sources of liquidity will be sufficient to fund our existing operations and obligations for the next 12 months and into the foreseeable future, but offer no assurances. Our liquidity could be affected by the stability of the electricity, gas, and water industries, competitive pressures, our dependence on certain key vendors and components, changes in estimated liabilities for product warranties and/or litigation, future business combinations, capital market fluctuations, international risks, and other factors described under Item 1A: "Risk Factors," as well as Item 7A: "Quantitative and Qualitative Disclosures About Market Risk".

Contingencies

Refer to Item 8: "Financial Statements and Supplementary Data, Note 12: Commitments and Contingencies".

Critical Accounting Estimates and Policies

Our consolidated financial statements and accompanying notes are prepared in accordance with GAAP. Preparing consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, and expenses. These estimates and assumptions are affected by management's application of accounting policies. Critical accounting policies for us include revenue recognition, warranty, restructuring, income taxes, business combinations, goodwill and intangible assets, defined benefit pension plans, contingencies, and stock-based compensation. Refer to Item 8: "Financial Statements and Supplementary Data, Note 1: Summary of Significant Accounting Policies" for further disclosures regarding accounting policies and new accounting pronouncements.

Revenue Recognition

Many of our revenue arrangements involve multiple performance obligations, which require us to determine the standalone selling price of the promised goods or services underlying each performance obligation and then allocate the total arrangement consideration among the separate performance obligations based on the relative standalone selling price. Revenues for each performance obligation are then recognized upon transfer of control to the customer at a point in time as products are shipped or received by a customer, or over time as services are delivered. The majority of our revenue is recognized at a point in time when products are shipped to or received by a customer. Professional services, which include implementation, project management, installation, and consulting services are recognized over time. We measure progress towards satisfying these performance obligations using input methods, most commonly based on the costs incurred in relation to the total expected costs to provide the service. The estimate of expected costs to provide services requires judgment. Cost estimates take into consideration past history and the specific scope requested by the customer and are updated quarterly. Other variables impacting our estimate of costs to complete include length of time to complete, changes in wages, subcontractor performance, supplier information, and business volume assumptions. Changes in underlying assumptions and estimates may adversely or favorably affect financial performance.

If we estimate that the completion of a performance obligation will result in a loss, then the loss is recognized in the period in which the loss becomes evident. We reevaluate the estimated loss through the completion of the performance obligation and adjust the estimated loss for changes in facts and circumstances.

Many of our contracts with customers include variable consideration, which can include liquidated damage provisions, rebates and volume and early payment discounts, or software licenses sold where the amount of consideration is dependent on the number of endpoints deployed. We estimate variable consideration using the expected value method, taking into consideration contract terms, historical customer behavior and historical sales.

Some of our contracts with customers contain clauses for liquidated damages related to the timing of delivery or milestone accomplishments, which could become material in an event of failure to meet the contractual deadlines. At the inception of the arrangement and on an ongoing basis, we evaluate the probability and magnitude of having to pay liquidated damages. In the case of liquidated damages, we also take into consideration progress towards meeting contractual milestones, including whether milestones have not been achieved, specified rates, if applicable, stated in the contract, and history of paying liquidated damages to the customer or similar customers.

Certain of our revenue arrangements include an extended or noncustomary warranty provision that covers all or a portion of a customer's replacement or repair costs beyond the standard or customary warranty period. Whether or not the extended warranty is separately priced in the arrangement, a portion of the arrangement's total consideration is allocated to this extended warranty deliverable. This revenue is deferred and recognized over the extended warranty coverage period. Extended or noncustomary warranties do not represent a significant portion of our revenue.

We allocate consideration to each performance obligation in an arrangement based on its relative standalone selling price. For goods or services where we have observable standalone sales, the observable standalone sales are used to determine the standalone selling price. For the majority of our goods and services, we do not have observable standalone sales. As a result, we estimate the standalone selling price using either the adjusted market assessment approach or the expected cost plus a margin approach. Approaches used to estimate the standalone selling price for a given good or service will maximize the use of observable inputs and considers several factors, including our pricing practices, costs to provide a good or service, the type of good or service, and availability of other transactional data, among others.

We determine the estimated standalone selling prices of goods or services used in our allocation of arrangement consideration on an annual basis or more frequently if there is a significant change in our business or if we experience significant variances in our transaction prices.

Warranty

We offer standard warranties on our hardware products and large application software products. We accrue the estimated cost of new product warranties based on historical and projected product performance trends and costs during the warranty period. Testing of new products in the development stage helps identify and correct potential warranty issues prior to manufacturing. Quality control efforts during manufacturing reduce our exposure to warranty claims. When testing or quality control efforts fail to detect a fault in one of our products, we may experience an increase in warranty claims. We track warranty claims to identify potential warranty trends. If an unusual trend is noted, an additional warranty accrual would be recognized if a failure event is probable and the cost can be reasonably estimated. When new products are introduced, our process relies on historical averages of similar products until sufficient data are available. As actual experience on new products becomes available, it is used to modify the historical averages to ensure the expected warranty costs are within a range of likely outcomes. Management regularly evaluates the sufficiency of the warranty provisions and makes adjustments when necessary. The warranty allowances may fluctuate due to changes in estimates for material, labor, and other costs we may incur to repair or replace projected product failures, and we may incur additional warranty and related expenses in the future with respect to new or established products, which could adversely affect our financial position and results of operations.

Restructuring

We recognize a liability for costs associated with an exit or disposal activity under a restructuring project at its fair value in the period in which the liability is incurred. Employee termination benefits considered post-employment benefits are accrued when the obligation is probable and estimable, such as benefits stipulated by human resource policies and practices or statutory requirements. One-time termination benefits are recognized at the date the employee is notified. If the employee must provide future service greater than 60 days, such benefits are recognized ratably over the future service period. For contract termination costs, we recognize a liability upon the later of when we terminate a contract in accordance with the contract terms or when we cease using the rights conveyed by the contract.

Asset impairments associated with a restructuring project are determined at the asset group level. An impairment may be recognized for assets that are to be abandoned, are to be sold for less than net book value, or are held for sale in which the estimated proceeds are less than the net book value less costs to sell. We may also recognize impairment on an asset group, which is held and used, when the carrying value is not recoverable and exceeds the asset group's fair value. If an asset group is considered a business, a portion of our goodwill balance is allocated to it based on relative fair value. If the sale of an asset group under a restructuring project results in proceeds that exceed the net book value of the asset group, the resulting gain is recognized within restructuring expense in the Consolidated Statements of Operations.

In determining restructuring charges, we analyze our future operating requirements, including the required headcount by business functions and facility space requirements. Our restructuring costs and any resulting accruals involve significant estimates using the best information available at the time the estimates are made. Our estimates involve a number of risks and uncertainties, some of which are beyond our control, including real estate market conditions and local labor and employment laws, rules, and regulations. If the amounts and timing of cash flows from restructuring activities are significantly different from what we have estimated, the actual amount of restructuring and asset impairment charges could be materially different, either higher or lower, than those we have recognized.

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Income Taxes
We estimate income tax expense in each of the taxing jurisdictions in which we operate. Changes in our actual tax rate are subject to several factors, including fluctuations in operating results, new or revised tax legislation and accounting pronouncements, changes in the level of business in domestic and foreign jurisdictions, research and development tax credits state income taxes, adjustments to valuation allowances, settlement of tax audits, and uncertain tax positions, among other items. Changes in tax laws, valuation allowances, and unanticipated tax liabilities could significantly impact our tax rate.

We recognize valuation allowances to reduce deferred tax assets to the extent we believe it is more likely than not that a portion of such assets will not be realized. In making such determinations, we consider all available favorable and unfavorable evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies, and our ability to carry back losses to prior years. We are required to make assumptions and judgments about potential outcomes that lie outside our control. Our most sensitive and critical factors are the projection, source, and character of future taxable income. Although realization is not assured, management believes it is more likely than not that deferred tax assets, net of valuation allowance, will be realized. The amount of deferred tax assets considered realizable, however, could be reduced in the near term if estimates of future taxable income during the carryforward periods are reduced or current tax planning strategies are not implemented.

We are subject to audits in multiple taxing jurisdictions in which we operate. These audits may involve complex issues, which may require an extended period of time to resolve. We believe we have recognized adequate income tax provisions and reserves for uncertain tax positions.

In evaluating uncertain tax positions, we consider the relative risks and merits of positions taken in tax returns filed and to be filed, considering statutory, judicial, and regulatory guidance applicable to those positions. We make assumptions and judgments about potential outcomes that lie outside management's control. To the extent the tax authorities disagree with our conclusions and depending on the final resolution of those disagreements, our actual tax rate may be materially affected in the period of final settlement with the tax authorities.

Business Combinations
On the date of acquisition, the assets acquired, liabilities assumed, and any noncontrolling interests in the acquiree are recognized at their fair values. The acquiree's results of operations are also included as of the date of acquisition in our consolidated results. Intangible assets that arise from contractual/legal rights, or are capable of being separated, as well as in-process research and development (IPR&D), are measured and recognized at fair value, and amortized over the estimated useful life. IPR&D is not amortized until such time as the associated development projects are completed or terminated. If a development project is completed, the IPR&D is reclassified as a core technology intangible asset and amortized over its estimated useful life. If the development project is terminated, the recognized value of the associated IPR&D is immediately recognized. If practicable, assets acquired and liabilities assumed arising from contingencies are measured and recognized at fair value. If not practicable, such assets and liabilities are measured and recognized when it is probable that a gain or loss has occurred, and the amount can be reasonably estimated. The residual balance of the purchase price, after fair value allocations to all identified assets and liabilities, represents goodwill. Acquisition-related costs are recognized as incurred. Integration costs associated with an acquisition are generally recognized in periods subsequent to the acquisition date, and changes in deferred tax asset valuation allowances and acquired income tax uncertainties, including penalties and interest, after the measurement period are recognized as a component of the provision for income taxes. Our acquisitions may include contingent consideration, which require us to recognize the fair value of the estimated liability at the time of the acquisition. Subsequent changes in the estimate of the amount to be paid under the contingent consideration arrangement are recognized in the Consolidated Statements of Operations.

We estimate the preliminary fair value of acquired assets and liabilities as of the date of acquisition based on information available at that time utilizing either a cost or income approach. These estimates are subject to variability in future cash flows. Contingent consideration is recognized at fair value as of the date of the acquisition with adjustments occurring after the purchase price allocation period, which could be up to one year, recognized in earnings. Changes to valuation allowances on acquired deferred tax assets that occur after the acquisition date are recognized in the provision for, or benefit from, income taxes. The valuation of these tangible and identifiable intangible assets and liabilities is subject to further management review and may change materially between the preliminary allocation and end of the purchase price allocation period. Any changes in these estimates may have a material effect on our consolidated operating results or financial position.

Goodwill and Intangible Assets

Goodwill and intangible assets may result from our business acquisitions. Intangible assets may also result from the purchase of assets and intellectual property where we do not acquire a business. We use estimates, including estimates of useful lives of intangible assets, the amount and timing of related future cash flows, and fair values of the related operations, in determining the value assigned to goodwill and intangible assets. Our finite-lived intangible assets are amortized over their estimated useful lives based on estimated discounted cash flows. In-process research and development (IPR&D) is considered an indefinite-lived

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intangible asset and is not subject to amortization until the associated projects are completed or terminated. Finite-lived intangible assets are tested for impairment at the asset group level when events or changes in circumstances indicate the carrying value may not be recoverable. Indefinite-lived intangible assets are tested for impairment annually, when events or changes in circumstances indicate the asset may be impaired, or at the time when their useful lives are determined to be no longer indefinite.

Goodwill is assigned to our reporting units based on the expected benefit from the synergies arising from each business combination, determined by using certain financial metrics, including the forecast discounted cash flows associated with each reporting unit. Each reporting unit corresponds with its respective operating segment.

We test goodwill for impairment each year as of October 1, or more frequently should a significant impairment indicator occur. As part of the impairment test, we may elect to perform an assessment of qualitative factors. If this qualitative assessment indicates that it is more likely than not that the fair value of a reporting unit, including goodwill, is less than its carrying amount, or if we elect to bypass the qualitative assessment, we would then proceed with the impairment test. The impairment test involves comparing the fair values of the reporting units to their carrying amounts. If the carrying amount of a reporting unit exceeds its fair value an impairment loss is recognized in an amount equal to the excess.

Determining the fair value of a reporting unit is judgmental in nature and involves the use of significant estimates and assumptions. We forecast discounted future cash flows at the reporting unit level using risk-adjusted discount rates and estimated future revenues and operating costs, which take into consideration factors such as existing backlog, expected future orders, supplier contracts, and expectations of competitive and economic environments. We also identify similar publicly traded companies and develop a correlation, referred to as a multiple, to apply to the operating results of the reporting units. These combined fair values are then reconciled to the aggregate market value of our common stock on the date of valuation, while considering a reasonable control premium.

Changes in market demand, fluctuations in the economies in which we operate, the volatility and decline in the worldwide equity markets, and a decline in our market capitalization could unfavorably impact the remaining carrying value of our goodwill, which could have a significant effect on our current and future results of operations and financial condition.

Defined Benefit Pension Plans
We sponsor both funded and unfunded defined benefit pension plans for our international employees, primarily in Germany, France, Italy, Indonesia, Brazil, and Spain. We recognize a liability for the projected benefit obligation in excess of plan assets or an asset for plan assets in excess of the projected benefit obligation. We also recognize the funded status of our defined benefit pension plans on our Consolidated Balance Sheets and recognize as a component of other comprehensive income (loss) (OCI), net of tax, the actuarial gains or losses and prior service costs or credits, if any that arise during the period but are not recognized as components of net periodic benefit cost.

Several economic assumptions and actuarial data are used in calculating the expense and obligations related to these plans. The assumptions are updated annually at December 31 and include the discount rate, the expected remaining service life, the expected rate of return on plan assets, and the rate of future compensation increase. The discount rate is a significant assumption used to value our pension benefit obligation. We determine a discount rate for our plans based on the estimated duration of each plan's liabilities. For our euro denominated defined benefit pension plans, which represent 94% of our benefit obligation, we use two discount rates with consideration of the duration of the plans, using a hypothetical yield curve developed from euro-denominated AA-rated corporate bond issues. These bond issues are partially weighted for market value, with minimum amounts outstanding of €500 million for bonds with less than 10 years to maturity and €50 million for bonds with 10 or more years to maturity, and excluding the highest and lowest yielding 10% of bonds within each maturity group. The discount rates used, depending on the duration of the plans, were 1.00% and 1.75%, respectively. The weighted average discount rate used to measure the projected benefit obligation for all of the plans at December 31, 2018 was 2.24%. A change of 25 basis points in the discount rate would change our projected benefit obligation by approximately $5 million. The financial and actuarial assumptions used at December 31, 2018 may differ materially from actual results due to changing market and economic conditions and other factors. These differences could result in a significant change in the amount of pension expense recognized in future periods.

Contingencies

A loss contingency is recognized if it is probable that an asset has been impaired or a liability has been incurred and the amount of the loss can be reasonably estimated. We evaluate, among other factors, the degree of probability of an unfavorable outcome and our ability to make a reasonable estimate of the amount of the ultimate loss. Loss contingencies that we determine to be reasonably possible, but not probable, are disclosed but not recognized. Changes in these factors and related estimates could materially affect our financial position and results of operations. Legal costs to defend against contingent liabilities are recognized as incurred.

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Stock-Based Compensation

We grant various stock-based compensation awards to our officers, employees and Board of Directors with service, performance, and market vesting conditions, including stock options, restricted stock units, phantom stock units, and unrestricted stock units (awards). We measure and recognize compensation expense for all awards based on estimated fair values. For awards with only a service condition, we expense stock-based compensation using the straight-line method over the requisite service period for the entire award. For awards with service and performance conditions, if vesting is probable, we expense the stock-based compensation on a straight-line basis over the requisite service period for each separately vesting portion of the award. For awards with a market condition, we expense the fair value over the requisite service period.

We measure and recognize compensation expense for all stock-based compensation based on estimated fair values. The fair value of stock options is estimated at the date of grant using the Black-Scholes option-pricing model, which includes assumptions for the dividend yield, expected volatility, risk-free interest rate, and expected term. For unrestricted stock awards with no market conditions, the fair value is the market close price of our common stock on the date of grant. For restricted stock units with market conditions, the fair value is estimated at the date of award using a Monte Carlo simulation model, which includes assumptions for dividend yield and expected volatility for our common stock and the common stock for companies within the Russell 3000 index, as well as the risk-free interest rate and expected term of the awards. For phantom stock units, fair value is the market close price of our common stock at the end of each reporting period.

In valuing our stock options and restricted stock units with a market condition, significant judgment is required in determining the expected volatility of our common stock and the expected life that individuals will hold their stock options prior to exercising. Expected volatility for stock options is based on the historical and implied volatility of our own common stock while the volatility for our restricted stock units with a market condition is based on the historical volatility of our own stock and the stock for companies comprising the market index within the market condition. The expected life of stock option grants is derived from the historical actual term of option grants and an estimate of future exercises during the remaining contractual period of the option. While volatility and estimated life are assumptions that do not bear the risk of change subsequent to the grant date, these assumptions may be difficult to measure as they represent future expectations based on historical experience. Further, our expected volatility and expected life may change in the future, which could substantially change the grant-date fair value of future awards and ultimately the expense we recognize. Actual results and future estimates may differ substantially from our current estimates.

Non-GAAP Measures

Our consolidated financial statements are prepared in accordance with GAAP, which we supplement with certain non-GAAP financial information. These non-GAAP measures should not be considered in isolation or as a substitute for the related GAAP measures, and other companies may define such measures differently. We encourage investors to review our financial statements and publicly-filed reports in their entirety and not to rely on any single financial measure. These non-GAAP measures exclude the impact of certain expenses that we do not believe are indicative of our core operating results. We use these non-GAAP financial measures for financial and operational decision making and/or as a means for determining executive compensation. These non-GAAP financial measures facilitate management's internal comparisons to our historical performance as well as comparisons to our competitors' operating results. Our executive compensation plans exclude non-cash charges related to amortization of intangibles and certain discrete cash and non-cash charges such as purchase accounting adjustments, restructuring charges or goodwill impairment charges. We believe that both management and investors benefit from referring to these non-GAAP financial measures in assessing our performance and when planning, forecasting and analyzing future periods. We believe these non-GAAP financial measures are useful to investors because they provide greater transparency with respect to key metrics used by management in its financial and operational decision making and because they are used by our institutional investors and the analyst community to analyze the health of our business.

Non-GAAP operating expenses and non-GAAP operating income – We define non-GAAP operating expenses as operating expenses excluding certain expenses related to the amortization of intangible assets, restructuring, acquisition and integration, and goodwill impairment. We define non-GAAP operating income as operating income excluding the expenses related to the amortization of intangible assets, restructuring, acquisition and integration, and goodwill impairment. Acquisition and integration related expenses include costs which are incurred to affect and integrate business combinations, such as professional fees, certain employee retention and salaries related to integration, severances, contract terminations, travel costs related to knowledge transfer, system conversion costs, and asset impairment charges. We consider these non-GAAP financial measures to be useful metrics for management and investors because they exclude the effect of expenses that are related to acquisitions and restructuring projects. By excluding these expenses, we believe that it is easier for management and investors to compare our financial results over multiple periods and analyze trends in our operations. For example, in certain periods expenses related to amortization of intangible assets may decrease, which would improve GAAP operating margins, yet the improvement in GAAP operating margins due to this lower expense is not necessarily reflective of an improvement in our core business. There are some limitations related to the use of non-GAAP operating expenses and non-GAAP operating income versus operating expenses and operating income calculated in accordance with GAAP. We compensate for these limitations by providing specific information about the GAAP amounts excluded from non-GAAP operating expense and non-GAAP operating income and evaluating non-GAAP operating expense and non-GAAP operating income together with GAAP operating expense and operating income.

Non-GAAP net income and non-GAAP diluted EPS – We define non-GAAP net income as net income attributable to Itron, Inc. excluding the expenses associated with amortization of intangible assets, restructuring, acquisition and integration, goodwill impairment, amortization of debt placement fees, the impact of the Tax Cuts and Jobs Act (Tax Act), and the tax effect of excluding these expenses. We define non-GAAP diluted EPS as non-GAAP net income divided by the weighted average shares, on a diluted basis, outstanding during each period. We consider these financial measures to be useful metrics for management and investors for the same reasons that we use non-GAAP operating income. The same limitations described above regarding our use of non-GAAP operating income apply to our use of non-GAAP net income and non-GAAP diluted EPS. We compensate for these limitations by providing specific information regarding the GAAP amounts excluded from these non-GAAP measures and evaluating non-GAAP net income and non-GAAP diluted EPS together with GAAP net income attributable to Itron, Inc. and GAAP diluted EPS.

Adjusted EBITDA – We define adjusted EBITDA as net income (a) minus interest income, (b) plus interest expense, depreciation, and amortization, restructuring, acquisition and integration related expense, goodwill impairment and (c) excluding income tax provision or benefit. Management uses adjusted EBITDA as a performance measure for executive compensation. A limitation to using adjusted EBITDA is that it does not represent the total increase or decrease in the cash balance for the period and the measure includes some non-cash items and excludes other non-cash items. Additionally, the items that we exclude in our calculation of adjusted EBITDA may differ from the items that our peer companies exclude when they report their results. We compensate for these limitations by providing a reconciliation of this measure to GAAP net income.

Free cash flow - We define free cash flow as net cash provided by operating activities less cash used for acquisitions of property, plant and equipment. We believe free cash flow provides investors with a relevant measure of liquidity and a useful basis for assessing our ability to fund our operations and repay our debt. The same limitations described above regarding our use of adjusted EBITDA apply to our use of free cash flow. We compensate for these limitations by providing specific information regarding the GAAP amounts and reconciling to free cash flow.

Constant currency - We refer to the impact of foreign currency exchange rate fluctuations in our discussions of financial results, which references the differences between the foreign currency exchange rates used to translate operating results from local currencies into U.S. dollars for financial reporting purposes. We also use the term "constant currency," which represents financial results adjusted to exclude changes in foreign currency exchange rates as compared with the rates in the comparable prior year period. We calculate the constant currency change as the difference between the current period results and the comparable prior period's results restated using current period foreign currency exchange rates.

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Reconciliation of GAAP Measures to Non-GAAP Measures

The tables below reconcile the non-GAAP financial measures of operating expenses, operating income, net income, diluted EPS, adjusted EBITDA, and free cash flow, with the most directly comparable GAAP financial measures.

TOTAL COMPANY RECONCILIATIONS	Year Ended December 31,		
	2018	2017	2016
	(in thousands, except per share data)		
NON-GAAP OPERATING EXPENSES			
GAAP operating expenses	$780,011	$521,874	$561,539
Amortization of intangible assets	(71,713)	(20,785)	(25,112)
Restructuring	(77,183)	(6,418)	(49,090)
Acquisition and integration related recovery (expense)	(91,916)	(17,139)	197
Non-GAAP operating expenses	$539,199	$477,532	$487,534
NON-GAAP OPERATING INCOME			
GAAP operating income (loss)	$(49,692)	$154,877	$100,993
Amortization of intangible assets	71,713	20,785	25,112
Restructuring	77,183	6,418	49,090
Acquisition and integration related (recovery) expense	91,916	17,139	(197)
Non-GAAP operating income	$191,120	$199,219	$174,998
NON-GAAP NET INCOME & DILUTED EPS			
GAAP net income (loss) attributable to Itron, Inc.	$(99,250)	$57,298	$31,770
Amortization of intangible assets	71,713	20,785	25,112
Amortization of debt placement fees	6,869	966	987
Restructuring	77,183	6,418	49,090
Acquisition and integration related (recovery) expense	91,916	17,139	(197)
Tax Cuts and Jobs Act Adjustment	—	30,424	—
Income tax effect of non-GAAP adjustments[1]	(42,700)	(12,544)	(8,478)
Non-GAAP net income attributable to Itron, Inc.	$105,731	$120,486	$98,284
Non-GAAP diluted EPS	$2.65	$3.06	$2.54
Weighted average common shares outstanding - Diluted	39,840	39,387	38,643
ADJUSTED EBITDA			
GAAP net income (loss) attributable to Itron, Inc.	$(99,250)	$57,298	$31,770
Interest income	(2,153)	(2,126)	(865)
Interest expense	58,203	13,845	13,521
Income tax (benefit) provision	(12,570)	74,326	49,574
Depreciation and amortization	122,497	63,215	68,318
Restructuring	77,183	6,418	49,090
Acquisition and integration related (recovery) expense	91,916	17,139	(197)
Adjusted EBITDA	$235,826	$230,115	$211,211
FREE CASH FLOW			
Net cash provided by operating activities	$109,755	$191,354	$115,842

Acquisitions of property, plant, and equipment	(59,952)	(49,495)	(43,543)
Free Cash Flow	$49,803	$141,859	$72,299

(1) The income tax effect of non-GAAP adjustments is calculated using the statutory tax rates for the relevant jurisdictions if no valuation allowance exists. If a valuation allowance exists, there is no tax impact to the non-GAAP adjustment.

ITEM 7A: QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

In the normal course of business, we are exposed to interest rate and foreign currency exchange rate risks that could impact our financial position and results of operations. As part of our risk management strategy, we may use derivative financial instruments to hedge certain foreign currency and interest rate exposures. Our objective is to offset gains and losses resulting from these exposures with losses and gains on the derivative contracts used to hedge them, therefore reducing the impact of volatility on earnings or protecting the fair values of assets and liabilities. We use derivative contracts only to manage existing underlying exposures. Accordingly, we do not use derivative contracts for trading or speculative purposes.

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Interest Rate Risk

We are exposed to interest rate risk through our variable rate debt instruments. In October 2015, we entered into an interest rate swap, which is effective from August 31, 2016 to June 23, 2020, and converts $214 million of our LIBOR-based debt from a floating LIBOR interest rate to a fixed interest rate of 1.42% (excluding the applicable margin on the debt). The notional balance will amortize to maturity at the same rate as required minimum payments on our term loan. At December 31, 2018, our LIBOR-based debt balance was $637.8 million.

In November 2015, we entered into three interest rate cap contracts with a total notional amount of $100 million. The interest rate cap contracts expire on June 23, 2020 and were entered into in order to limit our interest rate exposure on $100 million of our variable LIBOR-based debt up to 2.00%. In the event LIBOR is higher than 2.00%, we will pay interest at the capped rate of 2.00% with respect to the $100 million notional amount of such agreements. The interest rate cap contracts do not include the effect of the applicable margin.

In April 2018, we entered into a cross-currency swap which converts $56.0 million of floating rate U.S. Dollar denominated debt into fixed rate euro denominated debt. This cross-currency swap matures on April 30, 2021 and mitigates the risk associated with fluctuations in interest and currency rates impacting cash flows related to a U.S. Dollar denominated debt in a euro functional currency entity.

The table below provides information about our financial instruments that are sensitive to changes in interest rates and the scheduled minimum repayment of principal and the weighted average interest rates at December 31, 2018. Weighted average variable rates in the table are based on implied forward rates in the Reuters U.S. dollar yield curve as of December 31, 2018 and our estimated leverage ratio, which determines our additional interest rate margin at December 31, 2018.

	2019	**2020**	**2021**	**2022**	**2023**	**Total**	**Fair Value**
	(in thousands)						
Variable Rate Debt							
Principal: U.S. dollar term loan	$28,438	$44,688	$60,937	$65,000	$438,750	$637,813	$630,971
Weighted average interest rate	4.54 %	4.49 %	4.40 %	4.43 %	4.46 %		
Principal: Multicurrency revolving line of credit	$—	$—	$—	$—	$—	$—	$—
Weighted average interest rate	4.54 %	4.49 %	4.40 %	4.43 %	4.46 %		
Interest rate swap							
Weighted average interest rate (pay) Fixed	1.42 %	1.42 %					
Weighted average interest rate (receive) Floating LIBOR	2.54 %	2.49 %					
Net/Spread	1.12 %	1.07 %					
Interest rate cap							
Cap rate	2.00 %	2.00 %					
Weighted average interest rate Floating LIBOR	2.54 %	2.49 %					
Weighted average interest rate (receive)	0.54 %	0.49 %					
Cross currency swap							
Weighted average interest rate (pay) Fixed - EURIBOR	1.38 %	1.38 %	1.38 %				
Weighted average interest rate (receive) Floating - LIBOR	2.54 %	2.49 %	2.40 %				

Based on a sensitivity analysis as of December 31, 2018, we estimate that, if market interest rates average one percentage point higher in 2019 than in the table above, our financial results in 2019 would not be materially impacted.

We continually monitor and assess our interest rate risk and may institute additional interest rate swaps or other derivative instruments to manage such risk in the future.

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Foreign Currency Exchange Rate Risk

We conduct business in a number of countries. As a result, approximately half of our revenues and operating expenses are denominated in foreign currencies, which expose our account balances to movements in foreign currency exchange rates that could have a material effect on our financial results. Our primary foreign currency exposure relates to non-U.S. dollar denominated transactions in our international subsidiary operations, the most significant of which is the euro. Revenues denominated in functional currencies other than the U.S. dollar were 41% of total revenues for the year ended December 31, 2018, compared with 47% for the years ended December 31, 2017 and 2016.

We are also exposed to foreign exchange risk when we enter into non-functional currency transactions, both intercompany and third-party. At each period-end, non-functional currency monetary assets and liabilities are revalued with the change recognized to other income and expense. We enter into monthly foreign exchange forward contracts, which are not designated for hedge accounting, with the intent to reduce earnings volatility associated with currency exposures. As of December 31, 2018, a total of 57 contracts were offsetting our exposures from the Euro, Pound Sterling, New Zealand dollar, Swedish Krona, Hungarian Forint and various other currencies, with notional amounts ranging from $107,000 to $47.5 million. Based on a sensitivity analysis as of December 31, 2018, we estimate that, if foreign currency exchange rates average ten percentage points higher in 2018 for these financial instruments, our financial results in 2018 would not be materially impacted.

In future periods, we may use additional derivative contracts to protect against foreign currency exchange rate risks.

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ITEM 8: FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Itron, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Itron, Inc. and subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income (loss), equity, and cash flows, for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 28, 2019, expressed an unqualified opinion on the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 18 to the financial statements, the Company has changed its method of accounting for revenue from contracts with customers in 2018 due to the adoption of Accounting Standards Codification 606, *Revenue from Contracts with Customers*. The Company adopted the new revenue standard on January 1, 2018, using the modified retrospective approach.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

Seattle, Washington
February 28, 2019

We have served as the Company's auditor since 2016.

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ITRON, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2018	2017	2016
	(in thousands, except per share data)		
Revenues			
Product revenues	$2,095,458	$1,813,925	$1,830,070
Service revenues	280,659	204,272	183,116
Total revenues	2,376,117	2,018,197	2,013,186
Cost of revenues			
Product cost of revenues	1,476,498	1,204,127	1,236,977
Service cost of revenues	169,300	137,319	113,677
Total cost of revenues	1,645,798	1,341,446	1,350,654
Gross profit	730,319	676,751	662,532
Operating expenses			
Sales, general and administrative	423,210	325,264	319,571
Product development	207,905	169,407	167,766
Amortization of intangible assets	71,713	20,785	25,112
Restructuring	77,183	6,418	49,090
Total operating expenses	780,011	521,874	561,539
Operating income (loss)	(49,692)	154,877	100,993
Other income (expense)			
Interest income	2,153	2,126	865
Interest expense	(58,203)	(13,845)	(13,521)
Other income (expense), net	(3,409)	(8,583)	(3,710)
Total other income (expense)	(59,459)	(20,302)	(16,366)
Income (loss) before income taxes	(109,151)	134,575	84,627
Income tax benefit (provision)	12,570	(74,326)	(49,574)
Net income (loss)	(96,581)	60,249	35,053
Net income attributable to noncontrolling interests	2,669	2,951	3,283
Net income (loss) attributable to Itron, Inc.	$(99,250)	$57,298	$31,770
Earnings (loss) per common share - Basic	$(2.53)	$1.48	$0.83
Earnings (loss) per common share - Diluted	$(2.53)	$1.45	$0.82
Weighted average common shares outstanding - Basic	39,244	38,655	38,207
Weighted average common shares outstanding - Diluted	39,244	39,387	38,643

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

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ITRON, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

	Year Ended December 31,		
	2018	2017	2016
	(in thousands)		
Net income (loss)	$(96,581)	$60,249	$35,053
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	(28,841)	54,338	(24,977)
Net unrealized gain (loss) on derivative instruments designated as cash flow hedges	235	923	(275)
Pension benefit obligation adjustment	2,779	3,588	(3,468)
Total other comprehensive income (loss), net of tax	(25,827)	58,849	(28,720)
Total comprehensive income (loss), net of tax	(122,408)	119,098	6,333
Comprehensive income attributable to noncontrolling interest, net of tax	2,669	2,951	3,283
Comprehensive income (loss) attributable to Itron, Inc.	$(125,077)	$116,147	$3,050

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

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ITRON, INC.
CONSOLIDATED BALANCE SHEETS

	December 31, 2018	December 31, 2017
	(in thousands)	
ASSETS		
Current assets		
Cash and cash equivalents	$ 120,221	$ 176,274
Accounts receivable, net	437,161	398,029
Inventories	220,674	193,835
Other current assets	118,085	81,604
Total current assets	896,141	849,742
Property, plant, and equipment, net	226,551	200,768
Deferred tax assets, net	64,830	49,971
Restricted cash	2,056	311,010
Other long-term assets	45,288	43,666
Intangible assets, net	257,583	95,228
Goodwill	1,116,533	555,762
Total assets	$ 2,608,982	$ 2,106,147
LIABILITIES AND EQUITY		
Current liabilities		
Accounts payable	$ 309,951	$ 262,166
Other current liabilities	70,136	56,736
Wages and benefits payable	88,603	90,505
Taxes payable	14,753	16,100
Current portion of debt	28,438	19,688
Current portion of warranty	47,205	21,150
Unearned revenue	93,621	41,438
Total current liabilities	652,707	507,783
Long-term debt	988,185	593,572
Long-term warranty	13,238	13,712
Pension benefit obligation	91,522	95,717
Deferred tax liabilities, net	1,543	1,525
Other long-term obligations	127,739	88,206
Total liabilities	1,874,934	1,300,515
Commitments and Contingencies (Note 12)		
Equity		
Preferred stock, no par value, 10,000 shares authorized, no shares issued or outstanding	—	—
Common stock, no par value, 75,000 shares authorized, 39,498 and 38,771 shares issued and outstanding	1,334,364	1,294,767
Accumulated other comprehensive loss, net	(196,305)	(170,478)
Accumulated deficit	(425,396)	(337,873)
Total Itron, Inc. shareholders' equity	712,663	786,416

Noncontrolling interests	21,385	19,216
Total equity	734,048	805,632
Total liabilities and equity	$2,608,982	$ 2,106,147

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

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ITRON, INC.
CONSOLIDATED STATEMENTS OF EQUITY

	Common Stock Shares	Common Stock Amount	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Itron, Inc. Shareholders' Equity	Noncontrolling Interests	Total Equity
	(in thousands)						
Balances at January 1, 2016	37,906	$ 1,246,671	$ (200,607)	$ (441,306)	$ 604,758	$ 17,945	$ 622,703
Net income				31,770	31,770	3,283	35,053
Other comprehensive income (loss), net of tax			(28,720)		(28,720)	—	(28,720)
Distributions to noncontrolling interests						(2,479)	(2,479)
Stock issues and repurchases:							
Options exercised	58	2,144			2,144		2,144
Restricted stock awards released	312	—			—		—
Issuance of stock-based compensation awards	21	955			955		955
Employee stock purchase plan	20	747			747		747
Stock-based compensation expense		17,080			17,080		17,080
Employee stock plans income tax deficiencies		2,870			2,870		2,870
Balances at December 31, 2016	38,317	1,270,467	(229,327)	(409,536)	631,604	18,749	650,353
Net income				57,298	57,298	2,951	60,249
Cumulative effect of accounting change (ASU 2016-09)		215		14,365	14,580		14,580
Other comprehensive income (loss), net of tax			58,849		58,849	—	58,849
Distributions to noncontrolling interests						(2,171)	(2,171)
Stock issues and repurchases:							
Options exercised	41	1,631			1,631		1,631
Restricted stock awards released	372	—			—		—
Issuance of stock-based compensation awards	10	974			974		974
Employee stock purchase plan	31	1,978			1,978		1,978
Stock-based compensation expense		20,433			20,433		20,433
Repurchase of noncontrolling interest		(906)			(906)	(313)	(1,219)
Registration fee		(25)			(25)		(25)
Balances at December 31, 2017	38,771	1,294,767	(170,478)	(337,873)	786,416	19,216	805,632
Net income (loss)				(99,250)	(99,250)	2,669	(96,581)
Cumulative effect of accounting change (ASU 2014-09 and ASU 2016-16)		—		11,727	11,727		11,727
Other comprehensive income (loss), net of tax			(25,827)		(25,827)	—	(25,827)
Distributions to noncontrolling interests						(500)	(500)
Stock issues and repurchases:							
Options exercised	152	5,935			5,935		5,935
Restricted stock awards released	517	—			—		—
Issuance of stock-based compensation awards	10	729			729		729
Employee stock purchase plan	48	2,974			2,974		2,974
Stock-based compensation expense		30,534			30,534		30,534
Registration fee		(22)			(22)		(22)
SSNI acquisition adjustments, net		(553)			(553)		(553)
Balances at December 31, 2018	39,498	$ 1,334,364	$ (196,305)	$ (425,396)	$ 712,663	$ 21,385	$ 734,048

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

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ITRON, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31, 2018	2017	2016
	(in thousands)		
Operating activities			
Net income (loss)	$(96,581)	$60,249	$35,053
Adjustments to reconcile net (loss) income to net cash provided by operating activities:			
Depreciation and amortization	122,497	63,215	68,318
Stock-based compensation	31,263	21,407	18,035
Amortization of prepaid debt fees	7,046	1,067	1,076
Deferred taxes, net	(19,130)	50,667	13,790
Restructuring, non-cash	859	(2,297)	7,188
Other adjustments, net	1,452	3,673	4,309
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable	15,524	(17,573)	(27,162)
Inventories	(25,613)	(16,242)	22,343
Other current assets	(23,589)	8,112	20,705
Other long-term assets	3,020	11,230	(339)
Accounts payables, other current liabilities, and taxes payable	20,101	78,463	(37,312)
Wages and benefits payable	(9,565)	1,926	7,808
Unearned revenue	27,584	(41,309)	(25,810)
Warranty	20,815	(10,554)	(10,246)
Other operating, net	34,072	(20,680)	18,086
Net cash provided by operating activities	109,755	191,354	115,842
Investing activities			
Acquisitions of property, plant, and equipment	(59,952)	(49,495)	(43,543)
Business acquisitions, net of cash equivalents acquired	(803,075)	(99,386)	(951)
Other investing, net	369	702	(3,034)
Net cash used in investing activities	(862,658)	(148,179)	(47,528)
Financing activities			
Proceeds from borrowings	778,938	335,000	15,877
Payments on debt	(363,359)	(29,063)	(79,119)
Issuance of common stock	9,171	3,609	2,891
Prepaid debt fees	(24,042)	—	—
Other financing, net	(4,887)	(7,587)	(2,672)
Net cash provided by (used in) financing activities	395,821	301,959	(63,023)
Effect of foreign exchange rate changes on cash, cash equivalents, and restricted cash	(7,925)	8,636	(2,744)
(Decrease) increase in cash, cash equivalents, and restricted cash	(365,007)	353,770	2,547
Cash, cash equivalents, and restricted cash at beginning of period	487,335	133,565	131,018
Cash, cash equivalents, and restricted cash at end of period	$122,328	$487,335	$133,565

Supplemental disclosure of cash flow information:			
Cash paid during the period for:			
Income taxes, net	$13,771	$28,969	$24,287
Interest	42,347	10,106	9,921

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

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ITRON, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018

In this Annual Report, the terms "we," "us," "our," "Itron," and the "Company" refer to Itron, Inc.

Note 1: Summary of Significant Accounting Policies

We were incorporated in the state of Washington in 1977, and are a technology company, offering end-to-end solutions to enhance productivity and efficiency, primarily focused on utilities and municipalities around the globe. Our solutions generally include robust industrial grade networks, smart meters, meter data management software, and knowledge application solutions, which bring additional value to the customer. Our professional services help our customers project-manage, install, implement, operate, and maintain their systems. We operate under the Itron brand worldwide and manage and report under three operating segments: Device Solutions, Networked Solutions, and Outcomes.

Financial Statement Preparation
The consolidated financial statements presented in this Annual Report include the Consolidated Statements of Operations, Comprehensive Income (Loss), Equity, and Cash Flows for the years ended December 31, 2018, 2017, and 2016 and the Consolidated Balance Sheets as of December 31, 2018 and 2017 of Itron, Inc. and its subsidiaries, prepared in accordance with U.S. generally accepted accounting principles (GAAP).

On January 1, 2018, we adopted ASC 606 using the modified retrospective method applied to those contracts that were not completed. Results for reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with our historic accounting under ASC 605, *Revenue Recognition* (ASC 605). The cumulative impact of adoption was a net decrease to accumulated deficit of $10.9 million as of January 1, 2018, with the impact primarily related to multiple element arrangements that contain software and software related elements. As we had not established vendor specific objective evidence of fair value for certain of our software and software related elements, we historically combined them as one unit of account and recognized the combined unit of account using the combined services approach. Under ASC 606, these software and software related elements are generally determined to be distinct performance obligations. As such, we are able to recognize revenue as we satisfy the performance obligations, either at a point in time or over time. For contracts that were modified prior to January 1, 2018, we have reflected the aggregate effect of all modifications prior to the date of initial adoption in order to identify the satisfied and unsatisfied performance obligations, determine the transaction price, and allocate the transaction price to satisfied and unsatisfied performance obligations.

Refer to the updated Revenue Recognition accounting policy described below and "Note 18: Revenues" for additional disclosures regarding our revenues from contracts with customers and the adoption of ASC 606.

Use of Estimates
The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Examples of significant estimates include revenue recognition, warranty, restructuring, income taxes, business combinations, goodwill and intangible assets, defined benefit pension plans, contingencies, and stock-based compensation. Due to various factors affecting future costs and operations, actual results could differ materially from these estimates.

Basis of Consolidation

We consolidate all entities in which we have a greater than 50% ownership interest or in which we exercise control over the operations. We use the equity method of accounting for entities in which we have a 50% or less investment and exercise significant influence. Entities in which we have less than a 20% investment and where we do not exercise significant influence are accounted for under the cost method. Intercompany transactions and balances are eliminated upon consolidation.

Noncontrolling Interests

In several of our consolidated international subsidiaries, we have joint venture partners, who are minority shareholders. Although these entities are not wholly-owned by Itron, we consolidate them because we have a greater than 50% ownership interest or because we exercise control over the operations. The noncontrolling interest balance is adjusted each period to reflect the allocation of net income (loss) and other comprehensive income (loss) attributable to the noncontrolling interests, as shown in our Consolidated Statements of Operations and our Consolidated Statements of Comprehensive Income (Loss) as well as contributions from and

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distributions to the owners. The noncontrolling interest balance in our Consolidated Balance Sheets represents the proportional share of the equity of the joint venture entities which is attributable to the minority shareholders.

Cash and Cash Equivalents
We consider all highly liquid instruments with remaining maturities of three months or less at the date of acquisition to be cash equivalents.

Restricted Cash and Cash Equivalents
Cash and cash equivalents that are contractually restricted from operating use are classified as restricted cash and cash equivalents. On December 22, 2017, we issued $300 million aggregate principal amount of 5.00% senior unsecured notes due in 2026 (Notes). The proceeds of the Notes plus prepaid interest and a premium for a special mandatory redemption option were deposited into escrow, where the funds remained until all the escrow release conditions were satisfied, specifically the closing of the acquisition of Silver Spring Networks, Inc. (SSNI) on January 5, 2018. We have recognized the balance in escrow as restricted cash in our consolidated financial statements as of December 31, 2017. See "Note 6: Debt" for further details.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the Consolidated Balance Sheets that sum to the total of the same such amounts shown in the Consolidated Statements of Cash Flows:

	Year Ended December 31,		
	2018	**2017**	**2016**
	(in thousands)		
Cash and cash equivalents	$ 120,221	$ 176,274	$