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

FORM 10-K

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

For the fiscal year ended December 31, 2020

OR

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

For the transition period from to

Commission file number 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	Trading Symbol(s)	Name of each exchange on which registered
Common stock, no par value	ITRI	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 ☐

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 ☒

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

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

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐ (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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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

As of June 30, 2020 (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 $2,649,283,506.

As of January 31, 2021, there were outstanding 40,455,126 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 13, 2021.

Itron, Inc.

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 report contains, and our officers and representatives may from time to time make, "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements are neither historical factors nor assurances of future performance. These statements are based on our expectations about, among others, revenues, operations, financial performance, earnings, liquidity, earnings per share, cash flows and restructuring activities including headcount reductions and other cost savings initiatives. This document reflects our current strategy, 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 words such as "expect", "intend", "anticipate", "believe", "plan", "goal", "seek", "project", "estimate", "future", "strategy", "objective", "may", "likely", "should", "will", "will continue", and similar expressions, including related to future periods, they are intended to identify forward-looking statements. Forward-looking statements rely on a number of assumptions and estimates. Although we believe the estimates and assumptions upon which these forward-looking statements are based are reasonable, any of these estimates or assumptions could prove to be inaccurate and the forward-looking statements based on these estimates and assumptions could be incorrect. Our operations involve risks and uncertainties, many of which are outside our control, and any one of which, or a combination of which, could materially affect our results of operations and whether the forward-looking statements ultimately prove to be correct. Actual results and trends in the future may differ materially from those suggested or implied by the forward-looking statements depending on a variety of factors. Therefore, you should not rely on any of these forward-looking statements. Some of the factors that we believe could affect our results include our ability to execute on our restructuring plan, our ability to achieve estimated cost savings, the rate and timing of customer demand for our products, rescheduling of current customer orders, changes in estimated liabilities for product warranties, adverse impacts of litigation, changes in laws and regulations, our dependence on new product development and intellectual property, future acquisitions, changes in estimates for stock-based and bonus compensation, increasing volatility in foreign exchange rates, international business risks, uncertainties caused by adverse economic conditions, including, without limitation those resulting from extraordinary events or circumstances such as the COVID-19 pandemic and other factors that are more fully described in Part I, Item 1A: Risk Factors *included in our Annual Report on Form 10-K* and other reports on file with the Securities and Exchange Commission. *We undertake no obligation to update or revise any forward-looking statement, whether written or oral.*

The impact caused by the ongoing COVID-19 pandemic includes uncertainty as to the duration, spread, severity, and any resurgence of the COVID-19 pandemic including other factors contributing to infection rates, such as reinfection or mutation of the virus, the effectiveness or widespread availability and application of any vaccine, the duration and scope of related government orders and restrictions, impact on overall demand, impact on our customers' businesses and workforce levels, disruptions of our business and operations, including the impact on our employees, limitations on, or closures of, our facilities, or the business and operations of our customers or suppliers. Our estimates and statements regarding the impact of COVID-19 are made in good faith to provide insight to our current and future operating and financial environment and any of these may materially change due to factors outside our control. For more information on risks associated with the COVID-19 pandemic, please see our updated risk in Part I, Item 1A: Risk Factors *of this document.*

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*).

General

Itron is a leader in the Industrial Internet of Things (IIoT), enabling utilities and cities to safely, securely and reliably deliver critical infrastructure solutions to communities in more than 100 countries. Our proven platform enables smart networks, software, services, devices and sensors to help our customers better manage their operations in the energy, water, and smart city spaces. We are among the leading technology and services companies offering end-to-end device solutions, networked solutions, and outcomes-based products and services to the utility and municipal sectors. Our comprehensive offerings measure, monitor, and provide data analytics and services that enable utilities and municipalities to manage their critical resources responsibly and efficiently.

We have over 40 years of experience supporting utilities and municipalities in the management of their data and critical infrastructure needs and we have delivered continuous innovation to help drive the industry forward. Incorporated in 1977 with a focus on meter reading services and 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 broader IIoT markets with the acquisition of Silver Spring Networks, Inc. (SSNI).

Looking forward, we will continue to innovate and support open standards and maintain a device- and transport-agnostic platform that enables our customers to meet their immediate needs either directly or via our eco-system of over 250 partners. With a networked footprint of over 200 million connected devices, we will continue to develop more applications, new opportunities, and enhanced outcomes for our customers in the future.

The following is a discussion of our solutions, 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

The way the world manages energy and water will be one of the defining actions of this century. At Itron, we are committed to creating a more resourceful world—one where energy, water, and city resources are managed safely, securely, and reliably, to help improve day-to-day life and promote the well-being of people around the world. We invent new ways for cities and utilities to work together so they can cost-effectively leverage the same infrastructure to deliver multiple services and applications on a reliable, intelligent platform capable of serving all their customers.

Itron helps our customers adapt to a rapidly changing world and address a number of macro trends, including:

- *Infrastructure* – such as aging infrastructure, grid security, renewable energy and storage, and incorporating electric vehicles into the grid
- *Environmental* – such as extreme weather, resource scarcity and sustainability, safety, monitoring, and management
- S*ocial* – such as increased customer expectations, urbanization, population increase, and the management of "big data" and incorporating IIoT technology into their existing operations.

Our solutions include the deployment of smart networks, software, services, devices, sensors and data analytics upon a platform that allows our customers to not only address the changing macro environment listed above but also to address pressing industry challenges to better manage assets, secure revenue, lower operational costs, improve customer service, develop new business models and revenue streams, improve safety, and enable efficient management of valuable resources. Our comprehensive solutions and data analytics also help our customers address operational issues including increasing demand on resources, non-technical loss, leak detection, environmental and regulatory compliance, integrating renewable and distributed energy sources, and improving operational reliability.

Itron solutions include technology, software, and services delivered as part of a standalone, one-time purchase or end-to-end solution 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 with embedded intelligence that is designed and sold as a complete solution to acquire and transport application-specific data; and value-added services, software, and products that organize, analyze, and interpret data to gain insights, make decisions, and inform actions. We also offer managed services, software-as-a-service (SaaS), network-as-a-service (NaaS), technical support services, licensing hardware technology, and consulting services.

Industry Drivers
Utility and municipalities are undergoing an evolution in 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.

To address these challenges, utilities and cities are looking to leverage innovations across a networked platform such as edge (or distributed) intelligence to build and maintain critical infrastructure that can:

- Efficiently and effectively operate energy and water systems that are safe, reliable, and resilient
- Reduce the risk and impact of natural disasters
- Think for itself, repair itself, and anticipate problems before they occur
- Deliver enhanced, more personalized services at lower cost
- Accommodate next-generation services through shared infrastructure between utilities and cities/municipalities
- Provide actionable insights for asset management

Our Operating Segments
We operate under the Itron brand worldwide and manage and report under three operating segments: Device Solutions, Networked Solutions, and Outcomes. The following is a description of each of the three segments:

Device Solutions – This segment primarily 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., hardware-based products not part of a complete "end-to-end" solution. Examples from the Device Solutions portfolio include: standard endpoints that are shipped without Itron communications, such as our standard gas, electricity, and water meters for a variety of global markets and adhering to regulations and standards within those markets, as well as our heat and allocation products; communicating meters that are not a part of an Itron end-to-end solution such as Smart Spec meters; and the implementation and installation of non-communicating devices, such as gas regulators.

Networked Solutions – This segment primarily includes a combination of communicating devices (e.g., 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 includes products and software for the implementation, installation, and management of communicating devices and data networks. Examples from the Networked Solutions portfolio include: 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. The IIoT solutions supported by this segment include automated meter reading (AMR), advanced metering infrastructure (AMI), smart grid and distribution automation, smart street lighting and an ever-growing set of smart city applications such as traffic management, smart parking, air quality monitoring, electric vehicle charging, customer engagement, digital signage, acoustic (e.g., gunshot) detection, and leak detection and mitigation for both gas and water systems. Our IIoT platform allows all of these industry and smart city applications to be run and managed on a single, multi-purpose network.

Outcomes – This segment primarily includes our value-added, enhanced software and services 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 from the Outcomes portfolio include: our meter data management and analytics offerings; our managed service solutions including NaaS and platform-as-a-service, forecasting software and services; our Distributed Intelligence suite of applications 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.

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 clauses, which will not agree to the total transaction price allocated to the remaining performance obligations disclosed in Item 8: Financial Statements and Supplementary Data, Note 17: Revenues.

Year Ended	**Total Bookings**	**Total Backlog**	**12-Month Backlog**
In millions			
December 31, 2020	$ 2,213	$ 3,259	$ 1,204
December 31, 2019	2,551	3,207	1,499
December 31, 2018	2,515	3,173	1,349

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. This direct sales force is focused on solution selling, solving problems and business challenges, and delivering valuable outcomes to our utility and smart city customers. For smaller utilities and municipalities, we typically use an indirect sales channel that extends the reach of Itron's solutions by empowering trusted partners with the right tools, training, and technology to grow their business, deliver results, and help these customers better manage energy and water. These channels consist 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, 2020, 2019, and 2018. Our 10 largest customers accounted for approximately 33% of total revenues in the years ended December 31, 2020 and 31% in 2019 and 2018.

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 manufacturing and 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 many products to various manufacturing partners and drive to create an efficient and cost effective structure. This approach allows us to reduce the costs related to our manufacturing overhead and inventory and also allows us to adjust more quickly to changing customer demand. These manufacturing partners assemble our sub-assemblies and 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 solutions and systems to our customers, we frequently partner with third-party vendors to provide hardware, software, or services, e.g., meter installation and communication network equipment and infrastructure. Due to the interoperable, open-standards based nature of our platform, we have also cultivated a highly diverse and growing ecosystem of partners and third-party developers who can create complementary solutions for our customers that run on the same network and within the same platform framework.

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.

Research and Development

Our research and development is focused on both improving existing technology and developing innovative new technology for electricity, natural gas, water and heat endpoints, sensing and control devices, data collection software, communication technologies, data warehousing, software applications, and the IIoT. We invested approximately $194 million, $202 million, and $208 million in research and development in 2020, 2019 and 2018, which represented 9%, 8% and 9% of total revenues for 2020, 2019 and 2018. Refer to Item 1A: Risk Factors for further discussion related to costs of developing competitive products and services.

Human Capital

As of December 31, 2020, we had 6,749 people in our workforce, including 6,153 permanent employees. We have not experienced significant employee work stoppages and consider our employee relations to be good.

We are an equal opportunity employer, and we promote cultural diversity and workforce equality. We monitor our progress through various programs and policies. We offer wages and a range of company-paid benefits we believe are competitive with other companies in our industry. Benefits offered vary depending on the countries where we operate.

The table below provides the breakdown of our employees by region and self-identified gender:

	As of December 31, 2020			
Region	**Male**	**Female**	**Total Number of Employees**	**Percentage of Total Employees**
North America	1,933	874	2,807	45 %
Europe, Middle East and Africa	1,473	777	2,250	37 %
Asia Pacific & Other	901	195	1,096	18 %
Total [(1)]	4,307	1,846	6,153	

[(1)] These numbers do not include contingent workers (596 as of December 31, 2020)

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, and our competitors range from small companies to large, established corporations. 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 of devices based in China and India. Our primary competitors include Landis+Gyr (formerly part of Toshiba); Hubbell (formerly Aclara Inc.); Xylem, Inc. (formerly Sensus); Badger Meter, Inc.; and Mueller Water Products.

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 also differentiate ourselves with an intelligent IIoT platform that is solution, device, and transport agnostic—a platform that is: backwards compatible and future proofed; able to run a multitude of applications and solutions across it; is highly secure, fully integrated into our portfolio, and highly interoperable; captures, relays, and leverages high-resolution data for near real-time decision making; and includes an ever-growing, diverse ecosystem of partners and third-party developers who can create and deploy very specific point solutions across our network for even greater value for our customers.

We are a global leader in the IIoT category; an industry leader 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.

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, research and 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.

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 IIoT. 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 materially in compliance with environmental laws, rules, and regulations applicable to the operation of our business.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Set forth below are the names, ages, and titles of our executive officers as of February 24, 2021.

Name	Age	Position
Thomas L. Deitrich	54	President and Chief Executive Officer
Joan S. Hooper	63	Senior Vice President and Chief Financial Officer
Michel C. Cadieux	63	Senior Vice President, Human Resources
Sarah E. Hlavinka	56	Senior Vice President, General Counsel and Corporate Secretary
Justin K. Patrick	48	Senior Vice President, Device Solutions
John F. Marcolini	48	Senior Vice President, Networked Solutions
Donald L. Reeves	53	Senior Vice President, Outcomes

Thomas L. Deitrich is President and Chief Executive Officer and a member of our Board of Directors. Mr. Deitrich was appointed to his current position and to the Board of Directors in August 2019. Mr. Deitrich joined Itron in October 2015, serving as Itron’s Executive Vice President and Chief Operating Officer until August 2019. 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. Mr. Deitrich is a director of ON Semiconductor Corporation, a NASDAQ listed company.

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 executive finance 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. Ms. Hlavinka is a director of Quanterix Corporation, a NASDAQ listed company.

Justin K. Patrick is Senior Vice President, Device Solutions, where he is responsible for Itron’s strategy to become a leading global provider of measurement, safety, and operational devices for utilities and cities. Mr. Patrick joined Itron in January 2020. From 2018 to 2020, Mr. Patrick was Vice President & General Manager, Residential Products at Johnson Controls International (JCI). Before that role, he was Vice President & General Manager, Variable Refrigerant Flow Systems and Ductless from 2014 to 2017, and Director, Channel Strategy and Marketing from 2010 to 2014 at JCI. Prior to his time at JCI, Mr. Patrick held a sales leadership role at the Auer Steel and Heating Supply Company, and at Carrier Corporation he had roles of increasing responsibility culminating in general management. Prior to his civilian career, Mr. Patrick served as a Surface Warfare Officer in the United States Navy.

John F. Marcolini is Senior Vice President, Networked Solutions, where he is responsible for product development, marketing and overall strategy for Itron’s networking platforms and smart cities strategy and solutions, globally. Mr. Marcolini was appointed to this role in July 2020. Mr. Marcolini joined Itron in January 2018 as part of Itron's acquisition of SSNI as the vice president of product management, responsible for product strategy and lifecycle management across Itron’s smart energy, smart city and IIoT portfolios.. He has more than 20 years of product management, business development, and customer delivery experience with deep technical knowledge of networking, radio frequency technologies, and IIoT. Mr. Marcolini has also spent many years working with utility customers to deliver and implement complex product deployments.

Donald L. Reeves is Senior Vice President, Outcomes, where he is responsible for Itron’s software and services offerings, delivery teams, managed services operations and customer support. Mr. Reeves was appointed to this role in September 2019. Mr. Reeves joined Itron in January 2018 as part of Itron’s acquisition of SSNI, and from 2016 to 2018, he was SSNI’s Chief Technology Officer. From 2005 to 2016, Mr. Reeves held several managed services and engineering positions at SSNI. Prior to joining SSNI, Mr. Reeves served as Vice President of Engineering at Black Pearl from 2003 to 2004, and was Vice President of Engineering at Commerce One from 2001 to 2003, and prior to that held leadership positions at several startup technology companies.

Item 1A: Risk Factors

Business and Industry Risks

We are dependent on the utility industry, which has lengthy and unpredictable sales cycles and has experienced volatility in capital spending, each of which has and could cause our operating results to fluctuate significantly.

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 climate change, 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.

The industries in which we sell our products and services, in particular the utility industry, are subject to substantial government regulation. For example, regulations have often influenced the frequency of customer meter replacements. Sales cycles for our 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.

We must continually shift and adapt our products and services mix, which requires substantial judgment and investment.

Our market is characterized by increasing complexity driven by evolving technology, increased industry regulatory pressures, and the emergence of new competitive products, all of which impact the manner in which our products and services are designed, developed, marketed, and delivered. The shift in, and increasing complexity of, our products and services mix involves judgment and entails risks. In order to successfully design and develop more complex offerings, we must anticipate the right products, solutions, and technologies to meet estimated market demands. These estimates may prove wrong. Additionally, our complex offerings may contain defects when they are first introduced; their release may be delayed due to unforeseen difficulties during product and service design and development; or they may have reliability, quality, or compatibility problems. We may not be able to successfully design workarounds. Any shift in, or increased complexity of, our products and services mix may not be easily understood or adopted by our current or future customers, who may be reluctant to buy, or may delay purchases of, our products and services.

Additionally, our evolving product mix could cause us to incur substantial additional costs if we need to materially improve our manufacturing infrastructure, develop new systems to deliver our services, or fundamentally change the way in which we deliver services. Also, if one of our new offerings were competitive to our prior offerings and represented an adequate or superior alternative, customers could decide to abandon prior offerings that produce higher revenue or better margins than the new offering. Therefore, the adaptation to new technologies or standards or the development and launch of new products or services could result in lower revenue, lower margins, and/or higher costs, which could unfavorably impact our financial performance.

We have been and will continue to be affected by the ongoing COVID-19 pandemic, and such effects could have an adverse effect on our business operations, results of operations, cash flows, and financial condition.

We have experienced disruptions to our business from the ongoing COVID-19 pandemic, and the full impact of the COVID-19 pandemic on all aspects of our business and geographic markets is highly uncertain and cannot be predicted with confidence. This includes how it may impact our customers, employees, vendors, strategic partners, managed services, and manufacturing operations. The COVID-19 pandemic has created significant volatility, uncertainty, and economic disruption, which may materially and adversely affect our business operations, cash flows, and financial condition.

The impact of the virus on third parties on which we rely, such as our suppliers, contract manufacturers, distributors, and strategic partners, cannot be fully known or controlled by us. As a result, we may experience difficulties sourcing components, sub-assemblies, outsourced finished goods, and other products and services. The impact of the COVID-19 pandemic on our customers and demand for our products is also uncertain. Due to resulting financial constraints, illness within their organizations, quarantine and travel restrictions placed upon our customers' employees, as well as individual actions our customers may take in response to the spread of COVID-19, our customers may have difficulty in making timely payments to us or may have an inability or unwillingness to purchase our products and services. Also, certain of our projects require regulatory approvals, and our customers may experience delays in regulatory approvals. Any of these effects may materially and adversely affect us.

We continue to take measures, both voluntary and as a result of government directives and guidance, to mitigate the effects of the COVID-19 pandemic on us and others. These measures include, among others, restrictions on our employees' access to our physical work locations and the purchase of personal protective equipment. Additionally, we may implement the temporary closure or reduction in operations of certain of our facilities, which is disruptive to our operations. We have also implemented measures to allow certain employees to work remotely, which may place a burden on our IT systems and may expose us to increased vulnerability to cyber-attack and other cyber-disruption. Many of these measures may result in incremental costs to us, and such costs may not be recoverable or adequately covered by our insurance. Further, any focus by our management on mitigating COVID-19 effects has required, and will continue to require, a large investment of time and resources, which may delay other value-add initiatives.

As a company with global operations, we are subject to numerous government jurisdictions at all levels that are addressing COVID-19 differently. The guidance and directives provided by these governmental authorities is difficult to predict, may be unclear in their application, and are unknown in duration. This includes uncertainty in governmental authorities' assessments of our business as "essential". If governmental authorities were to reverse their designation of our business as "essential", it could have a material effect on our results of operations and cash flows.

In addition, the continued spread of COVID-19 has led to disruption and volatility in the worldwide credit and financial markets, which could limit our ability to obtain external financing on acceptable terms or at all. While the COVID-19 pandemic has not materially impacted our liquidity and capital resources to date, the duration and severity of any further economic or market impact of the pandemic remains uncertain and there can be no assurance that it will not have an adverse effect on our liquidity and capital resources, including our ability to access capital markets, in the future.

The full extent to which the COVID-19 pandemic impacts us depends on numerous evolving factors and future developments that we are not able to predict at this time, including: medical advancements to treat or stop the virus including the effectiveness, widespread availability and application of any vaccine, governmental, business, and other actions (which could include limitations on our operations to provide products or services); the duration and severity of the outbreak, including due to reinfections or mutation of the virus, and the related limitations on our ability to conduct business; or the length of time and velocity at which we will return to more normalized operations. In addition, we cannot predict the impact that COVID-19 will have on our customers, vendors, strategic partners, and other business partners, and each of their financial conditions; however, any material effect on these parties could materially and adversely impact us. The impact of COVID-19 may also include possible impairment or other charges and may exacerbate other risks discussed herein, any of which could have a material effect on us. This situation is changing rapidly and additional impacts may arise that we are not aware of currently.

We face competition which may result in a loss of market share or price erosion of our products and services.

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. These competitors may sell products and services at lower prices in order to gain or grow market share, be able to respond more quickly to new or emerging technologies and changes in customer requirements, and may have made or 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. Other companies may also drive technological innovation and develop products and services that are equal in quality and performance or superior to our products and services, which could reduce our market position, reduce our overall sales, and require us to invest additional funds in new technology development. In addition, our products and services may experience price erosion if low-cost providers expand their presence in our markets, improve their quality, or form alliances or cooperative relationships with our competitors or if our products and services become commoditized. For example, 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. Pricing pressure is also driven by other events outside our control, to include movement away from manually read meters, government programs, and new construction. Should we fail to compete successfully with current or future competitors, or to adequately manage pricing pressure, we could experience material adverse effects on our business, financial condition, results of operations, and cash flows.

If we cannot continue to invest in developing competitive products and services, we will not be able to compete effectively.

Our future success will depend, in part, on our ability to continue to develop, design and manufacture competitive products and services, enhance and sustain our existing products and services, 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 and services. Product and service development will require continued investment in order to maintain our competitive position, and the periods in which we incur significant research and 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 research and 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, or at all. Finally, we may not achieve market acceptance of our new products and services.

Our operations may be adversely impacted if key vendors, strategic partners, and other third parties fail to perform.

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 and pandemics, 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. 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 take delivery of 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 our 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. Raw materials include purchased castings made of metal or alloys (such as brass, which uses copper as its main component, aluminum, stainless steel and cast iron), plastic resins, glass, microprocessors and other electronic subassemblies, and components. There are multiple sources for these raw materials and components, but we sometimes rely on single suppliers for certain of these materials. Our 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, including reduced revenue, lower profit margins, and delays in deliveries to customers, which could result in damages or penalties to be paid under the terms of certain of our customer contracts. Since we do not control the 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, tariffs or embargoes may also affect the availability or prices of raw materials or component parts.

If we are unable to maintain a high level of customer satisfaction, demand for our products and services could suffer.

We believe that our success depends on our ability to understand and address our customers' requirements and concerns. This includes our ability to effectively articulate and demonstrate to customers how our products and services meet their needs and to deliver our products timely as committed, with a sufficient level of quality. In addition, we continue to work toward easing general concerns about the safety and perceived health risks of using radio frequency communications, as well as privacy concerns of monitoring home appliance energy usage, which have had some adverse publicity in the past. If we are unable to overcome these real and perceived risks, we could face customer dissatisfaction, dilution of our brand, decreased overall demand for our services, and loss of revenue. In addition, our inability to meet customer performance, safety, and service expectations may damage our reputation and could consequently limit our ability to retain existing customers and attract new customers, which would adversely affect our ability to generate revenue and unfavorably impact our operating results.

Product defects could disrupt our operations and result in harm to our reputation and financial position.

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, other third-party vendors, or regulatory entities; 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.

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, geopolitical instability, 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.

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 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.

Failure to attract and retain key personnel who are critical to the success of our business could negatively impact our ability to operate or grow 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. In addition, as our products and services become more technologically complex, it could become especially difficult to recruit or retain personnel with unique in-demand skills and knowledge, whom we would expect to become recruiting targets for our competitors and for other companies relying on similar talent. There is no assurance that we will be able to recruit or retain qualified personnel, and this failure could diminish our ability to develop and deliver new products and services, which could cause our operations and financial results to be unfavorably impacted.

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

We prepare our consolidated financial statements in accordance with U.S. generally accepted accounting principles (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.

Risks Related to Our Corporate Structure and Organization

Our indebtedness could restrict our operational flexibility and prevent us from raising additional capital or meeting our obligations under our debt instruments.

As of December 31, 2020, our total outstanding indebtedness was $936.1 million as described under Liquidity and Capital Resources. 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;
- requiring us to meet specified financial ratios, a failure of which may result in restrictions on us and our subsidiaries to take certain actions or result in the declaration of an event of default, which if not cured or waived, may permit acceleration of required payments against such indebtedness and result in cross defaults under our other indebtedness;
- exposing us to the risk of increased market interest rates, and corresponding increased interest expense, as unhedged 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 2018 credit facility, as amended, 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; and
- transfer or sell assets.

Our ability to make scheduled payments on and/or 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 system 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.

Although our debt instruments contain certain restrictions, these restrictions are subject to a number of qualifications and exceptions, including that certain trade payables do not constitute indebtedness. Additional indebtedness incurred in compliance with these restrictions could be substantial. To the extent we incur additional indebtedness or other obligations, the risks described above and others described herein may increase.

Our strategy includes acquisitions, divestitures, and investments, which we may not be able to execute or integrate successfully.

In pursuing our business strategy, we may conduct discussions, evaluate companies, and enter into agreements regarding possible acquisitions, divestitures, and equity investments. We have completed acquisitions and may make investments in the future, both within and outside of the United States. We may also, if appropriate opportunities present themselves, make divestitures. Acquisitions, investments, and divestitures involve numerous risks such as the diversion of senior management's attention; unsuccessful integration of the acquired or disintegration of the divested entity's personnel, operations, technologies, and products; unidentified or identified but un-indemnified pre-closing liabilities that we may be responsible for; incurrence of significant expenses to meet an acquiree's customer contractual commitments; lack of market acceptance of new services and technologies; difficulties in operating businesses in international legal jurisdictions; or transaction-related or other litigation, and other liabilities. 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 or investment. 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 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. Any divestiture could result in disruption to other parts of our business, potential loss of employees or customers, exposure to unanticipated liabilities, or result in ongoing obligations and liabilities following any such divestiture. For example, in connection with a divestiture, we may enter into transition services agreements or other strategic relationships, including long-term commercial arrangements, sales arrangements, or agree to provide certain indemnities to the purchaser in any such transaction, which may result in additional expense and may adversely affect our financial condition and results of operations.

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 and require us to deliver standby letters of credit or bonds as a guarantee to the customer for our future 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. Additionally, if we were to determine that products and/or services to be delivered under a specific component of a customer contract would result in a loss due to expected revenues estimated to be less than expected costs, we could be required to recognize a reduction of revenue in the period we made such determination, and such reduction could be material to our results of operations.

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, or adverse tax burdens.

Our business is also subject to foreign currency exchange rates fluctuations, particularly with respect to the euro, Canadian dollar, Indonesian rupiah, Pound sterling, and various other currencies. Change in the value of currencies of the countries in which we do business relative to the value of the U.S. dollar, or euro, could affect our ability to sell products competitively and control our cost structure, which could have an adverse effect on our business, financial condition, and results of operations. Additionally, we are subject to foreign exchange translation risk due to changes in the value of foreign currencies in relation to our reporting currency, the U.S. dollar. The translation risk is primarily concentrated in the exchange rate between the U.S. dollar and the euro. As the U.S. dollar fluctuates against other currencies in which we transact business, revenue and income can be impacted, include revenue decreases due to unfavorable foreign currency impacts. Strengthening of the U.S. dollar relative to the euro and the currencies of the other countries in which we do business, could materially and adversely affect our ability to compete in international markets and our sales growth in future periods.

Other risks related to our international operations include 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.

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 not achieve the anticipated savings and benefits from current or any future restructuring projects and such activities could cause us to incur additional charges in our efforts to improve profitability.

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 research and 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 or matters involving third-party service providers, our failure to retain key employees, changes in governmental policies or regulatory matters, adverse market conditions, or failure to meet targeted improvements could change the timing or reduce the overall savings realized from the restructuring project.

The successful implementation and execution of our restructuring projects are critical to achieving our expected cost savings as well as effectively competing in the marketplace and positioning us for future growth. If our restructuring projects are not executed successfully, it could have a material adverse effect on our competitive position, business, financial condition, cash flow, and results of operations.

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 operating effectiveness of our controls over financial reporting. Our compliance with the annual internal control report requirement 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 won't experience deficiencies in the design, implementation, and maintenance of 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.

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 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 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.

We may not realize the expected benefits from strategic alliances, which could adversely affect our operations.

We have several strategic alliances with large, 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 research and development or experience other operational difficulties.

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 were unable 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.

Risks Related to Our Technology and Intellectual Property

If we are unable to adequately protect our intellectual property, we may need to expend significant resources to enforce our rights or suffer competitive injury.

While we believe 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 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 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.

If we are unable to protect our information technology infrastructure and network against data corruption, cyber-based attacks or network security incidents caused by unauthorized access, we could be exposed to an increase risk of customer liability and reputational damage.

We rely on various information technology systems to capture, process, store, and report data and interact with customers, vendors, and employees. Despite taking security steps to secure all information and transactions, our information technology systems, and those of our third-party providers, may be subject to corruption from cyber-attacks, or other network security incidents. Any unauthorized access to data could result in misappropriation of the data or disruption of operations. In addition, hardware, operating system software, software libraries, and applications that we procure from third parties may contain defects in design or manufacturing 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 or personal information could stem from such incidents.

In addition, an increasing number of our products and services connect to and are part of the IIoT, the Internet, and public cloud services. As such, the products and services we offer may involve the transmission of large amounts of sensitive and proprietary information over public and private communications networks, as well as the processing and storage of confidential and personal customer data. While we attempt to provide adequate security measures to safeguard our products and services, techniques used to gain unauthorized access to or to sabotage systems are constantly evolving and therefore may not be recognized until launched against a target. Unauthorized access, remnant data exposure, computer viruses, denial of service attacks, accidents, employee error or malfeasance, intentional misconduct by computer "hackers", and other disruptions can occur. This can lead to gaps in infrastructure, hardware and software vulnerabilities, and security controls. The exposed or unprotected data can (i) interfere with the delivery of services to our customers, (ii) impede our customers' ability to do business, or (iii) compromise the security of systems and data, which exposes information to unauthorized third-parties. Like many companies, we are the target of cyber-attacks of varying degrees on a regular basis. Although such cyber-attacks have not had a material adverse effect on our operating results, there can be no assurance of a similar result in future security incidents.

Security incidents that occur could expose us to an increased risk of lawsuits, loss of existing or potential customers, harm to our reputation and increases in our security costs. Depending on the jurisdiction, security incidents could trigger notice requirements to impacted individuals and regulatory investigations leading to penalties and increased reputational harm.

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

We rely on information technology systems that may fail to operate effectively, require upgrades and replacements or experience breaches.

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 have a primary enterprise resource planning (ERP) system that maintains sales and transactional information to facilitate processes. This system may require updates and upgrades periodically that could be expensive and time consuming undertakings. Successful upgrades and updates provide many benefits, while unsuccessful upgrades and updates 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.

Financial and Market Risks

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

The 2018 credit facility bears, 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 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.

The alteration or discontinuation of LIBOR may adversely affect our borrowing costs.

Certain of our interest rate derivatives and a portion of our indebtedness bear interest at variable interest rates, primarily based on LIBOR, which is subject to regulatory guidance and/or reform that could cause interest rates under our current or future debt agreements to perform differently than in the past or cause other unanticipated consequences. In July 2017, the Chief Executive of the U.K. Financial Conduct Authority (FCA), which regulates LIBOR, announced that the FCA will no longer persuade or compel banks to submit rates for the calculation of LIBOR after 2021. However, on November 30, 2020, the ICE Benchmark Administration Limited announced its plan to extend the date that most U.S. LIBOR values would cease being computed and announced from December 31, 2021 to June 30, 2023. Such announcement indicates that the continuation of LIBOR on the current basis cannot and will not be guaranteed, and the timing of such discontinuation, modifications or other reforms to LIBOR is uncertain. At this time, it is not possible to predict the effect any discontinuance, modification or other reforms to LIBOR or any other reference rate, or the establishment of alternative reference rates will have on the Company. However, as LIBOR is expected to cease to exist in a future period, the Company’s borrowing costs may be adversely affected.

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 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, Indonesia, India, and Italy. 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.

Legal and Regulatory Risks

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 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, provides further recommendations for legislative changes under these tax policies. Additional recommendations will be forthcoming. More countries are beginning to implement legislative changes based on these BEPS recommendations and ATAD measures. The OECD has also proceeded with the advancement under Action 1 ("Addressing the Tax Challenges of the Digital Economy") of the ‘BEPS 2.0 initiative’, which proposes further fundamental changes to the international tax system. This project includes a framework for providing taxing rights to jurisdictions based on the location of the consumer regardless of current physical presence of a company. There is also a second component that would implement a global minimum tax. While there is significant uncertainty around this proposal, including how it would be applied, if implemented, it could create an adverse effect on our tax position.

A significant number of our products are affected by the availability and regulation of radio spectrum and could be affected by interference with the radio spectrum that we use.

A significant number of our products use radio spectrum, which are subject to regulation by the U.S. Federal Communications Commission (FCC). 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 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 jurisdictions. In addition, new consumer products may create interference with the performance of our products, which could lead to claims against us.

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.

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 U.S. Foreign Corrupt Practices Act requires U.S. 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 U.S. Department of Justice continues to heighten 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 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 result in fines and/or criminal penalties and have a material adverse effect on our business, financial condition, or results of operations. Further, we operate in some parts of the world that have experienced governmental corruption, and, in certain circumstances, local customs and practice might not be consistent with the requirements of anti-corruption laws. We remain subject to the risk that our employees, third party partners, or agents will engage in business practices that are prohibited by our policies and violate such laws and regulations.

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.

The SEC has adopted rules regarding disclosure 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 such metals originated from the Democratic Republic of Congo or adjoining countries and required due diligence efforts. We may not be able to sufficiently verify the origins for all minerals used in our products, and our reputation may suffer if we determine that our products contain conflict minerals that are not determined to be conflict free or if we are unable to sufficiently verify the origins for all conflict minerals used in our products. At times, our customers also request or require that we confirm whether our products contain conflict-free minerals, and this may result in challenges in timely satisfying such customers' requests, if at all. There are 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.

Item 2: Properties

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

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

Region	Location
North America	Oconee, SC (O) Waseca, MN (L)
Europe, Middle East, and Africa	Chasseneuil, France (O) Macon, France (O) Massy, France (L) Karlsruhe, Germany (O) Oldenburg, Germany (O) Godollo, Hungary (O) Asti, Italy (O)
Asia/Pacific	Bekasi, Indonesia (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, research and development facilities, and distribution centers, which are located throughout the world.

Item 3: Legal Proceedings

SEC regulations require us to disclose certain information about proceedings arising under federal, state or local environmental provisions if we reasonably believe that such proceedings may result in monetary sanctions above a stated threshold. Pursuant to the SEC regulations, Itron uses a threshold of $1 million or more for purposes of determining whether disclosure of any such proceedings is required. Under this threshold, Itron does not have any legal proceedings to report.

Item 4: Mine Safety Disclosures

Not applicable.

PART II

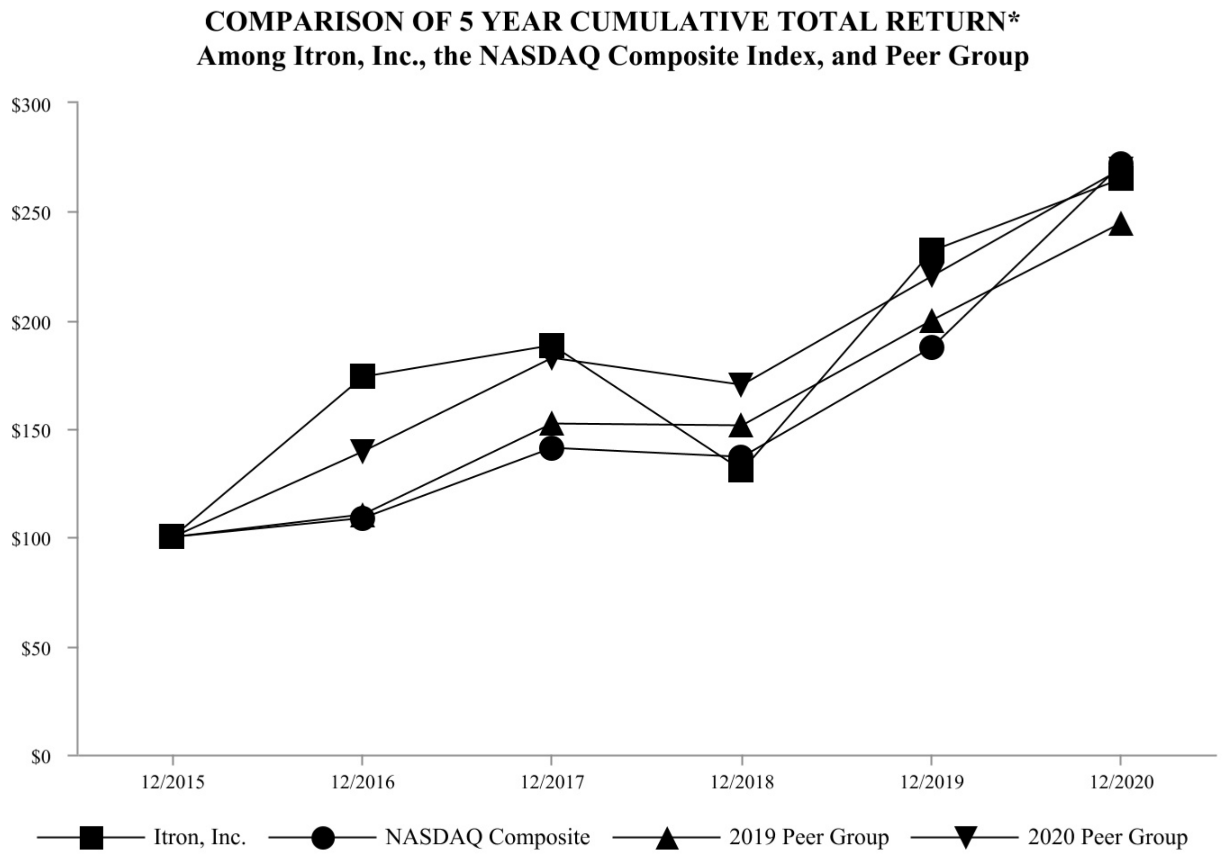
Item 5: Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

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, 2020 and the NASDAQ Composite Index.



* $100 invested on December 31, 2015, 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, 2015 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 historical stock prices shown above for our common stock are not necessarily indicative of future price performance.

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 2020 peer group includes the following publicly traded companies: Badger Meter, Inc., Landis+Gyr, Mueller Water Products, Inc., and Xylem, Inc. (Sensus). Our 2020 peer group was updated due to the direction of one of our peer's business. Our 2020 peer group was updated to exclude Roper Technologies, Inc. due to the direction of its business

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
				In thousands
October 1, 2020 through October 31, 2020	—	$ —	—	$ —
November 1, 2020 through November 30, 2020	4,409	73.72	—	—
December 1, 2020 through December 31, 2020	3,222	84.20	—	—
Total	7,631		—	

(1) Shares purchased 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, 2021, there were 179 holders of record of our common stock. This does not include persons whose stock is in nominee or accounts through brokers.

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.

Item 6: Selected Financial Data

Part II, Item 6 is no longer required as the company has applied certain provisions within the amendment to Regulation S-K Item 301, which became effective on February 10, 2021.

Item 7: Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis compares the change in the consolidated financial statements for fiscal years 2020 and 2019 and should be read in conjunction with Item 8: Financial Statements and Supplementary Data. For comparisons of fiscal years 2019 and 2018, see our Management’s Discussion and Analysis of Financial Condition and Results of Operations in Part II, Item 7 of our 2019 Annual Report on Form 10-K, filed with the Securities and Exchange Commission (SEC) on February 27, 2020, and incorporated herein by reference.

The objective of Management’s Discussion and Analysis is to provide our assessment of the financial condition and results of operations including an evaluation of our liquidity and capital resources along with material events occurring during the year. The discussion and analysis focuses on material events and uncertainties known to management that are reasonably likely to cause reported financial information not to be necessarily indicative of future operating results or of future financial condition. In addition, we address matters that are reasonably likely based on management’s assessment to have a material impact on future operations. We expect that the analysis will enhance a reader’s understanding of our financial condition, cash flows, and other changes in financial condition and results of operations.

Overview

We are a technology and service company, and we are a leader in the Industrial Internet of Things (IIoT). We offer 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 operate under the Itron brand worldwide and manage and report under three operating segments: Device Solutions, Networked Solutions, and Outcomes. The product and operating definitions of the three segments are as follows:

Device Solutions – This segment primarily 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., hardware-based products not part of a complete "end-to-end" solution. Examples from the Device Solutions portfolio include: standard endpoints that are shipped without Itron communications, such as our standard gas, electricity, and water meters for a variety of global markets and adhering to regulations and standards within those markets, as well as our heat and allocation products; communicating meters that are not a part of an Itron end-to-end solution such as Smart Spec meters; and the implementation and installation of non-communicating devices, such as gas regulators.

Networked Solutions – This segment primarily includes a combination of communicating devices (e.g., 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 includes products and software for the implementation, installation, and management of communicating devices and data networks. Examples from the Networked Solutions portfolio include: 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. The IIoT solutions supported by this segment include automated meter reading (AMR), advanced metering infrastructure (AMI), smart grid and distribution automation, smart street lighting and an ever-growing set of smart city applications such as traffic management, smart parking, air quality monitoring, electric vehicle charging, customer engagement, digital signage, acoustic (e.g., gunshot) detection, and leak detection and mitigation for both gas and water systems. Our IIoT platform allows all of these industry and smart city applications to be run and managed on a single, multi-purpose network.

Outcomes – This segment primarily includes our value-added, enhanced software and services 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 from the Outcomes portfolio include: our meter data management and analytics offerings; our managed service solutions including network-as-a-service (NaaS) and platform-as-a-service, forecasting software and services; our Distributed Intelligence suite of applications 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.

We have three measures of segment performance: revenues, gross profit (margin), and operating income (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), the income tax provision (benefit), and certain corporate operating expenses are neither allocated to the segments nor included in the measures of segment performance.

Non-GAAP Measures

To supplement our consolidated financial statements, which are prepared in accordance with accounting principles generally accepted in the United States (GAAP), we use certain adjusted or non-GAAP financial measures, including non-GAAP operating expense, non-GAAP operating income, non-GAAP net income, non-GAAP diluted earnings per share (EPS), adjusted EBITDA, adjusted EBITDA margin, constant currency, and free cash flow. We provide these non-GAAP financial measures because we believe they provide greater transparency and represent supplemental information used by management in its financial and operational decision making. We exclude certain costs in our non-GAAP financial measures as we believe the net result is a measure of our core business. We believe these measures facilitate operating performance comparisons from period to period by eliminating potential differences caused by the existence and timing of certain expense items that would not otherwise be apparent on a GAAP basis. Non-GAAP performance measures should be considered in addition to, and not as a substitute for, results prepared in accordance with GAAP. 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. Our non-GAAP financial measures may be different from those reported 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 restated 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 42-44 for information about these non-GAAP measures and the detailed reconciliation of items that impacted free cash flow, non-GAAP operating expense, non-GAAP operating income, non-GAAP net income, adjusted EBITDA, and non-GAAP diluted EPS in the presented periods.

Total Company Highlights

Highlights and significant developments for the year ended December 31, 2020 compared with the year ended December 31, 2019

- Revenues were $2.2 billion compared with $2.5 billion last year, a decrease of $329.1 million, or 13%
- Gross margin was 27.7% compared with 30.1% last year
- Operating expenses decreased $7.1 million, or 1%, compared with 2019, and included a $59.8 million loss on sale of business and $43.2 million of restructuring expense related to the 2020 Projects
- Net loss attributable to Itron, Inc. was $58.0 million compared with net income attributable to Itron, Inc. of $49.0 million in 2019
- GAAP loss per share was $1.44 compared with diluted EPS of $1.23 in 2019
- Non-GAAP net income attributable to Itron, Inc. was $75.3 million compared with $132.8 million in 2019
- Non-GAAP diluted EPS was $1.85 compared with $3.32 in 2019
- Adjusted EBITDA decreased $91.6 million, or 34%, to $178.4 million compared with adjusted EBITDA of $270.0 million in 2019
- Total backlog was $3.3 billion, and twelve-month backlog was $1.2 billion at December 31, 2020, compared with $3.2 billion and $1.5 billion at December 31, 2019.

Outlook for 2021 due to COVID-19

The COVID-19 pandemic has had global economic impacts including disrupting global supply chains and creating market volatility. The extent of the recent pandemic and its ongoing impact on our operations is volatile but is being monitored closely by our management. While certain of our European factories were closed during portions of the first half of 2020 due to government actions and local conditions, all were open by May and throughout the remainder of the year. Any further closures that may be imposed on us could impact our results for 2021. Incremental costs we have incurred related to COVID-19, such as personal protective equipment, increased cleaning and sanitizing of our facilities, and other such items, have not been material to date. At this time, we have not identified any significant decrease in long-term customer demand for our products and services. Certain of our customers' projects and deployments have shifted into 2021 and beyond. For more information on risks associated with the COVID-19 pandemic, please see our risk in Part I, Item 1A, Risk Factors.

The COVID-19 pandemic remains a rapidly evolving situation. Changes in the mix of earnings or losses from our different geographical operations, as well as any future enactment of tax legislation and other factors, may result in more volatile quarterly and annual effective tax rates. The detrimental impacts to financial results may be partially offset by financial assistance from the U.S. or the municipalities in which we operate, including employer payroll tax credits for wages paid to employees who are unable to work during the COVID-19 outbreak. Other benefits, including options to defer payroll tax payments and additional deductions, have resulted in reduced future cash outlays in the near term.

2020 Restructuring Plan

On September 17, 2020, our Board of Directors approved a restructuring plan (the 2020 Projects), which includes activities that continue our efforts to optimize our global supply chain and manufacturing operations, sales and marketing organizations, and other overhead. These projects are scheduled to be substantially complete by the end of 2022. We estimate pre-tax restructuring charges of $55 million to $65 million, of which approximately $35 million to $45 million will result in cash expenditures, and the remainder relates to non-cash charges. Of the total expected charges, $43.2 million was recognized in 2020. The largest component of expected remaining costs to be recognized is related to a non-cash cumulative translation adjustment charge. Many of the affected employees are represented by unions or works councils, which require consultation, and potential restructuring projects may be subject to regulatory approval, both of which could impact the timing of charges, total expected charges, cost recognized, and planned savings in certain jurisdictions. Refer to Item 8: Financial Statements and Supplementary Data, Note 13: Restructuring for more information.

Sale of Business

On June 25, 2020, we closed on the sale of five subsidiaries comprising our manufacturing and sales operations in Latin America to buyers led by Instalación Profesional y Tecnologías del Centro S.A. de C.V., a Mexican company doing business as Accell in Brazil (Accell), through the execution of various definitive stock purchase agreements. The sale of these Latin America-based operations is part of our continued strategy to improve profitability and focus on growing our Networked Solutions and Outcomes businesses in Latin America and throughout the world. We retained the intellectual property rights to our products sold in Latin America. As part of the transaction, we entered into an intellectual property license agreement whereby Accell pays a royalty on certain products manufactured by Accell using licensed Company intellectual property. In addition, Accell serves as the exclusive distributor for our Device Solutions, Networked Solutions, and Outcomes product and service offerings in Latin America. We recognized a loss on sale of business of $59.8 million during the year ended December 31, 2020, primarily due to foreign currency translation losses and allocated goodwill. Refer to Item 8: Financial Statements and Supplementary Data, Note 18: Sale of Business for more information.

Credit Facility Revolving Line of Credit

In March 2020, we drew $400 million in U.S. dollars under the multicurrency revolving line of credit (the revolver) within the credit facility that was initially entered on January 5, 2018 and amended on October 18, 2019 (2018 credit facility) to increase our cash position and preserve future financial flexibility. During the fourth quarter, we repaid the $400 million under the revolver. At December 31, 2020, there were no amounts outstanding under the revolver and $64.9 million was utilized by outstanding standby letters of credit, resulting in $435.1 million available for additional borrowings or standby letters of credit under the revolver. At December 31, 2020, $235.1 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.

Credit Facility Amendment

On October 19, 2020, we completed a second amendment to our 2018 credit facility. This amendment adjusts the maximum total net leverage ratio thresholds for the period beginning with the fourth quarter of 2020 through the fourth quarter of 2021 to allow for increased operational flexibility. The maximum leverage ratio is increased to 4.75:1 for the fourth quarter of 2020 and the first quarter of 2021 and 4.5:1 for the second quarter through the fourth quarter of 2021. An additional level of pricing was added to the existing pricing grid and is effective throughout the remaining term of the 2018 credit facility. Beginning with the fourth quarter of 2020, the commitment fee ranges from 0.15% to 0.30% and drawn amounts are subject to a margin ranging from 1.00% to 2.00%. Debt fees of approximately $1.4 million were incurred for the amendment, as well as other legal and advisory fees. Both the U.S. term loan (the term loan) and the revolver may 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.

Stock Repurchase Authorization

On March 14, 2019, Itron's Board of Directors authorized the Company to repurchase up to $50 million of our common stock over a 12-month period (the 2019 Stock Repurchase Program). Following the announcement of the program and through December 31, 2019, we repurchased 529,396 shares at an average share price of $47.22 (including commissions) for a total of $25 million. The program expired on March 13, 2020, and no additional shares were repurchased during 2020.

Total Company GAAP and Non-GAAP Highlights and Endpoints Under Management

	Year Ended December 31,		
In thousands, except margin and per share data	**2020**	**% Change**	**2019**
GAAP			
Revenues			
Product revenues	$ 1,889,173	(15)%	$ 2,220,395
Service revenues	284,177	1%	282,075
Total revenues	2,173,350	(13)%	2,502,470
Gross profit	602,167	(20)%	752,319
Operating expenses	612,562	(1)%	619,636
Operating income (loss)	(10,395)	NM	132,683
Other income (expense)	(46,244)	(22)%	(59,651)
Income tax benefit (provision)	(238)	NM	(20,617)
Net income (loss) attributable to Itron, Inc.	(57,955)	NM	49,006
Non-GAAP[(1)]			
Non-GAAP operating expenses	$ 470,028	(10)%	$ 519,954
Non-GAAP operating income	132,139	(43)%	232,365
Non-GAAP net income attributable to Itron, Inc.	75,253	(43)%	132,795
Adjusted EBITDA	178,399	(34)%	270,023
GAAP Margins and EPS			
Gross margin			
Product gross margin	25.4 %		28.5 %
Service gross margin	42.8 %		42.4 %
Total gross margin	27.7 %		30.1 %
Operating margin	(0.5)%		5.3 %
Net income (loss) per common share - Basic	$ (1.44)		$ 1.24
Net income (loss) per common share - Diluted	$ (1.44)		$ 1.23
Non-GAAP EPS [(1)]			
Non-GAAP diluted EPS	$ 1.85		$ 3.32

(1) These measures exclude certain expenses that we do not believe are indicative of our core operating results. See pages 42-44 for information about these non-GAAP measures and reconciliations to the most comparable GAAP measures.

Introduction to Itron’s Managed Endpoint Metric

More than 15 years ago we accelerated our ability to offer utilities higher value solutions with the purchase of Schlumberger's electricity metering business. With this acquisition, Itron solidified itself as one of the leaders in AMR modules, meters, and other critical infrastructure to the electric, gas, and water utility industries. In 2008, we continued our technology advancement with our first generation of AMI focused on growing our offerings of networked products and services around the globe. We expanded our network footprint and expanded our capabilities as a unified operating platform with the acquisition of Silver Spring Networks (SSNI) in 2018, strengthening our position as a global technology leader in smart utility and smart city critical infrastructure and outcomes.

Following the acquisition of SSNI, we realigned out product portfolio into reporting segments of Device Solutions, Networked Solutions, and Outcomes to emphasize our transformation from increasingly commoditized, undifferentiated endpoints to higher value data-centric networked solutions and outcomes. Our customers - utilities, municipalities, and cities - who deploy our Networked Solutions tend to utilize these assets for 10 to 15 years after their initial deployment. Building upon our established installed base of networked endpoints, our strategy focuses on converting our customers to long-term clients with ongoing professional services, managed services, software, security, and tools that improve data insight, risk mitigation, service resiliency, sustainability, and efficiency in their daily operations. In some instances, the "endpoints under management" are not on an Itron provided network but rather a network of another third party that has asked Itron to manage, monitor, or run the network or application for them.

Our management team places an emphasis on investments, both organic and inorganic, focused on growth in our Outcomes segment. Our strategy is to build higher value solutions, applications, and customer focused outcomes upon a set of global networked endpoint assets under Itron’s active management on behalf of our clients. To inform progression of our strategy, management relies on the metric of "endpoints under management" as a leading indicator of the potential for long-term value creation and growth for our Outcomes business.

Management believes using the "endpoints under management" metric enhances insight to the strategic and operational direction of our Networked Solutions and Outcomes segments to serve clients for years after their one-time installation of an endpoint.

Definition of an Endpoint Under Management

An "endpoint under management" is a unique endpoint, or data from that endpoint, which Itron manages via our networked platform or a third party's platform that is connected to one or multiple types of endpoints. Itron’s management of an endpoint occurs when on behalf of our client, we manage one or more of the physical endpoint, operating system, data, application, data analytics, and/or outcome deriving from this unique endpoint. Itron has the ability to monitor and/or manage endpoints or the data from the endpoints via NaaS, Software-as-a-Service (SaaS), and/or a licensed offering at a remote location designated by our client. Our offerings typically, but not exclusively, provide an Itron product or Itron certified partner product to our clients that has the capability of one-way communication or two-way communication of data that may include remote product configuration and upgradability. Examples of these offerings include our Temetra, OpenWay®, OpenWay® Riva and Gen X.

This metric primarily includes Itron or third party endpoints deployed within the electricity, water, and gas utility industries, as well as within cities and municipalities around the globe. Endpoints under management also include smart communication modules and network interface cards (NICs) within Itron’s platforms. At times, these NICs are communicating modules that were sold separately from an Itron product directly to our customers or to third party manufacturers for use in endpoints such as electric, water, and gas meters; streetlights and other types of IIoT sensors and actuators; sensors and other capabilities that the end customer would like Itron to connect and manage on their behalf.

The "endpoint under management" metric only accounts for the specific, unique endpoint itself, though that endpoint may have multiple applications, services, outcomes, and higher margin recurring offerings associated with it. This metric does not reflect the multi-application value that can be derived from the individual endpoint itself. Additionally, this metric excludes those endpoints that are non-communicating, non-Itron system hardware component sales or licensed applications that Itron does not manage the unit or the data from that unit directly.

While the one-time sale of the platform and endpoints are primarily delivered via our Networked Solutions segment, our enhanced solutions, on-going monitoring, maintenance, software, analytics, and distributed intelligent applications are predominantly recognized in our Outcomes segment. We would anticipate the opportunity to increase our penetration of Outcomes applications, software, and managed applications will increase as our Endpoints Under Management increases.

A summary of our endpoints under management is as follows:

Units in thousands	Year Ended December 31, 2020	2019	2018
Endpoints Under Management	74,184	64,719	47,755

Results of Operations

Revenues and Gross Margin

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

In thousands	Year Ended December 31, 2020	2019	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change	Total Change
Total Company					
Revenues	$ 2,173,350	$ 2,502,470	$ (3,384)	$ (325,736)	$ (329,120)
Gross profit	602,167	752,319	(219)	(149,933)	(150,152)

Revenues

Revenues decreased $329.1 million in 2020 compared with 2019. We have been unfavorably impacted by COVID-19, which played a significant role in customer demand and lower year-over-year results. Product revenues decreased $331.2 million in 2020 and service revenues increased $2.1 million in 2020 as compared with 2019. Device Solutions decreased by $164.9 million; Networked Solutions decreased by $167.9 million; and Outcomes increased by $3.6 million when compared with the same period last year. Changes in currency exchange rates unfavorably impacted revenues by $3.4 million in 2020, primarily in Device Solutions.

No single customer represented more than 10% of total revenues for the years ended December 31, 2020 and 2019. Our 10 largest customers accounted for 33% of total revenues in 2020 and 31% of total revenues in 2019.

Gross Margin

Gross margin was 27.7% for 2020, compared with 30.1% in 2019. We were unfavorably impacted by COVID-19 induced operating inefficiencies, product mix and increased inventory reserves. Product sales gross margin decreased to 25.4% in 2020 from 28.5% in 2019. Gross margin on service revenues increased to 42.8% from 42.4% in 2019.

Refer to Operating Segment Results section below for further detail on total company revenues and gross margin.

Operating Expenses

The actual results of and effects of changes in foreign currency exchange rates on operating expenses were as follows:

In thousands	Year Ended December 31, 2020	2019	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change	Total Change
Total Company					
Sales, general and administrative	$ 276,920	$ 346,872	$ 1,466	$ (71,418)	$ (69,952)
Research and development	194,101	202,200	569	(8,668)	(8,099)
Amortization of intangible assets	44,711	64,286	46	(19,621)	(19,575)
Restructuring	37,013	6,278	(154)	30,889	30,735
Loss on sale of business	59,817	—	—	59,817	59,817
Total Operating expenses	$ 612,562	$ 619,636	$ 1,927	$ (9,001)	$ (7,074)

Operating expenses decreased $7.1 million for the year ended December 31, 2020 as compared with the same period in 2019. This was primarily due to a decrease of $70.0 million in sales, general and administrative expenses due to lower variable compensation and reduced travel expenses, which includes lower acquisition and integration costs of $25.6 million classified within sales, general and administrative expenses. We had a decrease in amortization of intangible assets, as expected based on the amortization schedule determined at acquisition, of $19.6 million and an $8.1 million decrease in research and development expenses. These decreases were partially offset by an increase of $59.8 million in a loss on the sale of our Latin America business and a $30.7 million increase in restructuring expenses. See Item 8: Financial Statements and Supplementary Data, Note 18: Sale of Business and Note 13: Restructuring for more details.

Other Income (Expense)

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

	Year Ended December 31,		
In thousands	**2020**	**% Change**	**2019**
Interest income	$ 2,998	62%	$ 1,849
Interest expense	(39,871)	(15)%	(46,822)
Amortization of prepaid debt fees	(4,130)	(27)%	(5,631)
Other income (expense), net	(5,241)	(42)%	(9,047)
Total other income (expense)	$ (46,244)	(22)%	$ (59,651)

Total other income (expense) for the year ended December 31, 2020 was a net expense of $46.2 million compared with $59.7 million in 2019.

The change in other income (expense), net, for the year ended December 31, 2020 as compared with the same period in 2019 was primarily the result of $8.9 million decrease in interest expense for the credit facility, $2.7 million decrease due to lower foreign currency exchange losses resulting from transactions denominated in currency other than the reporting entity's functional currency, and $1.5 million decrease in amortization of prepaid debt fees, offset by an increase in interest rate swap expense of $2.2 million and an increase of $1.1 million in interest income.

Income Tax Provision

Our income tax provision was $0.2 million and $20.6 million for the years ended December 31, 2020 and 2019, respectively. Our tax rate for the year ended December 31, 2020 differed from the U.S. federal statutory tax rate of 21% due primarily to a significant loss recognized in the second quarter for the divestiture of the majority of our Latin American business activities. Refer to Item 8: Financial Statements and Supplementary Data, Note 18: Sale of Business for additional information on the transaction. This loss was recognized for tax as a discrete item and resulted in no tax benefit. A discrete tax benefit was recognized in the third quarter for $10.1 million related to the release of a valuation allowance on U.S. foreign tax credit deferred tax assets. This release was triggered by the carryforward of tax attributes due to the filing of amended tax returns in the third quarter. Other rate drivers include losses in jurisdictions for which no benefit is recognized because of valuation allowances on deferred tax assets, the level of profit or losses in domestic and international jurisdictions, a benefit related to excess stock-based compensation, and uncertain tax positions.

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

Operating Segment Results

The following tables and discussion highlight significant changes in trends or components of each operating segment:

	Year Ended December 31,		
In thousands	2020	% Change	2019
Segment revenues			
Device Solutions	$ 693,995	(19)%	$ 858,881
Networked Solutions	1,249,402	(12)%	1,417,254
Outcomes	229,953	2%	226,335
Total revenues	$ 2,173,350	(13)%	$ 2,502,470

	Year Ended December 31,			
	2020		2019	
In thousands	*Gross Profit*	*Gross Margin*	*Gross Profit*	*Gross Margin*
Segment gross profit and margin				
Device Solutions	$ 86,859	12.5%	$ 152,562	17.8%
Networked Solutions	432,906	34.6%	518,749	36.6%
Outcomes	82,402	35.8%	81,008	35.8%
Total gross profit and margin	$ 602,167	27.7%	$ 752,319	30.1%

	Year Ended December 31,		
In thousands	2020	% Change	2019
Segment operating expenses			
Device Solutions	$ 46,090	(16)%	$ 54,809
Networked Solutions	124,807	3%	121,424
Outcomes	34,783	(7)%	37,205
Corporate unallocated	406,882	—%	406,198
Total operating expenses	$ 612,562	(1)%	$ 619,636

	Year Ended December 31,			
	2020		2019	
In thousands	*Operating Income (Loss)*	*Operating Margin*	*Operating Income (Loss)*	*Operating Margin*
Segment operating income (loss) and operating margin				
Device Solutions	$ 40,769	5.9%	$ 97,753	11.4%
Networked Solutions	308,099	24.7%	397,325	28.0%
Outcomes	47,619	20.7%	43,803	19.4%
Corporate unallocated	(406,882)	NM	(406,198)	NM
Total operating income (loss) and operating margin	$ (10,395)	(0.5)%	$ 132,683	5.3%

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:

In thousands	Year Ended December 31, 2020	Year Ended December 31, 2019	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change	Total Change
Device Solutions Segment					
Revenues	$ 693,995	$ 858,881	$ (3,880)	$ (161,006)	$ (164,886)
Gross profit	86,859	152,562	(2,040)	(63,663)	(65,703)
Operating expenses	46,090	54,809	169	(8,888)	(8,719)

Revenues

Revenues decreased by $164.9 million in 2020, or 19%, compared with 2019 of which $3.9 million was due to foreign exchange rate changes. The decrease was mainly due to reduced shipments driven by COVID-19 and revenue decreased $33.0 million in the Latin America region driven by the sale of the business in June 2020.

Gross Margin

Gross margin was 12.5% in 2020 compared with 17.8% in 2019. The 530 basis point decrease was primarily due to COVID-19 induced operating inefficiencies, unfavorable product mix and increased inventory reserves.

Operating Expenses

Operating expenses decreased $8.7 million, or 16%. The decrease was primarily a result of a $6.6 million decrease in research and development costs, and a $2.1 million decrease due to lower sales commissions and travel costs.

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:

In thousands	Year Ended December 31, 2020	Year Ended December 31, 2019	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change	Total Change
Networked Solutions Segment					
Revenues	$ 1,249,402	$ 1,417,254	$ 455	$ (168,307)	$ (167,852)
Gross profit	432,906	518,749	1,709	(87,552)	(85,843)
Operating expenses	124,807	121,424	69	3,314	3,383

Revenues

Revenues decreased by $167.9 million, or 12%, in 2020 compared with 2019. The change was primarily due to the timing of customer deployments and the impact of COVID-19 project delays, with lower product revenue of $173.7 million partially offset by higher maintenance service revenue of $5.8 million.

Gross Margin

Gross margin was 34.6% in 2020 compared with 36.6% in 2019. The decrease of 200 basis points was primarily related to COVID-19 induced operational inefficiencies and unfavorable product mix.

Operating Expenses

Operating expenses increased by $3.4 million, or 2.8%, in 2020. The increase was primarily due to increased investment in product development of $7.9 million, partially offset by a decrease of $4.5 million in product marketing and travel expenses.

Outcomes:

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

In thousands	Year Ended December 31, 2020	Year Ended December 31, 2019	Effect of Changes in Foreign Currency Exchange Rates	Constant Currency Change	Total Change
Outcomes Segment					
Revenues	$ 229,953	$ 226,335	$ 40	$ 3,578	$ 3,618
Gross profit	82,402	81,008	109	1,285	1,394
Operating expenses	34,783	37,205	18	(2,440)	(2,422)

Revenues

Revenues increased $3.6 million, or 2%, in 2020. This increase was primarily due to a one-time customer adjustment recognized in 2019 in North America and an increase in software license sales and services.

Gross Margin

Gross margin was consistent at 35.8% in 2020 and 2019. Margin remained unchanged due to an unfavorable customer adjustment in 2019 in addition to higher margin software license sales in 2020, which were offset by higher costs in 2020.

Operating Expenses

Operating expenses decreased $2.4 million, or 6.5%, in 2020. The decrease was due to lower research and development of $1.8 million and lower marketing expense of $0.6 million.

Corporate unallocated:

Operating expenses not directly associated with an operating segment are classified as Corporate unallocated. These expenses increased $0.7 million in 2020 as compared with 2019. This was primarily the result of a $59.8 million loss on sale of business due to the Latin America divestiture and an increase of $30.7 million in restructuring expense primarily due to the 2020 Projects. Sales, general and administrative expenses and research and development expenses decreased $44.7 million mainly driven by lower variable compensation and reduced travel expenses. In addition, costs related to the SSNI integration decreased $25.6 million, and amortization of intangible assets decreased $19.6 million.

Financial Condition

Cash Flow Information:

In thousands	Year Ended December 31, 2020	Year Ended December 31, 2019	Year Ended December 31, 2018
Cash provided by operating activities	$ 109,514	$ 172,840	$ 109,755
Cash used in investing activities	(41,036)	(48,180)	(862,658)
Cash provided by (used in) financing activities	(11,576)	(97,519)	395,821
Effect of exchange rates on cash, cash equivalents, and restricted cash	127	435	(7,925)
Increase (decrease) in cash, cash equivalents, and restricted cash	$ 57,029	$ 27,576	$ (365,007)

Cash, cash equivalents, and restricted cash at December 31, 2020 was $206.9 million compared with $149.9 million at December 31, 2019. The $57.0 million increase in cash, cash equivalents, and restricted cash in the 2020 period was primarily the result of cash flows from operating activities, partially offset by acquisitions of property, plant, and equipment, and net repayment of debt.

Operating activities

Cash provided by operating activities in 2020 was $63.3 million lower than in 2019. This decrease was primarily due to lower earnings, partially offset by increased net cash inflows for working capital.

Investing activities
Cash used in investing activities during 2020 was $7.1 million lower than in 2019. This decrease in use of cash was primarily lower spending of $14.5 million for property, plant, and equipment, as well as lower proceeds from sale of property, plant, and equipment.

Financing activities
Net cash used in financing activities during 2020 was $11.6 million, compared with net cash used in 2019 of $97.5 million. In 2020, we had net repayments of debt of $14.1 million. In 2019, we paid down our debt of $87.7 million and repurchased $25 million of our stock.

Effect of exchange rates on cash and cash equivalents
The effect of exchange rates on the cash balances of currencies held in foreign denominations resulted in an increase of $0.1 million in 2020 and an increase of $0.4 million in 2019. Our foreign currency exposure relates to non-U.S. dollar denominated balances in our international subsidiary operations.

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 flow, using amounts from our Consolidated Statements of Cash Flows, as follows:

	Year Ended December 31,	
In thousands	**2020**	**2019**
Cash provided by operating activities	$ 109,514	$ 172,840
Acquisitions of property, plant, and equipment	(46,208)	(60,749)
Free cash flow	$ 63,306	$ 112,091

Free cash flow decreased primarily as a result lower earnings, partially offset by lower spending for property, plant, and equipment. See the cash flow discussion of operating activities above.

Liquidity and Capital Resources:

Our principal sources of liquidity are cash flows from operations, borrowings, and the sale of our 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, continues to be in a net favorable position.

Borrowings
On October 18, 2019, we amended our credit facility that was initially entered on January 5, 2018 (together with the amendment, the 2018 credit facility). The 2018 credit facility provides for committed credit facilities in the amount of $1.2 billion U.S. dollars. The 2018 credit facility consists of a $650 million the term loan and 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. The October 18, 2019, amendment extended the maturity date to October 18, 2024 and re-amortized the term loan based on the new balance as of the amendment date.

We drew $400 million in U.S. dollars under the revolving line of credit within the 2018 credit facility in March 2020. In light of the uncertain environment, we deemed it prudent to increase our cash position and preserve financial flexibility. We repaid the revolving line of credit during the fourth quarter of 2020. The Total Net Leverage Ratio, as defined in the amended 2018 credit facility agreement, was unchanged by this drawing.

On October 19, 2020, we completed a second amendment to our 2018 credit facility. This amendment adjusts the maximum total net leverage ratio thresholds for the period beginning with the fourth quarter of 2020 through the fourth quarter of 2021 to allow for increased operational flexibility. The maximum leverage ratio is increased to 4.75:1 for the fourth quarter of 2020 and the first quarter of 2021 and 4.50:1 for the second quarter through the fourth quarter of 2021. An additional level of pricing was added to the existing pricing grid and is effective throughout the remaining term of the 2018 credit facility. Beginning with the fourth quarter of 2020, the commitment fee ranges from 0.15% to 0.30% and drawn amounts are subject to a margin ranging from 1.00% to 2.00%. Going forward, we do not expect any significant increase in interest expense as the result of this amendment.

At December 31, 2020, no amount was outstanding under the 2018 credit facility revolver, and $65 million was utilized by outstanding standby letters of credit, resulting in $435.1 million available for additional borrowings or standby letters of credit under the revolver. At December 31, 2020, $235 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 October 18, 2024 and may 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. Principal and interest payments due in the next 12 months for the term loan are $27.7 million and $543.7 million is due beyond 12 months.

In December 2017 and January 2018, we issued a combined $400 million in aggregate principal amount of 5.00% senior notes maturing January 15, 2026 (Senior Notes). The proceeds were used to refinance existing indebtedness related to the acquisition of SSNI, pay related fees and expenses, and for general corporate purposes. Interest on the Senior Notes is payable semi-annually in arrears on January 15 and July 15, commencing on July 15, 2018. The $10 million interest payment due on January 15, 2021 was paid as of December 31, 2020. The Senior Notes are fully and unconditionally guaranteed, jointly and severally, on a senior unsecured basis by each of our subsidiaries that guarantee the 2018 credit facility.

Prior to maturity, we may redeem some or all of the Senior Notes, together with accrued and unpaid interest, if any, plus a "make-whole" premium. On or after January 15, 2021, we may redeem some or all of the Senior Notes at any time at declining redemption prices equal to 102.50% beginning on January 15, 2021, 101.25% beginning on January 15, 2022 and 100.00% beginning on January 15, 2023 and thereafter to the applicable redemption date. In the next 12 months, principal and interest of $10 million is due on the Senior Note. Principal and interest of $490 million is due beyond the next 12 months.

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. For the year ended December 31, 2020, we paid out $13.1 million and we have approximately $5 million to $10 million of estimated cash payments remaining on the integration plan, the majority of which is expected to be paid within the next 12 months.

Restructuring

On September 17, 2020, our Board of Directors approved a restructuring plan (the 2020 Projects). The 2020 Projects include activities that continue our efforts to optimize its global supply chain and manufacturing operations, sales and marketing organizations, and other overhead. These projects are scheduled to be substantially complete by the end of 2022. We estimate pre-tax restructuring charges of $55 million to $65 million. Of the total estimated charge, approximately $35 million to $45 million will result in cash expenditures, and the remainder relates to non-cash charges.

For the year ended December 31, 2020, we paid out a net $17.1 million related to all our restructuring projects. As of December 31, 2020, $72.6 million was accrued for these restructuring projects, of which $31.7 million is expected to be paid within the next 12 months.

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

Other contractual obligations and commitments

Operating lease obligations are disclosed in Item 8: Financial Statements and Supplementary Data, Note 19: Leases and do not include common area maintenance charges, real estate taxes, and insurance charges for which we are obligated. Amounts due under operating lease liabilities for the next twelve months are $18.3 million and beyond the next twelve months are $75.6 million.

We enter into standard purchase orders in the ordinary course of business that typically obligate us to purchase materials and other items. Purchase orders and other purchase obligations 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, which 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, 2021 if the commitments were canceled. Purchase order and other purchase obligations are $236.7 million for the next twelve months and $2.5 million for periods longer than twelve months, which includes capital expenditures of $0.8 million for the next twelve months and no obligations related to capital expenditures for periods beyond twelve months.

Other long-term liabilities consist of warranty obligations, estimated pension benefit payments, and other obligations. Estimated pension benefit payments include amounts to be paid from our assets for unfunded plans and reflect expected future service. The following table summarizes our known obligations to make future payments pursuant to certain contracts as of December 31, 2020.

In thousands	**Next 12 months**	**Beyond the next 12 months**
Warranty obligations	$ 28,329	$ 13,061
Estimated pension benefit payments	3,995	119,457

The period of cash settlement for long-term unrecognized tax benefits, which include accrued interest and penalties, cannot be reasonably estimated with the respective taxing authorities. 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 17: Revenues, respectively.

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,	
In thousands	**2020**	**2019**
U.S. federal taxes paid (refunded)	$ (6,816)	$ 184
State income taxes paid	914	1,664
Foreign and local income taxes paid	8,590	10,193
Total income taxes paid	$ 2,688	$ 12,041

Based on current projections, we expect to pay, net of refunds, approximately $5 million in U.S. federal and state taxes and $9 million in foreign and local income taxes in 2021.

As of December 31, 2020, there was $43.3 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
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, 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, 2020, $21.8 million of our consolidated cash balance was 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.

General Liquidity Overview
Notwithstanding the expected short to mid-term impacts of the COVID-19 pandemic, we expect to grow through a combination of internal new research and 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 our 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 utility industries, competitive pressures, our dependence on certain key vendors and components, changes in estimated liabilities for product warranties and/or litigation, duration of the COVID-19 pandemic, 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, revenues, and expenses. These estimates and assumptions are affected by management's application of accounting policies. Our critical accounting policies 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, consisting of hardware, software, and professional services such as implementation, project management, installation, and consulting services. These arrangements 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 their 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. Certain contracts that contain multiple performance obligations may contain customer-specific terms and conditions that govern service level commitments, transfer of control, and variable consideration that may involve complex accounting considerations.

Professional services revenues 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 of having to pay liquidated damages and the magnitude of such 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 customer-specific warranty provision that covers all or a portion of a customer's replacement or repair costs beyond the standard 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 customer-specific 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 maximize the use of observable inputs and consider 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.

Our contracts may be modified to add, remove, or change existing performance obligations or change contract price. The accounting for modifications to our contracts involves assessing whether the products or services added to an existing contract are distinct and whether the pricing is at the standalone selling price. Products or services added that are not distinct are accounted for as if it were part of the existing contract. The effect of the modification on the transaction price and on the measure of progress is recognized as an adjustment to revenue as of the date of the modification (i.e., on a cumulative catch-up basis). Those products or services that are distinct are accounted for prospectively, either as a separate contract if the additional services are priced at the standalone selling price, or as a termination of the existing contract and creation of a new contract if not priced at the standalone selling price.

Warranty

We offer standard warranties on our hardware products and large application software products. We accrue the estimated cost of 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 our products, we may experience an increase in warranty claims. We track warranty claims to identify potential warranty trends. If an unusual trend is identified, 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.

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.

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 is considered an indefinite-lived 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 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, we first evaluate the long-lived assets within the reporting unit for impairment and then recognize a goodwill impairment loss in an amount equal to any 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, business 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 markets 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 position. Due to a decline in our updated long-term forecast for the Device Solutions reporting unit, we completed an interim quantitative goodwill impairment test during the third quarter of 2020. After determining the estimated fair value of this reporting unit, we concluded there was no impairment to be recognized.

Defined Benefit Pension Plans

We sponsor both funded and unfunded defined benefit pension plans for our international employees, primarily in Germany, France, Indonesia, India, and Italy. 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, which 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 increases. 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 euro denominated defined benefit pension plans, which represent 92% of our projected benefit obligation, we use discount rates with consideration of the duration of each of the plans, using a hypothetical yield curve developed from euro-denominated AA-rated corporate bond issues. These bonds are assigned different weights to adjust their relative influence on the yield curve, and the highest and lowest yielding 10% of bonds are excluded within each maturity group. The discount rates used, depending on the duration of the plans, were between 0.20% and 0.75%. The weighted average discount rate used to measure the projected benefit obligation for all of the plans at December 31, 2020 was 1.10%. A change of 25 basis points in the discount rate would change our projected benefit obligation by approximately $6.5 million. The financial and actuarial assumptions used at December 31, 2020 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.

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 expected volatility, risk-free interest rate, expected term and dividend yield. 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. We have not paid dividends in the past and do not plan to pay dividends in the foreseeable future.

Non-GAAP Measures

The accompanying schedule contains non-GAAP financial measures. To supplement our consolidated financial statements, which are prepared in accordance with GAAP, we use certain non-GAAP financial measures, including non-GAAP operating expense, non-GAAP operating income, non-GAAP net income, non-GAAP diluted EPS, adjusted EBITDA, free cash flow, and constant currency. The presentation of this financial information is not intended to be considered in isolation or as a substitute for, or superior to, the financial information prepared and presented in accordance with GAAP, and other companies may define such measures differently. For more information on these non-GAAP financial measures, please see the table captioned "Reconciliations of Non-GAAP Financial Measures to the Most Directly Comparable GAAP Financial Measures".

We use these non-GAAP financial measures for financial and operational decision making and/or as a means for determining executive compensation. Management believes that these non-GAAP financial measures provide meaningful supplemental information regarding our performance and ability to service debt by excluding certain expenses that may not be indicative of our recurring core operating results. 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 acquisition and integration related expenses, loss on sale of business, or restructuring 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, loss on sale of business, corporate transition cost, and acquisition and integration. We define non-GAAP operating income as operating income excluding the expenses related to the amortization of intangible assets, restructuring, loss on sale of business, corporate transition cost, and acquisition and integration. 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, amortization of debt placement fees, restructuring, loss on sale of business, corporate transition cost, acquisition and integration, 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 of intangible assets, restructuring, loss on sale of business, corporate transition cost, acquisition and integration related expense, 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 (loss).

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 the entity's functional currency 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.

Reconciliations of Non-GAAP Financial Measures to the most Directly Comparable GAAP Financial 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,**	
In thousands, except per share data	**2020**	**2019**
NON-GAAP OPERATING EXPENSES		
GAAP operating expenses	$ 612,562	$ 619,636
Amortization of intangible assets	(44,711)	(64,286)
Restructuring	(37,013)	(6,278)
Loss on sale of business	(59,817)	—
Corporate transition cost	33	(2,520)
Acquisition and integration related expense	(1,026)	(26,598)
Non-GAAP operating expenses	$ 470,028	$ 519,954
NON-GAAP OPERATING INCOME		
GAAP operating income (loss)	$ (10,395)	$ 132,683
Amortization of intangible assets	44,711	64,286
Restructuring	37,013	6,278
Loss on sale of business	59,817	—
Corporate transition cost	(33)	2,520
Acquisition and integration related expense	1,026	26,598
Non-GAAP operating income	$ 132,139	$ 232,365
NON-GAAP NET INCOME & DILUTED EPS		
GAAP net income (loss) attributable to Itron, Inc.	$ (57,955)	$ 49,006
Amortization of intangible assets	44,711	64,286
Amortization of debt placement fees	3,954	5,455
Restructuring	37,013	6,278
Loss on sale of business	59,817	—
Corporate transition cost	(33)	2,520
Acquisition and integration related expense	1,026	26,598
Income tax effect of non-GAAP adjustments [1]	(13,280)	(21,348)
Non-GAAP net income attributable to Itron, Inc.	$ 75,253	$ 132,795
Non-GAAP diluted EPS	$ 1.85	$ 3.32
Weighted average common shares outstanding - Diluted	40,571	39,980
ADJUSTED EBITDA		
GAAP net income (loss) attributable to Itron, Inc.	$ (57,955)	$ 49,006
Interest income	(2,998)	(1,849)
Interest expense	44,001	52,453
Income tax (benefit) provision	238	20,617
Depreciation and amortization	97,290	114,400
Restructuring	37,013	6,278
Loss on sale of business	59,817	—
Corporate transition cost	(33)	2,520
Acquisition and integration related expense	1,026	26,598
Adjusted EBITDA	$ 178,399	$ 270,023
FREE CASH FLOW		
Net cash provided by operating activities	$ 109,514	$ 172,840
Acquisitions of property, plant, and equipment	(46,208)	(60,749)
Free Cash Flow	$ 63,306	$ 112,091

[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.

Interest Rate Risk

We are exposed to interest rate risk through our variable rate debt instruments. In March 2020, we entered into an interest rate swap, which is effective from June 30, 2020 to June 30, 2023, and converts $240 million of our LIBOR-based debt from a floating LIBOR interest rate to a fixed interest rate of 0.617% (excluding the applicable margin). The notional balance amortizes to maturity at the same rate of the originally required amortization on our term loan. At December 31, 2020, our LIBOR-based debt balance was $536.1 million.

In April 2018, we entered into a cross-currency swap, which converts $56.0 million of floating rate LIBOR-based U.S. dollar denominated debt into 1.38% 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, 2020. 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, 2020 and our estimated leverage ratio, which determines our additional interest rate margin at December 31, 2020.

In thousands	2021	2022	2023	2024	2025	Total	Fair Value
Variable Rate Debt							
Principal: U.S. dollar term loan	$ 18,359	$ 44,063	$ 44,063	$ 429,609	$ —	$ 536,094	$ 520,347
Weighted average interest rate	1.62 %	1.67 %	1.84 %	2.09 %	— %		
Principal: Multicurrency revolving line of credit	$ —	$ —	$ —	$ —	$ —	$ —	$ —
Weighted average interest rate	1.62 %	1.67 %	1.84 %	2.09 %	— %		
Interest rate swap							$ (1,982)
Weighted average interest rate (pay) Fixed	0.62 %	0.62 %	0.62 %				
Weighted average interest rate (receive) Floating LIBOR	0.12 %	0.17 %	0.30 %				
Cross currency swap							$ (526)
Weighted average interest rate (pay) Fixed - EURIBOR	1.38 %						
Weighted average interest rate (receive) Floating - LIBOR	0.13 %						

Based on a sensitivity analysis as of December 31, 2020, we estimate that, if market interest rates average one percentage point higher in 2021 than in the table above, our financial results in 2021 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.

Foreign Currency Exchange Rate Risk

We conduct business in a number of countries. Revenues denominated in functional currencies other than the U.S. dollar were 37% of total revenues for the year ended December 31, 2020, compared with 37% and 41% for the years ended December 31, 2019 and 2018. These transactions 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.

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 within Other income (expense) in our Consolidated Statements of Operations. 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, 2020, a total of 39 contracts were offsetting our exposures from the euro, Pound sterling, Canadian dollar, Brazilian real, Mexican peso and various other currencies, with notional amounts ranging from $121,000 to $26.4 million. Based on a sensitivity analysis as of December 31, 2020, we estimate that, if foreign currency exchange rates average ten percentage points higher in 2021 for these financial instruments, our financial results in 2021 would not be materially impacted.

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

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, 2020 and 2019, 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, 2020, 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, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, 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, 2020, 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 24, 2021, expressed an unqualified opinion on the Company's internal control over financial reporting.

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.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue Recognition ASC 606 — Revenue arrangements involving multiple performance obligations consisting of hardware, software, and professional services such as implementation, project management, installation, and consulting services — Refer to Notes 1 and 17 to the financial statements

Critical Audit Matter Description

Many of the Company’s revenue arrangements involve multiple performance obligations consisting of hardware, software, and professional services such as implementation, project management, installation, and consulting services. These contracts may contain customer-specific business terms and conditions, including service level commitments, variable consideration, and terms that govern when the customer has taken control. Additionally, these contracts may be modified from time to time as the Company delivers under the contract. These customer-specific business terms and conditions and modifications may involve complex accounting considerations, including determining whether the Company has enforceable rights and obligations, whether contract modifications represent new contracts or modification of existing contracts, whether certain performance obligations are distinct, and other considerations that may impact the timing of revenue recognition.

The evaluation of these factors is executed in accordance with the ASC 606 revenue recognition framework and requires significant management judgment that could affect the amount and timing of revenue recognition over the contractual period. The computations to recognize revenue under the ASC 606 revenue recognition framework can be complex and require a significant volume of data input. Additionally, there can be complexity in the computations and entries made to record the related contract assets and liabilities at the balance sheet date. Given the challenge in auditing the judgments and computations made in determining revenue recognition for these multiple performance obligation arrangements with customer-specific business terms and conditions and modifications, we identified revenue recognition as a critical audit matter.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to (1) determining whether the Company has enforceable rights and obligations, whether contract modifications represent new contracts or modifications, whether certain performance obligations are distinct and other considerations that may impact the timing of revenue recognition and (2) the completeness and accuracy of the revenue recognition computations and entries used to recognize revenue included the following, among others:

- We tested the effectiveness of controls over contract reviews, including management's use of checklists and other review procedures to determine whether customer-specific business terms are evident in the contract and whether accounting conclusions regarding enforceable rights and obligations, contract modifications, distinct products and services, and other considerations that may impact the timing of revenue recognition are appropriately applied.
- We tested the effectiveness of controls over revenue recognition computations and entries to determine whether the computations and entries appropriately reflect the accounting conclusions for these contracts. Such controls included (1) the review of the completeness and accuracy of data input into the computations and entries and (2) the review of the mathematical accuracy of the computations and entries.
- For a sample of contracts with customers that included existing contracts, new contracts and contract modifications, we:
    - Tested management's identification of customer-specific terms, whether the Company had enforceable rights and obligations, whether contract modifications represented new contracts or modifications to existing contracts, whether customer-specific terms introduced new or implied performance obligations, or other factors influencing the timing, nature and amount of revenue recognized, and assessed management's conclusions regarding accounting treatment. Our procedures included reading the selected contracts and inquiring of the Company's operational personnel to understand the nature of the contract and its business purpose, as well as evaluating management's conclusions.
    - Evaluated whether the identified accounting conclusions were appropriately reflected in the revenue recognition computations and entries.
    - Tested the accuracy and completeness of the data used in the computations and entries to record revenue.
    - Tested mathematical accuracy of revenue recognition computations and entries.

Goodwill — Device Solutions Reporting Unit — Refer to Notes 1 and 5 to the financial statements

Critical Audit Matter Description

The Company's evaluation of goodwill for impairment involves the comparison of the fair value of its reporting units to their carrying amounts. Due to a decline in the Company's updated long-term forecast for the Device Solutions ("Devices") reporting unit, the Company identified an impairment indicator and, as a result, evaluated goodwill for impairment during the third quarter of 2020. The Company develops its estimate of fair value of the reporting unit using forecast discounted cash flows at the reporting unit level, which requires the Company to make significant estimates and assumptions related to forecasts of future revenues and operating costs. Changes in these assumptions could have a significant impact on either the fair value, the amount of any goodwill impairment charge, or both. The goodwill balance relating to the Devices reporting unit is $53.2 million as of December 31, 2020. The estimated fair value of Devices exceeded its carrying value as of the measurement date and, therefore, no impairment was recognized.

We identified goodwill for Devices as a critical audit matter because of the significant estimates and assumptions the Company makes to estimate the fair value of Devices and the sensitivity of Devices' operations to changes in the Company's financial performance. This required a high degree of auditor judgment and an increased extent of effort, including the involvement of our fair value specialists, when performing audit procedures to evaluate the reasonableness of management's estimates and assumptions related to forecasts of future revenues and operating costs.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the forecasts of revenue and operating costs ("forecasts") for the Devices reporting unit included the following, among others:

- We tested the effectiveness of controls over management’s goodwill impairment evaluation, including those over the determination of the fair value of Devices, such as controls related to the Company’s forecasts.
- We inquired of members of the Company’s management responsible for the Devices reporting unit to understand and corroborate management’s plan to achieve planned forecast revenue growth
- We evaluated the reasonableness of management’s forecasts by comparing the forecasts to (1) historical results, (2) internal communications to management and the Board of Directors, and (3) forecasted information included in analyst and industry reports as well as press releases of the Company and companies in its peer group.
- With the assistance of our fair value specialists, we evaluated the valuation methodology and long-term forecast growth rates, including testing the underlying source information and the mathematical accuracy of the calculations, and developed a range of independent estimates and compared those to selections made by management.

/s/ DELOITTE & TOUCHE LLP

Seattle, Washington
February 24, 2021

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

ITRON, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS

In thousands, except per share data	Year Ended December 31, 2020	2019	2018
Revenues			
Product revenues	$ 1,889,173	$ 2,220,395	$ 2,095,458
Service revenues	284,177	282,075	280,659
Total revenues	2,173,350	2,502,470	2,376,117
Cost of revenues			
Product cost of revenues	1,408,615	1,587,710	1,476,498
Service cost of revenues	162,568	162,441	169,300
Total cost of revenues	1,571,183	1,750,151	1,645,798
Gross profit	602,167	752,319	730,319
Operating expenses			
Sales, general and administrative	276,920	346,872	423,210
Research and development	194,101	202,200	207,905
Amortization of intangible assets	44,711	64,286	71,713
Restructuring	37,013	6,278	77,183
Loss on sale of business	59,817	—	—
Total operating expenses	612,562	619,636	780,011
Operating income (loss)	(10,395)	132,683	(49,692)
Other income (expense)			
Interest income	2,998	1,849	2,153
Interest expense	(44,001)	(52,453)	(58,203)
Other income (expense), net	(5,241)	(9,047)	(3,409)
Total other income (expense)	(46,244)	(59,651)	(59,459)
Income (loss) before income taxes	(56,639)	73,032	(109,151)
Income tax benefit (provision)	(238)	(20,617)	12,570
Net income (loss)	(56,877)	52,415	(96,581)
Net income attributable to noncontrolling interests	1,078	3,409	2,669
Net income (loss) attributable to Itron, Inc.	$ (57,955)	$ 49,006	$ (99,250)
Net income (loss) per common share - Basic	$ (1.44)	$ 1.24	$ (2.53)
Net income (loss) per common share - Diluted	$ (1.44)	$ 1.23	$ (2.53)
Weighted average common shares outstanding - Basic	40,253	39,556	39,244
Weighted average common shares outstanding - Diluted	40,253	39,980	39,244

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

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

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Net income (loss)	$ (56,877)	$ 52,415	$ (96,581)
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	21,082	(2,953)	(28,841)
Foreign currency translation adjustment reclassified to net income on sale of business	52,074	2,443	—
Net unrealized gain (loss) on derivative instruments, designated as cash flow hedges	(898)	(1,924)	235
Pension benefit obligation adjustment	(6,112)	(5,933)	2,779
Total other comprehensive income (loss), net of tax	66,146	(8,367)	(25,827)
Total comprehensive income (loss), net of tax	9,269	44,048	(122,408)
Comprehensive income attributable to noncontrolling interests, net of tax	1,078	3,409	2,669
Comprehensive income (loss) attributable to Itron, Inc.	$ 8,191	$ 40,639	$ (125,077)

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

ITRON, INC.
CONSOLIDATED BALANCE SHEETS

In thousands	December 31, 2020	December 31, 2019
ASSETS		
Current assets		
Cash and cash equivalents	$ 206,933	$ 149,904
Accounts receivable, net	369,828	472,925
Inventories	182,377	227,896
Other current assets	171,124	146,526
Total current assets	930,262	997,251
Property, plant, and equipment, net	207,816	233,228
Deferred tax assets, net	76,142	63,899
Other long-term assets	51,656	44,686
Operating lease right-of-use assets, net	76,276	79,773
Intangible assets, net	132,955	185,097
Goodwill	1,131,916	1,103,907
Total assets	$ 2,607,023	$ 2,707,841
LIABILITIES AND EQUITY		
Current liabilities		
Accounts payable	$ 215,639	$ 328,128
Other current liabilities	72,591	63,785
Wages and benefits payable	86,249	119,220
Taxes payable	15,804	22,193
Current portion of debt	18,359	—
Current portion of warranty	28,329	38,509
Unearned revenue	112,928	99,556
Total current liabilities	549,899	671,391
Long-term debt, net	902,577	932,482
Long-term warranty	13,061	14,732
Pension benefit obligation	119,457	98,712
Deferred tax liabilities, net	1,921	1,809
Operating lease liabilities	66,823	68,919
Other long-term obligations	113,012	118,981
Total liabilities	1,766,750	1,907,026
Equity		
Preferred stock, no par value, 10,000 shares authorized, no shares issued or outstanding	—	—
Common stock, no par value, 75,000 shares authorized, 40,444 and 39,941 shares issued and outstanding	1,389,419	1,357,600
Accumulated other comprehensive loss, net	(138,526)	(204,672)
Accumulated deficit	(434,345)	(376,390)
Total Itron, Inc. shareholders' equity	816,548	776,538
Noncontrolling interests	23,725	24,277
Total equity	840,273	800,815
Total liabilities and equity	$ 2,607,023	$ 2,707,841

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

ITRON, INC.
CONSOLIDATED STATEMENTS OF EQUITY

	Common Stock						
In thousands	**Shares**	**Amount**	**Accumulated Other Comprehensive Loss**	**Accumulated Deficit**	**Total Itron, Inc. Shareholders' Equity**	**Noncontrolling Interests**	**Total Equity**
Balances at January 1, 2018	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 2016-09)		—		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
Net income				49,006	49,006	3,409	52,415
Other comprehensive income (loss), net of tax			(8,367)		(8,367)	—	(8,367)
Distributions to noncontrolling interests						(517)	(517)
Stock issues and repurchases:							
Options exercised	489	21,289			21,289		21,289
Restricted stock awards released net of repurchased shares for taxes	415	(3,113)			(3,113)		(3,113)
Issuance of stock-based compensation awards	9	630			630		630
Employee stock purchase plan	59	3,100			3,100		3,100
Stock-based compensation expense		26,330			26,330		26,330
Stock repurchased	(529)	(25,000)			(25,000)		(25,000)
Balances at December 31, 2019	39,941	1,357,600	(204,672)	(376,390)	776,538	24,277	800,815
Net income (loss)				(57,955)	(57,955)	1,078	(56,877)
Other comprehensive income (loss), net of tax			66,146		66,146	—	66,146
Distributions to noncontrolling interests						(1,630)	(1,630)
Stock issues and repurchases:							
Options exercised	103	5,551			5,551		5,551
Restricted stock awards released net of repurchased shares for taxes	334	(2,120)			(2,120)		(2,120)
Issuance of stock-based compensation awards	12	824			824		824
Employee stock purchase plan	54	3,335			3,335		3,335
Stock-based compensation expense		24,229			24,229		24,229
Balances at December 31, 2020	40,444	$ 1,389,419	$ (138,526)	$ (434,345)	$ 816,548	$ 23,725	$ 840,273

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

ITRON, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Operating activities			
Net income (loss)	$ (56,877)	$ 52,415	$ (96,581)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization of intangible assets	97,290	114,400	122,497
Non-cash operating lease expense	18,178	18,958	—
Stock-based compensation	25,053	26,960	31,263
Amortization of prepaid debt fees	4,130	5,631	7,046
Deferred taxes, net	(12,939)	(192)	(19,130)
Loss on sale of business	59,817	—	—
Restructuring, non-cash	5,888	(1,785)	859
Other adjustments, net	10,392	(4,295)	1,452
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable	108,256	(39,467)	15,524
Inventories	35,403	(9,389)	(25,613)
Other current assets	(11,832)	(31,128)	(23,589)
Other long-term assets	(11,391)	7,053	3,020
Accounts payables, other current liabilities, and taxes payable	(111,724)	9,177	20,101
Wages and benefits payable	(34,664)	30,835	(9,565)
Unearned revenue	8,212	8,905	27,584
Warranty	(13,538)	(6,637)	20,815
Other operating, net	(10,140)	(8,601)	34,072
Net cash provided by operating activities	109,514	172,840	109,755
Investing activities			
Net proceeds related to the sale of business	1,133	—	—
Acquisitions of property, plant, and equipment	(46,208)	(60,749)	(59,952)
Business acquisitions, net of cash equivalents acquired	—	—	(803,075)
Other investing, net	4,039	12,569	369
Net cash used in investing activities	(41,036)	(48,180)	(862,658)
Financing activities			
Proceeds from borrowings	400,000	50,000	778,938
Payments on debt	(414,063)	(137,657)	(363,359)
Issuance of common stock	8,886	24,390	9,171
Repurchase of common stock	—	(25,000)	—
Prepaid debt fees	(1,571)	(1,560)	(24,042)
Other financing, net	(4,828)	(7,692)	(4,887)
Net cash provided by (used in) financing activities	(11,576)	(97,519)	395,821
Effect of foreign exchange rate changes on cash, cash equivalents, and restricted cash	127	435	(7,925)
Increase (decrease) in cash, cash equivalents, and restricted cash	57,029	27,576	(365,007)
Cash, cash equivalents, and restricted cash at beginning of period	149,904	122,328	487,335
Cash, cash equivalents, and restricted cash at end of period	$ 206,933	$ 149,904	$ 122,328
Supplemental disclosure of cash flow information:			
Cash paid during the period for:			
Income taxes, net	$ 2,688	$ 12,041	$ 13,771
Interest	47,241	44,788	42,347

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

ITRON, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2020

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. 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, Consolidated Statements of Comprehensive Income (Loss), Consolidated Statements of Equity, and Consolidated Statements of Cash Flows for the years ended December 31, 2020, 2019, and 2018 and the Consolidated Balance Sheets as of December 31, 2020 and 2019 of Itron, Inc. and its subsidiaries, prepared in accordance with U.S. generally accepted accounting principles (GAAP).

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.

Risks and Uncertainties
The COVID-19 pandemic has had global economic impacts including disrupting global supply chains and creating market volatility. The extent of the recent pandemic and its ongoing impact on our operations is volatile but is being monitored closely by our management. While certain of our European factories were closed during portions of the first half of 2020 due to government actions and local conditions, all were open by May and throughout the remainder of the year. Any further closures that may be imposed on us could impact our results for 2021. Incremental costs we have incurred related to COVID-19, such as personal protective equipment, increased cleaning and sanitizing of our facilities, and other such items, have not been material to date. At this time, we have not identified any significant decrease in long-term customer demand for our products and services. Certain of our customers' projects and deployments have shifted into 2021 and beyond.

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 20% to 50% 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 fair value 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 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. 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,		
In thousands	**2020**	**2019**	**2018**
Cash and cash equivalents	$ 206,933	$ 149,904	$ 120,221
Restricted cash included in other current assets	—	—	51
Long-term restricted cash	—	—	2,056
Total cash, cash equivalents, and restricted cash	$ 206,933	$ 149,904	$ 122,328

Accounts Receivable, net

Accounts receivable are recognized for invoices issued to customers in accordance with our contractual arrangements. Interest and late payment fees are minimal. Unbilled receivables are recognized when revenues are recognized upon product shipment or service delivery and invoicing occurs at a later date. We recognize an allowance for credit losses representing our estimate of the expected losses in accounts receivable at the date of the balance sheet based on our historical experience of bad debts, our specific review of outstanding receivables, and our review of current and expected economic conditions. Accounts receivable are written-off against the allowance when we believe an account, or a portion thereof, is no longer collectible.

Inventories

Inventories are stated at the lower of cost or net realizable value using the first-in, first-out method. Cost includes raw materials and labor, plus applied direct and indirect overhead costs. Net realizable value is the estimated selling price in the normal course of business, minus the cost of completion, disposal and transportation.

Derivative Instruments

All derivative instruments, whether designated in hedging relationships or not, are recognized on the Consolidated Balance Sheets at fair value as either assets or liabilities. The fair values of our derivative instruments are determined using the fair value measurements of significant other observable inputs (Level 2), as defined by GAAP. The fair value of our derivative instruments may switch between an asset and a liability depending on market circumstances at the end of the period. We include the effect of our counterparty credit risk based on current published credit default swap rates when the net fair value of our derivative instruments is in a net asset position and the effect of our own nonperformance risk when the net fair value of our derivative instruments is in a net liability position.

For any derivative designated as a fair value hedge, the changes in the fair value of the derivative and of the hedged item attributable to the hedged risk are recognized in earnings. For any derivative designated as a cash flow hedge, changes in the fair value of the derivative are recognized as a component of other comprehensive income (loss) (OCI) and are recognized in earnings when the hedged item affects earnings. For a hedge of a net investment, any unrealized gain or loss from the foreign currency revaluation of the hedging instrument is reported in OCI as a net unrealized gain or loss on derivative instruments. Upon termination of a net investment hedge, the net derivative gain/loss will remain in accumulated other comprehensive income (loss) (AOCI) until such time when earnings are impacted by a sale or liquidation of the associated operations. We classify cash flows from our derivative programs as cash flows from operating activities in the Consolidated Statements of Cash Flows.

Derivatives are not used for trading or speculative purposes. Our derivatives are with credit-worthy multinational commercial banks, with which we have master netting agreements; however, our derivative positions are not recognized on a net basis in the Consolidated Balance Sheets. There are no credit-risk related contingent features within our derivative instruments. Refer to Note 7: Derivative Financial Instruments and Note 14: Shareholders' Equity for further disclosures of our derivative instruments and their impact on OCI.

Property, Plant, and Equipment

Property, plant, and equipment are stated at cost less accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful lives of the assets, generally 30 years for buildings and improvements and three years to 10 years for machinery and equipment, computers and software, and furniture. Leasehold improvements are capitalized and depreciated over the term of the applicable lease, including renewable periods if reasonably certain, or over the useful lives, whichever is shorter. Construction in process represents capital expenditures incurred for assets not yet placed in service. Costs related to internally developed software and software purchased for internal uses are capitalized and are amortized over the estimated useful lives of the assets. Repair and maintenance costs are recognized as incurred. We have no major planned maintenance activities.

We review long-lived assets for impairment whenever events or circumstances indicate the carrying amount of an asset group may not be recoverable. Assets held for sale are classified within other current assets in the Consolidated Balance Sheets, are reported at the lower of the carrying amount or fair value less costs to sell, and are no longer depreciated. Gains and losses from asset disposals and impairment losses are classified within the Consolidated Statements of Operations according to the use of the asset, except those gains and losses recognized in conjunction with our restructuring activities, which are classified within restructuring expense.

Prepaid Debt Fees

Prepaid debt fees for term debt represent the capitalized direct costs incurred related to the issuance of debt and are recognized as a deduction from the carrying amount of the corresponding debt liability. We have elected to present prepaid debt fees for revolving debt within other long-term assets in the Consolidated Balance Sheets. These costs are amortized to interest expense over the terms of the respective borrowings, including contingent maturity or call features, using the effective interest method or the straight-line method when associated with a revolving credit facility. When debt is repaid early, the related portion of unamortized prepaid debt fees is written off and included in interest expense.

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 requires 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. The determination of the fair value is judgmental in nature and involves the use of significant estimates and assumptions. 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.

Leases

We determine if an arrangement is a lease at inception. A lease exists when a contract conveys to the customer the right to control the use of identified property, plant, or equipment for a period of time in exchange for consideration. The definition of a lease embodies two conditions: (1) there is an identified asset in the contract that is land or a depreciable asset (i.e., property, plant, and equipment), and (2) the customer has the right to control the use of the identified asset.

Operating leases are included in operating lease right-of-use (ROU) assets, other current liabilities, and operating lease liabilities on our Consolidated Balance Sheets. Finance leases are included in property, plant, and equipment, other long-term assets, other current liabilities, and other long-term obligations on our Consolidated Balance Sheets.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. We use the rate implicit in the lease agreement when readily determinable. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate, which is the estimated rate of interest we expect to pay on a collateralized basis over a similar term, based on the information available at the lease commencement date. The Operating lease ROU asset also includes any lease payments made and is reduced by lease incentives received and initial direct costs incurred. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for operating lease payments is recognized on a straight-line basis over the lease term.

We have lease agreements that include lease and nonlease components. When nonlease components are fixed, we have elected the practical expedient to account for lease and nonlease components as a single lease component, except for leases embedded in service contracts.

All leases with a lease term that is greater than one month are subject to recognition and measurement on the balance sheet, except where we have leases in service contracts with contract manufacturers. For leases with contract manufacturers, we have elected to utilize the short-term lease exemption.

Lease expense for variable lease payments, where the timing or amount of the payment is not fixed, are recognized when the obligation is incurred. Variable lease payments generally arise in our net lease arrangements where executory and other lease-related costs are billed to Itron when incurred by the lessor.

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 in a transaction that does not qualify as a business combination. 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, generally three years to ten years for core-developed technology and customer contracts and relationships. 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 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 forecasted 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 quantitative 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, we first evaluate the long-lived assets within the reporting unit for impairment and then recognize goodwill impairment loss in an amount equal to any 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.

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. Legal costs to defend against contingent liabilities are recognized as incurred.

Bonus and Profit Sharing
We have various employee bonus and profit sharing plans, which provide award amounts for the achievement of financial and nonfinancial targets. If management determines it is probable that the targets will be achieved, and the amounts can be reasonably estimated, a compensation accrual is recognized based on the proportional achievement of the financial and nonfinancial targets.

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 is 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 long-term warranty balance includes estimated warranty claims beyond one year. Warranty expense is classified within cost of revenues.

Restructuring
We recognize a liability for costs associated with an exit or disposal activity under a restructuring project in the period in which the liability is incurred. Employee termination benefits considered postemployment 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 termination of a contract in accordance with the contract terms or the cessation of the use of the rights conveyed by the contract, whichever occurs later.

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 less costs to sell are less than the net book value. 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.

Defined Benefit Pension Plans
We sponsor both funded and unfunded defined benefit pension plans for certain international employees. We recognize a liability for the projected benefit obligation in excess of plan assets. We recognize an asset when plan assets exceed 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 OCI, net of tax, the actuarial gains or losses and prior service costs or credits, if any, which arise during the period but that are not recognized as components of net periodic benefit cost. If actuarial gains and losses exceed ten percent of the greater of plan assets or plan liabilities, we amortize them over the employees' average future service period.

Share Repurchase Plans
From time to time, we may repurchase shares of Itron common stock under programs authorized by our Board of Directors. Share repurchases are made in the open market or in privately negotiated transactions and in accordance with applicable securities laws. Under applicable Washington State law, shares repurchased are retired and not displayed separately as treasury stock on the financial statements; the value of the repurchased shares is deducted from common stock.

Product Revenues and Service Revenues

Product revenues include sales from standard and smart meters, systems or software, and any associated implementation and installation revenue. Service revenues include sales from post-sale maintenance support, consulting, outsourcing, and managed services.

Revenue Recognition

On January 1, 2018, we adopted Revenue from Contracts with Customers (ASC 606) using the modified retrospective method. The majority of our revenues consist primarily of hardware sales, but may also include the license of software, software implementation services, cloud services and Software-as-a-Service (SaaS), project management services, installation services, consulting services, post-sale maintenance support, and extended or customer-specific warranties. We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance, and collectability of consideration is probable. In determining whether the definition of a contract has been met, we consider whether the arrangement creates enforceable rights and obligations, which involves evaluation of contractual terms that would allow for the customer to terminate the agreement. If the customer has the unilateral right to terminate the agreement without providing further consideration to us, the agreement would not be considered to meet the definition of a contract.

Many of our revenue arrangements involve multiple performance obligations as our hardware and services are often sold together. Separate contracts entered into with the same customer (or related parties of the customer) at or near the same time are accounted for as a single contract when one or more of the following criteria are met:

- The contracts are negotiated as a package with a single commercial objective;
- The amount of consideration to be paid in one contract depends on the price or performance of the other contract; or
- The goods or services promised in the contracts (or some goods or services promised in each of the contracts) are a single performance obligation.

Once the contract has been defined, we evaluate whether the promises in the contract should be accounted for as more than one performance obligation. This evaluation requires significant judgment, and the decision to separate the combined or single contract into multiple performance obligations could change the amount of revenue and profit recognized in a given period. Some of our contracts contain a significant service of integrating, customizing or modifying goods or services in the contract, in which case the goods or services would be combined into a single performance obligation. It is common that we may promise to provide multiple distinct goods or services, in which case we separate the contract into more than one performance obligation. If a contract is separated into more than one performance obligation, we allocate the total transaction price to each performance obligation in an amount based on the estimated relative standalone selling prices of the promised goods or services. 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.

Many of our contracts with customers include variable consideration, which can include liquidated damage provisions, rebates and volume and early payment discounts. 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. We estimate variable consideration using the expected value method, taking into consideration contract terms, historical customer behavior, and historical sales. 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. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur.

In the normal course of business, we do not accept product returns unless the item is defective as manufactured. We establish provisions for estimated returns and warranties. In addition, we do not typically provide customers with the right to a refund.

Hardware revenue is recognized at a point in time. Transfer of control is typically at the time of shipment, receipt by the customer, or, if applicable, upon receipt of customer acceptance provisions. We will recognize revenue prior to receipt of customer acceptance for hardware in cases where the customer acceptance provision is determined to be a formality. Transfer of control would not occur until receipt of customer acceptance in hardware arrangements where such provisions are subjective or where we do not have history of meeting the acceptance criteria.

Perpetual software licenses are considered to be a right to use intellectual property and are recognized at a point in time. Transfer of control is considered to be at the point at which it is available to the customer to download and use or upon receipt of customer acceptance. In certain contracts, software licenses may be sold with implementation services that include a significant service of integrating, customizing or modifying the software. In these instances, the software license is combined into single performance obligation with the implementation services and recognized over time as the implementation services are performed.

Hardware and software licenses (when not combined with professional services) are typically billed when shipped and revenue recognized at a point-in-time. As a result, the timing of revenue recognition and invoicing does not have a significant impact on contract assets and liabilities.

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. We expect this method to best depict our performance in transferring control of services promised to the customer or represents a reasonable proxy for measuring progress. The estimate of expected costs to provide services requires judgment. Cost estimates take into consideration our historical experience and the specific scope requested by the customer and are updated quarterly. We may also offer professional services on a stand-ready basis over a specified period of time, in which case revenue would be recognized ratably over the term. Invoicing of these services is commensurate with performance and occurs on a monthly basis. As such, these services do not have a significant impact on contract assets and contract liabilities.

Cloud services and SaaS arrangements where customers have access to certain of our software within a cloud-based IT environment that we manage, host, and support are offered to customers on a subscription basis. Revenue for the cloud services and SaaS offerings are generally recognized over time, ratably over the contact term commencing with the date the services are made available to the customer.

Services, including professional services, cloud services, and SaaS arrangements, are commonly billed on a monthly basis in arrears and typically result in an unbilled receivable, which is not considered a contract asset as our right to consideration is unconditional.

Certain of our revenue arrangements include an extended or customer-specific warranty provision that covers all or a portion of a customer's replacement or repair costs beyond the standard warranty period. Whether or not the extended warranty is separately priced in the arrangement, such warranties are considered to be a separate good or service, and a portion of the transaction price is allocated to this extended warranty performance obligation. This revenue is recognized ratably over the extended warranty coverage period.

Hardware and software post-sale maintenance support fees are recognized over time, ratably over the life of the related service contract. Support fees are typically billed on an annual basis, resulting in a contract liability. Shipping and handling costs and incidental expenses billed to customers are recognized as revenue, with the associated cost charged to cost of revenues. We recognize sales, use, and value added taxes billed to our customers on a net basis.

Payment terms with customers can vary by customer; however, amounts billed are typically payable within 30 to 90 days, depending on the destination country. We do not typically offer financing as part of our contracts with customers.

We incur certain incremental costs to obtain contracts with customers, primarily in the form of sales commissions. Where the amortization period is one year or less, we have elected to apply the practical expedient and recognize the related commissions expense as incurred. Otherwise, such incremental costs are capitalized and amortized over the contract period. Capitalized incremental costs are not material.

Product and Software Development Costs

Product and software development costs primarily include employee compensation and third-party contracting fees. We do not capitalize product development costs, and we do not generally capitalize development expenses for computer software to be sold, leased, or otherwise marketed as the costs incurred are immaterial for the relatively short period of time between technological feasibility and the completion of software development.

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 where 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 have elected to account for forfeitures of any awards in stock-based compensation expense prospectively as they occur.

The fair value of stock options is estimated at the date of grant using the Black-Scholes option-pricing model. Options to purchase our common stock are granted with an exercise price equal to the market close price of the stock on the date the Board of Directors approves the grant. Options generally become exercisable in three equal annual installments beginning one year from the date of grant and expire 10 years from the date of grant. Expected volatility is based on a combination of the historical volatility of our common stock and the implied volatility of our traded options for the related expected term. We believe this combined approach is reflective of current and historical market conditions and is an appropriate indicator of expected volatility. The risk-free interest rate is the rate available as of the award date on zero-coupon U.S. government issues with a term equal to the expected term of the award. The expected term is the weighted average expected term of an award based on the period of time between the date the award is granted and the estimated date the award will be fully exercised. Factors considered in estimating the expected term include historical experience of similar awards, contractual terms, vesting schedules, and expectations of future employee behavior. We have not paid dividends in the past and do not plan to pay dividends in the foreseeable future.

The fair value of a restricted stock unit is the market close price of our common stock on the date of grant. Restricted stock units vest over a maximum period of three years. After vesting, the restricted stock units are converted into shares of our common stock on a one-for-one basis and issued to employees. Certain restricted stock units are issued under the Long-Term Performance Restricted Stock Unit Award Agreement and include performance and market conditions. The final number of shares issued will be based on the achievement of financial targets and our total shareholder return relative to the Russell 3000 Index during the performance periods. Due to the presence of a market condition, we utilize a Monte Carlo valuation model to determine the fair value of the awards at the grant date. Expected volatility is based on the historical volatility of our common stock for the related expected term. We believe this approach is reflective of current and historical market conditions and is an appropriate indicator of expected volatility. The risk-free interest rate is the rate available as of the grant date on zero-coupon U.S. government issues with a term equal to the expected term of the award. The expected term is the remaining term of an award based on the period of time between the grant date and the date the award is expected to vest. We have not paid dividends in the past and do not plan to pay dividends in the foreseeable future.

Phantom stock units are a form of share-based award that are indexed to our stock price and are settled in cash upon vesting and accounted for as liability-based awards. Fair value is remeasured at the end of each reporting period based on the market close price of our common stock. Phantom stock units vest over a maximum period of three years. Since phantom stock units are settled in cash, compensation expense recognized over the vesting period will vary based on changes in the fair value of the awards.

The fair value of unrestricted stock awards is the market close price of our common stock on the date of grant, and the awards are deemed fully vested. We expense stock-based compensation at the date of grant for unrestricted stock awards.

Excess tax benefits and deficiencies resulting from employee share-based payment are recognized as income tax provision or benefit in the Consolidated Statements of Operations, and as an operating activity on the Consolidated Statements of Cash Flows.

We also maintain an Employee Stock Purchase Plan (ESPP) for our employees. Under the terms of the ESPP, employees can deduct up to 10% of eligible compensation to purchase our common stock at a 5% discount from the fair market value of the stock at the end of each fiscal quarter, subject to other limitations under the plan. The sale of the stock to the employees occurs at the beginning of the subsequent quarter. The ESPP is not considered compensatory, and no compensation expense is recognized for sales of our common stock to employees.

Income Taxes

We account for income taxes using the asset and liability method of accounting. Deferred tax assets and liabilities are recognized based upon anticipated future tax consequences, in each of the jurisdictions that we operate, attributable to: (1) the differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax bases; and (2) net operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured annually using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The calculation of our tax liabilities involves applying complex tax regulations in different tax jurisdictions to our tax positions. The effect on deferred tax assets and liabilities of a change in tax legislation and/or rates is recognized in the period that includes the enactment date. A valuation allowance is recognized to reduce the carrying amounts of deferred tax assets if it is not more likely than not that such assets will be realized. We do not recognize tax liabilities on undistributed earnings of international subsidiaries that are permanently reinvested.

Foreign Exchange

Our consolidated financial statements are reported in U.S. dollars. Assets and liabilities of international subsidiaries with non-U.S. dollar functional currencies are translated to U.S. dollars at the exchange rates in effect on the balance sheet date, or the last business day of the period, if applicable. Revenues and expenses for each subsidiary are translated to U.S. dollars using an average rate for the relevant reporting period. Translation adjustments resulting from this process are included, net of tax, in OCI. Gains and losses that arise from exchange rate fluctuations for monetary asset and liability balances that are not denominated in an entity's functional currency are included within other income (expense), net in the Consolidated Statements of Operations. Currency gains and losses of intercompany balances deemed to be long-term in nature or designated as a hedge of the net investment in international subsidiaries are included, net of tax, in OCI. Foreign currency losses, net of hedging, of $2.8 million, $5.5 million, and $3.0 million were included in other expenses, net, for the years ended December 31, 2020, 2019, and 2018, respectively.

Fair Value Measurements

For assets and liabilities measured at fair value, the GAAP fair value hierarchy prioritizes the inputs used in different valuation methodologies, assigning the highest priority to unadjusted quoted prices for identical assets and liabilities in actively traded markets (Level 1) and the lowest priority to unobservable inputs (Level 3). Level 2 inputs consist of quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in non-active markets; and model-derived valuations in which significant inputs are corroborated by observable market data either directly or indirectly through correlation or other means. Inputs may include yield curves, volatility, credit risks, and default rates.

Recently Adopted Accounting Standards

In June 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments.* Subsequent to 2016-13 the FASB also issued codification improvements and transition relief in ASU 2019-04, ASU 2019-05, ASU 2019-11, ASU 2020-02, and ASU 2020-03, hereafter collectively referred to as Accounting Standards Codification (ASC) 326. ASC 326 replaces the incurred loss impairment methodology in previous GAAP with a methodology based on expected credit losses, which results in losses being recognized earlier. The estimate of expected credit losses uses a broader range of reasonable and supportable information. We adopted ASC 326 on January 1, 2020, and the impacts on our consolidated financial position, results of operations, and cash flows were immaterial.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which amended the disclosure requirements under ASC 820. This update clarifies and unifies the disclosure of Level 3 fair value instruments. We adopted this standard on January 1, 2020, and it did not materially impact our consolidated financial statements.

In August 2018, the FASB issued ASU 2018-14, *Compensation—Retirement Benefits—Defined Benefit Plans—General (Subtopic 715-20): Disclosure Framework—Changes to the Disclosure Requirements for Defined Benefit Plans*, which amends the disclosure requirements under ASC 715-20. This update clarifies annual disclosures for Defined Benefit Plans. We adopted this standard on January 1, 2020, and it did not materially impact our consolidated financial statements.

Recent Accounting Standards Not Yet Adopted

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which modifies certain provisions of ASC 740 to reduce the complexity of accounting for income taxes. ASU 2019-12 is effective for us beginning with our interim financial reports for the first quarter of 2021. During our evaluation process we have determined that early adopting would not have had a material impact on our 2020 financial statements. We have also determined that the retrospective portions of this amendment are not applicable to our business. We are still evaluating what impact this amendment will have in future periods, but we do not believe this standard will have a material impact on our consolidated financial position, results of operations, or cash flows.

In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*, which provides optional expedients and exceptions for applying GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform. ASU 2020-04 applies to contracts that reference LIBOR or another reference rate expected to be terminated because of reference rate reform. An entity may elect certain optional expedients for hedging relationships that exist as of December 31, 2022 and maintain those optional expedients through the end of the hedging relationship. ASU 2020-04 can be adopted as of March 12, 2020 or thereafter. We do not currently have any contracts that have been changed to a new reference rate, but we will continue to evaluate our contracts and the effects of this standard on our consolidated financial position, results of operations, and cash flows prior to adoption.

Note 2: Earnings Per Share

The following table sets forth the computation of basic and diluted earnings (loss) per share (EPS):

	Year Ended December 31,		
In thousands, except per share data	**2020**	**2019**	**2018**
Net income (loss) available to common shareholders	$ (57,955)	$ 49,006	$ (99,250)
Weighted average common shares outstanding - Basic	40,253	39,556	39,244
Dilutive effect of stock-based awards	—	424	—
Weighted average common shares outstanding - Diluted	40,253	39,980	39,244
Net income (loss) per common share - Basic	$ (1.44)	$ 1.24	$ (2.53)
Net income (loss) per common share - Diluted	$ (1.44)	$ 1.23	$ (2.53)

Stock-based Awards

For stock-based awards, the dilutive effect is calculated using the treasury stock method. Under this method, the dilutive effect is computed as if the awards were exercised at the beginning of the period (or at time of issuance, if later) and assumes the related proceeds were used to repurchase our common stock at the average market price during the period. Related proceeds include the amount the employee must pay upon exercise and the future compensation cost associated with the stock award. Approximately 0.7 million, 0.4 million, and 1.1 million stock-based awards were excluded from the calculation of diluted EPS for the years ended December 31, 2020, 2019, and 2018, respectively, because they were anti-dilutive. These stock-based awards could be dilutive in future periods.

Note 3: Certain Balance Sheet Components

A summary of accounts receivable from contracts with customers is as follows:

Accounts receivable, net

In thousands	**December 31, 2020**	**December 31, 2019**
Trade receivables (net of allowance of $1,312 and $3,064)	$ 318,269	$ 415,887
Unbilled receivables	51,559	57,038
Total accounts receivable, net	$ 369,828	$ 472,925

Allowance for credit losses account activity	Year Ended December 31,		
In thousands	2020	2019	2018
Beginning balance	$ 3,064	$ 6,331	$ 3,957
Provision for (release of) doubtful accounts, net	(299)	(1,511)	3,874
Accounts written-off	(1,463)	(1,749)	(1,281)
Effect of change in exchange rates	10	(7)	(219)
Ending balance	$ 1,312	$ 3,064	$ 6,331

Inventories *In thousands*	December 31, 2020	December 31, 2019
Raw materials	$ 114,058	$ 120,861
Work in process	8,094	11,105
Finished goods	60,225	95,930
Total inventories	$ 182,377	$ 227,896

Property, plant, and equipment, net *In thousands*	December 31, 2020	December 31, 2019
Machinery and equipment	$ 334,050	$ 323,003
Computers and software	115,776	109,924
Buildings, furniture, and improvements	155,676	149,471
Land	14,303	14,988
Construction in progress, including purchased equipment	31,425	54,490
Total cost	651,230	651,876
Accumulated depreciation	(443,414)	(418,648)
Property, plant, and equipment, net	$ 207,816	$ 233,228

Depreciation expense	Year Ended December 31,		
In thousands	2020	2019	2018
Depreciation expense	$ 52,579	$ 50,114	$ 50,784

Note 4: Intangible Assets and Liabilities

The gross carrying amount and accumulated amortization (accretion) of our intangible assets and liabilities, other than goodwill, were as follows:

	December 31, 2020			December 31, 2019		
In thousands	Gross Assets	Accumulated (Amortization) Accretion	Net	Gross Assets	Accumulated (Amortization) Accretion	Net
Intangible Assets						
Core-developed technology	$ 525,051	$ (498,113)	$ 26,938	$ 507,669	$ (458,109)	$ 49,560
Customer contracts and relationships	383,245	(280,497)	102,748	381,288	(251,509)	129,779
Trademarks and trade names	79,716	(76,912)	2,804	78,837	(73,732)	5,105
Other	12,025	(11,560)	465	12,020	(11,367)	653
Total intangible assets	$ 1,000,037	$ (867,082)	$ 132,955	$ 979,814	$ (794,717)	$ 185,097
Intangible Liabilities						
Customer contracts and relationships	$ (23,900)	$ 21,479	$ (2,421)	$ (23,900)	$ 13,450	$ (10,450)

A summary of intangible assets and liabilities activity is as follows:

In thousands	Year Ended December 31, 2020	2019
Intangible assets, gross beginning balance	$ 979,814	$ 981,160
Intangibles disposed in sale of business	(18,140)	—
Effect of change in exchange rates	38,363	(1,346)
Intangible assets, gross ending balance	$ 1,000,037	$ 979,814
Intangible liabilities, gross beginning balance	$ (23,900)	$ (23,900)
Effect of change in exchange rates	—	—
Intangible liabilities, gross ending balance	$ (23,900)	$ (23,900)

Assumed intangible liabilities reflect the present value of the projected cash outflows for an existing contract where remaining costs are expected to exceed projected revenues.

The disposal of intangible assets was related to the sale of our Latin America business. The net book value of these assets was $0.8 million at the disposal date. Refer to Note 18: Sale of Business for additional information on the transaction.

Estimated future annual amortization (accretion) is as follows:

Year Ending December 31,	Amortization	Accretion	Estimated Annual Amortization, net
In thousands			
2021	$ 38,033	$ (1,962)	$ 36,071
2022	27,599	(459)	27,140
2023	19,955	—	19,955
2024	15,746	—	15,746
2025	14,742	—	14,742
Thereafter	16,880	—	16,880
Total intangible assets subject to amortization (accretion)	$ 132,955	$ (2,421)	$ 130,534

Amortization Expense *In thousands*	Year Ended December 31, 2020	2019	2018
Amortization expense	$ 44,711	$ 64,286	$ 71,713

We have recognized amortization expense within operating expenses in the Consolidated Statements of Operations. These expenses relate to intangible assets acquired and liabilities assumed as part of business combinations.

Note 5: Goodwill

The following table reflects changes in the carrying amount of goodwill for the years ended December 31, 2020 and 2019:

In thousands	Device Solutions	Networked Solutions	Outcomes	Total Company
Goodwill balance at January 1, 2019	$ 55,259	$ 918,495	$ 142,779	$ 1,116,533
Goodwill acquired	—	(4,938)	(1,040)	(5,978)
Effect of change in exchange rates	(329)	(5,469)	(850)	(6,648)
Goodwill balance at December 31, 2019	54,930	908,088	140,889	1,103,907
Goodwill allocated to business sold	(3,000)	—	—	(3,000)
Effect of change in exchange rates	1,284	25,726	3,999	31,009
Goodwill balance at December 31, 2020	$ 53,214	$ 933,814	$ 144,888	$ 1,131,916

The accumulated goodwill impairment losses at December 31, 2020 and 2019 were $676.5 million. The goodwill impairment losses were originally recognized in 2011 and 2013.

We recognized a $3.0 million reduction in Device Solutions goodwill as part of our loss on sale of business. Refer to Note 18: Sale of Business for additional information on the transaction.

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, we first evaluate the long-lived assets within the reporting unit for impairment and then recognize a goodwill impairment loss in an amount equal to any 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, business 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 markets 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 position. Due to a decline in our updated long-term forecast for the Device Solutions reporting unit, we completed an interim quantitative goodwill impairment test during the third quarter of 2020. After determining the estimated fair value of this reporting unit, we concluded there was no impairment to be recognized.

Note 6: Debt

The components of our borrowings were as follows:

In thousands		December 31, 2020		December 31, 2019
Credit facility				
USD denominated term loan	$	536,094	$	550,156
Multicurrency revolving line of credit		—		—
Senior notes		400,000		400,000
Total debt		936,094		950,156
Less: current portion of debt [1]		18,359		—
Less: unamortized prepaid debt fees - term loan		3,469		3,661
Less: unamortized prepaid debt fees - senior notes		11,689		14,013
Long-term debt, net	$	902,577	$	932,482

[1] During 2019 we made debt prepayments on the term loan in excess of required principal payments, reducing the current portion of debt to zero at December 31, 2019.

Credit Facility

On October 18, 2019, we amended our credit facility that was initially entered on January 5, 2018 (together with the amendments, the 2018 credit facility). The 2018 credit facility provides for committed credit facilities in the amount of $1.2 billion U.S. dollars. 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. The October 18, 2019, amendment extended the maturity date to October 18, 2024 and re-amortized the term loan based on the new balance as of the amendment date. The amendment also modified the required interest payments and made it based on total net leverage instead of total leverage. Through the third quarter of 2020, amounts not borrowed under the revolver were subject to a commitment fee, which was paid in arrears on the last day of each fiscal quarter, ranging from 0.15% to 0.25% and drawn amounts were subject to a margin ranging from 1.00% to 1.75%.

On October 19, 2020, we completed a second amendment to our 2018 credit facility. This amendment adjusts the maximum total net leverage ratio thresholds for the period beginning with the fourth quarter of 2020 through the fourth quarter of 2021 to allow for increased operational flexibility. The maximum leverage ratio is increased to 4.75:1 for the fourth quarter of 2020 and the first quarter of 2021 and 4.5:1 for the second quarter through the fourth quarter of 2021. An additional level of pricing was added to the existing pricing grid and is effective throughout the remaining term of the 2018 credit facility. Beginning with the fourth quarter of 2020, the commitment fee ranges from 0.15% to 0.30% and drawn amounts are subject to a margin ranging from 1.00% to 2.00%. Debt fees of approximately $1.4 million were incurred for the amendment, as well as other legal and advisory fees. Both the term loan and the revolver may 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.

The 2018 credit facility permits us and certain of our foreign subsidiaries to borrow in U.S. dollars, euros, British pounds, or, with lender approval, other currencies readily convertible into U.S. dollars. All obligations under the 2018 credit facility are guaranteed by Itron, Inc. and material U.S. domestic subsidiaries and are secured by a pledge of substantially all of the assets of Itron, Inc. and material U.S. domestic subsidiaries. This includes a pledge of 100% of the capital stock of material U.S. domestic subsidiaries and up to 66% of the voting stock (100% of the non-voting stock) of first-tier foreign subsidiaries. In addition, the obligations of any foreign subsidiary who is a foreign borrower, as defined by the 2018 credit facility, are guaranteed by the foreign subsidiary and by its direct and indirect foreign parents. The 2018 credit facility includes debt covenants, which contain certain financial thresholds and place certain restrictions on the incurrence of debt, investments, and the issuance of dividends. We were in compliance with the debt covenants under the 2018 credit facility at December 31, 2020.

Under the 2018 credit facility, we elect applicable market interest rates for both the term loan and any outstanding revolving loans. We also pay an applicable margin, which is based on our total net leverage ratio as defined in the credit agreement. The applicable rates per annum may be based on either: (1) the LIBOR rate or EURIBOR rate (subject to a floor of 0%), plus an applicable margin, or (2) the Alternate Base Rate, plus an applicable margin. The Alternate Base Rate election is equal to the greatest of three rates: (i) the prime rate, (ii) the Federal Reserve effective rate plus 0.50%, or (iii) one month LIBOR plus

1.00%. At December 31, 2020, the interest rate for both the term loan and the revolver was 1.65%, which includes the LIBOR rate plus a margin of 1.50%.

In March 2020, we drew $400 million in U.S. dollars under the revolver within the 2018 credit facility to increase our cash position and preserve future financial flexibility. During the fourth quarter, we repaid the $400 million under the revolver. At December 31, 2020, there were no amounts outstanding under the revolver, and $64.9 million was utilized by outstanding standby letters of credit, resulting in $435.1 million available for additional borrowings or standby letters of credit under the revolver. At December 31, 2020, $235.1 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.

Senior Notes

In December 2017 and January 2018, we issued $300 million and $100 million, of aggregate principal amount of 5.00% senior notes maturing January 15, 2026 (Senior Notes). The proceeds were used to refinance existing indebtedness related to the acquisition of Silver Spring Networks, Inc., pay related fees and expenses, and for general corporate purposes. Interest on the Senior Notes is payable semi-annually in arrears on January 15 and July 15. The Senior Notes are fully and unconditionally guaranteed, jointly and severally, on a senior unsecured basis by each of our subsidiaries that guarantee the 2018 credit facility.

Prior to maturity we may redeem some or all of the Senior Notes, together with accrued and unpaid interest, if any, plus a "make-whole" premium. On or after January 15, 2021, we may redeem some or all of the Senior Notes at any time at declining redemption prices equal to 102.50% beginning on January 15, 2021, 101.25% beginning on January 15, 2022 and 100.00% beginning on January 15, 2023 and thereafter to the applicable redemption date.

Debt Maturities

The amount of required minimum principal payments on our long-term debt in aggregate over the next five years, is as follows:

Year Ending December 31,	**Minimum Payments**
In thousands	
2021	$ 18,359
2022	44,063
2023	44,063
2024	429,609
2025	—
Thereafter	400,000
Total minimum payments on debt	$ 936,094

Note 7: Derivative Financial Instruments

As part of our risk management strategy, we use derivative instruments to hedge certain foreign currency and interest rate exposures. Refer to Note 1: Summary of Significant Accounting Policies, Note 14: Shareholders' Equity, and Note 15: Fair Value of Financial Instruments for additional disclosures on our derivative instruments.

The fair values of our derivative instruments are determined using the income approach and significant other observable inputs (and are classified as Level 2 in the fair value hierarchy). We have used observable market inputs based on the type of derivative and the nature of the underlying instrument. The key inputs include interest rate yield curves (swap rates and futures) and foreign exchange spot and forward rates, all of which are available in an active market. We have utilized the mid-market pricing convention for these inputs. We include, as a discount to the derivative asset, the effect of our counterparty credit risk based on current published credit default swap rates when the net fair value of our derivative instruments is in a net asset position. We consider our own nonperformance risk when the net fair value of our derivative instruments is in a net liability position by discounting our derivative liabilities to reflect the potential credit risk to our counterparty through applying a current market indicative credit spread to all cash flows.

The fair values of our derivative instruments are as follows:

Derivatives Assets	Balance Sheet Location	December 31, 2020	December 31, 2019
Derivatives designated as hedging instruments under Subtopic ASC 815-20		*In thousands*	
Interest rate swap contracts	Other current assets	$ —	$ 174
Interest rate cap contracts	Other current assets	—	1
Cross currency swap contracts	Other current assets	—	1,156
Cross currency swap contracts	Other long-term assets	—	2,870
Derivatives not designated as hedging instruments under Subtopic ASC 815-20			
Foreign exchange forward contracts	Other current assets	52	96
Total asset derivatives		$ 52	$ 4,297
Derivatives Liabilities			
Derivatives designated as hedging instruments under ASC 815-20			
Interest rate swap contracts	Other current liabilities	$ 1,025	$ —
Interest rate swap contracts	Other long-term obligations	957	—
Cross currency swap contracts	Other current liabilities	526	—
Derivatives not designated as hedging instruments under Subtopic ASC 815-20			
Foreign exchange forward contracts	Other current liabilities	128	162
Total liability derivatives		$ 2,636	$ 162

The changes in AOCI, net of tax, for our derivative and nonderivative hedging instruments designated as hedging instruments, net of tax, were as follows:

In thousands	2020	2019	2018
Net unrealized loss on hedging instruments at January 1,	$ (15,103)	$ (13,179)	$ (13,414)
Unrealized gain (loss) on derivative instruments	(7,002)	4,061	2,586
Realized (gains) losses reclassified into net income (loss)	6,104	(5,985)	(2,351)
Net unrealized loss on hedging instruments at December 31,	$ (16,001)	$ (15,103)	$ (13,179)

Reclassification of amounts related to hedging instruments are included in interest expense in the Consolidated Statements of Operations. Included in the net unrealized gain (loss) on hedging instruments at December 31, 2020 and 2019 is a loss of $14.4 million, net of tax, related to our nonderivative net investment hedge, which terminated in 2011. This loss on our net investment hedge will remain in AOCI until earnings are impacted by a sale or liquidation of the associated foreign operation.

A summary of the effect of netting arrangements on our financial position related to the offsetting of our recognized derivative assets and liabilities under master netting arrangements or similar agreements is as follows:

Offsetting of Derivative Assets		Gross Amounts Not Offset in the Consolidated Balance Sheets		
In thousands	Gross Amounts of Recognized Assets Presented in the Consolidated Balance Sheets	Derivative Financial Instruments	Cash Collateral Received	Net Amount
December 31, 2020	$ 52	$ (52)	$ —	$ —
December 31, 2019	4,297	(56)	—	4,241

Offsetting of Derivative Liabilities		Gross Amounts Not Offset in the Consolidated Balance Sheets		
In thousands	Gross Amounts of Recognized Liabilities Presented in the Consolidated Balance Sheets	Derivative Financial Instruments	Cash Collateral Pledged	Net Amount
December 31, 2020	$ 2,636	$ (52)	$ —	$ 2,584
December 31, 2019	162	(56)	—	106

Our derivative assets and liabilities subject to netting arrangements consist of foreign exchange forward and interest rate contracts with four counterparties at December 31, 2020 and five counterparties at December 31, 2019. No derivative asset or liability balance with any of our counterparties was individually significant at December 31, 2020 or 2019. Our derivative contracts with each of these counterparties exist under agreements that provide for the net settlement of all contracts through a single payment in a single currency in the event of default. We have no pledges of cash collateral against our obligations, and we have not received pledges of cash collateral from our counterparties under the associated derivative contracts.

Cash Flow Hedges

As a result of our floating rate debt, we are exposed to variability in our cash flows from changes in the applicable interest rate index. We enter into interest rate caps and swaps to reduce the variability of cash flows from increases in the LIBOR based borrowing rates on our floating rate credit facility. These instruments do not protect us from changes to the applicable margin under our credit facility. At December 31, 2020, our LIBOR-based debt balance was $536.1 million.

In October 2015, we entered into one interest rate swap, which was effective from August 31, 2016, and expired on June 23, 2020, to convert $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 amortized to maturity at the same rate as required minimum payments on the term loan. This cash flow hedge was expected to be highly effective in achieving offsetting cash flows attributable to the hedged risk through the term of the hedge. Consequently, effective changes in the fair value of the interest rate swap were recognized as a component of other comprehensive income (loss) (OCI) and recognized in earnings when the hedged item affected earnings. The amounts paid or received on the hedge were recognized as adjustment to interest expense.

In March 2020, we entered into one interest rate swap, which is effective from June 30, 2020 to June 30, 2023, and converts $240 million of our LIBOR-based debt from a floating LIBOR interest rate to a fixed interest rate of 0.617% (excluding the applicable margin). The notional balance will amortize to maturity at the same rate of originally required amortizations on the term loan. Changes in the fair value of the interest rate swap are recognized as a component of OCI and recognized in earnings when the hedged item affects earnings. The amounts paid or received on the hedge are recognized as adjustment to interest expense along with the earnings effect of the hedged item. The amount of net losses expected to be reclassified into earnings in the next 12 months is $1.0 million.

In November 2015, we entered into three interest rate cap contracts with a total notional amount of $100 million at a cost of $1.7 million. The interest rate cap contracts expired 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%. The interest rate cap contracts did not include the effect of the applicable margin. Changes in the fair value of these instruments were recognized as a component of OCI and recognized in earnings when the hedged item affected earnings. The amounts received on the hedge were recognized as an adjustment to interest expense along with the earnings effect of the hedged item.

In April 2018, we entered into one cross-currency swap, which converts $56.0 million of floating LIBOR-based U.S. dollar denominated debt into 1.38% fixed rate euro denominated debt. This cross-currency swap matures on April 30, 2021 and mitigates the risk associated with fluctuations in currency rates impacting cash flows related to U.S. dollar denominated debt in a euro functional currency entity. Changes in the fair value of the cross-currency swap are recognized as a component of OCI and are recognized in earnings when the hedged item affects earnings. The amounts paid or received on the hedge are recognized as an adjustment to interest expense along with the earnings effect of the hedged item. The amount of net gains expected to be reclassified into earnings in the next 12 months is $0.5 million.

As a result of our forecasted inventory purchases in a non-functional currency, we are exposed to foreign exchange risk. We hedge portions of these purchases. During February 2020, we entered into foreign exchange option contracts for a total notional amount of $96 million at a cost of $1.2 million. The contracts matured ratably through the year with final maturity in October 2020. Changes in the fair value of the option contracts were recognized as a component of OCI and were recognized in product cost of revenues when the hedged item affected earnings. As of December 31, 2020, there are no more outstanding foreign exchange option contracts.

The before-tax effects of our accounting for derivative instruments designated as hedges on AOCI for the year ended December 31, were as follows:

Derivatives in ASC 815-20 Cash Flow Hedging Relationships	Amount of Gain (Loss) Recognized in OCI on Derivative			Gain (Loss) Reclassified from AOCI into Income			
				Location	Amount		
In thousands	2020	2019	2018	*In thousands*	2020	2019	2018
Interest rate swap contracts	$ (2,900)	$ (987)	$ 1,306	Interest expense	$ (745)	$ 1,451	$ 1,065
Interest rate cap contracts	782	995	18	Interest expense	392	1,046	(439)
Foreign exchange options	(1,228)	1,141	—	Product cost of revenues	(1,228)	1,141	—
Cross currency swap contract	(4,164)	3,022	1,584	Interest expense	619	1,632	949
Cross currency swap contract	—	—	—	Other income (expense), net	(5,228)	1,335	932

Derivatives Not Designated as Hedging Relationships

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 within Other income (expense) in our Consolidated Statements of Operations. 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, 2020, a total of 39 contracts were offsetting our exposures from the euro, Pound sterling, Canadian dollar, Brazilian real, Mexican peso and various other currencies, with notional amounts ranging from $121,000 to $26.4 million.

The effect of our derivative instruments not designated as hedges on the Consolidated Statements of Operations for the year ended December 31, were as follows:

Derivatives Not Designated as Hedging Instrument under ASC 815-20	Location	Gain (Loss) Recognized on Derivatives in Other Income (Expenses)		
In thousands		2020	2019	2018
Foreign exchange forward contracts	Other income (expense), net	$ (4,538)	$ (2,425)	$ 3,448

We will continue to monitor and assess our interest rate and foreign exchange risk and may institute additional derivative instruments to manage such risk in the future.

Note 8: Defined Benefit Pension Plans

We sponsor both funded and unfunded defined benefit pension plans offering death and disability, retirement, and special termination benefits for certain of our international employees, primarily in Germany, France, Indonesia, India, and Italy. The defined benefit obligation is calculated annually by using the projected unit credit method. The measurement date for the pension plans was December 31, 2020.

The following tables set forth the components of the changes in benefit obligations and fair value of plan assets:

	Year Ended December 31,	
In thousands	2020	2019
Change in benefit obligation:		
Benefit obligation at January 1,	$ 114,218	$ 105,570
Service cost	4,027	3,711
Interest cost	1,817	2,278
Actuarial (gain) loss	9,323	8,798
Benefits paid	(2,820)	(2,970)
Foreign currency exchange rate changes	9,594	(1,984)
Curtailment	(589)	(36)
Settlement	(78)	(234)
Other	(2,760)	(915)
Benefit obligation at December 31,	$ 132,732	$ 114,218
Change in plan assets:		
Fair value of plan assets at January 1,	$ 12,665	$ 11,890
Actual return on plan assets	389	1,134
Company contributions	349	289
Benefits paid	(298)	(411)
Foreign currency exchange rate changes	(177)	(237)
Release for Divestiture	(2,722)	—
Fair value of plan assets at December 31,	10,206	12,665
Net pension benefit obligation at fair value	$ 122,526	$ 101,553

Amounts recognized on the Consolidated Balance Sheets consist of:

	December 31,	
In thousands	2020	2019
Assets		
Plan assets in other long-term assets	$ —	$ 44
Liabilities		
Current portion of pension benefit obligation in wages and benefits payable	3,069	2,885
Long-term portion of pension benefit obligation	119,457	98,712
Pension benefit obligation, net	$ 122,526	$ 101,553

Amounts recognized in OCI (pre-tax) are as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
Net actuarial (gain) loss	$ 8,734	$ 8,762	$ (3,191)
Settlement (gain) loss	(286)	(250)	(1)
Curtailment (gain) loss	—	—	(1)
Plan asset (gain) loss	64	(526)	724
Amortization of net actuarial loss	(2,255)	(1,648)	(1,533)
Amortization of prior service cost	(68)	(68)	(61)
Other	—	(160)	124
Other comprehensive (income) loss	$ 6,189	$ 6,110	$ (3,939)

If actuarial gains and losses exceed ten percent of the greater of plan assets or plan liabilities, we amortize them over the employees' average future service period. The estimated net actuarial loss and prior service cost that will be amortized from AOCI into net periodic benefit cost during 2021 is $2.9 million.

Net periodic pension benefit cost for our plans include the following components:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Service cost	$ 4,027	$ 3,711	$ 4,034
Interest cost	1,817	2,278	2,324
Expected return on plan assets	(453)	(608)	(670)
Amortization of prior service costs	68	68	61
Amortization of actuarial net loss	2,255	1,648	1,533
Settlement	286	250	1
Curtailment	—	—	1
Net periodic benefit cost	$ 8,000	$ 7,347	$ 7,284

The components of net periodic benefit cost, other than the service cost component, are included in total other income (expense) on the Consolidated Statements of Operations.

The significant actuarial weighted average assumptions used in determining the benefit obligations and net periodic benefit cost for our benefit plans are as follows:

	Year Ended December 31,		
	2020	**2019**	**2018**
Actuarial assumptions used to determine benefit obligations at end of period:			
Discount rate	1.10 %	1.76 %	2.24 %
Expected annual rate of compensation increase	3.68 %	3.76 %	3.60 %
Actuarial assumptions used to determine net periodic benefit cost for the period:			
Discount rate	1.76 %	2.24 %	2.21 %
Expected rate of return on plan assets	4.89 %	5.19 %	5.58 %
Expected annual rate of compensation increase	3.76 %	3.60 %	3.64 %

We determine a discount rate for our plans based on the estimated duration of each plan's liabilities. For euro denominated defined benefit pension plans, which represent 92% of our projected benefit obligation, we use discount rates with consideration of the duration of each of the plans, using a hypothetical yield curve developed from euro-denominated AA-rated corporate bond issues. These bonds are assigned different weights to adjust their relative influence on the yield curve, and the highest and lowest yielding 10% of bonds are excluded within each maturity group. The discount rates used, depending on the duration of the plans, were between 0.20% and 0.75%.

Our expected rate of return on plan assets is derived from a study of actual historic returns achieved and anticipated future long-term performance of plan assets, specific to plan investment asset category. While the study primarily gives consideration to recent insurers' performance and historical returns, the assumption represents a long-term prospective return.

The total accumulated benefit obligation for our defined benefit pension plans was $121.7 million and $105.1 million at December 31, 2020 and 2019.

The total obligations and fair value of plan assets for plans with projected benefit obligations and accumulated benefit obligations exceeding the fair value of plan assets are as follows:

	December 31,	
In thousands	**2020**	**2019**
Projected benefit obligation	$ 132,732	$ 110,656
Accumulated benefit obligation	121,747	101,611
Fair value of plan assets	10,206	9,059

Our asset investment strategy focuses on maintaining a portfolio using primarily insurance funds, which are accounted for as investments and measured at fair value, in order to achieve our long-term investment objectives on a risk adjusted basis. 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 fair values of our plan investments by asset category are as follows:

In thousands	**Total**	**Quoted Prices in Active Markets for Identical Assets (Level 1)**	**Significant Unobservable Inputs (Level 3)**
		December 31, 2020	
Cash	$ 1,050	$ 1,050	$ —
Insurance funds	9,156	—	9,156
Other securities	—	—	—
Total fair value of plan assets	$ 10,206	$ 1,050	$ 9,156
In thousands		**December 31, 2019**	
Cash	$ 926	$ 926	$ —
Insurance funds	8,133	—	8,133
Other securities	3,606	—	3,606
Total fair value of plan assets	$ 12,665	$ 926	$ 11,739

The following tables present a reconciliation of Level 3 assets held during the years ended December 31, 2020 and 2019.

In thousands	**Balance at January 1, 2020**	**Net Realized and Unrealized Gains**	**Net Purchases, Issuances, Settlements, and Other**	**Release for Divestiture**	**Effect of Foreign Currency**	**Balance at December 31, 2020**
Insurance funds	$ 8,133	$ 237	$ 15	$ —	$ 771	$ 9,156
Other securities	3,606	117	(61)	(2,722)	(940)	—
Total	$ 11,739	$ 354	$ (46)	$ (2,722)	$ (169)	$ 9,156

In thousands	**Balance at January 1, 2019**	**Net Realized and Unrealized Gains**	**Net Purchases, Issuances, Settlements, and Other**	**Release for Divestiture**	**Effect of Foreign Currency**	**Balance at December 31, 2019**
Insurance funds	$ 8,020	$ 282	$ (27)	$ —	$ (142)	$ 8,133
Other securities	3,083	814	(160)	—	(131)	3,606
Total	$ 11,103	$ 1,096	$ (187)	$ —	$ (273)	$ 11,739

As the plan assets and contributions are not significant to our total company assets, no further disclosures are considered material.

Annual benefit payments for the next 10 years, including amounts to be paid from our assets for unfunded plans and reflecting expected future service, as appropriate, are expected to be paid as follows:

Year Ending December 31,	**Estimated Annual Benefit Payments**
In thousands	
2021	$ 3,995
2022	3,934
2023	4,082
2024	5,309
2025	5,360
2026-2030	28,493

Note 9: Stock-Based Compensation

We grant stock-based compensation awards, including stock options, restricted stock units, phantom stock, and unrestricted stock units, under the Second Amended and Restated 2010 Stock Incentive Plan (Stock Incentive Plan). In the Stock Incentive Plan, we have 12,623,538 shares of common stock reserved and authorized for issuance subject to stock splits, dividends, and other similar events, and at December 31, 2020, 5,597,418 shares were available for grant. We issue new shares of common stock upon the exercise of stock options or when vesting conditions on restricted stock units are fully satisfied. These shares are subject to a fungible share provision such that the authorized share available for grant is reduced by (i) one share for every one share subject to a stock option or share appreciation right granted under the Plan and (ii) 1.7 shares for every one share of common stock that was subject to an award other than an option or share appreciation right.

We also periodically award phantom stock units, which are settled in cash upon vesting and accounted for as liability-based awards, with no impact to the shares available for grant.

In addition, we maintain the ESPP, for which 178,159 shares of common stock were available for future issuance at December 31, 2020.

ESPP activity and stock-based grants other than stock options and restricted stock units were not significant for the years ended December 31, 2020, 2019, and 2018.

Stock-Based Compensation Expense

Total stock-based compensation expense and the related tax benefit were as follows:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Stock options	$ 1,944	$ 1,770	$ 3,675
Restricted stock units	22,285	24,560	26,859
Unrestricted stock awards	824	630	729
Phantom stock units	3,720	3,301	2,165
Total stock-based compensation	$ 28,773	$ 30,261	$ 33,428
Related tax benefit	$ 5,086	$ 5,390	$ 6,019

Stock Options

A summary of our stock option activity is as follows:

	Shares	Weighted Average Exercise Price per Share	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value	Weighted Average Grant Date Fair Value
	In thousands		*Years*	*In thousands*	
Outstanding, January 1, 2018	956	$ 47.10	6.3	$ 21,965	
Converted upon acquisition	42	51.86			$ 14.86
Granted	122	68.21			24.29
Exercised	(152)	38.99		4,520	
Forfeited	(7)	60.03			
Expired	(66)	95.31			
Outstanding, December 31, 2018	895	$ 47.93	6.2	$ 4,806	
Granted	76	76.55			$ 26.20
Exercised	(489)	43.55		15,759	
Forfeited	(13)	67.34			
Expired	(11)	66.24			
Outstanding, December 31, 2019	458	$ 56.38	7.0	$ 12,641	
Granted	83	84.39			$ 26.37
Exercised	(103)	53.99		2,061	
Forfeited	(5)	83.94			
Outstanding, December 31, 2020	433	$ 61.95	6.9	$ 14,697	
Exercisable, December 31, 2020	268	$ 51.85	5.8	$ 11,810	

At December 31, 2020, total unrecognized stock-based compensation expense related to nonvested stock options was $2.6 million, which is expected to be recognized over a weighted average period of approximately 1.9 years.

The weighted average assumptions used to estimate the fair value of stock options granted and the resulting weighted average fair value are as follows:

	Year Ended December 31,		
	2020	2019	2018
Expected volatility	32.3 %	31.7 %	30.5 %
Risk-free interest rate	1.3 %	1.7 %	2.8 %
Expected term (years)	5.3	6.1	6.1

Restricted Stock Units

The following table summarizes restricted stock unit activity:

	Number of Restricted Stock Units	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value
	In thousands		*In thousands*
Outstanding, January 1, 2018	556	$ 47.68	
Converted upon acquisition	579	69.40	
Granted	387	57.48	
Released [1]	(593)		$ 32,567
Forfeited	(112)		
Outstanding, December 31, 2018	817	$ 59.70	
Granted	404	62.97	
Released [1]	(471)		$ 29,304
Forfeited	(66)		
Outstanding, December 31, 2019	684	$ 64.38	
Granted	262	83.42	
Released [1]	(363)	65.25	$ 23,702
Forfeited	(39)	71.96	
Outstanding, December 31, 2020	544	$ 71.79	
Vested but not released, December 31, 2020	50		$ 4,836

[1] Shares released is presented as gross shares and does not reflect shares withheld by us for employee payroll tax obligations.

At December 31, 2020, total unrecognized compensation expense on restricted stock units was $25.9 million, which is expected to be recognized over a weighted average period of approximately 1.7 years.

The weighted average assumptions used to estimate the fair value of performance-based restricted stock units granted with a service and market condition and the resulting weighted average fair value are as follows:

	Year Ended December 31,		
	2020	2019	2018
Expected volatility	44.9 %	31.4 %	28.0 %
Risk-free interest rate	1.0 %	2.5 %	2.2 %
Expected term (years)	1.8	1.6	2.1
Weighted average fair value	$ 93.97	$ 61.25	$ 78.56

Phantom Stock Units

The following table summarizes phantom stock unit activity:

	Number of Phantom Stock Units	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value
	In thousands		*In thousands*
Outstanding, January 1, 2018	63	$ 62.53	
Converted upon acquisition	21		
Granted	41	66.67	
Released	(35)		$ 2,409
Forfeited	(7)		
Outstanding, December 31, 2018	83	$ 61.80	
Converted upon acquisition	—		
Granted	55	60.49	
Released	(42)		$ 2,625
Forfeited	(7)		
Outstanding, December 31, 2019	89	$ 62.85	
Granted	38	87.27	
Released	(40)	63.87	$ 2,971
Forfeited	(5)	70.99	
Outstanding, December 31, 2020	82	$ 73.13	

At December 31, 2020, total unrecognized compensation expense on phantom stock units was $5.2 million, which is expected to be recognized over a weighted average period of approximately 1.8 years. As of December 31, 2020 and 2019, we have recognized a phantom stock liability of $2.7 million and $2.3 million within wages and benefits payable in the Consolidated Balance Sheets.

Note 10: Defined Contribution, Bonus, and Profit Sharing Plans

Defined Contribution Plans

In the United States, United Kingdom, and certain other countries, we make contributions to defined contribution plans. For our U.S. employee savings plan, which represents a majority of our contribution expense, we provide a 75% match on the first 6% of the employee salary deferral, subject to statutory limitations. For our international defined contribution plans, we provide various levels of contributions, based on salary, subject to stipulated or statutory limitations. The expense for our defined contribution plans was as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
Defined contribution plans expense	$ 18,424	$ 17,882	$ 11,593

Bonus and Profit Sharing Plans and Awards

We have employee bonus and profit sharing plans in which many of our employees participate, as well as an award program, which allows for recognition of individual employees' achievements. The bonus and profit sharing plans provide award amounts for the achievement of performance and financial targets. As the bonuses are being earned during the year, we estimate a compensation accrual each quarter based on the progress towards achieving the goals, the estimated financial forecast for the year, and the probability of achieving results. Bonus and profit sharing plans and award expense was as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
Bonus and profit sharing plans expense	$ 11,455	$ 48,435	$ 15,466

Note 11: Income Taxes

On March 27, 2020, the U.S. Federal government passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act to provide economic relief from COVID-19. The CARES Act contains significant business tax provisions, which the Company has evaluated and determined will not have a material impact on the Company's financial statements or related disclosures.

The CARES Act also provides employer payroll tax credits for wages paid to employees who are unable to work during the COVID-19 outbreak and options to defer payroll tax payments. The Company has elected to defer remittances of payroll and other taxes into the future as provided for under the Act, and may assess in subsequent quarters the impact and availability of payroll tax credits from the U.S. and similar programs provided for by foreign governments, as applicable.

The following table summarizes the provision (benefit) for U.S. federal, state, and foreign taxes on income from continuing operations:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Current:			
Federal	$ (963)	$ 4,859	$ (7,695)
State and local	1,731	2,179	(362)
Foreign	12,409	13,771	14,618
Total current	13,177	20,809	6,561
Deferred:			
Federal	(2,852)	2,334	(17,463)
State and local	(3,340)	(1,846)	(4,492)
Foreign	(60,444)	(1,518)	(139,915)
Total deferred	(66,636)	(1,030)	(161,870)
Change in valuation allowance	53,697	838	142,739
Total provision (benefit) for income taxes	$ 238	$ 20,617	$ (12,570)

Subsequent to the issuance of our 2019 financial statements, we determined that a deferred tax liability related to the difference between the book and tax bases of a European subsidiary, initially recorded in 2018, should not have been recognized. Instead, we should have established a valuation allowance against the net operating loss deferred tax asset recognized for that subsidiary. As a result, the valuation allowance, the deferred tax liability, and the related disclosures of movements in those amounts, including foreign currency impacts, have been restated from the amounts previously reported in the 2018 and 2019 tax disclosures to reverse the $117 million deferred tax liability originally recorded in 2018 and to record a $117 million valuation allowance. There is no impact on income tax benefit (provision), net income or the balance sheet presentation of this immaterial misstatement.

The change in the valuation allowance does not include the impacts of currency translation adjustments, acquisitions, or significant intercompany transactions.
Our tax provision (benefit) as a percentage of income before tax was less than 1%, 28%, and 12% for 2020, 2019, and 2018, respectively. Our actual tax rate differed from the 21% U.S. federal statutory tax rate due to various items. A reconciliation of income taxes at the U.S. federal statutory rate of 21% to the consolidated actual tax rate is as follows:

In thousands	Year Ended December 31, 2020	2019	2018
Income (loss) before income taxes			
Domestic	$ 24,010	$ 57,261	$ (50,463)
Foreign	(80,649)	15,771	(58,688)
Total income before income taxes	$ (56,639)	$ 73,032	$ (109,151)
Expected federal income tax provision	$ (11,894)	$ 15,337	$ (22,922)
Latin America Divestiture	10,936	—	—
Change in valuation allowance	53,697	838	142,739
Stock-based compensation	(163)	(2,130)	(104)
Foreign earnings	(58,649)	(15,610)	(132,808)
Tax credits	(9,101)	(8,794)	(10,502)
Uncertain tax positions, including interest and penalties	11,144	13,060	7,727
Change in tax rates	557	9,514	335
State income tax provision (benefit), net of federal effect	(1,997)	2,805	(4,524)
U.S. tax provision on foreign earnings	142	129	25
Local foreign taxes	1,298	1,471	2,540
Transaction costs	—	—	974
Other, net	4,268	3,997	3,950
Total provision (benefit) from income taxes	$ 238	$ 20,617	$ (12,570)

Deferred tax assets and liabilities consist of the following:

In thousands	December 31, 2020	2019
Deferred tax assets		
Loss carryforwards[(1)]	$ 423,013	$ 343,614
Tax credits[(2)]	88,433	98,098
Accrued expenses	47,569	46,846
Pension plan benefits expense	21,735	17,310
Warranty reserves	11,083	12,961
Depreciation and amortization	6,363	6,112
Equity compensation	4,701	4,685
Inventory valuation	1,799	1,069
Deferred revenue	9,705	8,951
Leases	10,872	13,876
Other deferred tax assets, net	10,817	9,777
Total deferred tax assets	636,090	563,299
Valuation allowance	(503,859)	(427,030)
Total deferred tax assets, net of valuation allowance	132,231	136,269
Deferred tax liabilities		
Depreciation and amortization	(39,995)	(54,663)
Leases	(10,046)	(12,976)
Other deferred tax liabilities, net	(7,969)	(6,540)
Total deferred tax liabilities	(58,010)	(74,179)
Net deferred tax assets	$ 74,221	$ 62,090

(1) For tax return purposes at December 31, 2020, we had U.S. federal loss carryforwards of $125.3 million, which begin to expire in the year 2021. At December 31, 2020, we have net operating loss carryforwards in Luxembourg of $1.4 billion, the majority of which can be carried forward indefinitely, offset by a full valuation allowance. The remaining portion of the loss carryforwards are composed primarily of losses in various other state and foreign jurisdictions. The majority of these losses can be carried forward indefinitely. At December 31, 2020, there was a valuation allowance of $503.9 million primarily associated with foreign loss carryforwards and foreign tax credit carryforwards (discussed below).

(2) For tax return purposes at December 31, 2020, we had: (1) U.S. general business credits of $46.9 million, which begin to expire in 2022; (2) U.S. foreign tax credits of $50.8 million, which begin to expire in 2024; and (3) state tax credits of $38.2 million, which begin to expire in 2021.

Changes in the valuation allowance for deferred tax assets are summarized as follows:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Balance at beginning of period	$ 427,030	$ 437,149	$ 285,784
Other adjustments	23,132	(10,957)	8,626
Additions charged to costs and expenses	53,697	838	142,739
Balance at end of period, noncurrent	$ 503,859	$ 427,030	$ 437,149

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 management's 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 do not provide U.S. deferred taxes on temporary differences related to our foreign investments that are considered permanent in duration. These temporary differences include undistributed foreign earnings of $18.1 million and $13.7 million at December 31, 2020 and 2019, respectively. Foreign taxes have been provided on these undistributed foreign earnings. As a result of recent changes in U.S. tax legislation, any repatriation of these earnings would not result in additional U.S. federal income tax.

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 are 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, such as the outcome of tax audits. The provision for income taxes includes the impact of reserve positions and changes to reserves that are considered appropriate.

A reconciliation of the beginning and ending amount of unrecognized tax benefits were as follows:

In thousands		Total
Unrecognized tax benefits at January 1, 2018	$	56,702
Gross increase to positions in prior years		22,943
Gross decrease to positions in prior years		(24,949)
Gross increases to current period tax positions		63,869
Audit settlements		(2,977)
Decrease related to lapsing of statute of limitations		(1,368)
Effect of change in exchange rates		(1,662)
Unrecognized tax benefits at December 31, 2018	$	112,558
Gross increase to positions in prior years		1,067
Gross decrease to positions in prior years		(3,296)
Gross increases to current period tax positions		13,762
Audit settlements		—
Decrease related to lapsing of statute of limitations		(1,574)
Effect of change in exchange rates		(802)
Unrecognized tax benefits at December 31, 2019	$	121,715
Gross increase to positions in prior years		633
Gross decrease to positions in prior years		(2,140)
Gross increases to current period tax positions		14,821
Audit settlements		(795)
Decrease related to lapsing of statute of limitations		(2,381)
Effect of change in exchange rates		4,057
Unrecognized tax benefits at December 31, 2020	$	135,910

	At December 31,		
In thousands	2020	2019	2018
The amount of unrecognized tax benefits that, if recognized, would affect our effective tax rate	$ 134,473	$ 120,410	$ 111,224

If certain unrecognized tax benefits are recognized they would create additional deferred tax assets. These assets would require a full valuation allowance in certain locations based upon present circumstances.

We classify interest expense and penalties related to unrecognized tax benefits and interest income on tax overpayments as components of income tax expense. The net interest and penalties expense recognized were as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
Net interest and penalties expense (benefit)	$ 400	$ 708	$ (990)

	At December 31,	
In thousands	2020	2019
Accrued interest	$ 3,432	$ 2,849
Accrued penalties	1,645	1,681

At December 31, 2020, we are under examination by certain tax authorities. We believe we have appropriately accrued for the expected outcome of all tax matters and do not currently anticipate that the ultimate resolution of these examinations will have a material adverse effect on our financial condition, future results of operations, or cash flows.

Based upon the timing and outcome of examinations, litigation, the impact of legislative, regulatory, and judicial developments, and the impact of these items on the statute of limitations, it is reasonably possible that the related unrecognized tax benefits could change from those recognized within the next twelve months. However, at this time, an estimate of the range of reasonably possible adjustments to the balance of unrecognized tax benefits cannot be made.

We file income tax returns in various jurisdictions. We are subject to income tax examination by tax authorities in our major tax jurisdictions as follows:

Tax Jurisdiction	**Years Subject to Audit**
U.S. federal	Subsequent to 2001
France	Subsequent to 2012
Germany	Subsequent to 2013
United Kingdom	Subsequent to 2015
Indonesia	Subsequent to 2014
Italy	Subsequent to 2015

Note 12: Commitments and Contingencies

Guarantees and Indemnifications

We are often required to obtain standby letters of credit (LOCs) or bonds in support of our obligations for customer contracts. These standby LOCs or bonds typically provide a guarantee to the customer for our future performance, which usually covers the installation phase of a contract and may, on occasion, cover the operations and maintenance phase of outsourcing contracts.

Our available lines of credit, outstanding standby LOCs, and bonds were as follows:

	At December 31,	
In thousands	**2020**	**2019**
Credit facility		
Multicurrency revolving line of credit	$ 500,000	$ 500,000
Long-term borrowings	—	—
Standby LOCs issued and outstanding	(64,948)	(41,072)
Net available for additional borrowings under the multicurrency revolving line of credit	$ 435,052	$ 458,928
Net available for additional standby LOCs under sub-facility	$ 235,052	$ 258,928
Unsecured multicurrency revolving lines of credit with various financial institutions		
Multicurrency revolving lines of credit	$ 99,201	$ 107,206
Standby LOCs issued and outstanding	(24,966)	(25,100)
Short-term borrowings	—	(173)
Net available for additional borrowings and LOCs	$ 74,235	$ 81,933
Unsecured surety bonds in force	$ 162,912	$ 136,004

In the event any such standby LOC or bond is called, we would be obligated to reimburse the issuer of the standby LOC or bond; however, as of February 24, 2021, we do not believe that any outstanding LOC or bond will be called.

We generally provide an indemnification related to the infringement of any patent, copyright, trademark, or other intellectual property right on software or equipment within our sales contracts, which indemnifies the customer from and pays the resulting costs, damages, and attorney's fees awarded against a customer with respect to such a claim provided that (a) the customer promptly notifies us in writing of the claim and (b) we have the sole control of the defense and all related settlement negotiations. We may also provide an indemnification to our customers for third-party claims resulting from damages caused by the negligence or willful misconduct of our employees/agents in connection with the performance of certain contracts. The terms of our indemnifications generally do not limit the maximum potential payments. It is not possible to predict the maximum potential amount of future payments under these or similar agreements.

Legal Matters

We are subject to various legal proceedings and claims of which the outcomes are subject to significant uncertainty. Our policy is to assess the likelihood of any adverse judgments or outcomes related to legal matters, as well as ranges of probable losses. A determination of the amount of the liability required, if any, for these contingencies is made after an analysis of each known issue. A liability would be recognized and charged to operating expense when we determine that a loss is probable and the amount can be reasonably estimated. Additionally, we disclose contingencies for which a material loss is reasonably possible, but not probable.

Warranty

A summary of the warranty accrual account activity is as follows:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Beginning balance	$ 53,241	$ 60,443	$ 34,862
Assumed liabilities from acquisition	—	—	12,946
New product warranties	3,616	5,202	3,772
Other adjustments and expirations, net	7,736	15,695	22,741
Claims activity	(25,582)	(27,916)	(12,753)
Effect of change in exchange rates	2,379	(183)	(1,125)
Ending balance	41,390	53,241	60,443
Less: current portion of warranty	28,329	38,509	47,205
Long-term warranty	$ 13,061	$ 14,732	$ 13,238

Total warranty expense is classified within cost of revenues and consists of new product warranties issued, costs related to insurance and supplier recoveries, other changes and adjustments to warranties, and customer claims. Warranty expense was as follows:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Total warranty expense	$ 11,539	$ 17,975	$ 26,513

Warranty expense decreased during the year ended December 31, 2020 compared with the same period in 2019. The lower costs in 2020 are primarily the result of incremental specific reserves recognized in 2019 including $3.9 million for gas interface modules in North America Networked Solutions.

Warranty expense decreased during the year ended December 31, 2019 compared with the same period in 2018. This decrease was primarily driven by a warranty reserve of $11.4 million for replacement of certain gas meters in our Device Solutions segment recognized in 2018.

Health Benefits

We are self-insured for a substantial portion of the cost of our U.S. employee group health insurance. We purchase insurance from a third-party, which provides individual and aggregate stop loss protection for these costs. Each reporting period, we expense the costs of our health insurance plan including paid claims, the change in the estimate of incurred but not reported (IBNR) claims, taxes, and administrative fees (collectively, the plan costs).

Plan costs were as follows:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Plan costs	$ 36,672	$ 33,611	$ 41,543

IBNR accrual, which is included in wages and benefits payable, was as follows:

	At December 31,	
In thousands	**2020**	**2019**
IBNR accrual	$ 3,507	$ 3,171

Our IBNR accrual and expenses may fluctuate due to the number of plan participants, claims activity, and deductible limits. For our employees located outside of the United States, health benefits are provided primarily through governmental social plans, which are funded through employee and employer tax withholdings.

Note 13: Restructuring

2020 Projects

On September 17, 2020, our Board of Directors approved a restructuring plan (the 2020 Projects), which includes activities that continue our efforts to optimize our global supply chain and manufacturing operations, sales and marketing organizations, and other overhead. These projects are scheduled to be substantially complete by the end of 2022. We estimate pre-tax restructuring charges of $55 million to $65 million, of which approximately $35 million to $45 million will result in cash expenditures, and the remainder relates to non-cash charges. Of the total expected charges, $43.2 million was recognized in 2020. The largest component of expected remaining costs to be recognized is related to a non-cash cumulative translation adjustment charge. Many of the affected employees are represented by unions or works councils, which require consultation, and potential restructuring projects may be subject to regulatory approval, both of which could impact the timing of charges, total expected charges, cost recognized, and planned savings in certain jurisdictions.

The total expected restructuring costs, the restructuring costs recognized, and the remaining expected restructuring costs related to the 2020 Projects were as follows:

In thousands	Total Expected Costs at December 31, 2020	Costs Recognized in Prior Periods	Costs Recognized During the Year Ended December 31, 2020	Expected Remaining Costs to be Recognized at December 31, 2020
Employee severance costs	$ 36,225	$ —	$ 36,225	$ —
Asset impairments & net loss on sale or disposal	6,944	—	6,944	—
Other restructuring costs	16,508	—	63	16,445
Total	$ 59,677	$ —	$ 43,232	$ 16,445

2018 Projects

In February 2018, our Board of Directors approved a restructuring plan (the 2018 Projects) to continue our efforts to optimize our global supply chain and manufacturing operations, research and development, and sales and marketing organizations. We have substantially completed expense recognition on the plan as of the end of 2020.

In the second quarter of 2020, we reversed expenses for employee severance costs and asset impairments we will no longer incur as a result of selling our operations in Latin America.

The total expected restructuring costs, the restructuring costs recognized, and the remaining expected restructuring costs related to the 2018 Projects were as follows:

In thousands	Total Expected Costs at December 31, 2020	Costs Recognized in Prior Periods	Costs Recognized During the Year Ended December 31, 2020	Expected Remaining Costs to be Recognized at December 31, 2020
Employee severance costs	$ 63,173	$ 72,133	$ (8,960)	$ —
Asset impairments & net loss (gain) on sale or disposal	2,786	3,842	(1,056)	—
Other restructuring costs	19,862	11,420	3,797	4,645
Total	$ 85,821	$ 87,395	$ (6,219)	$ 4,645

All prior restructuring plans are substantially complete and are not presented below.

The following table summarizes the activity within the restructuring related balance sheet accounts for the 2020 Projects and the 2018 Projects during the year ended December 31, 2020:

In thousands	Accrued Employee Severance	Asset Impairments & Net Loss (Gain) on Sale or Disposal	Other Accrued Costs	Total
Beginning balance, January 1, 2020	$ 53,741	$ —	$ 2,366	$ 56,107
Costs charged to expense	27,265	5,888	3,860	37,013
Cash (payments) receipts	(15,725)	2,214	(3,632)	(17,143)
Net assets disposed and impaired	—	(8,102)	—	(8,102)
Effect of change in exchange rates	4,724	—	27	4,751
Ending balance, December 31, 2020	$ 70,005	$ —	$ 2,621	$ 72,626

Asset impairments are determined at the asset group level. Revenues and net operating income from the activities we have exited or will exit under the restructuring projects are not material to our operating segments or consolidated results.

Other restructuring costs include expenses for employee relocation, professional fees associated with employee severance, costs to exit the facilities once the operations in those facilities have ceased, and other costs associated with the liquidation of any effected legal entities. Costs associated with restructuring activities are generally presented in the Consolidated Statements of Operations as restructuring, except for certain costs associated with inventory write-downs, which are classified within cost of revenues, and accelerated depreciation expense, which is recognized according to the use of the asset. Restructuring expense is part of the Corporate unallocated segment and does not impact the results of our operating segments.

The current portion of restructuring liabilities were $31.7 million and $18.9 million as of December 31, 2020 and 2019, respectively. The current portion of restructuring liabilities is classified within other current liabilities on the Consolidated Balance Sheets. The long-term portion of restructuring liabilities balances were $40.9 million and $37.2 million as of December 31, 2020 and 2019, respectively. The long-term portion of restructuring liabilities is classified within other long-term obligations on the Consolidated Balance Sheets and includes severance accruals and facility exit costs.

Note 14: Shareholders' Equity

Preferred Stock

We have authorized the issuance of 10 million shares of preferred stock with no par value. In the event of a liquidation, dissolution, or winding up of the affairs of the corporation, whether voluntary or involuntary, the holders of any outstanding preferred stock will be entitled to be paid a preferential amount per share to be determined by the Board of Directors prior to any payment to holders of common stock. There was no preferred stock issued or outstanding at December 31, 2020 or 2019.

Stock Repurchase Authorization

On March 14, 2019, Itron's Board of Directors authorized the Company to repurchase up to $50 million of our common stock over a 12-month period (the 2019 Stock Repurchase Program). Following the announcement of the program and through December 31, 2019, we repurchased 529,396 shares at an average share price of $47.22 (including commissions) for a total of $25 million. The program expired on March 13, 2020, and no additional shares were repurchased during 2020.

Accumulated Other Comprehensive Income (Loss)

The changes in the components of AOCI, net of tax, were as follows:

In thousands	Foreign Currency Translation Adjustments	Net Unrealized Gain (Loss) on Derivative Instruments	Net Unrealized Gain (Loss) on Nonderivative Instruments	Pension Benefit Obligation Adjustments	Accumulated Other Comprehensive Income (Loss)
Balances at January 1, 2018	$ (128,648)	$ 966	$ (14,380)	$ (28,416)	$ (170,478)
OCI before reclassifications	(28,841)	2,586	—	1,653	(24,602)
Amounts reclassified from AOCI	—	(2,351)	—	1,126	(1,225)
Total other comprehensive income (loss)	(28,841)	235	—	2,779	(25,827)
Balances at December 31, 2018	$ (157,489)	$ 1,201	$ (14,380)	$ (25,637)	$ (196,305)
OCI before reclassifications	(2,953)	4,061	—	1,909	3,017
Amounts reclassified from AOCI	2,443	(5,985)	—	(7,842)	(11,384)
Total other comprehensive income (loss)	(510)	(1,924)	—	(5,933)	(8,367)
Balances at December 31, 2019	$ (157,999)	$ (723)	$ (14,380)	$ (31,570)	$ (204,672)
OCI before reclassifications	21,082	(7,002)	—	(8,689)	5,391
Amounts reclassified from AOCI	52,074	6,104	—	2,577	60,755
Total other comprehensive income (loss)	73,156	(898)	—	(6,112)	66,146
Balances at December 31, 2020	$ (84,843)	$ (1,621)	$ (14,380)	$ (37,682)	$ (138,526)

The before-tax, income tax (provision) benefit, and net-of-tax amounts related to each component of OCI were as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
Before-tax amount			
Foreign currency translation adjustment	$ 20,947	$ (2,581)	$ (29,130)
Foreign currency translation adjustment reclassified to net income on sale of business	52,074	2,443	—
Net unrealized gain (loss) on derivative instruments, designated as cash flow hedges	(7,519)	4,063	2,908
Net hedging (gain) loss reclassified to net income	6,190	(6,605)	(2,507)
Net unrealized gain (loss) on defined benefit plans	(8,798)	1,966	2,343
Net defined benefit plan (gain) loss reclassified to net income	2,609	(8,076)	1,596
Total other comprehensive income (loss), before tax	65,503	(8,790)	(24,790)
Tax (provision) benefit			
Foreign currency translation adjustment	135	(372)	289
Foreign currency translation adjustment reclassified into net income on sale of business	—	—	—
Net unrealized gain (loss) on derivative instruments, designated as cash flow hedges	517	(2)	(322)
Net hedging (gain) loss reclassified to net income	(86)	620	156
Net unrealized gain (loss) on defined benefit plans	109	(57)	(690)
Net defined benefit plan (gain) loss reclassified to net income	(32)	234	(470)
Total other comprehensive income (loss) tax (provision) benefit	643	423	(1,037)
Net-of-tax amount			
Foreign currency translation adjustment	21,082	(2,953)	(28,841)
Foreign currency translation adjustment reclassified to net income on sale of business	52,074	2,443	—
Net unrealized gain (loss) on derivative instruments, designated as cash flow hedges	(7,002)	4,061	2,586
Net hedging (gain) loss reclassified to net income	6,104	(5,985)	(2,351)
Net unrealized gain (loss) on defined benefit plans	(8,689)	1,909	1,653
Net defined benefit plan (gain) loss reclassified to net income	2,577	(7,842)	1,126
Total other comprehensive income (loss), net of tax	$ 66,146	$ (8,367)	$ (25,827)

Note 15: Fair Value of Financial Instruments

The fair values at December 31, 2020 and 2019 do not reflect subsequent changes in the economy, interest rates, tax rates, and other variables that may affect the determination of fair value.

	December 31, 2020		December 31, 2019	
In thousands	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Credit facility				
USD denominated term loan	$ 532,625	$ 520,347	$ 546,495	$ 550,135
Multicurrency revolving line of credit	—	—	—	—
Senior notes	388,311	410,000	385,987	416,500

The following methods and assumptions were used in estimating fair values:

Cash, cash equivalents, and restricted cash: Due to the liquid nature of these instruments, the carrying amount approximates fair value (Level 1).

Credit Facility - term loan and multicurrency revolving line of credit: The term loan and the revolver are not traded publicly. The fair values, which are determined based upon a hypothetical market participant, are calculated using a discounted cash flow model with Level 2 inputs, including estimates of incremental borrowing rates for debt with similar terms, maturities, and credit profiles. Refer to Note 6: Debt for a further discussion of our debt.

Senior Notes: The Senior Notes are not registered securities nor listed on any securities exchange but may be actively traded by qualified institutional buyers. The fair value is estimated using Level 1 inputs, as it is based on quoted prices for these instruments in active markets.

Derivatives: See Note 7: Derivative Financial Instruments for a description of our methods and assumptions in determining the fair value of our derivatives, which were determined using Level 2 inputs. Each derivative asset and liability has a carrying value equal to fair value.

Note 16: Segment Information

We operate under the Itron brand worldwide and manage and report under three operating segments: Device Solutions, Networked Solutions, and Outcomes.

We have three GAAP 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. Corporate operating expenses, interest income, interest expense, other income (expense), and the income tax provision (benefit) are neither allocated to the segments, nor are they included in the measure of segment performance. In addition, we allocate only certain production assets and intangible assets to our operating segments. We do not manage the performance of the segments on a balance sheet basis.

Segment Products

Device Solutions – This segment primarily 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., hardware-based products not part of a complete "end-to-end" solution. Examples from the Device Solutions portfolio include: standard endpoints that are shipped without Itron communications, such as our standard gas, electricity, and water meters for a variety of global markets and adhering to regulations and standards within those markets, as well as our heat and allocation products; communicating meters that are not a part of an Itron end-to-end solution such as Smart Spec meters; and the implementation and installation of non-communicating devices, such as gas regulators.

Networked Solutions – This segment primarily includes a combination of communicating devices (e.g., 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 includes products and software for the implementation, installation, and management of communicating devices and data networks. Examples from the Networked Solutions portfolio include: 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. The IIoT solutions supported by this segment include automated meter reading (AMR), advanced metering infrastructure (AMI), smart grid and distribution automation, smart street lighting and an ever-growing set of smart city applications such as traffic management, smart parking, air quality monitoring, electric vehicle charging, customer engagement, digital signage, acoustic (e.g., gunshot) detection, and leak detection and mitigation for both gas and water systems. Our IIoT platform allows all of these industry and smart city applications to be run and managed on a single, multi-purpose network.

Outcomes – This segment primarily includes our value-added, enhanced software and services 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 from the Outcomes portfolio 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; our Distributed Intelligence suite of applications 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.

Revenues, gross profit, and operating income associated with our operating segments were as follows:

	Year Ended December 31,		
In thousands	**2020**	**2019**	**2018**
Product revenues			
Device Solutions	$ 684,517	$ 847,580	$ 916,809
Networked Solutions	1,148,698	1,322,382	1,133,919
Outcomes	55,958	50,433	44,730
Total Company	$ 1,889,173	$ 2,220,395	$ 2,095,458
Service revenues			
Device Solutions	$ 9,478	$ 11,301	$ 16,556
Networked Solutions	100,704	94,872	90,225
Outcomes	173,995	175,902	173,878
Total Company	$ 284,177	$ 282,075	$ 280,659
Total revenues			
Device Solutions	$ 693,995	$ 858,881	$ 933,365
Networked Solutions	1,249,402	1,417,254	1,224,144
Outcomes	229,953	226,335	218,608
Total Company	$ 2,173,350	$ 2,502,470	$ 2,376,117
Gross profit			
Device Solutions	$ 86,859	$ 152,562	$ 187,254
Networked Solutions	432,906	518,749	482,471
Outcomes	82,402	81,008	60,594
Total Company	$ 602,167	$ 752,319	$ 730,319
Operating income (loss)			
Device Solutions	$ 40,769	$ 97,753	$ 130,988
Networked Solutions	308,099	397,325	360,779
Outcomes	47,619	43,803	16,634
Corporate unallocated	(406,882)	(406,198)	(558,093)
Total Company	(10,395)	132,683	(49,692)
Total other income (expense)	(46,244)	(59,651)	(59,459)
Income (loss) before income taxes	$ (56,639)	$ 73,032	$ (109,151)

Our corporate unallocated operating loss for the year ended December 31, 2020 includes a $59.8 million loss from the sale of our Latin American business. Refer to Note 18: Sale of Business for additional information on the transaction.

For all periods presented, no single customer represents more than 10% of total Company.

We currently buy a majority of our integrated circuit board assemblies from two suppliers. Management believes that other suppliers could provide similar products, but a change in suppliers, disputes with our suppliers, or unexpected constraints on the suppliers' production capacity could adversely affect operating results.

Revenues by region were as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
United States and Canada	$ 1,434,577	$ 1,629,742	$ 1,442,792
Europe, Middle East, and Africa	594,264	663,851	733,732
Asia Pacific and Latin America [1]	144,509	208,877	199,593
Total Company	$ 2,173,350	$ 2,502,470	$ 2,376,117

(1) On June 25, 2020, we sold our Latin American operations. We continue to sell into the region through an exclusive distributor.

Property, plant, and equipment, net, by geographic area were as follows:

	At December 31,	
In thousands	2020	2019
United States	$ 100,381	$ 99,615
Outside United States	107,435	133,613
Total Company	$ 207,816	$ 233,228

Depreciation expense is allocated to the operating segments based upon each segment's use of the assets. All amortization expense is recognized within Corporate unallocated. Depreciation and amortization of intangible assets expense associated with our operating segments was as follows:

	Year Ended December 31,		
In thousands	2020	2019	2018
Device Solutions	$ 25,058	$ 25,542	$ 25,022
Networked Solutions	16,965	13,004	12,671
Outcomes	5,348	5,363	6,572
Corporate unallocated	49,919	70,491	78,232
Total Company	$ 97,290	$ 114,400	$ 122,497

Note 17: Revenues

A summary of significant net changes in the contract assets and the contract liabilities balances during the period is as follows:

In thousands	Contract liabilities, less contract assets
Beginning balance, January 1, 2020	$ 88,215
Revenues recognized from beginning contract liability	(83,530)
Cumulative catch-up adjustments	(13,372)
Increases due to amounts collected or due	309,613
Revenues recognized from current period increases	(198,190)
Other	(4,348)
Ending balance, December 31, 2020	$ 98,388

On January 1, 2020, total contract assets were $50.7 million and total contract liabilities were $138.9 million. On December 31, 2020, total contract assets were $49.8 million and total contract liabilities were $148.2 million. The contract assets primarily relate to contracts that include a retention clause and allocations related to contracts with multiple performance obligations. The contract liabilities primarily relate to deferred revenue, such as extended warranty and maintenance cost. The cumulative catch-up adjustments relate to contract modifications, measure-of-progress changes, and changes in the estimate of the transaction price.

Transaction price allocated to the remaining performance obligations

Total transaction price allocated to remaining performance obligations represents committed but undelivered products and services for contracts and purchase orders at period end. Twelve-month remaining performance obligations represent the portion of total transaction price allocated to remaining performance obligations that we estimate will be recognized as revenue over the next 12 months. Total transaction price allocated to remaining performance obligations is not a complete measure of our future revenues as we also receive orders where the customer may have legal termination rights but are not likely to terminate.

Total transaction price allocated to remaining performance obligations related to contracts is approximately $1.0 billion for the next twelve months and approximately $1.5 billion for periods longer than 12 months. The total remaining performance obligations consist of product and service components. The service component relates primarily to maintenance agreements for which customers pay a full year's maintenance in advance, and service revenues are generally recognized over the service period. Total transaction price allocated to remaining performance obligations also includes our extended warranty contracts, for which revenue is recognized over the warranty period, and hardware, which is recognized as units are delivered. The estimate of when remaining performance obligations will be recognized requires significant judgment.

Cost to obtain a contract and cost to fulfill a contract with a customer

Cost to obtain a contract and costs to fulfill a contract were capitalized and amortized using a systematic rational approach to align with the transfer of control of underlying contracts with customers. While amounts were capitalized, they are not material.

Disaggregation of revenue

Refer to Note 16: Segment Information and the Consolidated Statements of Operations for disclosure regarding the disaggregation of revenue into categories, which depict how revenue and cash flows are affected by economic factors. Specifically, our operating segments and geographical regions as disclosed, and categories for products, which include hardware and software and services, are presented.

Note 18: Sale of Business

Latin America Divestiture

On June 25, 2020, we closed on the sale of five subsidiaries comprising our manufacturing and sales operations in Latin America to buyers led by Instalación Profesional y Tecnologías del Centro S.A. de C.V., a Mexican company doing business as Accell in Brazil (Accell), through the execution of various definitive stock purchase agreements. The sale of these Latin America-based operations is part of our continued strategy to improve profitability and focus on growing our Networked Solutions and Outcomes businesses in Latin America and throughout the world. We retained the intellectual property rights to our products sold in Latin America. As part of the transaction, we entered into an intellectual property license agreement whereby Accell pays a royalty on certain products manufactured by Accell using licensed Company intellectual property. In addition, Accell serves as the exclusive distributor for our Device Solutions, Networked Solutions, and Outcomes product and service offerings in Latin America.

Based on the sales price and the net assets of the five subsidiaries sold, we recognized a total loss of $59.8 million during the year ended in 2020. The loss was primarily due to the recognition of $52.1 million in foreign currency translation losses accumulated since the acquisition of these subsidiaries in 2006 and 2007 along with allocated goodwill of $3.0 million. Accell assumed all recognized liabilities, as well as all future liabilities, of the subsidiaries. We have provided no indemnification for any future losses that may be incurred.

At the close date of the transaction, we received $2.5 million of the sales price in cash. Included in the net assets sold was $6.1 million in cash. This resulted in net outflow of cash at closing of $3.6 million. The sale of price consisted of a cash received of $2.5 million, deferred purchase price note of $2.0 million and a working capital note of $21.1 million, both of which were to be paid in 2020, and $9.4 million for minimum royalties and tax credits to be paid in 2021 through 2024. During 2020, we received $4.8 million of payments related to the deferred purchase price note and working capital amount. In January 2021, we agreed to extend the payment terms on the outstanding working capital balance of $18.4 million. Accell agreed to make monthly payments including interest through September 2022. We received the first two of these monthly payments with interest in January and February 2021.

The loss on sale of business was calculated as follows:

In thousands	Loss on sale of business	
Sales price	$	35,008
Net assets sold (including working capital)		(38,636)
Currency translation adjustment loss		(52,074)
Goodwill allocated		(3,000)
Legal fees		(1,115)
Total loss on sale of business	$	(59,817)

Note 19: Leases

We lease certain factories, service and distribution locations, offices, and equipment under operating leases. Our operating leases have initial lease terms ranging from 1 to 9 years, some of which include options to extend or renew the leases for up to 10 years. Certain lease agreements contain provisions for future rent increases. Our leases do not contain material residual value guarantees, and finance leases are not material.

The components of operating lease expense are as follows:

In thousands	Year Ended December 31,			
	2020		2019	
Operating lease cost	$	22,081	$	23,221
Variable lease cost		2,582		2,103
Total operating lease cost	$	24,663	$	25,324

Supplemental cash flow information related to operating leases is as follows:

In thousands	Year Ended December 31,			
	2020		2019	
Cash paid for amounts included in the measurement of operating lease liabilities	$	20,678	$	19,899
Right-of-use assets obtained in exchange for operating lease liabilities		13,051		23,511

Supplemental balance sheet information related to operating leases is as follows:

In thousands	December 31, 2020		December 31, 2019	
Operating lease right-of-use assets, net	$	76,276	$	79,773
Other current liabilities		16,243		17,049
Operating lease liabilities		66,823		68,919
Total operating lease liability	$	83,066	$	85,968
Weighted average remaining lease term - Operating leases		5.6 years		5.9 years
Weighted average discount rate - Operating leases		4.5 %		4.9 %

Amounts due under operating lease liabilities as of December 31, 2020 are as follows:

In thousands	December 31, 2020
2021	$ 18,271
2022	16,001
2023	15,144
2024	13,745
2025	13,242
Thereafter	17,484
Total lease payments	93,887
Less: imputed interest	(10,821)
Total operating lease liability	$ 83,066

Operating lease rental expense for factories, service and distribution locations, office, and equipment prior to adoption of ASC 842 was as follows:

In thousands	Year Ended December 31, 2018
Rental expense	$ 24,453

Item 9: Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

There were no disagreements with our independent accountants on accounting and financial disclosure matters within the three year period ended December 31, 2020, or in any period subsequent to such date, through the date of this report.

Item 9A: Controls and Procedures

Evaluation of disclosure controls and procedures

An evaluation was performed under the supervision and with the participation of our Company's management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of the Company's disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e)) under the Securities Exchange Act of 1934 as amended. Based on that evaluation, the Company's management, including the Chief Executive Officer and Chief Financial Officer, concluded that as of December 31, 2020, the Company's disclosure controls and procedures were effective to ensure the information required to be disclosed by an issuer in the reports that it files or submits under the Securities Exchange Act of 1934 is accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives.

Management's Annual Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f). Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control— Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Based on our evaluation under the 2013 Framework, management concluded that our internal control over financial reporting was effective as of December 31, 2020.

The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report that is included in this Annual Report.

Changes in internal controls over financial reporting

There have been no changes in our internal control over financial reporting during the three months ended December 31, 2020 that materially affected, or are reasonably likely to materially affect, internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Itron, Inc. and subsidiaries (the "Company") as of December 31, 2020, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2020, of the Company and our report dated February 24, 2021, expressed an unqualified opinion on those financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management's Annual Report on Internal Control Over Financial Reporting.* Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ DELOITTE & TOUCHE LLP

Seattle, Washington
February 24, 2021

Item 9B: Other Information

No information was required to be disclosed in a report on Form 8-K during the fourth quarter of 2020 that was not reported.

PART III

Item 10: Directors, Executive Officers and Corporate Governance

The section entitled "Proposal 1 – Election of Directors" appearing in our Proxy Statement for the Annual Meeting of Shareholders to be held on May 13, 2021 (the 2021 Proxy Statement) sets forth certain information with regard to our directors as required by Item 401 of Regulation S-K and is incorporated herein by reference.

Certain information with respect to persons who are or may be deemed to be executive officers of Itron, Inc. as required by Item 401 of Regulation S-K is set forth under the caption "Information about our Executive Officers" in Part I of this Annual Report.

The section entitled "Delinquent Section 16(a) Reports" appearing in the 2021 Proxy Statement sets forth certain information as required by Item 405 of Regulation S-K and is incorporated herein by reference.

The section entitled "Corporate Governance" appearing in the 2021 Proxy Statement sets forth certain information with respect to the Registrant's code of conduct and ethics as required by Item 406 of Regulation S-K and is incorporated herein by reference. Our code of conduct and ethics can be accessed on our website, at *www.itron.com* under the Investors section.

There were no material changes to the procedures by which security holders may recommend nominees to Itron's board of directors during 2021, as set forth by Item 407(c)(3) of Regulation S-K.

The section entitled "Corporate Governance" appearing in the 2021 Proxy Statement sets forth certain information regarding the Audit/Finance Committee, including the members of the Committee and the Audit/Finance Committee financial experts, as set forth by Item 407(d)(4) and (d)(5) of Regulation S-K and is incorporated herein by reference.

Item 11: Executive Compensation

The sections entitled "Compensation of Directors" and "Executive Compensation" appearing in the 2021 Proxy Statement set forth certain information with respect to the compensation of directors and management of Itron as required by Item 402 of Regulation S-K and are incorporated herein by reference.

The section entitled "Corporate Governance" appearing in the 2021 Proxy Statement sets forth certain information regarding members of the Compensation Committee required by Item 407(e)(4) of Regulation S-K and is incorporated herein by reference.

The section entitled "Compensation Committee Report" appearing in the 2021 Proxy Statement sets forth certain information required by Item 407(e)(5) of Regulation S-K and is incorporated herein by reference.

Item 12: Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The section entitled "Equity Compensation Plan Information" appearing in the 2021 Proxy Statement sets forth certain information required by Item 201(d) of Regulation S-K and is incorporated herein by reference.

The section entitled "Security Ownership of Certain Beneficial Owners and Management" appearing in the 2021 Proxy Statement sets forth certain information with respect to the ownership of our common stock as required by Item 403 of Regulation S-K and is incorporated herein by reference.

Item 13: Certain Relationships and Related Transactions, and Director Independence

The section entitled "Corporate Governance" appearing in the 2021 Proxy Statement sets forth certain information required by Item 404 of Regulation S-K and is incorporated herein by reference.

The section entitled "Corporate Governance" appearing in the 2021 Proxy Statement sets forth certain information with respect to director independence as required by Item 407(a) of Regulation S-K and is incorporated herein by reference.

Item 14: Principal Accountant Fees and Services

The section entitled "Independent Registered Public Accounting Firm's Audit Fees and Services" appearing in the 2021 Proxy Statement sets forth certain information with respect to the principal accounting fees and services and the Audit/Finance Committee's policy on pre-approval of audit and permissible non-audit services performed by our independent auditors as required by Item 9(e) of Schedule 14A and is incorporated herein by reference.

PART IV

Item 15: Exhibit and Financial Statement Schedules

(a) (1) Financial Statements:

The financial statements required by this item are submitted in Item 8 of this Annual Report on Form 10-K.

(a) (2) Financial Statement Schedule:

All schedules have been omitted because of the absence of conditions under which they are required or because the required information is included in the consolidated financial statements or the notes thereto.

(a) (3) Exhibits:

Exhibit Number	Description of Exhibits
2.1	Agreement and Plan of Merger, dated September 17, 2017, by and among Itron, Inc., Ivory Merger Sub, Inc., and Silver Spring, Inc. (Filed as Exhibit 2.1 to Itron Inc.'s Current Report on Form 8-K, filed on September 18, 2017)
3.1	Amended and Restated Articles of Incorporation of Itron, Inc. (Filed as Exhibit 3.1 to Itron, Inc.'s Annual Report on Form 10-K, filed on March 27, 2003)
3.2	Amended and Restated Bylaws of Itron, Inc. (Filed as Exhibit 3.2 to Itron, Inc.'s Annual Report on Form 10-K, filed on June 30, 2016)
4.1	Security Agreement dated August 5, 2011 among Itron, Inc. and Wells Fargo Bank, National Association (Filed as Exhibit 4.2 to Form 8-K filed on August 8, 2011)
4.2	First Amendment to Security Agreement dated June 23, 2015 among Itron, Inc. and Wells Fargo Bank, National Association. (Filed as Exhibit 4.2 to Itron, Inc.'s Current Report on Form 8-K, filed on June 23, 2015)
4.3	Indenture, dated as of December 22, 2017 among Itron, Inc., the guarantors from time to time party thereto and U.S. Bank National Association, as trustee. (Filed as Exhibit 4.1 to Itron, Inc.'s Current Report on Form 8-K, filed on December 22, 2017)
4.4	Second Amended and Restated Credit Agreement dated January 5, 2018 among Itron, Inc. and a syndicate of banks led by Wells Fargo Bank, National Association, JPMorgan Chase Bank, N.A., J.P. Morgan Europe Limited, J.P. Morgan Securities PLC, BNP Paribas, and Silicon Valley Bank (Filed as Exhibit 4.1 to Itron, Inc.'s Current Report on Form 8-K, filed on January 11, 2018)
4.5	Amendment No. 1 dated October 18, 2019, to the Second Amended and Restated Credit Agreement dated January 5, 2018 among Itron, Inc., certain foreign borrowers, guarantors, lenders and issuing parties thereto, and Wells Fargo Bank, National Association, as administrative agent. (Filed as Exhibit 4.1 to Itron, Inc.'s Current Report on Form 8-K, filed on October 24, 2019)
4.6	Amendment No. 2 dated October 19, 2020, to the Second Amended and Restated Credit Agreement dated January 5, 2018 among Itron, Inc., certain foreign borrowers, guarantors, lenders and issuing parties thereto, and Wells Fargo Bank, National Association, as administrative agent. (Filed as Exhibit 4.1 to Itron, Inc's Quarterly Report on Form 10-Q filed on November 2, 2020)
4.7	Description of Registrant's Securities (filed with this report)
10.1*	Form of Amended and Restated Change in Control Severance Agreement for Executive Officers. (Filed as Exhibit 10.1 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 22, 2013)
10.2*	Form of Indemnification Agreements between Itron, Inc. and certain directors and officers. (Filed as Exhibit 10.9 to Itron, Inc.'s Annual Report on Form 10-K, filed on March 30, 2000)
10.3*	Amended and Restated 2010 Stock Incentive Plan. (Filed as Appendix A to Itron, Inc.'s Proxy Statement for the 2014 Annual Meeting of Shareholders, filed on March 13, 2014)
10.4*	Second Amended and Restated 2010 Stock Incentive Plan. (Filed as Appendix A to Itron, Inc.'s Proxy Statement for the 2017 Annual Meeting of Shareholders, filed on March 24, 2017)
10.5*	Rules of Itron Inc.'s Amended and Restated 2010 Stock Incentive Plan for the Grant of Restricted Stock Unit (RSU's) to Participants in France. (Filed as Exhibit 10.6 to Itron, Inc.'s Quarterly Report on Form 10-Q, filed on August 6, 2014)
10.6*	Terms of the Amended and Restated Equity Grant Program for Nonemployee Directors under the Itron, Inc. Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.4 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 26, 2008)

Exhibit Number	Description of Exhibits
10.7*	Form of Stock Option Grant Notice and Agreement for use in connection with both incentive and non-qualified stock options granted under Itron, Inc.'s Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.6 to Itron, Inc.’s Current Report on Form 8-K, filed on February 18, 2010)
10.8*	Form of RSU Award Notice and Agreement for U.S. Participants for use in connection with the Company’s Long-Term Performance Plan (LTPP) and issued under Itron, Inc.'s Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.1 to Itron, Inc.’s Current Report on Form 8-K, filed on February 18, 2010)
10.9*	Form of RSU Award Notice and Agreement for International Participants (excluding France) for use in connection with the Company’s LTPP and issued under Itron, Inc.'s Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.2 to Itron, Inc.’s Current Report on Form 8-K, filed on February 18, 2010)
10.10*	Form of RSU Award Notice and Agreement for Participants in France for use in connection with Itron, Inc.'s LTPP and issued under Itron, Inc.'s Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.3 to Itron, Inc.’s Current Report on Form 8-K, filed on February 18, 2010)
10.11*	Form of RSU Award Notice and Agreement for all Participants (excluding France) for use in connection with Itron, Inc.'s Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.4 to Itron, Inc.’s Current Report on Form 8-K, filed on February 18, 2010)
10.12*	Form of RSU Award Notice and Agreement for Participants in France for use in connection with Itron, Inc.'s Amended and Restated 2000 Stock Incentive Plan. (Filed as Exhibit 10.5 to Itron, Inc.’s Current Report on Form 8-K, filed on February 18, 2010)
10.13*	Form of Long Term Performance RSU Award Notice and Agreement for U.S. Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.4 to Itron, Inc.’s Quarterly Report on Form 10-Q, filed on August 6, 2014)
10.14*	Form of Long Term Performance RSU Award Notice and Agreement for International Participants (excluding France) for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.19 to Itron, Inc.’s Annual Report on Form 10-K, filed on February 25, 2011)
10.15*	Form of Long Term Performance RSU Award Notice and Agreement for Participants in France for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.5 to Itron, Inc.’s Quarterly Report on Form 10-Q, filed on August 6, 2014)
10.16*	Form of RSU Award Notice and Agreement for all Participants (excluding France) for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.2 to Itron, Inc.’s Quarterly Report on Form 10-Q, filed on August 6, 2014)
10.17*	Form of RSU Award Notice and Agreement for Participants in France for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.3 to Itron, Inc.’s Quarterly Report on Form 10-Q, filed on August 6, 2014)
10.18*	Form of RSU Award Notice and Agreement for Non-employee Directors for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.3 to Itron, Inc.’s Quarterly Report on Form 10-Q, filed on May 3, 2013)
10.19*	Form of Stock Option Grant Notice and Agreement for use in connection with both incentive and non-qualified stock options granted under Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.1 to Itron, Inc's Quarterly Report on Form 10-Q, filed on August 6, 2014)
10.20*	Amendment to the Executive Deferred Compensation Plan. (Filed as Exhibit 10.1 to Itron, Inc.’s Quarterly Report on Form 10-Q, filed on November 3, 2016)
10.21*	Amended and Restated 2012 Employee Stock Purchase Plan. (filed with this report)

Exhibit Number	Description of Exhibits
10.22	Cooperation Agreement by and among Itron, Inc., Coppersmith Capital Management LLC, Scopia Management, Inc. and certain of their specified affiliates, Jerome J. Lande and Peter Mainz, dated as of December 9, 2015. (Filed as Exhibit 10.1 to Itron, Inc.'s Current Report on Form 8-K, filed on December 11, 2015)
10.23	Amendment to Cooperation Agreement by and among Itron, Inc., Coppersmith Capital Management LLC, Scopia Management, Inc. and certain of their specified affiliates, Jerome J. Lande and Peter Mainz. (Filed as Exhibit 10.2 to Itron, Inc.'s Quarterly Report on Form 10-Q, filed on November 3, 2016)
10.24	First Amendment to Cooperation Agreement, dated November 1, 2017, by and among Itron, Inc., Scopia Management, Inc. and certain of their specified affiliates, Jerome J. Lande and certain other individuals. (Filed as Exhibit 10.1 to Itron, Inc.'s Current Report on Form 8-K, filed on November 2, 2017)
10.25*	Form of Stock Option Grant Notice and Agreement for use in connection with both incentive and non-qualified stock options granted under Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.1 to Itron, Inc.'s Quarterly Report on Form 10-Q, filed on May 4, 2017)
10.26*	Form of Long-Term Performance RSU Award Notice and Agreement for U.S. Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.2 to Itron, Inc.'s Quarterly Report on Form 10-Q, filed on May 4, 2017)
10.27*	Form of RSU Award Notice and Agreement for all Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.3 to Itron, Inc.'s Quarterly Report on Form 10-Q, filed on May 4, 2017)
10.28*	Form of Stock Option Grant Notice and Agreement for use in connection with both incentive and non-qualified stock options granted under Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.32 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 28, 2019)
10.29*	Form of Long-Term Performance RSU Award Notice and Agreement for U.S. Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.33 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 28, 2019)
10.30*	Form of RSU Award Notice for awards with 1 year vesting and Agreement for all Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.34 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 28, 2019)
10.31*	Form of RSU Award Notice for awards with 2 year vesting and Agreement for all Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.35 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 28, 2019)
10.32*	Form of RSU Award Notice for awards with 3 year vesting and Agreement for all Participants for use in connection with Itron, Inc.'s Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.36 to Itron, Inc.'s Annual Report on Form 10-K, filed on February 28, 2019)
10.33*	Transition and Retirement Agreement, dated as of January 21, 2019, by and between Itron, Inc. and Philip C. Mezey. (Filed as Exhibit 10.1 to Itron, Inc.'s Current Report on Form 8-K, filed on January 22, 2019)
10.34*	Employment agreement between Itron, Inc. and Thomas L. Deitrich, dated July 16, 2019. (Filed as Exhibit 10.1 to Itron, Inc.'s Current Report on Form 8-K, filed on July 22, 2019)
10.35*	Form of Long-Term Performance RSU Award Notice and Agreement for U.S Participants for use in connection with Itron, Inc.'s Second Amended and Restated 2010 Stock Incentive Plan. (Filed as Exhibit 10.39 to Itron, Inc's Annual report on Form 10-K, filed on February 26, 2020)
10.36*	Form of RSU Award Notice and Agreement for all Participants for use in connection with Itron, Inc.'s Second Amended and Restated 2010 Stock Incentive Plan. (filed with this report)

Exhibit Number	Description of Exhibits
21.1	Subsidiaries of Itron, Inc. (filed with this report)
23.1	Consent of Deloitte & Touche LLP Independent Registered Public Accounting Firm. (filed with this report)
31.1	Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (filed with this report)
31.2	Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (filed with this report)
32.1	Certification Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (furnished with this report)
101	The following financial information from Itron, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2020 formatted in Inline XBRL (Extensible Business Reporting Language) includes: (i) the Consolidated Statements of Operations, (ii) the Consolidated Statements of Comprehensive Income (Loss), (iii) the Consolidated Balance Sheets, (iv) the Consolidated Statements of Equity, (v) the Consolidated Statements of Cash Flows, and (vi) Notes to the Consolidated Financial Statements.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)
*	Management contract or compensatory plan or arrangement.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on the 24th day of February, 2021.

ITRON, INC.

By: /s/ JOAN S. HOOPER

Joan S. Hooper

Senior Vice President and Chief Financial Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on the 24th day of February, 2021.

Signatures	Title
/s/ THOMAS L. DEITRICH **Thomas L. Deitrich**	President and Chief Executive Officer (Principal Executive Officer), Director
/s/ JOAN S. HOOPER **Joan S. Hooper**	Senior Vice President and Chief Financial Officer
/s/ THOMAS S. GLANVILLE **Thomas S. Glanville**	Director
/s/ FRANK M. JAEHNERT **Frank M. Jaehnert**	Director
/s/ JEROME J. LANDE **Jerome J. Lande**	Director
/s/ TIMOTHY M. LEYDEN **Timothy M. Leyden**	Director
/s/ DANIEL S. PELINO **Daniel S. Pelino**	Director
/s/ GARY E. PRUITT **Gary E. Pruitt**	Director
/s/ DIANA D. TREMBLAY **Diana D. Tremblay**	Director
/s/ LYNDA L. ZIEGLER **Lynda L. Ziegler**	Chair of the Board

**DESCRIPTION OF REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934**

DESCRIPTION OF COMMON STOCK

The following description of the Company's common stock is based upon the Company's Amended and Restated Articles of Incorporation ("Articles"), the Company's Amended and Restated Bylaws ("Bylaws") and applicable provisions of law. We have summarized certain portions of the Articles and Bylaws below. The summary is not complete and is subject to, and is qualified in its entirety by express reference to, the provisions of our Articles and Bylaws, each of which is filed as an exhibit to the Annual Report on Form 10-K of which this Exhibit 4.7 is a part.

Authorized Capital Stock

Under the Articles, the Company's authorized capital stock consists of 75,000,000 shares of common stock, without par value, and 10,000,000 shares of preferred stock, without par value.

Common Stock

Common Stock Outstanding. The outstanding shares of the Company's common stock are duly authorized, validly issued, fully paid and nonassessable. The Company's common stock is listed and principally traded on the Nasdaq Global Select Market under the ticker symbol "ITRI."

Dividend Rights. Subject to the prior or preferential rights of holders of our preferred stock outstanding at the time, holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our Board of Directors out of legally available funds.

Voting Rights. Each share of our common stock entitles its holder to one vote on all matters voted on by the shareholders, including the election of directors. We have not provided for cumulative voting for the election of directors in our Articles.

Right to Receive Liquidation Distributions. Subject to the prior or preferential rights of holders of our preferred stock outstanding at the time, in the event of our liquidation, dissolution, or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to shareholders.

Rights and Preferences. Holders of our common stock have no preemptive or conversion rights, and there are no redemption or sinking fund provisions applicable to our common stock.

Preferred Stock

Our Board of Directors has the authority, without further action by our shareholders, to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges, and restrictions thereof. These rights, preferences, and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms, and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of preferred stock by us could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock by us could have the effect of delaying, deferring, or preventing a change in control of our company or other corporate action. No shares of preferred stock are outstanding, and we have no present plan to issue any shares of preferred stock.

Anti-Takeover Provisions

Certain provisions of our Articles and Bylaws could have the effect of delaying, deferring or preventing a change of control of our company without further action by our shareholders and may adversely affect the voting and other rights of the holders of common stock. For example, our Articles and Bylaws include provisions that:

- authorize our Board of Directors to issue up to 10,000,000 shares of preferred stock and to determine the price, rights, preferences, privileges and restrictions, including voting rights, of those shares without any further vote or action by the shareholders. The rights of the holders of common stock may be subject to, and may be adversely affected by, the rights of the holders of any preferred stock that may be issued in the future;
- limit the ability of shareholders to raise matters at a meeting of shareholders without giving advance notice;
- provide that directors may only be removed for cause;
- set the Superior Court of Spokane County of the State of Washington as the sole and exclusive forum for (a) any derivative action or proceeding brought on behalf of the Company, (b) any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to the Company or the Company's shareholders, (c) any action asserting a claim against the Company arising under or pursuant to, or based on, any provision of the Washington Business Corporation Act or our Articles or Bylaws, or (d) any action asserting a claim against the Company governed by the internal affairs doctrine; and
- provide for a classified Board of Directors, which will generally make it more difficult for shareholders to replace a majority of our Board of Directors.

Washington law, our Articles and Bylaws limit the ability of shareholders from acting by written consent by requiring unanimous written consent for shareholder action to be effective. Similarly, state anti-takeover laws in the State of Washington related to corporate takeovers may prevent or delay a change of control of our Company.

ITRON, INC.

2012 EMPLOYEE STOCK PURCHASE PLAN

As adopted by the board on February 17, 2012 and approved by the shareholders on May 4, 2012
and amended by the Compensation Committee of the board on May 2, 2013 and September 11, 2013

SECTION 1. PURPOSE; STRUCTURE OF PLAN

The purpose of the Plan is to provide Eligible Employees with an opportunity to purchase shares of Stock by means of payroll deductions or other contributions, thereby allowing such individuals the opportunity to acquire an equity interest in the Company in a convenient manner and enhancing their sense of participation in the affairs of the Company.

The Plan includes two components: a Code Section 423 component (the “Section 423 Plan”) and a non-Code Section 423 component (the “Non-423 Plan”). It is the intention of the Company that the Section 423 Plan qualify as an “employee stock purchase plan” under Section 423 of the Code, although the Company makes no undertaking nor representation to maintain such qualification. The provisions of the Section 423 Plan, accordingly, shall be construed so as to extend and limit participation in a uniform and nondiscriminatory manner consistent with the requirements of Section 423 of the Code. In addition, the Plan authorizes the grant of Options under the Non-423 Plan, which does not qualify as an “employee stock purchase plan” under Section 423 of the Code; such Options granted under the Non-423 Plan shall be granted pursuant to rules, procedures or sub-plans adopted by the Plan Administrator designed to achieve tax, securities laws or other objectives for Eligible Employees, the Company and its Affiliates. Except as otherwise provided herein, the Section 423 Plan and the Non-423 Plan shall operate and be administered in the same manner. Offerings intended to be made under the Non-423 Plan shall be designated as such by the Plan Administrator at or prior to the time of such Offering.

If a Participant transfers employment among the Company and any Designated Corporation or Designated Affiliate, such participant shall continue to participate in the Offering in which he or she was participating for the duration of the current Offering Period (except as set forth herein or unless otherwise determined by the Plan Administrator in its sole discretion), but upon commencement of a new Offering, the Participant shall automatically be deemed to be participating in the new Offering applicable to the Company or Designated Corporation or Designated Affiliate to which the Participant transferred employment.

If a Participant transfers employment from the Company or any Designated Corporation participating in the Section 423 Plan to a Designated Affiliate participating in the Non-423 Plan, he or she shall remain in the Section 423 Plan until the next Offering, provided he or she continues to be eligible to purchase Stock under the Code Section 423 requirements; if the Participant is not eligible to purchase Stock under the Code Section 423 requirements, he or she shall immediately cease to participate in the Section 423 Plan but any payroll deductions taken or other contributions made for the Purchase Period in which such transfer occurs shall be transferred to the Non-423 Plan, and such Participant shall participate in the Plan under the Non-423 Plan upon the same terms and conditions as previously applicable to him or her, except for such modifications as may be required by applicable law, as determined by the Administrator in its sole discretion. A Participant who transfers employment from a Designated Affiliate participating in the Non-423 Plan to the Company or any Designated Corporation participating in the Section 423 Plan shall remain a Participant in the Non-423 Plan until the earlier of (i) the end of the current Offering under the Non-423 Plan, or (ii) the Offering Date of the first Offering in which he or she participates following such transfer. Notwithstanding the foregoing, the Plan Administrator may establish different rules to govern transfers of employment between Affiliates participating in the Section 423 Plan and the Non-423 Plan, consistent with the applicable requirements of Section 423 of the Code.

SECTION 2. DEFINITIONS

"*Affiliate*" (except as used in the definition of "Change in Control Transaction" below) means (i) an entity that, directly or indirectly, is controlled by, controls or is under common control with the Company or (ii) an entity in which the Company has a significant equity interest, in either case as determined by the Plan Administrator, whether now or hereafter existing (which, for avoidance of doubt, shall include any Parent Corporation or Subsidiary Corporation).

"*Board*" means the board of directors of the Company.

"*Code*" means the U.S. Internal Revenue Code of 1986, as amended. Reference to a specific section of the Code or U.S. Treasury Regulation thereunder shall include such section or regulation and any comparable provision of any future legislation or regulation amending, supplementing or superseding such section or regulation.

"*Company*" means Itron, Inc., a Washington corporation, or any successor thereto.

"*Change in Control Transaction*" means the occurrence of any of the following events:

(a) any Person is or becomes the Beneficial Owner (as such term is set forth in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities of the Company representing 25% or more of either the then outstanding shares of Stock or the combined voting power of the Company's then outstanding securities, excluding any Person who becomes such a Beneficial Owner in connection with a transaction described in (c)(i) below;

(b) a change in the composition of the Board during any two-year period such that the individuals who, as of the date hereof, constitute the Board (the "*Incumbent Board*") cease for any reason to constitute at least a majority of the Board; provided, however, that for purposes of this definition, any individual who becomes a member of the Board subsequent to the beginning of the two-year period, whose election, or nomination for election by the Company's shareholders, was approved by a vote of at least two-thirds of those individuals who are members of the Board and who were also members of the Incumbent Board (or deemed to be such pursuant to this proviso) shall be considered as though such individual were a member of the Incumbent Board; and provided further, however, that any such individual whose initial assumption of office occurs as a result of or in connection with an actual or threatened solicitation of proxies or consents by or on behalf of an Person other than the Board shall not be considered a member of the Incumbent Board;

(c) there is consummated a merger or consolidation of the Company or any direct or indirect Subsidiary with any other corporation, other than (i) a merger or consolidation immediately following which members of the Incumbent Board constitute a majority of the members of the board of directors (or similar body) of the surviving entity or, if the surviving entity is a subsidiary, any parent thereof, or (ii) a merger or consolidation effected to implement a recapitalization of the Company (or similar transaction) in which no Person is or becomes the Beneficial Owner, directly or indirectly, of securities of the Company (not including in the securities Beneficially Owned by such Person any securities acquired directly from the Company or its Affiliates (as such term is set forth in Rule 12b-2 promulgated under Section 12 of the Exchange Act)) representing 25% or more of the combined voting power of the Company's then outstanding securities; or

(d) the shareholders of the Company approve a plan of complete liquidation or dissolution of the Company or the consummation of a sale or disposition by the Company of all or substantially all of the Company's assets, other than a sale or disposition by the Company of all or substantially all of the Company's assets to an entity, at least 50% of the combined voting power of the voting securities of which are owned by shareholders of the Company in substantially the same proportions as their ownership of the Company immediately prior to such sale.

For purposes of this definition, "*Person*" shall have the meaning given in Section 3(a)(9) of the Exchange Act, as modified and used in Sections 13(d) and 14(d) thereof, except that such term shall not include (i) the Company or any of its Subsidiaries, (ii) a trustee or other fiduciary holding securities under an employee benefit plan of the Company or any of its Affiliates (as such term is set forth in Rule 12b -2 promulgated under Section 12 of the Exchange Act), (iii) an underwriter temporarily holding securities pursuant to an offering of such securities or (iv) a corporation owned, directly or indirectly, by the shareholders of the Company in substantially the same proportions as their ownership of stock of the Company.

For the avoidance of doubt, a transaction shall not constitute a Change in Control Transaction if its sole purpose is either to change the state of the Company's incorporation or to create a holding company that shall be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

"Designated Affiliate" means any Affiliate designated by the Plan Administrator as eligible to participate under the Non-423 Plan.

"Designated Corporation" means any Parent Corporation or Subsidiary Corporation designated by the Plan Administrator as eligible to participate under the Section 423 Plan.

"Eligible Compensation" means all regular cash compensation, including overtime, cash bonuses and commissions. Regular cash compensation does not include severance pay, hiring and relocation bonuses, pay in lieu of vacations, sick leave or any other special payments. The Plan Administrator, in its discretion, may, on a uniform and nondiscriminatory basis for each Offering, establish a different definition of Eligible Compensation for a subsequent Offering. Further, the Plan Administrator shall have discretion to determine the application of this definition to Participants outside the United States.

"Eligible Employee" means any individual who is treated as an employee in the records of the Company or any Designated Corporation or Designated Affiliate, in each case regardless of any subsequent reclassification by the Company or by any Designated Corporation or Designated Affiliate, any governmental agency, or any court, and subject to the qualifications set forth in this definition section.

For purposes of the Plan, the employment relationship shall be treated as continuing intact while the individual is on military or sick leave or other bona fide leave of absence approved by the Company or the applicable Designated Corporation or Designated Affiliate so long as the leave does not exceed three (3) months or, if longer than three (3) months, the individual's right to reemployment is provided by statute or has been agreed to by contract or in a written policy of the Company which provides for a right of reemployment following the leave of absence. The employment relationship shall be treated as continuing intact where an Eligible Employee transfers employment between the Company, Designated Corporations and/or Designated Affiliates.

The Plan Administrator, in its discretion, from time to time may, prior to an Offering Date for all Options to be granted on such Offering Date, determine (on a uniform and nondiscriminatory basis or as otherwise permitted by U.S. Treasury Regulation Section 1.423-2 for Options granted under the Section 423 Plan) that the definition of Eligible Employee shall or shall not include an individual if he or she: (a) customarily works twenty (20) hours or less per week (or such lesser period of time as may be determined by the Plan Administrator in its discretion), (b) customarily works not more than five (5) months per calendar year (or such lesser period of time as may be determined by the Plan Administrator in its discretion), (c) is a highly compensated employee within the meaning of Section 414(q) of the Code, or (d) is a highly compensated employee within the meaning of Section 414(q) of the Code with compensation above a certain level or is an officer or subject to the disclosure requirements of Section 16(a) of the Exchange Act. Under the Section 423 Plan, any such exclusion shall be applied with respect to an Offering in a manner complying with U.S. Treasury Regulation Section 1.423-2(e).

A Participant shall cease to be an Eligible Employee upon the Participant's termination of employment, upon the Participant's Employer ceasing to be a Designated Corporation or Designated

Affiliate, or upon the Participant transferring to an Affiliate that is not a Designated Corporation or Designated Affiliate.

"*Employer*" means the Company or the Designated Corporation or Designated Affiliate that is the employer of the applicable Eligible Employee in accordance with the definition of Eligible Employee set forth above.

"*ESPP Broker*" has the meaning set forth in Section 10.

"*Exchange Act*" means the U.S. Securities Exchange Act of 1934, as amended.

"*Fair Market Value*" means, as of any date, the value of the Stock determined as follows:

(a) If the Stock is listed on any established stock exchange or national market system (including, without limitation, the NASDAQ Global Select Market), its Fair Market Value shall be the closing sales price for such Stock as quoted on such exchange or system on the date of determination, as reported in *The Wall Street Journal* or such other source as the Plan Administrator deems reliable; or

(b) In the absence of an established market for the Stock, its Fair Market Value shall be determined in good faith by the Plan Administrator.

For purposes of the Plan, if the date as of which the Fair Market Value is to be determined is not a Trading Day, then, solely for the purpose of determining Fair Market Value, such date shall be: (i) in the case of the Offering Date, the first Trading Day following the Offering Date; (ii) in the case of the Purchase Date, the last Trading Day prior to the Purchase Date.

"*Offering*" has the meaning set forth in Section 5.1.

"*Offering Date*" means the first day of an Offering.

"*Option*" means an option granted under the Plan to an Eligible Employee to purchase shares of Stock.

"*Parent Corporation*" means a "parent corporation" of the Company, whether now or hereafter existing, as such term is defined in Section 424(e) of the Code.

"*Participant*" means any Eligible Employee who has elected to participate in an Offering in accordance with the procedures set forth in Section 6.1 and who has not withdrawn from the Plan or whose participation in the Plan has not terminated.

"*Plan*" means the Itron, Inc. 2012 Employee Stock Purchase Plan, as set forth herein, and as amended from time to time, which includes a Section 423 Plan and a Non-423 Plan.

"*Plan Administrator*" means the Board or any committee of the Board designated to administer the Plan under Section 3.1.

"*Purchase Date*" means the last day of each Purchase Period. "*Purchase Period*" has the meaning set

forth in Section 5.2. "*Purchase Price*" has the meaning set forth in Section 8.

"*Stock*" means the common stock, no par value, of the Company.

"*Subsidiary Corporation*" means a "subsidiary corporation" of the Company, whether now or hereafter existing, as such term is defined in Section 424(f) of the Code.

"*Successor Corporation*" has the meaning set forth in Section 18.2.

“*Trading Day*” means a day on which the stock exchange or national market system on which the Stock is listed is open for trading.

SECTION 3. ADMINISTRATION

3.1 Plan Administrator

The Plan shall be administered by the Compensation Committee of the Board, except to the extent that (a) the Board appoints another committee or committees (which term includes subcommittees) consisting of one or more members of the Board to administer the Plan or (ii) the Board determines to administer the Plan. Committee members shall serve for such terms as the Board may determine, subject to removal by the Board at any time.

3.2 Administration and Interpretation by the Plan Administrator

Subject to the provisions of the Plan, the Plan Administrator shall have exclusive authority, in its discretion, to determine all matters relating to Options granted under the Plan, including, without limitation, the authority to: (a) construe, interpret, reconcile any inconsistency in, correct any default in and supply any omission in, and apply the terms of the Plan and any subscription agreement or other instrument or agreement relating to the Plan, (b) adjudicate all disputed claims filed under the Plan (including making factual determinations), (c) determine the terms and conditions of any Offering and any Option under the Plan, (d) establish, amend, suspend or waive such rules and regulations and appoint such agents as it shall deem appropriate for the proper administration of the Plan, (e) amend an outstanding Option or grant a replacement Option for an Option previously granted under the Plan if, in the discretion of the Plan Administrator, it determines that (i) the tax consequences of such Option to the Company or the Participant differ from those consequences that were expected to occur on the date the Option was granted, or (ii) clarifications or interpretations of, or changes to, tax law or regulations permit Options to be granted that have more favorable tax consequences than initially anticipated, (f) impose such terms and conditions under an Offering as the Plan Administrator may deem necessary to ensure that the terms of an Offering comply with the requirements under FAS 123(R) applicable to employee stock purchase plan offerings intended to receive non-compensatory accounting treatment, and (g) make any other determination and take any other action that the Plan Administrator deems necessary or desirable for the administration of the Plan.

In particular, the Plan Administrator shall have exclusive authority, in its discretion, to: designate separate Offerings under the Plan, determine which entities shall be Designated Corporations or Designated Affiliates, determine who is an Eligible Employee, change the length and duration of Offerings and Purchase Periods, limit the frequency and/or number of changes in the amount deducted or contributed during an Offering or Purchase Period, permit payroll deductions or contributions in excess of the amount designated by a Participant in order to adjust for delays or mistakes in the Company’s processing of properly completed subscription agreements, establish reasonable waiting and adjustment periods and/or accounting and crediting procedures to ensure that amounts applied toward the purchase of Stock for each Participant properly correspond with payroll deductions or other contribution amounts, and establish such other limitations or procedures as the Plan Administrator determines in its sole discretion advisable that are consistent with the Plan.

Further, the Plan Administrator may adopt such rules, procedures and sub-plans as are necessary or appropriate to permit the participation in the Plan by employees who are foreign nationals or employed outside the United States, the terms of which sub-plans may take precedence over other provisions of this Plan, with the exception of Sections 4 and 8 below, but unless otherwise superseded by the terms of such sub-plan, the provisions of this Plan shall govern the operation of such sub-plan. To the extent inconsistent with the requirements of Section 423, any such sub-plan shall be considered part of the Non-423 Plan, and rights granted thereunder shall not be required by the terms of the Plan to comply with Section 423 of the Code. Without limiting the generality of the foregoing, the Plan Administrator is specifically authorized to adopt rules and procedures regarding eligibility to participate, the definition of Eligible Compensation, handling of payroll deductions and other contributions, taking of payroll deductions and making of contributions to the Plan, establishment of bank or trust accounts to hold contributions, payment of interest, establishment of the exchange rate applicable to payroll deductions taken and other contributions made in a currency other than U.S. dollars, obligations to pay payroll tax, determination of beneficiary designation requirements, tax withholding procedures and handling of stock certificates that vary with applicable local requirements.

The Plan Administrator's interpretation of the Plan and its rules and regulations, and all actions taken and determinations made by the Plan Administrator pursuant to the Plan, shall be conclusive and binding on all parties involved or affected. The Plan Administrator may delegate administrative duties to such of the Company's officers or employees as it so determines.

SECTION 4. STOCK SUBJECT TO PLAN

Subject to adjustment from time to time as provided in Section 18.1, the maximum number of shares of Stock that shall be available for issuance under the Plan shall be 625,000 shares, plus any shares of Stock that remain available for issuance under the Company's Amended and Restated 2002 Employee Stock Purchase Plan after the last Purchase Date under such plan.

Shares issued under the Plan shall be drawn from authorized and unissued shares or shares now held or subsequently acquired by the Company.

SECTION 5. OFFERINGS UNDER THE PLAN

5.1 Offerings

Except as otherwise set forth below, the Plan shall be implemented by a series of Offerings (each, an "Offering"). Offerings shall commence on January 1, April 1, July 1 and October 1 of each year and end on the next March 31, June 30, September 30 and December 31, respectively, occurring thereafter. Notwithstanding the foregoing, the Plan Administrator may establish (a) a different term for one or more future Offerings and (b) different commencing and ending dates for such Offerings; provided, however, that an Offering may not exceed five years.

Unless otherwise specified by the Plan Administrator, each Offering to Eligible Employees of the Company, a Designated Corporation or a Designated Affiliate shall be deemed a separate Offering (the terms of which Offering under the Non-423 Plan need not be identical), even if the dates and other terms of the separate Offerings are identical and the provisions of the Plan shall separately apply to each Offering. To the extent permitted by U.S. Treasury Regulation Section 1.423-2(a)(1), the terms of each separate Offering under the Section 423 Plan need not be identical, provided that the terms of the Plan and an Offering together satisfy U.S. Treasury Regulation Section 1.423-2(a)(2) and (a)(3).

5.2 Purchase Periods

Each Offering shall consist of one Purchase Period (a "Purchase Period"). The last day of each Purchase Period shall be the Purchase Date for such Purchase Period. Purchase Periods shall commence on January 1, April 1, July 1 and October 1 of each year and shall end on the next March 31, June 30, September 30 and December 31, respectively, occurring thereafter. Notwithstanding the foregoing, the Plan Administrator may establish (a) a different term for one or more future Purchase Periods and (b) different commencing dates and Purchase Dates for any such Purchase Period.

SECTION 6. PARTICIPATION IN THE PLAN; GRANT OF OPTION

6.1 Initial Participation

An Eligible Employee may become a Participant in the Plan by completing, within any prescribed enrollment period prior to the applicable Offering Date, a subscription agreement (either through the Company's online Plan enrollment process or in paper form) and/or any other forms and following any other procedures for enrollment in the Plan as may be established by the Plan Administrator from time to time. A Participant's enrollment in the Plan shall remain in effect for successive Offerings under the terms of the Plan and Offering then in effect unless his or her participation in the Plan is terminated as provided in Sections 11 and 12 below. Any such Participant is not required to complete any additional subscription agreement or other form or procedure in order to continue participation in the Plan, unless requested by the Plan Administrator for legal or administrative reasons. Eligible Employees may not participate in more than one Offering at a time.

An individual who becomes an Eligible Employee after an Offering has commenced shall not be eligible to participate in such Offering but may participate in any subsequent Offering, provided that such individual is still an Eligible Employee as of the commencement of any such subsequent Offering.

6.2 Continued Participation

If a Participant withdraws from an Offering or the Plan pursuant to Section 11 below, he or she must follow the procedures for becoming a Participant described in Section 6.1 above in order to participate in the Plan for a subsequent Offering.

6.3 Exclusions from Participation

In the case of the Section 423 Plan, Eligible Employees who are citizens or residents of a non-U.S. jurisdiction (without regard to whether they also are citizens or residents of the United States or resident aliens within the meaning of Section 7701(b)(1)(A) of the Code) may be excluded from participation in the Plan or an Offering to the extent permitted under Section 423 of the Code. In the case of the Non-423 Plan, Eligible Employees may be excluded from participation in the Plan or an Offering if the Plan Administrator has determined that participation of such Eligible Employees is not advisable or practicable.

6.4 Grant of Option to Participants

On each Offering Date and subject in all cases to the provisions of the Plan, each Participant shall be granted an Option to purchase on each Purchase Date during the applicable Offering (at the applicable Purchase Price) up to a number of shares of Stock determined by dividing such Participant’s payroll deductions or other contributions accumulated prior to such Purchase Date by the applicable Purchase Price.

SECTION 7. LIMITATIONS ON RIGHT TO PURCHASE SHARES

7.1 5% Limitation

Notwithstanding any provisions of the Plan to the contrary, no Eligible Employee shall be granted an Option under the Plan to the extent that, immediately after the grant, such Eligible Employee (or any other person whose stock would be attributed to such Eligible Employee pursuant to Section 424(d) of the Code) would own capital stock of the Company or any Parent Corporation or Subsidiary Corporation and/or hold outstanding options to purchase such stock possessing five percent (5%) or more of the total combined voting power or value of all classes of the capital stock of the Company or of any Parent Corporation or Subsidiary Corporation.

7.2 $25,000 Limitation

Notwithstanding any provisions of the Plan to the contrary, no Eligible Employee shall be granted an Option under the Plan to the extent that his or her rights to purchase stock under all employee stock purchase plans (as defined in Section 423 of the Code) of the Company or any Parent Corporation or Subsidiary Corporation accrues at a rate, which exceeds twenty-five thousand dollars ($25,000) worth of stock (determined at the Fair Market Value of the stock at the time such Option is granted) for each calendar year in which such Option is outstanding at any time, as determined in accordance with Section 423 of the Code and the regulations thereunder.

7.3 Number of Shares Purchased

No Participant shall be entitled to purchase more than 250 shares of Stock (or such other number as the Plan Administrator shall specify for a future Offering) under the Plan in any Purchase Period.

7.4 Pro Rata Allocation

In the event the number of shares of Stock that might be purchased by all Participants in the Plan exceeds the number of shares of Stock available in the Plan, the Plan Administrator shall make a pro rata allocation of the remaining shares of Stock in as uniform a manner as shall be practicable and as the Plan Administrator shall determine to be equitable.

SECTION 8. PURCHASE PRICE

The purchase price (the "Purchase Price") at which Stock may be acquired pursuant to the exercise of an Option granted under the Plan shall be an amount equal to ninety-five percent (95%) of the Fair Market Value of a share of Stock on the Purchase Date; provided, however, that the Plan Administrator may establish a different Purchase Price for any Offering which shall not be less than 85% of the lower of: (a) the Fair Market Value of a share of Stock on the Offering Date, and (b) the Fair Market Value of a share of Stock on the Purchase Date.

SECTION 9. EXERCISE OF OPTION; PAYMENT OF PURCHASE PRICE

9.1 Exercise of Option; General Rules

Subject to Section 9.10 below, each Participant's Option to purchase shares of Stock under the Plan shall be exercised automatically on each Purchase Date.

Stock that is acquired pursuant to the exercise of an Option shall be paid for by means of payroll deductions taken from the Participant's Eligible Compensation during each Purchase Period. Except as set forth in this Section 9, the amount of payroll deductions to be taken from a Participant's Eligible Compensation during each pay period shall be determined by the Participant at the time of completing the subscription agreement and enrolling in the Plan as described in Section 6.1 above.

Notwithstanding the foregoing or any provisions to the contrary in the Plan, the Administrator may allow Participants to make payments under the Plan via cash, check or other means instead of payroll deductions if payroll deductions are not permitted under applicable local law and, for any Offering under the Section 423 Plan, the Plan Administrator determines that such other contributions are permissible under Section 423 of the Code.

9.2 Amount of Payroll Deductions or Other Contributions

The amount of payroll deductions taken from (or other contributions made by) a Participant during any pay period shall be a percentage of the Participant's Eligible Compensation, such amount to be, in either case, at least 1% of the Participant's Eligible Compensation for such pay period and not more than 10% of the Participant's Eligible Compensation for such pay period (or such other percentages as the Plan Administrator may establish for future Offerings). Amounts shall be deducted (or contributed) in whole percentages only.

9.3 Commencement of Payroll Deductions and Other Contributions

Payroll deductions shall commence on the first payday following the Offering Date and shall continue through the last payday of the Offering, unless sooner altered or terminated as provided in the Plan. Should a payday occur on a Purchase Date, a Participant shall have the payroll deductions made on such day applied to his or her account under the current Purchase Period, unless otherwise provided by the Plan Administrator. Other contributions (if permitted) shall be made at the time and in the manner prescribed by the Plan Administrator and communicated to Eligible Employees during the prescribed enrollment period for the applicable Offering.

9.4 Changes in Payroll Deduction or Other Contributions

(a) Unless the Plan Administrator establishes otherwise for a future Offering, during an Offering, a Participant may elect to decrease the amount deducted (or otherwise contributed) from his or her Eligible

Compensation by completing an amended subscription agreement (either through the Company's online Plan enrollment process or in paper form). Any such change in rate shall be effective as soon as administratively practicable following the Participant's completion of such an amended subscription agreement, provided that the Plan Administrator may establish in advance of a particular Purchase Period a deadline by which any such change must be submitted before the change shall be effective for a pay period. Such amended subscription agreement shall remain in effect until the Participant changes such agreement in accordance with the terms of the Plan.

(b) Unless the Plan Administrator establishes otherwise for a future Offering, a Participant may elect to increase or decrease the amount to be deducted (or otherwise contributed) from his or her Eligible Compensation for future Offerings by completing an amended subscription agreement (either through the Company's online Plan enrollment process or in paper form) during the prescribed enrollment period prior to the applicable Offering or by such other deadline as may be established by the Plan Administrator in advance of a particular Offering. Such amended subscription agreement shall remain in effect until the Participant changes such agreement in accordance with the terms of the Plan.

(c) Notwithstanding the foregoing, a Participant's payroll deductions or contributions shall be decreased to 0% during an Offering to the extent necessary to comply with Section 423(b)(8) of the Code and Section 7.2 above. Payroll deductions or contributions shall re-commence at the rate provided in such Participant's subscription agreement at the beginning of the first Offering that is scheduled to end in the following calendar year, unless the Participant terminates participation in an Offering or the Plan as provided in Section 11 below or indicates otherwise in an amended subscription agreement.

9.5 Memorandum Accounts

Individual accounts shall be maintained for each Participant for memorandum purposes only, unless otherwise required by applicable law, as determined by the Plan Administrator.

All payroll deductions from a Participant's Eligible Compensation or other contributions which are credited to such account shall be deposited with the general funds of the Company and may be used by the Company for any corporate purpose, unless otherwise required by applicable law, as determined by the Plan Administrator.

9.6 No Interest

No interest shall accrue on a Participant's contributions to the Plan, except as may be required by applicable law, as determined by the Plan Administrator.

9.7 Acquisition of Stock

Subject to the limitations set forth in Section 7 above, on each Purchase Date, each Participant shall acquire, pursuant to the automatic exercise of the Participant's Option, the number of whole shares of Stock arrived at by dividing the total amount of the Participant's accumulated payroll deductions or other contributions for the Purchase Period by the Purchase Price; provided, however, that in no event shall the number of shares of Stock purchased by the Participant exceed the number of shares of Stock subject to the Participant's Option. Fractional shares may be issued under the Plan only to the extent permitted by the Plan Administrator.

9.8 Refund of Excess Amounts

Any cash balance remaining in the Participant's account shall be refunded to the Participant as soon as practical after the Purchase Date. In the event the cash to be returned to a Participant pursuant to the preceding sentence is an amount less than the amount necessary to purchase a whole share of Stock, and the Plan Administrator has determined that fractional shares may not be issued, the Plan Administrator may establish procedures whereby such cash is maintained in the Participant's account and applied to the purchase of Stock in the subsequent Purchase Period. If the Participant does not participate in the next

Purchase Period, such remaining cash balance shall be refunded to the Participant as soon as practical after the Purchase Date without the payment of any interest (subject to Section 9.6 above).

9.9 Withholding Obligations

At the time the Option is exercised or at the time some or all of the Stock issued under the Plan is disposed of (or at any other time that a taxable event related to the Plan occurs), the Participant must make adequate provision for the Company's or the Employer's federal, state, local or any other tax liability payable to any authority including taxes imposed by jurisdictions outside of the U.S., national insurance, social security or other tax withholding obligations, if any, which arise upon the exercise of the Option or the disposition of the Stock (or any other taxable event related to the Plan), including, for the avoidance of doubt, any liability to pay an employer tax or social insurance contribution which has been shifted from the Company or any Employer to the Participant as a matter of law or contract. At any time, the Company or the Employer may, but shall not be obligated to, withhold from the Participant's compensation the amount necessary for the Company or the Employer to meet applicable withholding obligations, including any withholding required to make available to the Company or the Employer any tax deductions or benefits attributable to sale or early disposition of Stock by the Participant. In addition, the Company or the Employer may, but shall not be obligated to, withhold from the proceeds of the sale of Stock or any other method of withholding the Company or the Employer deems appropriate.

9.10 Termination of Participation

No Stock shall be purchased on a Purchase Date on behalf of a Participant whose participation in a current Offering or the Plan has terminated on or before such Purchase Date, whether such termination is due to withdrawal as described in Section 11 below or due to termination of employment as described in Section 12 below.

SECTION 10. STOCK OWNERSHIP

Promptly following each Purchase Date, the number of shares of Stock purchased by each Participant shall be deposited into an account established in the Participant's name at a stock brokerage or other financial services firm designated or approved by the Plan Administrator (the "ESPP Broker"). A Participant shall be free to undertake a disposition of the shares of Stock in his or her account at any time, but the Company may require that, in the absence of such a disposition, the shares of Stock remain in the Participant's account at the ESPP Broker until the disposition of the shares of Stock or until such other time as the Company deems necessary in order for it to comply with any applicable laws or regulations or desirable for the administration of the Plan.

SECTION 11. WITHDRAWAL

11.1 Withdrawal From an Offering

A Participant may withdraw from an Offering by completing a notice of withdrawal (either through the Company's online Plan enrollment process or in paper form) and/or any other forms and following any procedures for withdrawal from an Offering as may be established by the Plan Administrator from time to time. Such withdrawal may be elected at any time prior to the end of an Offering; provided, however, that if a Participant withdraws after the Purchase Date for a Purchase Period of an Offering, the withdrawal shall not affect Stock acquired by the Participant in an earlier Purchase Period and, provided further, that the Plan Administrator may determine that the notice of withdrawal (and any other prescribed procedures) must be completed by a particular deadline in advance of a Purchase Date of an Offering in order for such withdrawal to be effective with respect to such Purchase Period within the Offering. A Participant is prohibited from again participating in the same Offering at any time after withdrawing from such Offering.

11.2 Withdrawal From the Plan

A Participant may withdraw from the Plan by completing a notice of withdrawal (either through the Company's online Plan enrollment process or in paper form) and/or any other forms and following any procedures for withdrawal from the Plan as may be established by the Plan Administrator from time to time. The Plan Administrator may determine that the notice of withdrawal (and any other prescribed procedures) must be completed by a particular deadline in order for such withdrawal to be effective with respect to an Offering and/or Purchase Period. In the event a Participant withdraws from the Plan, such Participant may not resume participation in the Plan during the same Offering, but may participate in any subsequent Offering under the Plan by again satisfying the definition of Eligible Employee and following the procedures for enrolling in the Plan as described in Section 6.1.

11.3 Return of Payroll Deductions or Other Contributions

Upon withdrawal from an Offering or the Plan pursuant to Sections 11.1 or 11.2 above, the Participant's accumulated payroll deductions or contributions that have not been applied to the purchase of Stock shall be returned to the Participant as soon as practical after the withdrawal, without the payment of any interest (subject to Section 9.6), and the Participant's interest in the Offering and the Plan shall terminate. Such accumulated payroll deductions or contributions may not be applied to any other Offering under the Plan.

SECTION 12. TERMINATION OF EMPLOYMENT

Termination of a Participant's employment with the Company or a Designated Corporation or Designated Affiliate for any reason (including retirement, death, the Employer ceasing to remain a Designated Corporation or Designated Affiliate) shall immediately terminate the Participant's participation in the Plan. In such event, the payroll deductions or contributions credited to the Participant's account since the last Purchase Date shall, as soon as practical, be returned to the Participant or, in the case of a Participant's death, to the Participant's legal representative, and all the Participant's rights under the Plan shall terminate. Interest shall not be paid on sums returned to a Participant pursuant to this Section 12 (subject to Section 9.5).

SECTION 13. RESTRICTIONS UPON ASSIGNMENT

13.1 Transferability

An Option granted under the Plan shall not be transferable otherwise than by will or the laws of descent and distribution, and is exercisable during the Participant's lifetime only by the Participant. The Plan Administrator shall not recognize, and shall be under no duty to recognize, any assignment or purported assignment by a Participant, other than by will or the laws of descent and distribution, of the Participant's interest in the Plan, of his or her Option or of any rights under his or her Option.

13.2 Beneficiary Designation

If permitted by the Plan Administrator, a Participant may designate on a Company-approved form a beneficiary who is to receive any shares and cash, if any, from the Participant's account under the Plan in the event the Participant dies after the Purchase Date for an Offering but prior to delivery to such Participant of such shares and cash. In addition, if permitted by the Plan Administrator, a Participant may designate on a Company-approved form a beneficiary who is to receive any cash from the Participant's account under the Plan in the event that the Participant dies before the Purchase Date for an Offering. Such designation may be changed by the Participant by following any procedures for making such change prescribed by the Company.

SECTION 14. NO RIGHTS OF SHAREHOLDER UNTIL SHARES ISSUED

With respect to shares of Stock subject to an Option, a Participant shall not be deemed to be a shareholder of the Company, and he or she shall not have any of the rights or privileges of a shareholder. A Participant shall have the rights and privileges of a shareholder of the Company when, but not until, the shares of Stock have been issued following exercise of the Participant's Option.

SECTION 15. LIMITATIONS ON SALE OF STOCK PURCHASED UNDER THE PLAN

The Plan is intended to provide Stock for investment and not for resale. The Company does not, however, intend to restrict or influence any Participant in the conduct of his or her own affairs. A Participant, therefore, may sell Stock purchased under the Plan at any time he or she chooses subject to compliance with Company policies and any applicable U.S. federal and state and foreign securities laws. A Participant assumes the risk of any market fluctuations in the price of the Stock.

SECTION 16. AMENDMENT OR TERMINATION OF THE PLAN

The Plan Administrator may amend, modify, suspend or terminate the Plan at any time without the approval of the shareholders of the Company; provided, however, that the Company shall obtain shareholder approval of any amendment in such a manner and to such a degree as required by applicable law or government regulation, or the rules of the NASDAQ Stock Market or any stock exchange or national market system on which the shares of Stock may be listed or to comply with Section 423 of the Code.

Without any limitations to the foregoing, if the Plan Administrator determines that the ongoing operation of the Plan may result in unfavorable financial accounting consequences, the Plan Administrator may, in its discretion and, to the extent necessary or desirable, modify or amend the Plan to reduce or eliminate such accounting consequences including, but not limited to:

(i) altering the Purchase Price for any Purchase Period, including a Purchase Period in progress at the time of the Plan Administrator action; or

(ii) shortening any Purchase Period so that the Purchase Period ends on a new Purchase Date, including a Purchase Period in progress at the time of the Plan Administrator action.

Such modifications or amendments shall not require consent of any Participant.

For the avoidance of doubt, the authority to take action under this Section 16 may not be delegated by the Plan Administrator to an officer or other employee.

SECTION 17. NO RIGHTS AS AN EMPLOYEE

Nothing in the Plan shall be construed to give any person (including any Eligible Employee or Participant) the right to remain in the employ of the Company or an Affiliate or to affect the right of the Company or an Affiliate to terminate the employment of any person (including any Eligible Employee or Participant) at any time with or without cause.

SECTION 18. ADJUSTMENTS

18.1 Adjustment of Shares

In the event that, at any time or from time to time, a stock dividend, stock split, spin-off, combination or exchange of shares, recapitalization, merger, consolidation, distribution to shareholders other than a normal cash dividend, or other change in the Company’s corporate or capital structure results in (a) the outstanding shares, or any securities exchanged therefor or received in their place, being exchanged for a different number or class of securities of the Company or of any other corporation or (b) new, different or additional securities of the Company or of any other corporation being received by the holders of shares of Stock, then the Plan Administrator shall make such equitable adjustments as it shall deem appropriate in the circumstances in (i) the maximum number and kind of shares of Stock subject to the Plan as set forth in Section 4, (ii) the maximum number and kind of securities that are subject to any outstanding Option and the per share price of such securities and (iii) the maximum number and kind of shares of Stock that may be purchased by a Participant in a Purchase Period. The determination by the Plan Administrator as to the terms of any of the foregoing adjustments shall be conclusive and binding. Notwithstanding the foregoing, a Change in Control Transaction shall not be governed by this Section 18.1 but shall be governed by Section 18.2.

18.2 Change in Control Transaction

In the event of a proposed Change in Control Transaction, each outstanding Option shall be assumed or an equivalent option substituted by the successor company or parent thereof (the "Successor Corporation"). In the event that the Successor Corporation refuses to assume or substitute for the Option, any Offering then in progress shall be shortened by setting a new Purchase Date. The new Purchase Date shall be a specified date before the date of the Change in Control Transaction. The Board shall notify each Participant, prior to the new Purchase Date, that the Purchase Date for the Participant's Option has been changed to the new Purchase Date and that the Participant's Option shall be exercised automatically on the new Purchase Date, unless prior to such date the Participant has withdrawn from an Offering then in progress or the Plan as provided in Section 11.

18.3 Limitations

The grant of Options shall in no way affect the Company's right to adjust, reclassify, reorganize or otherwise change its capital or business structure or to merge, consolidate, dissolve, liquidate or sell or transfer all or any part of its business or assets.

SECTION 19. CONDITIONS UPON ISSUANCE OF SHARES

Stock shall not be issued with respect to an Option unless the exercise of such Option and the issuance and delivery of shares of Stock pursuant thereto shall comply with all applicable provisions of law, domestic or foreign, including, without limitation, the U.S. Securities Act of 1933, as amended, the Exchange Act, the rules and regulations promulgated thereunder, and the requirements of any stock exchange upon which the shares may then be listed, and shall be further subject to the approval of counsel for the Company with respect to such compliance. The inability or impracticability of the Company to obtain from any regulatory body having jurisdiction the authority, if any, deemed by the Company's legal counsel to be necessary to the lawful issuance and sale of any shares of Stock under the Plan, or the approval of any securities exchange or market system upon which the Stock may then be listed, if any, deemed by the Company's legal counsel to be necessary to the issuance and sale of any shares of Stock under the Plan in compliance with the requirements of such securities exchange or market system, shall relieve the Company of any liability in respect of the failure to issue or sell such shares of Stock as to which such requisite authority or approval shall not have been obtained. As a condition to the exercise of an Option, the Company may require the Participant to satisfy any qualifications that may be necessary or appropriate, to evidence compliance with any applicable law or regulation, and to make any representation or warranty with respect thereto as may be requested by the Company.

SECTION 20. SECTION 409A

The Section 423 Plan is exempt from the application of Section 409A of the Code ("Section 409A") and any ambiguities herein shall be interpreted to so be exempt from Section 409A. The Non-423 Plan is intended to be exempt from the application of Section 409A under the short-term deferral exception and any ambiguities shall be construed and interpreted in accordance with such intent. In furtherance of the foregoing and notwithstanding any provision in the Plan to the contrary, if the Plan Administrator determines that an Option granted under the Plan may be subject to Section 409A or that any provision in the Plan would cause an Option under the Plan to be subject to Section 409A, the Plan Administrator may amend the terms of the Plan and/or of an outstanding Option granted under the Plan, or take such other action the Plan Administrator determines is necessary or appropriate, in each case, without the Participant's consent, to exempt any outstanding Option or future Option that may be granted under the Plan from or to allow any such options to comply with Section 409A, but only to the extent any such amendments or action by the Plan Administrator would not violate Section 409A. Notwithstanding the foregoing, the Company shall have no liability to a Participant or any other party if the Option under the Plan that is intended to be exempt from or compliant with Section 409A is not so exempt or compliant or for any action taken by the Plan Administrator with respect thereto.

SECTION 21. TAX QUALIFICATION

Although the Company may endeavor to (i) qualify an Option for favorable tax treatment under the laws of the United States or jurisdictions outside of the United States or (ii) avoid adverse tax treatment (*e.g*., under Section 409A), the Company makes no representation to that effect and expressly disavows any covenant to maintain favorable or avoid unfavorable tax treatment, notwithstanding anything to the contrary in this Plan, including Section 20. The Company shall be unconstrained in its corporate activities without regard to the potential negative tax impact on Participants under the Plan.

SECTION 22. TERM OF PLAN

Subject to Section 23 of the Plan, the Plan shall become effective upon its adoption by the Board. The Plan shall continue until the earlier to occur of (a) termination of the Plan by the Plan Administrator (pursuant to Section 16 above), (b) issuance of all of the shares of Stock reserved for issuance under the Plan, or (c) ten (10) years from the adoption of the Plan by the Board.

SECTION 23. SHAREHOLDER APPROVAL

The Plan shall be subject to approval by the shareholders of the Company within twelve (12) months after the date the Plan is adopted by the Board. Such shareholder approval shall be obtained in the manner and to the degree required under U.S. state corporate laws, U.S. federal and state securities laws, the Code and/or any stock exchange or quotation system on which the Stock is listed or quoted.

SECTION 24. SEVERABILITY

If any provision of the Plan is or becomes or is deemed to be invalid, illegal, or unenforceable for any reason in any jurisdiction or as to any Participant, such invalidity, illegality or unenforceability shall not affect the remaining parts of the Plan, and the Plan shall be construed and enforced as to such jurisdiction or Participant as if the invalid, illegal or unenforceable provision had not been included.

SECTION 25. HEADINGS

Headings are given to the sections and subsections of the Plan solely as a convenience to facilitate reference. Such headings shall not be deemed in any way material or relevant to the construction or interpretation of the Plan.

SECTION 26. GOVERNING LAW

The Plan and all determinations made and actions taken hereto, to the extent not otherwise governed by the laws of the United States, shall be governed by the laws of the State of Washington, without giving effect to such state’s conflict of laws principles.

ITRON, INC.
SECOND AMENDED AND RESTATED 2010 STOCK INCENTIVE PLAN

RESTRICTED STOCK UNIT AWARD NOTICE

Itron, Inc. (the “***Company***”) hereby grants to Participant a restricted stock unit award (the “***Award***”). The Award is subject to all the terms and conditions set forth in this Restricted Stock Unit Award Notice (the “***Award Notice***”), the Restricted Stock Unit Award Agreement, including Appendix A (the “***Agreement***”) and the Itron, Inc. Second Amended and Restated 2010 Stock Incentive Plan (the “***Plan***”), all of which are incorporated into the Award Notice in their entirety.

Participant:	Participant Name
Grant Date:	Grant Date
Number of Restricted Stock Units:	Number of Awards Granted
Vesting Schedule:	The Award will vest with respect to one-third of the Restricted Stock Units on the first, second and third anniversary of the Grant Date (each, a “***Vest Date***”).

Additional Terms/Acknowledgement: This Award is subject to all the terms and conditions set forth in this Award Notice, the Agreement, and the Plan which are attached to and incorporated into this Award Notice in their entirety.

Participant Name

I accept this award subject to the terms and conditions stated herein.
Electronic Signature

ITRON, INC.
SECOND AMENDED AND RESTATED 2010 STOCK INCENTIVE PLAN

RESTRICTED STOCK UNIT AWARD AGREEMENT
ALL PARTICIPANTS

Pursuant to your Restricted Stock Unit Award Notice (the "***Award Notice***") and this Restricted Stock Unit Award Agreement, including Appendix A (this "***Agreement***"), Itron, Inc. (the "***Company***") has granted you a restricted stock unit award (the "***Award***") under its Second Amended and Restated 2010 Stock Incentive Plan (the "***Plan***") for the number of restricted stock units indicated in your Award Notice. Capitalized terms not expressly defined in this Agreement but defined in the Plan shall have the same definitions as in the Plan.

The details of the Award are as follows:

1. Vesting

The Award will vest according to the vesting schedule set forth in the Award Notice (the "***Vesting Schedule***"). One share of Common Stock will be issuable for each restricted stock unit that vests. Restricted stock units that have vested and are no longer subject to forfeiture according to the Vesting Schedule are referred to herein as "***Vested Units***." Restricted stock units that have not vested and remain subject to forfeiture under the Vesting Schedule are referred to herein as "***Unvested Units***." Except as provided in Sections 2 and 3 below, the Unvested Units will vest (and to the extent so vested cease to be Unvested Units remaining subject to forfeiture) in accordance with the Vesting Schedule (the Unvested and Vested Units are collectively referred to herein as the "***Units***"). Except as provided in Sections 2 and 3 below, the Award will terminate and the Unvested Units will be forfeited upon termination of your employment for any reason.

2. Retirement, Death or Disability

2.1 In the event that your employment terminates by reason of Retirement at least 12 months after the Grant Date but during the Units' vesting period, any Unvested Units will continue to vest in accordance with the Vesting Schedule until all Units become vested, provided that if you breach any of the covenants set forth in Appendix A to this Agreement after your Retirement, the Unvested Units will be forfeited immediately. For the purposes of this Section 2.1, "***Retirement***" means your voluntary termination of employment after the date on which you have reached (i) the age of 55 and have a total of at least 10 years of continuous employment with the Company and/or a Related Corporation or (ii) the age of 60 and have a total of at least 5 years of continuous employment with the Company and/or a Related Corporation; provided however, in either case, you must provide advance written notice to the Company at least 90 days prior to the termination of your employment unless otherwise agreed to in writing by the Company. For the avoidance of doubt, if your employment terminates due to Retirement within 12 months after the Grant Date, all Unvested Units will be automatically forfeited.

2.2 In the event that your employment terminates during the Units' vesting period by reason of death or Disability, any Unvested Units will accelerate in vesting and become Vested Units upon such termination of employment.

3. Change in Control Transaction

3.1 In the event of a Change in Control Transaction, the Award will be subject to any change in control severance agreement or other agreement providing for change in control provisions between you and the Company (a "***CIC Agreement***"). If you are not a party to a CIC Agreement, the provisions of this Section 3 shall apply.

3.2 In the event of a Change in Control Transaction in which (i) the Unvested Units are not assumed, substituted for, or converted into an award of the acquiring or surviving corporation (or a publicly-traded parent thereof) in a manner which prevents dilution of your rights under the Award or (ii) the acquiring or surviving corporation (or parent thereof) is not publicly-traded, any Unvested Units shall become immediately and fully vested as of the date of the Change in Control Transaction.

3.3 In the event of a Change in Control Transaction in which your Unvested Units are assumed, substituted for, or converted into an award of the acquiring or surviving public corporation (or a publicly-traded parent thereof) and your employment is terminated within twenty-four (24) months following such Change in Control Transaction, other than (a) for Cause, (b) by reason of Retirement, death or Disability (which shall be governed by Section 2), or (c) by you without Good Reason, any Unvested Units shall become immediately and fully vested as of the date of your termination of employment.

3.4 Definitions - For purposes of this Agreement, the following capitalized terms shall have the meanings set forth below:

(a) "***Base Salary***" shall mean your annual base salary immediately prior to a Change in Control Transaction, as such salary may be increased from time to time (in which case such increased amount shall be the Base Salary for purposes hereof), but without giving effect to any reduction thereto.

(b) "***Beneficial Owner***" shall have the meaning set forth in Rule 13d-3 under the Exchange Act.

(c) "***Cause***" for termination of your employment by the Company or your employer, if different (the "***Employer***") shall mean (i) your willful and continued failure (other than any such failure resulting from (A) your incapacity due to physical or mental illness, (B) any such actual or anticipated failure after the issuance by you of a notice of termination in a form prescribed by the Company for Good Reason or (C) the Employer's active or passive obstruction of the performance of your duties and responsibilities) to perform substantially the duties and responsibilities of your position with the Employer after a written demand for substantial performance is delivered to you by the Employer, which demand specifically identifies the manner in which the Employer believes that you have not substantially performed such duties or responsibilities; (ii) your conviction by a court of competent jurisdiction for felony criminal conduct (or the equivalent under applicable local law); or (iii) your willful engaging in fraud or dishonesty which is injurious to the Company and/or the Employer or its reputation, monetarily or otherwise. No act, or failure to act, on your part shall be deemed "willful" unless committed, or omitted by you in bad faith and without reasonable belief that your act or failure to act was in, or not opposed to, the best interest of the Company and/or the Employer.

(d) "***Good Reason***" for termination of your employment by you shall mean the occurrence (without your express written consent) after any Change in Control Transaction of any one of the following acts by the Company or the Employer, or failures by the Company or the Employer to act, unless, in the case of any act or failure to act described in subsection (i), (ii), (iii), (iv) or (v) below, such act or failure to act is corrected prior to the date of your termination specified in a notice of termination in a form prescribed by the Company given in respect thereof:

(i) an adverse change in your status or position(s) with the Employer as in effect immediately prior to the Change in Control Transaction, including, without limitation, any adverse change in your status or position as a result of a diminution of your duties or responsibilities (other than, if applicable, any such change directly and solely attributable to the fact that the Company is no longer publicly owned) or the assignment to you of any duties or responsibilities which are inconsistent with such status or position(s), or any removal of you from, or any failure to reappoint or reelect you to, such position(s);

(ii) a reduction in your Base Salary;

(iii) a reduction in your annual bonus opportunity or long term incentive opportunity, as compared to the year immediately preceding the year in which the Change in Control Transaction occurs;

(iv) the failure to continue to provide welfare, pension and fringe benefits which are in each case, in the aggregate, substantially similar to those provided to you immediately prior to Change in Control Transaction; or

(v) the Employer requiring you to be based at an office that is greater than 50 miles from where your office is located immediately prior to the Change in Control Transaction except for required travel on the Employer's business to an extent substantially consistent with the business travel obligations which you undertook on behalf of the Employer prior to the Change in Control Transaction.

Notwithstanding the foregoing, the events described in clauses (ii), (iii) or (iv) above shall not constitute Good Reason hereunder to the extent they are as a result of across-the-board reductions of the applicable compensation element following the Change in Control Transaction which are equally applicable to all similarly situated employees of the surviving corporation and its affiliates. Your right to terminate your employment for Good Reason shall not be affected by your incapacity due to physical or mental illness. In order for Good Reason to exist hereunder, you must provide notice to the Company of the existence of the condition or circumstance described above within 90 days of the initial existence of the condition or circumstance (or, if later, within 90 days of becoming aware of such condition or circumstance), and the Employer must have failed to cure such condition within 30 days of the receipt of such notice. Subject to the preceding sentence, your continued employment shall not constitute consent to, or a waiver of rights with respect to, any act or failure to act constituting Good Reason hereunder.

(e) "***Person***" shall have the meaning given in Section 3(a)(9) of the Exchange Act, as modified and used in Sections 13(d) and 14(d) thereof, except that such term shall not include (i) the Company or any of its subsidiaries, (ii) a trustee or other fiduciary holding securities under an employee benefit plan of the Company or any of its affiliates, (iii) an underwriter temporarily holding securities pursuant to an offering of such securities or (iv) a corporation owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of stock of the Company.

4. Settlement of Vested Units.

Vested Units shall be settled on the earliest to occur of (a) a date within 30 days following the applicable Vest Date, (b) a date within 30 days following the termination of your employment (i) due to death or Disability pursuant to Section 2 above or (ii) following a Change in Control Transaction pursuant to Section 3.3 above, or (c) the date of a Change in Control Transaction pursuant to Section 3.2 above that constitutes a "change in control event" within the meaning of U.S. Treasury Regulation Section 1.409A-3(i)(5).

5. Securities Law Compliance

5.1 You represent and warrant that you (a) have been furnished with a copy of the prospectus for the Plan and all information which you deem necessary to evaluate the merits and risks of receipt of the Award, (b) have had the opportunity to ask questions and receive answers concerning the information received about the Award and the Company, and (c) have been given the opportunity to obtain any additional information you deem necessary to verify the accuracy of any information obtained concerning the Award and the Company.

5.2 You hereby agree that you will in no event sell or distribute all or any part of the shares of Common Stock that you receive pursuant to settlement of this Award (the "***Shares***") unless (a) there is an effective registration statement under the U.S. Securities Act of 1933, as amended (the "***Securities Act***") and any applicable state and foreign securities laws covering any such transaction involving the Shares or (b) the Company receives an opinion of your legal counsel (concurred with by legal counsel for the Company) stating that such transaction is exempt from registration or the Company otherwise satisfies itself that such transaction is exempt from registration. You understand that the Company has no obligation to you to register the Shares with the U.S. Securities and Exchange Commission or any foreign securities regulator and has not represented to you that it will so register the Shares.

5.3 You confirm that you have been advised, prior to your receipt of the Shares, that neither the offering of the Shares nor any offering materials have been reviewed by any regulator under the Securities Act or any other applicable securities act (the "***Acts***") and that the Shares cannot be resold unless they are registered under the Acts or unless an exemption from such registration is available.

5.4 You hereby agree to indemnify the Company and hold it harmless from and against any loss, claim or liability, including attorneys' fees or legal expenses, incurred by the Company as a result of any breach by you of, or any inaccuracy in, any representation, warranty or statement made by you in this Agreement or the breach by you of any terms or conditions of this Agreement.

6. Transfer Restrictions

Units shall not be sold, transferred, assigned, encumbered, pledged or otherwise disposed of, whether voluntarily or by operation of law, other than pursuant to a beneficiary designation in accordance with the following sentence. You may, from time to time, name any beneficiary or beneficiaries (who may be named contingently or successively) to whom any benefit under this Agreement is to be paid in case you do not receive any or all such benefit during your lifetime. Each such designation shall revoke all of your prior designations, shall be in a form prescribed by the Company, and will be effective only when completed in accordance with any instructions provided by the Company during your lifetime. In the absence of any such designation, benefits remaining unpaid to you during your lifetime shall be paid to your estate.

7. No Rights as Shareholder

You shall not have voting or other rights as a shareholder of the Company with respect to the Units.

8. Book Entry Registration of Shares

The Company will issue the Shares by registering the Shares in book entry form with the Company's transfer agent in your name and the applicable restrictions will be noted in the records of the Company's transfer agent and in the book entry system.

9. Responsibility for Taxes

9.1 Regardless of any action the Company (or your Employer, if different) takes with respect to any and all income tax, social insurance, payroll tax, fringe benefits tax, payment on account or other tax-related items related to your participation in the Plan and legally applicable to you ("***Tax-Related Items***"), you acknowledge that the ultimate liability for all Tax-Related Items is and remains your responsibility and may exceed the amount actually withheld by the Company and/or the Employer. You further acknowledge that the Company and the Employer (a) make no representations or undertakings regarding the treatment of any Tax-Related Items in connection with any aspect of the Award, including, but not limited to, the granting or vesting of the Award, the settlement of Vested Units, the issuance of Shares upon settlement of the Vested Units, the subsequent sale of Shares acquired upon settlement of the Vested Units and the receipt of any dividends; and (b) do not commit to and are under no obligation to structure the terms of the grant or any aspect of the Award to reduce or eliminate your liability for Tax-Related Items or achieve any particular tax result. Further, if you have become subject to Tax-Related Items in more than one jurisdiction between the Grant Date and the date of any relevant taxable or tax withholding event, as applicable, you acknowledge that the Company and/or the Employer (or former employer, as applicable) may be required to withhold or account for Tax-Related Items in more than one jurisdiction.

9.2 Prior to any relevant taxable or tax withholding event, as applicable, you will pay or make adequate arrangements satisfactory to the Company and or the Employer to satisfy all Tax-Related Items.

(a) In this regard, you hereby irrevocably appoint Fidelity or any stock plan service provider or brokerage firm designated by the Company for such purpose (the "***Agent***") as your Agent, and authorize the Agent, to:

(i) Sell on the open market at the then prevailing market price(s), on your behalf, as soon as practicable on or after the settlement date for any Vested Unit, a number of Shares (rounded up to the next whole number) sufficient to generate proceeds to cover the Tax-Related Items and all applicable fees and commissions due to, or required to be collected by, the Agent;

(ii) Remit directly to the Company the cash amount necessary to cover the Tax-Related Items;

(iii) Retain the amount required to cover all applicable fees and commissions due to, or required to be collected by, the Agent, relating directly to the sale of Shares referred to in clause (i) above; and

(iv) Remit any remaining funds to you.

(b) If the sale of Shares required by Section 9.2(a)(i) above is prohibited by a legal, contractual or regulatory restriction, is otherwise impossible as described in the 10b5-1 Plan set forth in Section 9.3 below, or if the obligation for withholding of Tax-Related Items arises at a time other than the settlement of the Award, then in addition to the withholding mechanism described in Section 9.2(a), you authorize the Company and/or the Employer, at their discretion, to satisfy the obligations with regard to all Tax-Related Items by:

(i) requiring you to pay to the Company or the Employer any amount of the Tax-Related Items; and/or

(ii) withholding any amount of the Tax-Related Items from your wages or other cash compensation paid to you by the Company and/or the Employer; and/or

(iii) withholding in Shares to be issued upon settlement of the Vested Units, provided, however, that if you are a Section 16 officer of the Company under the Exchange Act, then the Plan Administrator (as constituted to satisfy Rule 16b-3 of the Exchange Act) shall establish any alternative method of withholding as may be required from the alternatives (i) – (iii) herein and, if the Plan Administrator does not exercise its discretion prior to the Tax-Related Items withholding event, then the method of withholding set forth in alternative (iii) shall apply.

(c) Notwithstanding anything in Section 9.2(a), you may satisfy the obligations with respect to a specified withholding event for Tax-Related Items by making a payment in check or cash to the Company if (1) in advance of the specified tax withholding event and during a period that you are not prohibited from engaging in transactions involving the securities of the Company pursuant to the Company's Insider Trading Policy you request the Chief Financial Officer, the General Counsel, or their authorized designee that you wish to satisfy the withholding obligations applicable to the tax withholding event by a payment in check (or cash) to the Company instead of pursuant to Section 9.2(a) and (2) the Chief Financial Officer, General Counsel, or their authorized deisgnee approves such request. For the avoidance of doubt, you hereby acknowledge, understand and agree that the obligations applicable to withholding events with respect to Tax-Related Items that occur subsequent to the specified withholding event with respect to which a request was made pursuant to this Section 9.2(c) shall continue to be satisfied pursuant to Section 9.2(a) unless a request is made pursuant to this Section 9.2(c) with respect to a specified withholding event.

(d) Depending on the withholding method, the Company may withhold or account for Tax-Related Items by considering applicable minimum statutory withholding amounts or other applicable withholding rates, including maximum applicable rates, in which case you will receive a refund of any over-withheld amount in cash and will have no entitlement to the equivalent amount in Shares. If the obligation for Tax-Related Items is satisfied by withholding in Shares, for tax purposes, you will be deemed to have been issued the full number of Shares subject to the Vested Units notwithstanding that a number of the Shares are held back solely for the purpose of paying the Tax-Related Items due as a result of any aspect of your participation in the Plan. The Company may refuse to issue or deliver Shares to you if you fail to comply with your obligations in connection with the Tax-Related Items.

9.3 You acknowledge that the authorization and instruction to the Agent set forth in Section 9.2(a)(i) above to sell Shares to cover the Tax-Related Items is intended to comply with the requirements of Rule 10b5-1(c)(1)(i)(B) under the Exchange Act and to be interpreted to comply with the requirements of Rule 10b5-1(c) under the Exchange Act (regarding trading of the Company's securities on the basis of material nonpublic information) (a "***10b5-1 Plan***"). This 10b5-1 Plan is being adopted to permit you to sell a number of Shares issued upon settlement of Vested Units sufficient to pay the Tax-Related Items.

You acknowledge that the broker is under no obligation to arrange for the sale of Shares at any particular price. You further acknowledge that you will be responsible for all brokerage fees and other costs of sale, and you agree to indemnify and hold the Company harmless from any losses, costs, damages, or expenses relating to any such sale. You acknowledge that it may not be possible to sell Shares during the term of this 10b5-1 Plan due to (a) a legal or contractual restriction applicable to you or to the broker, (b) a market disruption, (c) rules governing order execution priority on the Nasdaq or other exchange where the Shares may be traded, (d) a sale effected pursuant to this 10b5-1 Plan that fails to comply (or in the reasonable opinion of the Agent's counsel is likely not to comply) with the Securities Act, or (e) if the Company determines that sales may not be effected under this 10b5-1 Plan. In the event of the Agent's inability to sell Shares, you will continue to be responsible for the Tax-Related Items.

You hereby agree to execute and deliver to the Agent any other agreements or documents as the Agent reasonably deems necessary or appropriate to carry out the purposes and intent of the 10b5-1 Plan. You acknowledge that this 10b5-1 Plan is subject to the terms of any policy adopted now or hereafter by the Company governing the adoption of 10b5-1 plans. The Agent is a third party beneficiary of Section 9.2(a)(i) and this 10b5-1 Plan.

10. Nature of Grant

In accepting the grant, you acknowledge, understand and agree that:

(a) the Plan is established voluntarily by the Company, it is discretionary in nature and it may be modified, amended, suspended or terminated by the Company at any time, to the extent permitted by the Plan;

(b) the grant of the Award is exceptional, voluntary and occasional and does not create any contractual or other right to receive future grants of restricted stock units, or benefits in lieu of restricted stock units, even if restricted stock units have been granted in the past;

(c) all decisions with respect to future grants of restricted stock units, if any, will be at the sole discretion of the Company;

(d) the grant of the Award and your participation in the Plan shall not create a right to employment or be interpreted as forming an employment or service contract with the Employer, the Company or any Related Corporation and shall not interfere with the ability of the Employer, the Company or any Related Corporation to terminate your employment or service relationship (if any);

(e) you are voluntarily participating in the Plan;

(f) the Award and the Shares subject to the Award are not intended to replace any pension rights or compensation;

(g) the Award and the Shares subject to the Award, and the income and value of same, are not part of normal or expected compensation for any purpose, including but not limited to, calculating any severance, resignation, termination, redundancy, dismissal, end of service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments;

(h) the future value of the underlying Shares is unknown, indeterminable and cannot be predicted with certainty;

(i) no claim or entitlement to compensation or damages shall arise from forfeiture of the Award resulting from your ceasing to provide employment or other services to the Company or the Employer (for any reason whatsoever, and whether or not later found to be invalid or in breach of employment laws in the jurisdiction where you are employed or the terms of your employment agreement, if any);

(j) for purposes of the Award, your employment will be considered terminated as of the date you cease to actively provide services to the Company or a Related Corporation; further, in the event of termination of your employment or other services (for any reason whatsoever, whether or not later found to be invalid or in breach of employment laws in the jurisdiction where you are employed or the terms of your employment agreement, if any), unless otherwise provided in this Agreement or determined by the Company, your right to vest in the Award, if any, will terminate effective as of the date that you are no longer actively providing services and will not be extended by any notice period (*e.g.*, active service would not include any contractual notice period or any period of "garden leave" or similar period mandated under employment laws in the jurisdiction where you are employed or the terms of your employment agreement, if any); the Company's Chief Executive Officer shall have the exclusive discretion to determine when you are no longer actively providing services for purposes of the Award (including whether or not you may still be considered to be providing services while on an approved leave of absence);

(k) unless otherwise provided in the Plan or by the Company in its discretion, the Award and the benefits evidenced by this Agreement do not create any entitlement to have the Award or any such benefits transferred to, or assumed by, another company nor to be exchanged, cashed out or substituted for, in connection with any corporate transaction affecting the shares of the Company; and

(l) the following provisions apply only if you are providing services outside the United States:

(i) the Award and the Shares subject to the Award are not part of normal or expected compensation or salary for any purpose;

(ii) neither the Company, the Employer nor any Related Corporation shall be liable for any foreign exchange rate fluctuation between your local currency and the United States dollar that may affect the value of the Award or of any amounts due to you pursuant to the settlement of the Award or the subsequent sale of any Shares acquired upon settlement.

11. No Advice Regarding Grant

The Company is not providing any tax, legal or financial advice, nor is the Company making any recommendations regarding your participation in the Plan or your acquisition or sale of the underlying Shares. You are hereby advised to consult with your own personal tax, legal and financial advisors regarding your participation in the Plan before taking any action related to the Plan. You acknowledge that you have either consulted with competent advisors independent of the Company to obtain advice concerning the receipt of the Award and the acquisition or disposition of any Shares to be issued pursuant to the Award in light of your specific situation or had the opportunity to consult with such advisors but chose not to do so.

12. *Data Privacy*

You hereby explicitly and unambiguously consent to the collection, use and transfer, in electronic or other form, of your personal data as described in this Agreement and any other Award materials by and among, as applicable, the Employer, the Company and its Related Corporations for the exclusive purpose of implementing, administering and managing your participation in the Plan.

You understand that the Company and the Employer may hold and process certain personal information about you, including, but not limited to, your name, home address, email address and telephone number, date of birth, social insurance number, passport or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company, details of all Awards or any other entitlement to shares of stock awarded, canceled, exercised, vested, unvested or outstanding in your favor, for the exclusive purpose of implementing, administering and managing the Plan ("Data").

You understand that Data will be transferred to Fidelity or such other stock plan service provider as may be selected by the Company in the future, which is assisting the Company with the implementation, administration and management of the Plan. You understand that the recipients of Data may be located in the United States or elsewhere, and that the recipients' country (e.g., the United States) may have different data privacy laws and protections than your country. You understand that you may request a list with the names and addresses of any potential recipients of Data by contacting your local human resources representative. You authorize the Company, Fidelity and any other possible recipients which may assist the Company (presently or in the future) with implementing, administering and managing the Plan to receive, possess, use, retain and transfer Data, in electronic or other form, for the sole purpose of implementing, administering and managing your participation in the Plan. You understand that Data will be held only as long as is necessary to implement, administer and manage your participation in the Plan. You understand that you may, at any time, view Data, request additional information about the storage and processing of Data, require any necessary amendments to Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing your local human resources representative. Further, you understand that you are providing the consents herein on a purely voluntary basis. If you do not consent, your employment status or service and career with the Employer will not be affected; the only consequence of refusing or withdrawing your consent is that the Company would not be able to grant you the Award or other equity awards or administer or maintain such awards. Therefore, you understand that refusing or withdrawing your consent may affect your ability to participate in the Plan. For more information on the consequences of your refusal to consent or withdrawal of consent, you understand that you may contact your local human resources representative.

Finally, upon request of the Company and/or the Employer, you agree to provide an executed data privacy consent form (or any other agreements or consents) that the Company and/or the Employer may deem necessary to obtain from you for the purpose of administering the Award in compliance with the data privacy laws in your country, either now or in the future. You understand and agree that you will not be able to accept the Award if you fail to provide such consent or agreement as requested by the Company and/or the Employer.

13. Electronic Delivery and Participation

The Company may, in its sole discretion, decide to deliver any documents related to current or future participation in the Plan by electronic means. You hereby consent to receive such documents by electronic delivery and agree to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company.

14. Language

You acknowledge that you are sufficiently proficient in English to understand the terms and conditions of the Agreement. Furthermore, if you have received this Agreement (or any portion thereof) or any other document related to the Plan translated into a language other than English and if the meaning of the translated version is different from the English version, the English version will control.

15. General Provisions

15.1 Successors and Assigns. The provisions of this Agreement will inure to the benefit of the successors and assigns of the Company and be binding upon you and your heirs, executors, administrators, successors and assigns.

15.2 Section 409A.

(a) For purposes of U.S. taxpayers, the settlement of the Units is intended to be in compliance with Section 409A of the Code, and this Agreement will be interpreted, operated and administered in a manner that is consistent with this intent. In furtherance of this intent, the Plan Administrator may, at any time and without your consent, modify the terms of the Award as it determines appropriate to comply with the requirements of Section 409A of the Code and the related U.S. Department of Treasury guidance or to mitigate any additional tax, interest and/or penalties that may apply under Section 409A of the Code if compliance is not practicable. The Company makes no representation or covenant to ensure that the Units, settlement of the Units or other payment hereunder are compliant with Section 409A of the Code and will have no liability to you or any other party if the settlement of the Units or other payment hereunder that is intended to be compliant with Section 409A of the Code, is not compliant or for any action taken by the Plan Administrator with respect thereto.

(b) Notwithstanding anything in this Agreement to the contrary, any Units that become vested under this Agreement by reason of a termination of employment and that constitute an item of non-qualified deferred compensation subject to Section 409A of the Code shall not be settled unless you experience a “separation from service” within the meaning of Section 409A of the Code (a “***Separation from Service***”) and such Units shall be settled within 90 days of a Separation from Service; provided, however, that if you are a “specified employee” within the meaning of Section 409A of the Code as of the date of the Separation from Service (as determined according to the methodology established by the Company as in effect on the date of your termination of employment), such Units shall instead be settled on the first business day that is after the earlier of (i) the date that is six months following the date of the Separation from Service or (ii) the date of your death, to the extent such delayed payment is otherwise required in order to avoid a prohibited distribution under Section 409A(a)(2) of the Code, or any successor provision thereto.

15.3 Governing Law and Choice of Venue. The Award and the provisions of this Agreement will be construed and administered in accordance with and governed by the laws of the State of Washington without giving effect to such state's principles of conflict of laws. For the purposes of litigating any dispute that arises under this grant of this Agreement, the parties hereby submit to and consent to the exclusive jurisdiction of the State of Washington and agree that such litigation shall be conducted in the courts of Spokane County, Washington, or the federal courts for the United States for the Eastern District of Washington, where this grant is made and/or to be performed.

15.4 Severability. The provisions of this Agreement are severable and if any one or more provisions are determined to be illegal or otherwise unenforceable, in whole or in part, the remaining provisions shall nevertheless be binding and enforceable.

15.5 Notice. Any notice required or permitted hereunder shall be made in writing and sent to the following address:

Itron, Inc.
Attn. General Counsel
2111 N. Molter Road
Liberty Lake, WA USA 99019

16. Appendix A

Notwithstanding any provisions in this Agreement, the Award shall be subject to any special terms and conditions set forth in Appendix A to this Agreement. Appendix A constitutes part of this Agreement.

17. Imposition of Other Requirements

The Company reserves the right to impose other requirements on your participation in the Plan, on the Award and on any Shares acquired under the Plan, to the extent the Company determines it is necessary or advisable for legal or administrative reasons, and to require you to sign any additional agreements or undertakings that may be necessary to accomplish the foregoing

18. Waiver

You acknowledge that a waiver by the Company of breach of any provision of this Agreement shall not operate or be construed as a waiver of any other provision of this Agreement, or of any subsequent breach by you or any other Participant.

APPENDIX A

Restrictive Covenants

(a) **Confidential Information**. The person entering into the Agreement with the Company (the "**Participant**") shall hold in a fiduciary capacity for the benefit of the Company and its Subsidiaries (collectively, the "**Affiliated Group**"), all secret or confidential information, knowledge or data relating to the Affiliated Group and its businesses (including, without limitation, any proprietary and not publicly available information concerning any processes, methods, trade secrets, research or secret data, costs, names of users or purchasers of their respective products or services, business methods, operating procedures or programs or methods of promotion and sale) that the Participant obtains during the Participant's employment that is not public knowledge (other than as a result of the Participant's violation of this Section (a)) ("**Confidential Information**"). The Participant shall not communicate, divulge or disseminate Confidential Information at any time during or after the Participant's employment, except with the prior written consent of the Company, or as otherwise required by law or legal process, or as may be required in the course of the Participant performing his or her duties and responsibilities with the Affiliated Group; provided, however, that no Company policies or practices, including the sections addressing confidentiality obligations, is intended to or shall limit, prevent, impede or interfere in any way with an employee's right, without prior notice to the Company, to provide information to the government, participate in investigations, testify in proceedings regarding the Company's past or future conduct, or engage in any activities protected under whistle blower statutes. Pursuant to the Defend Trade Secrets Act of 2016, an employee shall not be held criminally, or civilly, liable under any Federal or State Trade secret law for the disclosure of a trade secret that is made in confidence either directly or indirectly to a Federal, State, or local government official, or an attorney, for the sole purpose of reporting, or investigating, a violation of law. Moreover, employees may disclose trade secrets in a complaint, or other document, filed in a lawsuit, or other proceeding, if such filing is made under seal. Finally, an employee who files a lawsuit alleging retaliation by the company for reporting a suspected violation of the law may disclose the trade secret to the attorney of the employee and use the trade secret in the court proceeding, if the employee files any document containing the trade secret under seal and does not disclose the trade secret, except pursuant to court order. Upon his or her termination of employment for any reason, the Participant shall promptly return to the Company all records, files, memoranda, correspondence, notebooks, notes, reports, customer lists, drawings, plans, documents, and other documents and the like relating to the business of the Affiliated Group or containing any trade secrets relating to the Affiliated Group or that the Participant uses, prepares or comes into contact with during the course of the Participant's employment with the Affiliated Group, and all keys, credit cards and passes, and such materials shall remain the sole property of the Affiliated Group. The Participant agrees to execute any standard-form confidentiality agreements with the Company that the Company in the future generally enters into with similarly situated employees.

(b) **Non-Recruitment of Affiliated Group Employees**. The Participant acknowledges that employees are a significant part of the goodwill of the Affiliated Group, such as, without limitation, their relationships and contacts with customers and suppliers as well as the training and knowledge they receive from the Affiliated Group in the course of their employment. The Participant shall not, at any time during the Non-solicitation Period (as defined below), without the prior written consent of the Company, directly or indirectly, solicit, recruit, or employ (whether as an employee, officer, agent, consultant or independent contractor) any person who is or was at any time during the previous 12 months, an employee, representative, officer or director of any member of the Affiliated Group. Further, during the Non-solicitation Period, the Participant shall not take any action that could reasonably be expected to have the effect of directly encouraging or inducing any person to cease their relationship with any member of the Affiliated Group for any reason. A general employment advertisement by an entity of which the Participant is a part will not constitute solicitation or recruitment. The "**Non-solicitation Period**" shall mean the period from the Date of Grant through the first anniversary of the Participant's termination of employment.

(c) **Non-Competition – Solicitation of Business**. Participant recognizes and agrees that the Affiliated Group has provided Confidential Information to Participant and has an interest in protecting this information from disclosure. Participant further understands that the goodwill of the Affiliated Group is an interest worthy of protection. For the protection of these and other interests, during the Non-competition Period (as defined below), the Participant shall not, either directly or indirectly, compete with the business of the Affiliated Group by (i) becoming an officer, agent, employee, partner or director of any other corporation, partnership or other entity, or otherwise render services to or assist or hold an interest (except as a less than 3-percent shareholder of a publicly traded corporation or as a less than 5-percent shareholder of a corporation that is not publicly traded) in any Competitive Business (as defined below), or (ii) soliciting, servicing, or accepting the business of (A) any active customer of any member of the Affiliated Group, or (B) any person or entity who is or was at any time during the previous twelve months a customer of any member of the Affiliated Group, provided that such business is competitive with any significant business of any member of the Affiliated Group. "**Competitive Business**" shall mean any person or entity (including any joint venture, partnership, firm, corporation, or limited liability company) that conducts a business that is competitive with any business of the Affiliated Group as of the date of termination (or any business that is being actively pursued as of the date of termination by the Affiliated Group). The Affiliated Group designs, manufactures, sells and licenses its products and technology worldwide. In addition, Competitive Businesses, as defined above, are not tied or limited to any specific geographic location. Accordingly, the scope of this Non-Competition provision is worldwide. The "**Non-competition Period**" shall mean the period from the Date of Grant through the first anniversary of the date of termination of the Participant's employment.

(d) **Remedies**. The Participant acknowledges and agrees that the terms of this Appendix A: (i) are reasonable in geographic and temporal scope, (ii) are necessary to protect legitimate proprietary and business interests of the Affiliated Group in, inter alia, customer relationships and confidential information. The Participant further acknowledges and agrees that the Participant's breach of the provisions of this Appendix A will cause the Affiliated Group irreparable harm, which cannot be adequately compensated by money damages. The Participant consents and agrees that the forfeiture provisions contained in the Agreement are reasonable remedies in the event the Participant commits any such breach. If any of the provisions of this

Appendix A are determined to be wholly or partially unenforceable, the Participant hereby agrees that Appendix A or any provision hereof may be reformed so that it is enforceable to the maximum extent permitted by law. If any of the provisions of this Appendix A are determined to be wholly or partially unenforceable in any jurisdiction, such determination shall not be a bar to or in any way diminish the Affiliated Group's right to enforce any such covenant in any other jurisdiction.

CONSOLIDATED SUBSIDIARIES OF THE REGISTRANT AT DECEMBER 31, 2020

Itron, Inc. Domestic Subsidiaries	**State of Incorporation**
Itron International, Inc.	Delaware
Itron Networked Solutions, Inc.	Delaware
SSN Holdings, LLC	Delaware
Royal Cautivo Insurance, Inc.	Utah

Itron, Inc. International Subsidiaries	**Jurisdiction of Incorporation or Organization**
Itron Australasia Pty Limited	Australia
Itron Austria GmbH	Austria
Itron Belgium SA	Belgium
Itron China Gas Holding Co. Ltd.	British Virgin Islands
Itron Canada, Inc.	Canada
Itron Metering Solutions (Suzhou) Co., Ltd.	China
Itron Metering Systems (Suzhou) Co., Ltd.	China
Comverge International, Ltd.	Cyprus
Itron Czech Republic s.r.o.	Czech Republic
Itron Denmark ApS	Denmark
Asais S.A.S	France
Asais Conseil S.A.S.	France
Itron France S.A.S.	France
Itron Holding France S.A.S.	France
Itron Holding Germany GmbH	Germany
Itron GmbH	Germany
Itron Zähler & Systemtechnik GmbH	Germany
Itron Unterstutzungskasse GmbH	Germany
Allmess GmbH	Germany
Itron Unterstutzungseinrichtung GmbH	Germany
SEWA GmbH	Germany
Ganz Meter Company Ltd.	Hungary
Itron Labs Kft	Hungary
Itron India Private Limited	India
Itron Metering Solutions India Private Limited	India
PT Mecoindo (J.V.)	Indonesia
Itron Management Services Ireland, Limited	Ireland
Temetra Limited	Ireland
Itron Italia SpA	Italy
Itron Japan Co., Ltd.	Japan
Itron Metering Solutions Luxembourg SARL	Luxembourg
Itron Global SARL	Luxembourg
Metertek Sdn Bhd (J.V. 100% indirectly owned)	Malaysia
Itron Servicios, S.A. de C.V.	Mexico
Itron Nederland B.V.	Netherlands
Itron Polska SP ZOO	Poland
Itron Portugal, Unipessoal, LDA.	Portugal
Itron Imobiliaria, Unipessoal, LDA.	Portugal

Itron, Inc. International Subsidiaries	Jurisdiction of Incorporation or Organization
Itron Sistemas de Medição Lda.	Portugal
Itron Middle East LLC	Qatar
Itron Measurement and Systems (Proprietary) Limited	Republic of South Africa
Itron LLC	Russia
Arabian Metering Company	Saudi Arabia
Itron Metering Systems Singapore Pte Ltd.	Singapore
Itron Spain SLU	Spain
Itron Sweden AB	Sweden
Itron Ukraine	Ukraine
Itron Ukrgas Meters Company (J.V. Majority)	Ukraine
Itron Metering Solutions UK Ltd.	United Kingdom
Itron Development UK Ltd.	United Kingdom
Itron Metering Solutions (Thailand) Co. Ltd.	Thailand
Itron New Zealand Limited	New Zealand
Silver Spring Networks Hong Kong Limited	Hong Kong
Silver Spring Networks India LLP	India
Silver Spring Networks Malaysia Sdn. Bhd.	Malaysia
Itron Wireless Trading, LLC	Dubai
Silver Spring Networks (UK) Limited	United Kingdom
Silver Spring Networks International Limited	Cayman Islands

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-40356, 333-89966, 333-97571, 333-110703, 333-115987, 333-125461, 333-134749, 333-143048, 333-166601, 333-181685, 333-193970, 333-195633, 333-218086, 333-222480, and 333-226020 on Form S-8 of our reports dated February 24, 2021, relating to the financial statements of Itron, Inc. and the effectiveness of the Itron Inc.'s internal control over financial reporting appearing in this Annual Report on Form 10-K for the year ended December 31, 2020.

/s/ DELOITTE & TOUCHE LLP

Seattle, Washington
February 24, 2021

Exhibit 31.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 302 OF THE
SARBANES-OXLEY ACT OF 2002

I, Thomas L. Deitrich, certify that:

1. I have reviewed this Annual Report on Form 10-K of Itron, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations, and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting, which are reasonably likely to adversely affect the registrant's ability to record, process, summarize, and report financial information; and

   b) Any fraud, whether or not material that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

ITRON, INC.

By: /s/ THOMAS L. DEITRICH
Thomas L. Deitrich
President and Chief Executive Officer

Date: February 24, 2021

Exhibit 31.2

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 302 OF THE
SARBANES-OXLEY ACT OF 2002**

I, Joan S. Hooper, certify that:

1. I have reviewed this Annual Report on Form 10-K of Itron, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations, and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting, which are reasonably likely to adversely affect the registrant's ability to record, process, summarize, and report financial information; and

   b) Any fraud, whether or not material that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

ITRON, INC.

By: /s/ JOAN S. HOOPER

Joan S. Hooper
Senior Vice President and Chief Financial Officer

Date February 24, 2021

Exhibit 32.1

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO SECTION 906 OF THE
SARBANES-OXLEY ACT OF 2002**

The certification set forth below is being submitted in connection with the Annual Report of Itron, Inc. (the Company) on Form 10-K for the year ended December 31, 2020 (the Report) for the purpose of complying with Rule 13a-14(b) or Rule 15d-14(b) of the Securities Exchange Act of 1934 and Section 1350 of Chapter 63 of Title 18 of the United States Code.

Thomas L. Deitrich, the Chief Executive Officer and Joan S. Hooper, the Chief Financial Officer of the Company, each certifies that to the best of his or her knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

/s/ THOMAS L. DEITRICH

Thomas L. Deitrich
President and Chief Executive Officer
February 24, 2021

/s/ JOAN S. HOOPER

Joan S. Hooper
Senior Vice President and Chief Financial Officer
February 24, 2021