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**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**  
**Washington, D.C. 20549**  
**Form 10-K**

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- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)  
OF THE SECURITIES EXCHANGE ACT OF 1934**  
For the fiscal year ended December 31, 2019
- 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 0-18277

**VICOR CORPORATION**

*(Exact name of registrant as specified in its charter)*

**Delaware**  
*(State or other jurisdiction of  
incorporation or organization)*  
**25 Frontage Road, Andover, Massachusetts**  
*(Address of principal executive offices)*

**04-2742817**  
*(IRS employer  
identification no.)*  
**01810**  
*(Zip code)*

**Registrant's telephone number, including area code:**  
**(978) 470-2900**

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$0.01 per share	VICR	The NASDAQ Stock Market LLC

**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 during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

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

Large Accelerated Filer  Accelerated Filer  Non-accelerated Filer  Smaller Reporting Company   
Emerging growth company

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

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

The aggregate market value of the voting and non-voting common equity of the registrant held by non-affiliates (for this purpose, persons and entities other than executive officers and directors) of the registrant, as of the registrant's most recently completed second fiscal quarter (June 30, 2019) was approximately \$549,713,000.

<u>Title of Each Class</u>	<u>Number of Shares of Common Stock Outstanding as of February 19, 2020</u>
Common Stock	28,844,478
Class B Common Stock	11,758,218

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the Company's definitive proxy statement (the "Definitive Proxy Statement") to be filed with the Securities and Exchange Commission pursuant to Regulation 14A and relating to the Company's 2020 annual meeting of stockholders are incorporated by reference into Part III.

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## PART I

In this Annual Report on Form 10-K, unless the context indicates otherwise, references to “Vicor<sup>®</sup>,” “the Company,” “our company,” “we,” “us,” “our,” and similar references, refer to Vicor Corporation and its subsidiaries, unless otherwise specified.

The Company’s consolidated operating results are affected by a wide variety of factors that could materially and adversely affect revenues and profitability, including the risk factors described in Item 1A of this Annual Report on Form 10-K. As a result of these and other factors, the Company may experience material fluctuations in future operating results on a quarterly or annual basis, which could materially and adversely affect its business, consolidated financial condition, operating results, and the share price of its listed common stock. This document and other documents filed by the Company with the Securities and Exchange Commission (“SEC”) include forward-looking statements regarding future events and the Company’s future results that are subject to the safe harbor afforded under the Private Securities Litigation Reform Act of 1995 and other safe harbors afforded under the Securities Act of 1933 and the Securities Exchange Act of 1934. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. Forward-looking statements are based on our current beliefs, expectations, estimates, forecasts, and projections for the future performance of the Company. Forward-looking statements are identified by the use of the words denoting uncertain, future events, such as “anticipate,” “assume,” “believe,” “continue,” “could,” “estimate,” “expect,” “future,” “if,” “intend,” “may,” “plan,” “potential,” “project,” “prospective,” “seek,” “should,” “target,” “will,” or “would,” as well as similar words and phrases, including the negatives of these terms, or other variations thereof. Forward-looking statements also include statements regarding: our ongoing development of power conversion architectures, switching topologies, materials, packaging, and products; the ongoing transition of our business strategically, organizationally, and operationally from serving a large number of relatively low volume customers across diversified markets and geographies to serving a small number of relatively large volume customers; our intent to enter new market segments; the levels of customer orders overall and, in particular, from large customers and the delivery lead times associated therewith; the financial and operational impact of customer changes to shipping schedules; the derivation of a portion of our sales in each quarter from orders booked in the same quarter; our intent to expand the percentage of revenue associated with licensing our intellectual property to third parties; our plans to invest in expanded manufacturing capacity and the timing, location, and funding thereof; our belief cash generated from operations and the total of our cash and cash equivalents will be sufficient to fund operations and capital investments for the foreseeable future; our outlook regarding tariffs and the impact thereof on our business; our belief that we have limited exposure to currency risks; our intentions regarding the declaration and payment of cash dividends; our intentions regarding protecting our rights under our patents; and our expectation that no current litigation or claims will have a material adverse impact on our financial position or results of operations. These forward-looking statements are based upon our current expectations and estimates associated with prospective events and circumstances that may or may not be within our control and as to which there can be no assurance. Actual results could differ materially from those implied by forward-looking statements as a result of various factors, including but not limited to those described under Part I, Item 1 — “Business,” under Part I, Item 1A — “Risk Factors,” under Part I, Item 3 — “Legal Proceedings,” and under Part II, Item 7 — “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” The discussion of our business contained herein, including the identification and assessment of factors that may influence actual results, may not be exhaustive. Therefore, the information presented should be read together with other documents we file with the SEC from time to time, including our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K, which may supplement, modify, supersede, or update the factors discussed in this Annual Report on Form 10-K. We do not undertake any obligation to update any forward-looking statements as a result of future events or developments, except as required by law.

### ITEM 1. BUSINESS

#### Overview

Vicor Corporation designs, develops, manufactures, and markets modular power components and power systems for converting electrical power (expressed as “watts,” and represented by the symbol “W”, with wattage being the product of voltage, expressed as “volts,” and represented by the symbol “V,” and current, expressed as

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“amperes,” and represented by the symbol “I”). In electrically-powered devices utilizing alternating current (“AC”) voltage from a primary AC source (for example, a wall outlet), a power system converts AC voltage into the stable direct current (“DC”) voltage necessary to power subsystems and/or individual applications and devices (known as “loads”). In many electronic devices, this DC voltage may be further converted to one or more voltages and currents required by a range of loads. In equipment utilizing DC voltage from a primary DC source (for example, a battery) or a secondary source (such as an AC-DC converter), the initial DC voltage similarly may require further conversion. A power system most commonly incorporates four voltage conversion functions: transformation, isolation, rectification, and regulation. Transformation refers to the process of increasing or decreasing an AC voltage; isolation refers to the electrical separation, for safety, of primary and secondary voltages in a transformer; rectification refers to the process of converting a voltage from AC to DC and/or from DC to AC; and regulation refers to the process of providing a near constant voltage under a range of line and load conditions. Because numerous applications requiring different voltages, currents, and varied power ratings may exist within an electronically-powered device, and system power architectures themselves vary, we offer an extensive range of products and accessories in numerous application-specific configurations. We believe our product offering is among the most comprehensive in the market segments we serve.

Our strategy, competitive positioning, and product offerings are all based on highly differentiated product performance, reflecting our anticipation of the evolution of system power architectures and customer performance requirements. Since the Company was founded, we have pursued continuous innovations in product design and achievements in product performance, largely enabled by our focus on the research and development of advanced technologies and processes, often implemented in proprietary semiconductor circuitry, materials, and packaging. Reflecting this strategy, we categorize our offerings as either “Advanced Products” or “Brick Products,” generally based on design, performance, and form factor considerations, as well as the range of evolving applications for which the products are appropriate.

Our competition varies, depending on the market segment and application. Generally, we compete with developers and manufacturers of integrated circuits and semiconductor-based modules when addressing the needs of customers in enterprise computing and other market segments with implementations of our proprietary Factorized Power Architecture<sup>TM</sup> (“FPA”) using Advanced Products. In contrast, we generally compete with manufacturers of integrated power supplies when addressing the needs of customers, across a wide range of market segments, implementing conventional power systems architectures (e.g., Centralized Power Architecture (“CPA”), Distributed Power Architecture (“DPA”), and Intermediate Bus Architecture (“IBA”)) using Brick Products.

Our website, [www.vicorpower.com](http://www.vicorpower.com), sets forth detailed information describing our products, the applications for which they may be used, and our suite of design tools. The information contained on our website is not a part of, nor incorporated by reference into, this Annual Report on Form 10-K and shall not be deemed “filed” under the Exchange Act.

We are headquartered in Andover, Massachusetts, where our manufacturing facility is located. Our wholly-owned subsidiaries, VICR Securities Corporation and VLT, Inc., also are located in Andover, Massachusetts. Our domestic offices are located in Santa Clara, California, Lombard, Illinois, and Lincoln, Rhode Island. Our two Vicor Custom Power<sup>TM</sup> subsidiaries, Freedom Power Systems, Inc. and Northwest Power, Inc., are located in Cedar Park, Texas, and Milwaukie, Oregon, respectively.

We have established individual subsidiaries or branch offices outside of the United States, which we call Technical Support Centers (“TSCs”), to conduct preparatory and auxiliary services in support of the Company. Vicor Japan Company, Ltd. (“VJCL”), our 92.5%-owned Japanese subsidiary, which is engaged in sales and customer support activities exclusively for the sale of certain products customized by VJCL for the Japanese market, is headquartered in Tokyo, Japan.

On June 28, 2019, our subsidiary, VI Chip Corporation (“VI Chip”), was merged with and into the Company, and its operations and personnel were reassigned. On December 30, 2019, we closed Vicor B.V., a

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wholly-owned subsidiary incorporated in the Netherlands, which provided logistical and administrative support for certain sales in the European Union. In 2018, our subsidiary, Picor Corporation (“Picor”), was merged with and into the Company, and its operations and personnel were reassigned. We continue to occupy the former subsidiary’s Picor facility in Lincoln, Rhode Island. Also in 2018, we closed Granite Power Technologies, Inc., a Vicor Custom Power subsidiary located in Manchester, New Hampshire, transferring its operations and reassigning certain personnel.

Our subsidiaries and their legal domicile are set forth in Exhibit 21.1 to this Annual Report on Form 10-K. The activities of all of the above named entities are consolidated in the financial statements presented herein.

Vicor was incorporated in Delaware in 1981, and we completed an initial public offering in May 1991. The Company has two classes of common stock outstanding: shares of our “Common Stock,” listed on The NASDAQ Stock Market under the ticker symbol VICR, and shares of our Class B common stock, which are not subject to registration pursuant to the Securities Exchange Act of 1934, as amended (the “Exchange Act”) and are not listed on any exchange. (Please refer to Exhibit 4.2 to this Form 10-K for a summary of our equity capitalization and the terms of our two classes of Common Stock.)

### **Our Strategy**

Our strategy emphasizes demonstrable product differentiation and a value proposition based on competitively superior solution performance, advantageous design flexibility, and a compelling total cost of ownership (“TCO”). Since the Company was founded, our competitive position has been maintained by continuous innovations in product design and achievements in product performance, largely enabled by our focus on the research and development of advanced technologies and processes, often implemented in proprietary semiconductor circuitry, materials, and packaging. Many of our products incorporate patented or proprietary implementations of high-frequency switching topologies, which enable the design of power system solutions more efficient and much smaller than conventional alternatives. This efficiency and small size is enabled by our proprietary switching circuitry and magnetic structures, as well as our use of highly differentiated packaging.

Power system performance is based primarily on conversion efficiency (i.e., the ratio of output power (i.e., watts) to input power) and power density (i.e., the amount of output power divided by the volume of the power system). Higher efficiency and density contribute to superior thermal performance, as the by-product of power conversion and distribution is heat, which must be dissipated in order to assure the performance of the power system solution itself and the overall system to which it is delivering power. Power system performance also is based on the electrical characteristics of the power system (and their effect on and compatibility with the customer’s application). Important electrical characteristics include transient responsiveness (i.e., the reaction of a power system to a sudden change in voltage or current levels) and noise profile (i.e., the level of electromagnetic interference created by power conversion). We believe the superior performance of our power systems is the most important element of our differentiation strategy.

Our strategy complements performance superiority with design flexibility (i.e., ease of use), as our products can be utilized individually or combined, given their level of integration, to create power system solutions specific to a customer’s precise needs. We articulate this positioning through our “Power Component Design Methodology,” an element of our differentiation strategy, which is our approach to providing our customers the modular products, design tools, and engineering support to enable the rapid design of advanced power system solutions by customers and, thereby, accelerate their own product development cycles. Our value proposition is supported by a compelling TCO, representing the cost of acquiring and operating a power system over its useful life, driven by competitive product pricing, high reliability, and demonstrably lower electricity costs.

Our earliest market focus was on telecommunications infrastructure, which uses a standard DC distribution voltage of 48V (nominally 48V to 54V), the highest distribution voltage that meets Safety Extra-Low Voltage (“SELV”) standard requirements, while leaving sufficient margin for over-voltage protection circuits. While we offer products addressing other DC voltage standards (e.g., 380V for power distribution in data centers, 110V for

rail applications, 28V for military and avionics applications, and 24V for industrial automation) and a broad range of customer requirements, we consider our core competencies to be associated with 48V distribution, which offers numerous inherent cost and performance advantages over lower distribution voltages, while remaining within the 60V SELV safety limit.

Our product portfolio also includes families of “front-end” devices, which address applications requiring the transformation of AC voltages to regulated DC voltages. Examples of such applications include powering data center server racks, large-scale LED lighting, specialized laboratory, diagnostic, and test equipment, small-cell wireless base stations, and higher power equipment for defense and industrial use.

Our strategy, competitive positioning, and product offerings are all based on highly differentiated product performance, reflecting our anticipation of the evolution of system power architectures and customer performance requirements. Reflecting this, we categorize our offerings as either Advanced Products or Brick Products, generally based on design, performance, and form factor considerations, as well as the range of evolving applications for which the respective categories are appropriate. The Advanced Products category consists of our most innovative products, which are used to implement our proprietary distribution architecture, FPA,, a highly differentiated approach to power distribution that enables flexible, rapid power system design using individual components optimized to perform a specific function. The Brick Products category largely consists of integrated power systems (i.e., “bricks”), incorporating multiple conversion stages, used in conventional power systems architectures including CPA, DPA, and IBA.

Given the growth profiles and performance requirements of the market segments served with Advanced Products and Brick Products, our strategy involves a transition in organizational focus, emphasizing investment in Advanced Products design and manufacturing, targeting high growth market segments with a low-mix, high-volume operational model, while maintaining a profitable business in mature market segments we serve with Brick Products with a high-mix, low-volume operational model.

### **Our Products**

Reflecting our Power Component Design Methodology, we offer a comprehensive range of modular building blocks enabling rapid design of a power system specific to a customer’s precise needs. Based on design, performance, and form factor considerations, as well as the range of evolving applications for which the products are appropriate, we categorize our product portfolios as either Advanced Products or Brick Products. We also sell a range of electrical and mechanical accessories for use with our products.

#### ***Advanced Products***

We continue to invest in the research and development of power system technologies and product concepts addressing two accelerating trends, the first toward higher required conversion efficiencies, and the second toward more and diverse on-board voltages, higher performance demands of complex loads, and, in particular, higher current requirements of those loads. These trends are most visible in the microprocessor-based applications we target with Advanced Products, for which energy consumption, energy efficiency, processor performance, and computing density are critical priorities. Recognizing the performance and scale limitations of conventional power distribution architectures and products, we introduced FPA and a range of enabling products incorporating our latest advances in power distribution concepts, switching topologies, materials, and packaging.

FPA, which is focused on, but not limited to, 48V DC distribution solutions, increases power system conversion efficiency, density, and power delivery performance by “factorizing” (i.e., separating) the power conversion process into individual components, reducing the design limitations, thermal management challenges, and scaling trade-offs associated with conventional architectures for DC voltage distribution. All such architectures follow a sequence whereby a DC voltage is first transformed, or reduced, and that lower voltage subsequently conducted (i.e., “bussed”) across the circuit to the load (i.e., the point of use), where the voltage is

regulated and lowered once more, to the required operating voltage of the load. In a FPA implementation, the sequence is reversed. Regulation occurs first, and the regulation module can be placed in the optimal position for space utilization and thermal management. A regulated voltage approaching 48V is bussed across the circuit to the transformation module, which performs what we refer to as current multiplication, adjacent to the load. Bussing high voltage minimizes the current levels across the circuit, thereby minimizing the potential for distribution losses and reducing the volume of the conduit (e.g., the copper wire). Placing the relatively low noise, low heat transformation module adjacent to the load further minimizes the potential for distribution losses associated with bussing a low operating voltage to the load and reduces the potential influence of the power system on the performance of the load.

A typical FPA implementation for delivering 48V DC from a server backplane to a 1.0V microprocessor would consist of three modules: a PRM™ (Pre-Regulator Module) regulator, a VTM™ (Voltage Transformation Module) current multiplier, and a proprietary communications controller. In contrast, a commodity IBA design for delivering 48V DC from a server backplane to a 1.0V microprocessor requires an additional conversion stage, to reduce 48V to 12V, and a multiphase voltage regulation module (i.e., a “VRM” consisting of multiple switching regulators, each representing a phase and consisting of two switching transistors, a capacitor, and an inductor, with the transistors switched by separate pulse width modulation controller). For a 200W two stage, multiphase application, a 12V commodity IBA implementation would require an intermediate bus converter, to reduce 48V to 12V, and a VRM consisting of 10 phases and a controller to reduce and regulate the 12V current for use at 1V by the microprocessor. Such a commodity IBA design requires a significantly higher component count, consumes more motherboard area, requires more copper conduit, generates more heat due to switching and distribution losses, and can be meaningfully less efficient than a 48V FPA implementation. As microprocessor operating voltages have declined and operating currents increased, commodity IBA implementations, given the fundamental constraints of the architecture, have not met the power system conversion efficiency, density, and power delivery performance delivered by FPA.

The advantages of FPA over legacy power distribution architectures are most evident in high performance computing applications. Our “Power-on-Package” power system solution meets the computational performance requirements of artificial intelligence (“AI”). The microprocessors typically used in AI, particularly in more computationally demanding “machine learning” or “training” applications, are graphics processing units (“GPUs”) and custom application-specific integrated circuits (“ASICs”). Both GPUs and ASICs, in contrast to CPUs, are designed for parallel processing throughput, not serial execution of complex instruction sets. As such, higher levels of average and peak current are required to achieve this throughput. Our most popular Power-on-Package solution, a re-integration of the functions of our PRM-VTM configuration, consists of one MCD® (“Modular Current Driver”) unit, providing high-bandwidth, low-noise regulation, and two MCM® (“Modular Current Multiplier”) units, providing high performance current multiplication. Power-on-Package delivers unprecedented current levels to GPUs and ASICs, in part due to the placement of the MCMs directly on the substrate onto which the processor is mounted, thereby minimizing distribution losses associated with high current levels. Placement of MCM units on the substrate also reduces the number of GPU or ASIC processor substrate pins required for power, allowing for their use by other functions (e.g., memory I/O). A typical four-module laterally-mounted Power-on-Package configuration powering a GPU requiring 350W delivers 0.7V, 500A average current, and up to 1,000A peak current, with superior transient response and unmatched power density.

In 2019, we introduced vertically-mounted versions of our Power-on-Package solution, which, by being mounted directly to the underside of the GPU or ASIC, achieves a further 10 times reduction in distribution losses at the load over our laterally-mounted solution. Vertically-mounting the solution allows unrestricted access to microprocessor input/output (“I/O”) pins on the top side of the motherboard, thereby improving memory access, which is a priority for GPUs and ASICs in AI applications.

We are unaware of any competitive solution for AI acceleration offering the power system performance and density of Power-on-Package, as IBA-based solutions scale to reach high current levels by adding conversion

phases, thereby increasing component count and motherboard area used, which contributes to higher switching and distribution losses and associated heat generation, resulting in lower efficiency.

Our proprietary technologies enable us to offer a range of Advanced Products, in various package formats across functional families, applicable to other market segments and power distribution architectures other than FPA. Within computing, these market segments include AC to DC voltage conversion and DC voltage distribution in server racks and high voltage conversion across datacenter infrastructure. We also offer Advanced Product power system solutions for aerospace and aviation (e.g., for use in satellites, unmanned aerial vehicles, and various airframes, for which small size, light weight, and design flexibility are advantageous); defense electronics (e.g., for use in airborne, seaborne, or field communications and radar, for which reliability in harsh environments is a priority); industrial automation, instrumentation, and test equipment (e.g., for use in robotics and semiconductor testing, for which high power levels and precision performance are required); solid state lighting (e.g., for use in large scale displays and signage, for which, again, small size, light weight, and design flexibility are advantageous ); telecommunications and networking infrastructure (e.g., for use in high throughput data distribution and pole-mounted small-cell base stations); and vehicles (e.g., in autonomous driving applications, electric vehicles, and hybrid electric vehicles).

Annual revenue associated with the sale of Advanced Products was approximately 28.6%, 35.9%, and 33.4% of the Company's consolidated revenue for the years ended December 31, 2019, 2018, and 2017, respectively. Sales of Advanced Products declined sequentially from 2018 to 2019, falling as a percentage of our total revenue, due to an unexpected and sustained period of low demand across the computing market, notably in the data center and hyperscalers segments we target. This low demand was caused by the buildup of excess inventory levels at contract manufacturers during the second half of 2018 and planning uncertainty associated with the ongoing trade dispute between China and the U.S., the two largest geographic markets we serve. We anticipate the percentage of periodic revenue associated with the sale of Advanced Products will increase in the future, given our strategic and organizational focus and the relatively higher expected growth of the market segments we serve.

### ***Brick Products***

Brick-format converters provide the integrated transformation, rectification, isolation, regulation, filtering, and/or input protection necessary to power and protect loads, across a range of conventional power architectures. We offer a wide range of brick-format DC-DC converters, as well as complementary components providing AC line rectification, input filtering, power factor correction, and transient protection. Wide ranges of input voltages, output voltages, and output power are offered, allowing end users to select components appropriate to their individual applications. The products differ in dimensions, temperature grades, maximum power ratings, performance characteristics, pin configuration, and, in certain cases, characteristics specific to the targeted market.

We also integrate these converters and components into complete power systems representing standard or custom AC-DC and DC-DC solutions for our customers' power needs. We refer to such standard products as our "Configurable" product line, while our two Vicor Custom Power subsidiaries design, sell, and service custom power system solutions.

We market our standard Brick Products emphasizing "mass customization," using highly automated, efficient, domestic manufacturing to serve customers with product design and performance requirements, across a wide range of worldwide market segments, which could not be met by high-volume oriented competitors. We focus on distributed power implementations, for which our brick-format products are well-suited, in market segments such as aerospace and defense electronics, industrial automation, industrial equipment, instrumentation and test equipment, and transportation (e.g., rail). Our customers range from independent manufacturers of highly specialized electronic devices to larger original equipment manufacturers ("OEMs") and their contract



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manufacturers. Some of our Brick Product lines have been in production for over a decade, reflecting the long-established relationships we have with many customers and the long-standing suitability of our products to demanding applications.

Annual revenue associated with the sale of Brick Products, representing the sum of third-party sales of the products sold under the Brick Products line, which were sold under the former the Brick Business Unit operating segment, inclusive of such sales of our Vicor Custom Power and VJCL subsidiaries, was approximately 71.4%, 64.1%, and 66.6% of the Company's consolidated revenue for the years ended December 31, 2019, 2018, and 2017, respectively.

### **Customers and Backlog**

The applications in which our Advanced Products and Brick Products are used are typically in the higher-performance, higher-power segments of the market segments we serve. With our Advanced Product lines, our customers are concentrated in the data center and hyperscaler segments of enterprise computing, in which our products are used for voltage distribution on server motherboards, in server racks, and across datacenter infrastructure, although we also target applications in aerospace and aviation, defense electronics, industrial automation, instrumentation, test equipment, solid state lighting, telecommunications and networking infrastructure, and vehicles (notably in the autonomous driving, electric vehicle, and hybrid vehicle niches of the vehicle segment). With our Brick Product lines, we serve customers concentrated in aerospace and defense electronics, industrial automation, industrial equipment, instrumentation and test equipment, and transportation (notably in rail and heavy equipment applications). With our strategic emphasis on larger, high-volume customers, we expect to experience a greater concentration of sales among relatively fewer customers.

As of December 31, 2019, the Company's order backlog was approximately \$104,164,000, compared to \$102,963,000 as of December 31, 2018. Backlog, as presented here, consists of orders for products for which shipment is scheduled within the following 12 months, subject to our scheduling and cancellation policies.

The lead times between receipt and acceptance of an order and our shipment of the product remained long through 2019, although overall conditions across the global electronics supply chain generally stabilized, allowing the Company to shorten production lead times for certain products. As of December 31, 2019, we were quoting average lead times of 16 weeks to customers, consistent with the lead times quoted as of December 31, 2018, although during 2019 we quoted lead times as high as 20 weeks for certain products. We expect supply availability for certain materials and components to remain uncertain for the foreseeable future, and we may further increase inventory levels for these components and raw materials, as necessary. Accordingly, we may not be able to reduce delivery lead times across all product lines for the foreseeable future.

A portion of our revenue in any quarter is, and will continue to be, derived from "turns" volume, representing either orders booked and shipped in the same quarter or orders for which customers have requested accelerated delivery from a later quarter to the current quarter. This volume generally has been associated with orders for Brick Products. Over the past three years, the volume of orders booked and shipped within a quarter has declined steadily, reflecting lengthened delivery lead times across the electronics industry. However, over the same period, the volume of orders for which customers have requested accelerated delivery has increased, which we believe to be a reflection of improved conditions in many of the market segments we serve with Brick Products. An additional influence on turns volume has been our transition to larger OEM customers, which typically schedule large volumes for delivery over multiple quarters and frequently reschedule deliveries for either earlier or later shipment. Average quarterly turns volume averaged approximately 27% of 2019 revenue, approximately 20% of 2018 revenue, and approximately 36% of revenue for 2017.

### **Competition and Market Characteristics**

The competitive characteristics of the markets we serve with Advanced Products and Brick Products can differ significantly. For example, in the higher-performance segments of computing we serve, our Advanced



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Products most often compete with solutions offered by large integrated device manufacturers (“IDMs”), which offer integrated circuits and semiconductor-based modules. These IDMs generally offer far broader product portfolios, possess far greater global manufacturing and support resources, and have the ability to aggressively price their products to defend market share. Accordingly, Advanced Products are positioned as highly differentiated alternatives to commodity solutions for customers seeking high levels of performance. The customers we serve with Advanced Products, typically on a direct basis, are in market segments generally characterized by an emphasis on product performance differentiation, a compelling TCO, relatively extended and highly competitive design cycles, and product life cycles of generally less than three years. In contrast, the Brick Products competitive landscape is relatively fragmented, with large-scale, low-cost global suppliers of commodity solutions and many smaller manufacturers focused on specialized products or narrowly defined market segments or geographies. The market segments we serve with Brick Products, typically through sales representatives and distribution partners, generally are characterized by relatively short design cycles, relatively long (i.e., greater than three years) product life cycles, and, given the maturity of many market segments and applications, degrees of commoditization and price competition. As such, Brick Products are positioned with an emphasis on mass customization, through which we offer products with specific features and performance profiles typically not available from catalog-oriented competitors.

The size and growth characteristics of the markets we serve with Advanced Products and Brick Products also can differ significantly, and the range and quality of market data is problematic, making summary statements about these markets challenging.

We believe our Advanced Products generally compete with power modules and power integrated circuits (“ICs”) developed and manufactured by IDMs and other fabless vendors of discrete power semiconductors. Based on available third-party industry assessments, we believe the global market for all categories of power semiconductor devices exceeds \$40 billion annually and is expected to grow over the next five years at a compounded annual rate between 4% and 5%. We estimate the addressable market for power modules and power ICs in market segments we are targeting exceeded \$7 billion in 2019 and, after recently slowed growth, is expected to resume annual growth rates well above those of the global market as a whole. We believe the market segments (and applications) we are targeting, primarily the data center segment of the enterprise computing market, driven by adoption of AI applications, and the electric and mild hybrid segments of the automotive market, driven by customer adoption of 48V distribution, should grow over the next five years at compounded annual rates exceeding 10%.

We believe our Brick Products generally compete with similarly integrated switching power supply products developed and manufactured by large global competitors and a fragmented group of small regional competitors. The switching power supply market can be segmented by product type (i.e., DC-DC converters, AC-DC converters, and DC-AC inverters), by output power levels, and by numerous vertical markets (i.e., industry-specific applications). Available third party industry assessments estimate the total global merchant (i.e., non-captive) market for AC-DC and DC-DC switching power supplies currently exceeds \$25 billion of annual revenue, although as much as three-quarters of this total is associated by market analysts with AC-DC converters, primarily used in consumer applications. Accordingly, we estimate the addressable market for switching power supplies (and related products) in market segments we are targeting exceeded \$4 billion in 2019. Estimates of total market compounded annual growth rates for the next five years are as high as 6%, but reflect relatively high growth in market segments in which we do not compete (e.g., solar inverters). We believe compounded annual growth rates in the smaller, well-defined market segments we serve are likely to approximate the annual growth of industrial output of the regions in which we operate. Across all geographies, Brick Products revenue has experienced low to middle single-digit growth over the three years prior to 2019. Given the maturity and fragmentation of the market segments in which we compete and our competitive positioning within these market segments, we anticipate revenue for Brick Products will continue to follow trends in industrial activity on a regional basis, with expectations of continued stability in U.S. segments and changes in export activity varying with economic conditions in Europe and Asia, with Chinese demand further influenced by the China — U.S. trade dispute. In 2019, the Chinese government increased its pressure on Chinese manufacturers to meet the

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“China 2025” mandate for targeted development of Chinese technology sectors, whereby their domestic technology vendors are explicitly favored over foreign vendors such as Vicor. We believe we have experienced reduced demand in certain segments (e.g., rail), reflecting the significant role of state-owned enterprises in those segments, and also believe such demand that may not recover for the foreseeable future to historical levels, even if tariffs are reduced on Vicor products.

Despite our minor share in the overall merchant market and the competitive presence of numerous, far larger vendors in the market segments we serve with both Advanced Products and Brick Products, we believe we maintain an advantageous competitive position in those market segments. Notably, we believe we have the largest share of 48V distribution opportunities within the segments of the computing market we serve. However, numerous competitors across these market segments have significantly greater engineering, financial, manufacturing, and marketing and sales resources, as well as longer operating histories and longer customer relationships than we do.

### **Marketing and Sales**

We reach and serve customers through several channels: a direct sales force; a network of independent sales representative organizations in North America and South America; independent, authorized non-stocking distributors in Europe and Asia; and three authorized stocking distributors worldwide, Digi-Key Corporation, Future Electronics Incorporated, and Mouser Electronics, Inc. These channels are supported by regional TSCs, each offering application engineering and sales support for our channel partners. Domestic TSCs are located in: Andover, Massachusetts; Lombard, Illinois; and Santa Clara, California. International TSCs are located in: Beijing, China; Hong Kong, China; Shanghai, China; Shenzhen, China; Munich, Germany; Bangalore, India; Milan, Italy; Tokyo, Japan; Seoul, South Korea; Taipei, Taiwan (Republic of China); and Camberley, United Kingdom. Customers do not place purchase orders with TSCs, but do so directly with the Company or with our distributors. In Japan, customers place purchase orders with authorized distributors or, for certain custom products, VJCL.

We generally sell our products on the basis of our standard terms and conditions, and we most commonly warrant our products for a period of two years. Effective January 1, 2017, we extended the warranty period to three years for a range of H Grade, M Grade, and MI Family DC-DC products sold after that date. In a limited number of circumstances, we have entered into supply contracts with certain high-volume customers calling for extended warranty terms. With our distribution partners, we also enter into contracts providing for our product warranties to transfer to the end customer upon final sale of our product(s) by the distributor.

Because of the technically complex nature of our products and the applications they address, we maintain an extensive staff of Field Applications Engineers to support our own sales and customer support activities, as well as those of our channel partners. Field Application Engineers, based in our TSCs, provide direct technical support worldwide by reviewing new applications and technical matters with our channel partners in support of existing and potential customers. Product Line Engineers, located in our Andover headquarters, support Field Application Engineers assigned to all of our TSCs.

Our direct sales force focuses on higher-volume opportunities involving Advanced Products with global OEMs (and the Original Design Manufacturers (“ODMs”) and contract manufacturers serving these OEMs). Because of the high level of product differentiation and the increasing complexity and challenges of customer requirements, we have experienced, and may continue to experience, extended design cycles before production orders are received.

We also reach customers through the electronic commerce capabilities of our website, [www.vicorpower.com](http://www.vicorpower.com). Registered, qualified customers in the United States, Canada, and certain European countries are able to purchase selected products online.

Our web-based resources are an important element of our efforts to interact with and support customers. Within our website, *PowerBench*<sup>™</sup> is a workspace of tools and references allowing engineers to select, architect, and implement power systems using our products. Our highly differentiated *Whiteboard*<sup>™</sup> tool allows users to configure and analyze their own power system designs or those from an extensive library of designs addressing a wide range of applications. Users can modify the operating condition for each component of their design to match the intended application and perform efficiency and loss analysis of individual components and the full power system. We continue to enhance and expand the range and capabilities of engineering tools we make available online to customers and prospective customers.

As stated, our strategy involves maintaining high levels of customer engagement and support for design and engineering, which has resulted in significant expansion of our sales and application engineering infrastructure over historical levels, notably across Asia. We incurred approximately \$43,387,000, \$42,533,000, and \$40,438,000 in marketing and sales expenses in 2019, 2018, and 2017, respectively, representing approximately 16.5%, 14.6%, and 17.7% of revenues in 2019, 2018, and 2017, respectively.

### **Manufacturing, Quality Assurance, and Supply Chain Management**

Our 230,000 sq. ft. manufacturing facility is located in Andover, Massachusetts, where we are headquartered. In this facility, we manufacture Brick Products, with the exception of custom products produced by our Vicor Custom Power and VJCL subsidiaries, and Advanced Products, with the exception of products designed and sourced by personnel from our former subsidiary, Picor, which, given its fabless model, are manufactured, packaged, and tested by third party wafer foundries and packaging contractors in the United States and Asia.

Our primary manufacturing processes consist of assembly of electronic components onto printed circuit boards; automatic testing of components; wave, reflow and infrared soldering of assembled components; encapsulation or over-molding of converter subassemblies and assemblies; final environmental stress screening of certain products; and product inspection and testing using automated equipment. These processes are largely automated, but their labor components require relatively high levels of skill and training.

We continue to make investments in automated manufacturing equipment, particularly for expansion of production capacity for Advanced Products. During 2019, through investment in additional capital equipment, we increased our total manufacturing capacity in our Andover facility by approximately 35%. We are scheduled to begin construction of an approximately 90,000 square feet addition to our existing plant in the spring of 2020 and take occupancy later in the year. The planned addition of multiple manufacturing lines in this additional space, across 2021, is expected to increase our Advanced Products capacity by an additional 100%.

As previously disclosed, in December 2017 we began collaborating with a highly-specialized electroplating contractor capable of meeting our near-term volume expectations for our SM-ChiP<sup>®</sup> line with acceptable quality and cost. In 2019, we entered into a service agreement with this contractor. While commodity electroplating services are available from numerous alternate providers, we entered into this service agreement due to the level of our collaboration to date with the contractor in the development of certain proprietary processes, the high quality of the contractor's services, and its commitment to environmentally sound, non-toxic processes. As such, we have revised our schedule for taking such proprietary processes in-house, and expect to meet our forecast needs for SM-ChiP production with this contractor through 2020.

Product quality and reliability are critical to our success and, as such, we emphasize quality and reliability in our design and manufacturing activities. We follow industry best practices in manufacturing and are compliant with ISO 9001 certification standards (as set forth by the International Organization for Standardization). Our quality assurance practices include rigorous testing and, as necessary, burn-in and temperature cycling (i.e., extended operation of a product to confirm performance) of our products using automated equipment. Incoming components, assemblies, and other parts are subjected to several levels of inspection procedures, and we maintain robust data on our raw material inventories in order to support our quality assurance procedures.

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Components and materials used in our products are purchased from a variety of domestic and international vendors. Generally, the global electronics supply chain has stabilized, but lead times for delivery of certain raw materials required for the manufacturing of our products remain extended. Most of these raw materials are available from multiple sources, whether directly from suppliers or indirectly through distributors, and, during 2019 we continued to opportunistically expand certain raw material inventories to offset the uncertainties associated with availability and lead times.

Advanced Products developed by personnel from Picor, our former subsidiary, are manufactured by a limited number of wafer foundries, with packaging and test services provided by a limited number of providers. Our proprietary switching controllers were designed by Picor and are sourced internally, and we rely on these wafer foundries and service providers for supply continuity and sufficiency of these critical semiconductor devices. Similarly, many of the proprietary semiconductors we use, for which we have either a manufacturing license or ownership of the designs, are sourced from third party foundries.

To date, we have not experienced delays or reduced raw material availability as a result of trade disputes between the United States and China, including the imposition in 2018 of import tariffs under the provisions of Section 301 of the Trade Act of 1974 (19 U.S.C. § 2411) (“Section 301 Tariffs”) on certain Chinese goods imported into the United States. For the year ended December 31, 2019, costs associated with tariffs totaled approximately \$5,280,000. We continue to assess the impact of these costs and are actively evaluating alternative sources of raw materials. We also have engaged a consultant to assist us with implementing a “duty drawback” process, by which we may file with U.S. Customs and Border Protection for the recovery of tariffs paid on raw materials used to produce products we subsequently exported. At this time, we are not able to estimate the amount of such recovery or the timing thereof.

### **Intellectual Property**

Our competitive positioning has been, and will continue to be, supported by our long-standing commitment to research and development of power distribution architectures, power conversion technologies, advanced packaging and manufacturing, and innovative approaches to solving customer problems. Our research and development activities have resulted in important domestic and foreign patents protecting our products and enabling technologies, as well as proprietary trade secrets associated with our use of certain components and materials of our own design and proprietary manufacturing, packaging, and testing processes. We incurred approximately \$46,588,000, \$44,286,000, and \$44,924,000 in research and development expenses in 2019, 2018, and 2017, respectively, representing approximately 17.7%, 15.2%, and 19.7% of revenues in 2019, 2018, and 2017, respectively.

We believe our intellectual property affords advantages by building fundamental and multilayered barriers to competitive encroachment upon key features and performance benefits of our principal product families. Our patents cover the fundamental switching topologies used to achieve the performance attributes of our converter product lines; converter array architectures; product packaging design; product construction; high frequency magnetic structures; and automated equipment and methods for circuit and product assembly.

As of December 31, 2019, in the United States, we have been issued 114 total patents. These patents have expirations scheduled between 2020 and 2038. We also have a number of patent applications pending in the United States and certain countries of Europe and Asia, including applications that would extend the life of current patents. We have vigorously protected our rights under these patents and will continue to do so. Although we believe patents are an effective way of protecting our technology, there can be no assurances our patents will prove to be enforceable in any given jurisdiction.

In addition to generating revenue from product sales, we seek to license our intellectual property. In granting licenses, we generally retain the right to use our patented technologies and manufacture and sell our products in all licensed geographic areas and fields of use. Licenses are granted and administered through our

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wholly-owned subsidiary, VLT, Inc., which is the assignee for our patents that may be subject to licensing. Revenues from licensing arrangements have not exceeded 10% of our consolidated revenues in any of the last three fiscal years.

### **Employees**

As of December 31, 2019, we had 993 full time employees and 21 part time employees. The number of part time employees varies throughout any year, largely based on the number of production shifts we may require at a particular time, as well as the number of college and graduate students participating in short term co-op programs. None of our employees are subject to a collective bargaining agreement. We believe our continued success depends, in part, on our ability to attract and retain qualified personnel. Although there is strong demand for qualified personnel, we have not to date experienced meaningful difficulty in attracting and retaining sufficient engineering and technical personnel to meet our needs (see Part I, Item 1A — “Risk Factors”).

### **Available Information**

We maintain a website with the address [www.vicorpower.com](http://www.vicorpower.com) and make available free of charge through this website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act of 1934 (“the Exchange Act”), as soon as reasonably practicable after we electronically file such material with, or furnish such material to, the SEC. We also make available on our website our Code of Business Conduct, as well as the charters for the Audit and Compensation Committees of our Board of Directors.

While our website sets forth extensive information, including information regarding our products and the applications in which they may be used, such information is not a part of, nor incorporated by reference into, this Annual Report on Form 10-K and shall not be deemed “filed” under the Exchange Act.

**ITEM 1A. RISK FACTORS**

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Exchange Act. Actual results could differ materially from those projected in the forward-looking statements as a result of, among other factors, the risk factors set forth below.

***Our future operating results are difficult to predict and are subject to fluctuations.***

Our operating results, including revenues, gross margins, operating expenses, and net income (loss), have fluctuated on a quarterly and annual basis. Our focus on higher volume opportunities with OEMs, ODMs, and contract manufacturers has caused the actions of a relative few such customers to disproportionately influence our operating results. Unanticipated delays in purchase orders from, and shipments to, certain large customers have resulted in lower than expected revenue. Despite our profitability during 2019, we cannot predict if we will maintain sustained profitability. Our future operating results may be materially influenced by a number of factors, many of which are beyond our control, including:

- changes in demand for our products and for our customers' end-products incorporating our products, as well as our ability to respond efficiently to such changes in demand, including changes in delivery lead times and the volume of product for which orders are accepted and the product shipped within an individual quarter;
- our ability to manage our supply chain, inventory levels, and our own manufacturing capacity or that of third-party partners, particularly in the event of delays or cancellation of significant customer orders;
- our ability to effectively coordinate changes in the mix of products we manufacture and sell, while managing our ongoing transition in organizational focus to Advanced Products from Brick Products;
- our ability to provide and maintain a high level of sales and engineering support to an increasing number of demanding, high volume customers;
- the ability of our third party suppliers, service subcontractors, and manufacturers to supply us with sufficient quantities of high quality products, components, and/or services on a timely basis;
- the effectiveness of our ongoing efforts to continuously reduce product costs and manage operating expenses;
- our ability to utilize our manufacturing facilities and personnel at efficient levels, maintaining sufficient production capacity and necessary manufacturing yields;
- our ability to plan, schedule, execute, and fund capacity expansion, including the anticipated addition in 2020 of approximately 90,000 square feet to our Andover manufacturing facility;
- the timing of our new product introductions and our ability to meet customer expectations for timely delivery of fully qualified products;
- the timing of new product introductions or other competitive actions (e.g., product price reductions) by our competitors;
- the ability to hire, retain, and motivate qualified employees to meet the demands of our customers;
- intellectual property disputes;
- potential significant litigation-related costs;
- adverse economic conditions in the United States and those international markets in which we operate, as well as our ability to respond to rapid developments, such as the imposition of tariffs or trade restrictions;

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- adverse budgetary conditions within the U.S. government, particularly the Department of Defense, which continue to influence spending on current and anticipated programs into which we sell or anticipate to sell our products;
- costs related to compliance with increasing worldwide governance, quality, environmental, and other regulations; and
- the effects of events outside of our control, including natural disasters, public health emergencies, terrorist activities, political risks, international conflicts, information security breaches, communication interruptions, and other *force majeure*.

As a result of these and other factors, we cannot assure you we will not experience significant fluctuations in future operating results on a quarterly or annual basis. In addition, if our operating results do not meet the expectations of investors, the market price of our Common Stock may decline.

### ***Our stock price has been volatile and may fluctuate in the future.***

Because of the factors set forth above and below, among others, the trading price of our Common Stock has fluctuated and may continue to fluctuate significantly:

- volatility of the financial markets, notably the equity markets in the United States;
- uncertainty regarding the prospects of domestic and foreign economies, including the impact of tariffs, trade restrictions, and volatile currency exchange rates;
- uncertainty regarding domestic and international political conditions, including tax and tariff policies;
- actual or anticipated fluctuations in our operating performance or that of our competitors;
- the performance and prospects of our major customers;
- announcements by us or our competitors of significant new products, technical innovations, or litigation;
- investor perception of the Company and the industry in which we operate;
- the liquidity of the market for our Common Stock, reflecting a relatively low trading float and relatively low average trading volumes;
- the uncertainty of the declaration and payment of future cash dividends on our Common Stock; and
- the concentration of ownership of our Common Stock by Dr. Vinciarelli, our Chairman of the Board, Chief Executive Officer, and President.

In the past, we have declared and paid cash dividends on our Common Stock. The payment of dividends is based on the periodic determination by our Board of Directors that we have adequate capital to fund anticipated operating requirements and that excess cash is available for distribution to stockholders via a dividend. We have no formal policy regarding dividends and, as such, investors cannot make assumptions regarding the possibility of future dividend payments nor the amounts and timing thereof. As of December 31, 2019, we have no plans to declare or pay a cash dividend.

The ownership of our Common Stock is concentrated between Dr. Vinciarelli and a limited number of institutional investors. As of December 31, 2019, Dr. Vinciarelli was the beneficial owner of 9,861,605 shares of our Common Stock, plus 311,954 shares which Dr. Vinciarelli has the right to acquire upon exercise of options to purchase Common Stock within 60 days of December 31, 2019. He also holds 11,023,648 shares of our unregistered Class B Common Stock (which may only be sold or transferred after required conversion, on a one-for-one basis, into registered shares of Common Stock), together with his ownership of Common Stock, represents 52.9% of our total issued and outstanding shares of capital stock. Accordingly, the market float for our



Common Stock and average daily trading volumes are relatively small, which may negatively impact investors' ability to buy or sell shares of our Common Stock in a timely manner.

Dr. Vinciarelli owns 93.8% of the issued and outstanding shares of our Class B Common Stock, which possess 10 votes per share. Dr. Estia J. Eichten, a member of our Board of Directors, owns the majority of the balance of the Class B Common Stock issued and outstanding. As such, Dr. Vinciarelli, controlling in aggregate 81.6% of our outstanding voting securities, has effective control of our governance.

***Global economic uncertainty could materially and adversely affect our business and consolidated operating results.***

During 2019, global economic conditions varied by region. Domestic industrial and defense electronics market segments were steady for the year. However, conditions in China, our largest international market, continued to deteriorate through the year, contributing to the cyclical decline of certain markets and geographies around the world. Conditions in the enterprise computing supply chain, notably those associated with the data center and hyperscaler categories, caused customer uncertainty across Asia and reduced demand for our products. Our exports to China declined through the year, in part, due to the imposition by China of tariffs on certain U.S. goods imported into China in response to the imposition of Section 301 Tariffs on certain imported Chinese goods by the United States. In addition, our near-term forecasts of Chinese demand for our products may be revised if the negative impact of the coronavirus on the Chinese economy is sustained.

Disruption and further deterioration of global economic conditions, including extended trade disputes, the relative strength of the U.S. Dollar, and rising interest rates, may reduce end-demand for our customers' products and, in turn, their purchases of our products, thereby reducing our revenues and earnings. In addition, such adverse conditions may, among other things, result in increased price competition for our products, notably in Brick Product categories, increased risk of excess and obsolete inventories, increased risk in the collectability of our accounts receivable from our customers, increased risk in potential reserves for doubtful accounts and write-offs of accounts receivable, and higher operating costs as a percentage of revenues.

***We compete with many companies possessing far greater resources.***

Some of our competitors have far greater financial, manufacturing, technical, and sales and marketing resources than we possess or have access to. Our Brick Products compete with those products offered by domestic and foreign manufacturers of integrated power supplies and related power conversion components. With our Advanced Product lines, we compete with global IDMs and fabless developers of semiconductor-based power management modules and power management ICs. These competitors have far larger organizations and broader semiconductor-based product lines. Competition is generally based on product performance, design flexibility (i.e., ease of use), product price, and product availability, but with the relative importance of these factors varying among products, markets, and customers.

Existing or new competitors may develop products or technologies that more effectively address the demands of our customers and markets with enhanced performance, features and functionality, or lower cost. Larger competitors frequently seek to maintain market share and protect customer relationships through heavily-discounted pricing, which we may not be able to match. If we fail to develop and commercialize leading-edge technologies and products that are cost effective and maintain high standards of quality, and introduce them to the market on a timely basis, our competitive position and results of operations could be materially adversely affected.

***Our future success depends upon our ability to develop and market differentiated, leading-edge power conversion products for larger customers, potentially contributing to lengthy product development and sales cycles that may result in significant expenditures before revenues are generated. Our future operating results are dependent on the growth in such customers' businesses and on our ability to profitably develop and deliver products meeting customer requirements.***

The power system industry and the industries in which many of our customers operate are characterized by intense competition, rapid technological change, quickened product obsolescence, and price erosion for mature products, each of which could have an adverse effect on our results of operations. We are following a strategy based on the development of differentiated Advanced Products addressing what we believe to be the long-term limitations of traditional power architectures, while at the same time sustaining sales and profitability of our well-established Brick Products. The development of new, innovative products is often a complex, time-consuming, and costly process involving significant investment in research and development, with no assurance of return on investment. Although we have introduced many Advanced Products over recent years, there can be no assurance we will be able to continue to develop and introduce new and improved products and power system concepts in a timely or efficient manner. Similarly, there can be no assurance recently introduced or to be developed products will achieve customer acceptance.

Our future success depends substantially upon customer acceptance of our innovative Advanced Products, notably our Power-on-Package concept in AI and other high-performance applications. As we have been in the early stages of market penetration for these and other Advanced Products, we have experienced lengthy periods during which we have focused our product development efforts on the specific requirements of a limited number of large customers, followed by further periods of delay before meaningful purchase orders are received. These lengthy development and sales cycle times increase the possibility a customer may decide to cancel or change product plans, which could reduce or eliminate our sales to that customer. As a result, we may incur significant product development expenses, as well as significant sales and marketing expenses, before we generate the related revenues for these products. Furthermore, we may never generate the anticipated revenues from a product after incurring such expenses if our customer cancels or changes its product plans.

We continue to shift our go-to-market strategy to focus on larger opportunities with global OEMs, ODMs, and contract manufacturers. Our growth is therefore dependent on: the pace at which these OEMs and ODMs develop their own new products; the acceptance of our Advanced Products by these OEMs and ODMs; and the success of the customers' products incorporating our Advanced Products. If we fail to anticipate changes in our customers' businesses and their changing product needs or do not successfully identify and enter new markets, our results of operations and financial position could be negatively impacted.

In 2019, we expanded our dedicated sales effort to penetrate the automotive market with our Advanced Products, notably in the rapidly expanding 48V opportunity within the electric vehicle and mild hybrid vehicle market segments. The automotive market is dominated by relatively few global OEMs and "tiers" of well-established suppliers. Penetrating this market will be challenging and we may not be successful in doing so. Additionally, our early success with vendors of AI computing solutions may not translate into long-term success with customers participating in the long-term development of autonomous driving solutions.

We cannot offer any assurance the markets we currently serve will grow in the future, our Advanced Products or Brick Products will meet respective market requirements, or we can maintain adequate gross margins or operating profits in these markets.

***Our operating results recently have been influenced by a limited number of customers, and our future results may be similarly influenced.***

Since the introduction of our Advanced Products, the Company has derived a substantial portion of its revenue from Advanced Products in any given year from either one customer or a limited number of customers,

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whether through sales directly to the customer(s) or indirectly to the customers' contract manufacturers. This concentration of revenue is a reflection of the relatively early stage of adoption of the Advanced Products and the associated technologies and power system architectures, and our targeting of market leading innovators as initial customers. A consequence of customer concentration was the significant decline in bookings and shipments from an important hyperscaler customer during the first two quarters of 2019, while that customer transferred production capacity from China to Taiwan in response to the tariffs charged on imported materials, including our products. Once this transfer of production was completed, booking and shipment activity resumed during the third quarter of 2019.

Our current sales and marketing efforts are focused primarily on accelerating the adoption of Advanced Products by a diversified customer base, across a number of identified market segments. However, we cannot assure you our strategy will be successful and such diversification of customers will be achieved.

***We may not be able to procure necessary key components or raw materials, or we may purchase excess raw material inventory or unusable inventory, which increases the risk of reserve charges to reduce the value of any inventory deemed excess or obsolete, thereby reducing our profitability.***

The power systems industry, and the electronics industry as a whole, can be subject to pronounced, lengthy business cycles and otherwise subject to sudden and sharp changes in demand. Our success, in part, is dependent on our ability to forecast and procure inventories of components and materials to match production schedules and customer delivery requirements. Many of our products require raw materials supplied by a limited number of vendors and, in some instances, a single vendor. During certain periods, key components or materials required to build our products may become unavailable in the timeframe required for us to meet our customers' needs. Our inability to secure sufficient raw materials to manufacture products for our customers has reduced, in the past, our revenue and profitability and could do so again.

We may choose, and have chosen, to mitigate our inventory risks by increasing the levels of inventory for certain components and materials. Such increased inventory levels may increase the potential risk for excess or obsolete inventories, should our forecasts fail to materialize or if there are negative factors impacting our customers' end markets, leading to order cancellation. If we identify excess inventory or determine certain inventory is obsolete (i.e., unusable), we likely will record additional inventory reserves (i.e., expenses representing the write-off of the excess or obsolete inventory), which could have an adverse effect on our gross margins and on our operating results.

***We rely on third-party vendors and subcontractors for supply of components, assemblies, and services and, therefore, cannot control the availability or quality of such components, assemblies, and services.***

We depend on third-party vendors and subcontractors to supply components, assemblies, and services used in our products, some of which are supplied by a single vendor, and have experienced shortages of certain semiconductor components, incurred additional and unexpected costs to address the shortages, and experienced delays in production and shipping. In 2019, we increased our dependence on a highly-specialized electroplating contractor for meeting our near-term volume expectations for our SM-ChiP line. While commodity electroplating services are available from numerous alternate providers, we have developed certain proprietary processes with this contractor. As such, any interruption or delay of production by the contractor could have an adverse effect on our delivery of SM-ChiP modules to our customers.

If suppliers or subcontractors cannot provide their products or services on time or to our specifications, we may not be able to meet the demand for our products and our delivery times may be negatively affected. In addition, we cannot directly control the quality of the products and services provided by third parties. In order to expand revenue, we likely will need to identify and qualify new suppliers and subcontractors to supplant or replace existing suppliers and subcontractors, which may be a time-consuming and expensive process. In addition, any qualification of new suppliers may require customers of our products utilizing products and

services from new suppliers and service providers to undergo a re-qualification process. Such circumstances likely would lead to disruptions in our production, increased manufacturing costs, delays in shipping to our customers, and/or increases in prices paid to third parties for products and services. In addition, visibility into our Chinese supply chain has been recently clouded by the uncertain impact of the coronavirus on the personnel and operations of our Chinese vendors. We are in frequent contact with our critical vendors in China, and are monitoring the situation closely.

***We are exposed to foreign economic, political, and other external risks.***

For the years ended December 31, 2019, 2018, and 2017, revenues from sales outside the United States were 53.7%, 62.0%, and 63.2%, respectively, of our total revenues. Net revenues from customers in China, our largest international market, accounted for approximately 22.1% of total net revenues in 2019, approximately 37.4% in 2018, and approximately 35.8% in 2017, respectively. We expect international sales will continue to be a significant component of total sales, since many of the OEMs and ODMs we target as customers are domiciled offshore, and such customers increasingly utilize offshore contract manufacturers, and rely upon those contract manufacturers to place orders directly with us. We also expect international revenue from our distributors to increase.

While our currency risks are limited, as our sales are denominated in U.S. Dollars worldwide, with the exception of Yen-based sales by VJCL in Japan, our international activities expose us to special risks including, but not limited to, regulatory requirements, economic and political instability, transportation delays, foreign currency controls, trade restrictions and tariffs, and unfavorable shifts in foreign exchange rates. Our international customers' business may be negatively affected by the imposition of tariffs, as was the case in 2018 and 2019 with the imposition of Section 301 Tariffs on certain Chinese goods imported into the United States and the corresponding imposition of import tariffs by China on certain U.S. goods imported into China, and by economic sanctions, as were imposed by the United States on certain Chinese enterprises and individuals in 2019 and on certain Russian enterprises and individuals in 2014.

In addition, as noted elsewhere in this Annual Report on Form 10-K, recent uncertainty associated with the extent of the negative impact of the coronavirus outbreak in China may cause us to revise our near-term forecast of Chinese demand and to closely assess the ability of our Chinese vendors to meet our near-term supply requirements.

Sudden or unexpected changes in the foregoing could have a material adverse effect on our operating results.

***We may be unable to adequately protect our proprietary rights, which may limit our ability to compete effectively.***

We operate in an industry in which the ability to compete depends on the development or acquisition of proprietary technologies that must be protected to preserve the exclusive use of such technologies. We devote substantial resources to establish and protect our patents and proprietary rights, and we rely on patent and intellectual property law to protect such rights. This protection, however, may not prevent competitors from independently developing products similar or superior to our products. We may be unable to protect or enforce current patents, may rely on unpatented technology that competitors could restrict or replicate, or may be unable to acquire patents in the future, all of which may have a material adverse effect on our competitive position. In addition, the intellectual property laws of foreign countries may not protect our rights to the same extent as those of the United States. We have been and may need to continue to defend or challenge patents. We have incurred and expect to incur significant financial costs in the defense of our patented technologies and have devoted and expect to devote significant resources to these efforts which, if unsuccessful, may have a material adverse effect on our operating results and financial position.

***We face intellectual property infringement claims that could be disruptive to operations and costly to resolve and may encounter similar infringement claims in the future.***

The power supply industry is characterized by vigorous protection and pursuit of intellectual property rights. We have in the past and may in the future receive communications from third parties asserting that our products or manufacturing processes infringe on a third party's patent or other intellectual property rights. Such assertions, if publicly disclosed, have in the past and may in the future inhibit the willingness of potential customers to purchase certain of our products. In the event a third party makes a valid intellectual property claim against us and a license is not available to us on commercially reasonable terms, or at all, we could be forced to either redesign or stop production of products incorporating that technology, and our operating results could be materially and adversely affected. In addition, litigation may be necessary to defend us against claims of infringement, and this litigation could be costly, extend over a lengthy period of time, and divert the attention of key personnel. An adverse outcome in these types of matters could have a material adverse impact on our operating results and financial condition.

Please see Part I, Item 3 — “Legal Proceedings” for information regarding current litigation related to our intellectual property.

***Any expenses or liability resulting from the outcome of litigation could adversely influence our operating results and financial condition.***

From time to time, we may be subject to claims or litigation, including intellectual property litigation as described elsewhere in this Annual Report on Form 10-K. Any such claims or litigation may be time-consuming and costly, divert management resources, require us to change our products, or have other adverse effects on our business. Any of the foregoing could have a material adverse effect on our operating results and could require us to pay significant monetary damages.

The outcomes of legal proceedings and claims brought against us are subject to significant uncertainty. An estimated loss from a loss contingency such as a legal proceeding or claim is accrued by a charge to income if it is considered probable an asset has been impaired or a liability has been incurred and the amount of the loss can be reasonably estimated. Disclosure of a contingency is required if there is at least a reasonable possibility that a loss has been incurred. In determining whether a loss should be accrued, we evaluate, among other factors, the degree of probability of an unfavorable outcome and the ability to make a reasonable estimate of the amount of loss. Changes in these factors could materially impact our financial statements. As of December 31, 2019, our evaluation led us to conclude no accrual of a loss contingency was warranted.

***We may face legal claims and litigation from product warranty or other claims that could be costly to resolve.***

We have in the past and may in the future encounter legal action from customers, vendors, or others concerning product warranty or other claims. We generally offer a two-year warranty from the date title passes from us for all of our standard products. Effective January 1, 2017, we extended the warranty period to three years for a range of H Grade, M Grade and MI Family DC-DC legacy products sold after that date. In a limited number of circumstances, we have entered into supply contracts with certain high-volume customers calling for extended warranty terms. With our distribution partners, we also enter into contracts providing for our product warranties to transfer to the end customer upon final sale of our product(s) by the distributor.

We invest significant resources in the testing of our products; however, if any of our products contain defects, we may be required to incur additional development and remediation costs, pursuant to our warranty policies. These issues may divert our technical and other resources from other product development efforts and could result in claims against us by our customers or others, including liability for costs associated with product returns, which may adversely influence our operating results. If any of our products contain defects, or have

reliability, quality, or compatibility problems, the Company's reputation may be damaged, which could make it more difficult for us to sell our products to existing and prospective customers and could adversely affect our operating results. We are currently party to a limited number of supply agreements with certain customers contractually committing us to warranty and indemnification requirements exceeding those to which we have been exposed in the past. While we maintain insurance coverage for such exposure, we could incur significant financial cost beyond the limits of such coverage, as well as operational disruption and damage to our competitive position and image if faced with a significant product warranty or other claim.

***Extended interruption of production at our manufacturing facility in Andover, Massachusetts, could materially reduce our revenue and increase costs.***

The majority of our power components and power systems, whether for direct sale to customers or for sale to our subsidiaries for incorporation into their respective products, are manufactured at our Andover facility. Substantial damage to this facility due to fire, natural disaster, power loss, or other events, including events associated with our planned expansion of the facility in 2020, could interrupt manufacturing. While we have never experienced any meaningful interruption of manufacturing in our history, any prolonged inability to utilize all or a significant portion of our Andover facility could have a material adverse effect on our results of operations.

Given our intent to begin construction during the first half of 2020 of an approximately 90,000 square foot addition to our Andover facility, we have phased the construction schedule and otherwise developed procedures intended to minimize the disruption of our operations over the period of construction, which likely will extend into early 2021. Any prolonged disruption or delay in current production caused by construction could have a material adverse effect on our results of operations.

***Disruption of our information technology infrastructure could adversely affect our business.***

We depend heavily on our computing and communications infrastructure to achieve our business objectives, particularly for our financial and operational record keeping, our computer-integrated manufacturing processes controlling all aspects of our operations in our manufacturing facility in Andover, Massachusetts, our public website, and our email communications. We also rely on trusted third parties to provide certain infrastructure support services to us. If we or a third party service provider encounter a problem that impairs this infrastructure, the resulting disruption could impede the accuracy and timeliness of our financial reporting processes, and our ability to record or process customer orders, manufacture, and ship in a timely manner, or otherwise carry on business in the normal course. Our image and reputation also could be negatively affected by such circumstances. Additionally, we could incur material liabilities associated with the harm such impairment and disruption of our infrastructure may have on third parties including those associated with the unintentional release of confidential information and or sensitive data. While we carry business interruption insurance to offset financial losses from such an interruption, and cyber-risk insurance to address potential liabilities from such circumstances, such insurance may be insufficient to compensate us for the potentially significant costs or liabilities incurred. Any such events, if prolonged, could have a material and adverse effect on our operating results and financial condition.

Our systems are designed to protect us from network security incidents and associated disruptions. However, as evidenced by the ransomware incident described below, we remain vulnerable to computer viruses and related software-based challenges to the integrity of our systems, unauthorized or illegal break-ins, or malicious network hacking, equipment or software sabotage, acts of vandalism to our systems by third parties, and, in the extreme, forms of cyber-terrorism. Our security measures or those of our third party service provider detected, but did not prevent, the network security incident and the associated disruptions described below and may not detect or prevent such incidents and disruptions in the future.

On December 24, 2019, elements of our network were compromised by a form of malware referred to as "ransomware." The malware was introduced unintentionally into our network by a trusted service provider that

had access to our network for remote management of application patching and related system updates. The infection was spread in an automated manner through the download and distribution of malicious executables to systems in our network via an application used by the service provider. Only systems under the service provider's support were affected. The malware encrypted Windows-based files stored on PCs and on Windows-based servers across our global network. The malware did not encrypt Windows operating systems or Unix or Linux based files. On that same date, our network monitoring processes detected unusual network traffic volumes and patterns and automatically alerted management of the circumstances. Following established business continuity and disaster recovery policies and procedures, a cross-functional team of senior managers immediately began diagnosis of the circumstances and quickly determined the nature of the ransomware and the extent of the incident. In close collaboration with the service provider, a containment and recovery plan was developed and executed. Law enforcement authorities and our insurance providers were notified of the incident, and we immediately engaged outside counsel and forensic specialists with security expertise. The forensic specialists provided information to us to support our conclusion there was no evidence to indicate sensitive data was accessed, viewed, or exfiltrated from our environment as a result of this incident. Based on the forensic findings, we determined, in consultation with counsel the Company was not required to provide notification of this incident under applicable data breach notification laws. On December 25, 2019, the service provider obtained and distributed the necessary decryption key, and we began the process of recovering encrypted files and restoring system and operational functionality. Business functions were prioritized for restoration and, by the evening of December 26, 2019, we believe over 90% of encrypted resources had been recovered. We also believe we had restored all operations by the afternoon of December 27, 2019.

Subsequent analysis by management and the forensic specialists we retained allowed us to conclude the incident had no material impact on our operations, financial condition and performance, or the integrity of our financial reporting systems. Management is developing a plan to enhance network and file security, reflecting the lessons learned from the incident and the restoration process. Our expectation is these enhancements to system monitoring, network and file access, and emergency procedures will be deployed during the first half of 2020, however there can be no assurance that these enhancements will be successful in detecting or preventing such an incident in the future.

As of December 31, 2019, we were compliant with the comprehensive requirements for the protection of controlled unclassified information ("CUI") as set forth in Special Publication 800-171 of the National Institute of Standards and Technology ("NIST"). The Company provides confidential information to third party business partners and/or receives confidential information from third party business partners in certain circumstances, when doing so is necessary to conduct business, particularly with departments of agencies of the U.S. Government. While we employ confidentiality agreements to protect other sensitive information (i.e., information not considered CUI), our own security measures or those of our third party service providers may not be sufficient to protect such information in the event the computing infrastructure of these third party business partners is compromised. Security incidents involving our computing and communications infrastructure or that of a third party business partner or service provider could result in the misappropriation or unauthorized release of confidential information belonging to us or to our employees, partners, customers or suppliers, which could result in an interruption to our operations, result in a violation of privacy or other laws, expose us to a risk of litigation, or damage our reputation, any of which could have a material and adverse effect on our operating results and financial condition. Our network segmented NIST 800-171 environment was not impacted by the December 2019 ransomware incident, but there can be no assurance that it will not be impacted by similar incidents in the future, which could have a material and adverse effect on our operating results and financial condition for the reasons described above.



***If we fail to maintain an effective system of internal controls over financial reporting or discover material weaknesses in our internal controls over financial reporting, we may not be able to report our financial results accurately or timely or detect fraud, which could have a material adverse effect on our business.***

An effective internal control environment is necessary for us to produce reliable financial reports and is an important part of our effort to prevent financial fraud. Section 404 of the Sarbanes-Oxley Act of 2002 (“SOX”) requires our management to report on, and our independent registered public accounting firm to attest to, the effectiveness of our internal control over financial reporting.

We have an ongoing program to perform the system and process evaluation and testing necessary to comply with the requirements of SOX and to continuously improve and, when necessary, remediate internal controls over financial reporting.

While management evaluates the effectiveness of our internal controls on a regular basis, these controls may not always be effective. There are inherent limitations on the effectiveness of internal controls, including collusion, management override, and failure in human judgment. In addition, control procedures are designed to reduce rather than eliminate business risks. In the event our Chief Executive Officer or Chief Financial Officer, our certifying officers under SOX, or our independent registered public accounting firm determines our internal controls over financial reporting are not effective as defined under Section 404, we may be unable to produce reliable financial reports or prevent fraud, which could materially harm our business. In addition, we may be subject to sanctions or investigation by government authorities or self-regulatory organizations, such as the SEC, the Financial Industry Regulatory Authority, or The NASDAQ Stock Market LLC. Any such actions could affect investor perceptions of the Company and result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements, which could cause the market price of our Common Stock to decline or limit our access to capital.

***Regulations related to conflict minerals could adversely impact our business.***

The Dodd-Frank Wall Street Reform and Consumer Protection Act contains provisions to improve transparency and accountability concerning the supply of certain minerals, known as conflict minerals (including gold, tantalum, tin, and tungsten, and their related ores), originating from the Democratic Republic of Congo (“DRC”) and adjoining countries. As a result, in August 2012 the SEC released final rules for annual disclosure and reporting for those companies who use conflict minerals mined from the DRC and adjoining countries in their products. We began to implement processes within our supply chain to comply with these rules beginning in 2012 and filed our initial Form SD in May 2014. There have been and will continue to be costs associated with complying with these disclosure requirements, including due diligence to determine the sources of conflict minerals used in our products and other potential changes to products, processes, or sources of supply as a consequence of such verification activities. The implementation of these rules could adversely affect the sourcing, supply, and pricing of materials used in our products. As there may be only a limited number of suppliers offering “conflict free” conflict minerals, we cannot be certain we will be able to obtain necessary conflict minerals from such suppliers in sufficient quantities or at competitive prices. Also, we may face reputational challenges if we determine that certain of our products contain minerals not determined to be conflict free or if we are unable to sufficiently verify the origins for all conflict minerals used in our products through the procedures we may implement.

***Our ability to successfully implement our business strategy may be limited if we do not retain our key personnel and attract and retain skilled and experienced personnel.***

Our success depends on our ability to retain the services of our executive officers. The loss of one or more members of senior management could materially adversely influence our business and financial results. In particular, we are dependent on the services of Dr. Vinciarelli, our founder, Chairman of the Board, Chief Executive Officer, and President. The loss of the services of Dr. Vinciarelli could have a material adverse effect on our development of new products and on our results of operations. In addition, our research and development

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and marketing and sales activities depend on highly skilled engineers and other personnel with technical skills, who are in high demand and are difficult to replace. Our continued operations and growth depend on our ability to attract and retain skilled and experienced personnel in a very competitive employment market. If we are unable to attract and retain such employees, our ability to successfully implement our business strategy may be harmed.

### **ITEM 1B. UNRESOLVED STAFF COMMENTS**

None.

### **ITEM 2. PROPERTIES**

Our corporate headquarters building in Andover, Massachusetts, which we own, provides approximately 90,000 square feet of office space for our sales, marketing, engineering, and administrative personnel. We also own a building of approximately 230,000 square feet in Andover, Massachusetts, which houses all Massachusetts manufacturing activities.

Current capital investments are focused on the expansion of manufacturing capacity for the production of Advanced Products at our Andover facility. Based on our long-term forecast of production levels, we anticipate substantial additional capacity will be required to meet expected requirements. We believe the most appropriate manner of meeting our long-term capacity requirements will be to initially expand the production area of our Andover facility by approximately 90,000 square feet, through the addition of a two story wing. We have completed the design and permitting phase for this project, have entered into an agreement to acquire approximately three acres adjacent to our facility, and expect to begin construction of this new addition to our existing plant in the spring of 2020 and take occupancy later in the year. We also are proceeding with the evaluation of alternative projects for the addition of another, larger manufacturing facility, should we anticipate the need based on our forecasts for capacity beyond 2021.

We own and lease a single-story industrial building of approximately 31,000 square feet in Sunnyvale, California, to a corporate tenant, who occupied the building beginning in June 2016.

All other domestic and foreign facilities are leased from third-party lessors on arms' length terms. We believe our owned and leased facilities are adequate for our present needs and expect them to remain adequate for the foreseeable future.

### **ITEM 3. LEGAL PROCEEDINGS**

We are the defendant in a patent infringement lawsuit originally filed on January 28, 2011 by SynQor, Inc. ("SynQor") in the U.S. District Court for the Eastern District of Texas (the "Texas Action"). The complaint, as amended, alleges that our products, including but not limited to, unregulated bus converters used in intermediate bus architecture power supply systems, infringe SynQor's U.S. patent numbers 7,072,190, 7,272,021, 7,564,702, and 8,023,290 ("the '190 patent", "the '021 patent", "the '702 patent", and "the '290 patent", respectively). SynQor's complaint sought an injunction against further infringement and an award of unspecified compensatory and enhanced damages, interest, costs and attorney fees. We denied that our products infringe any of the SynQor patents, and have asserted that the SynQor patents are invalid and/or unenforceable. We have also asserted counterclaims seeking damages from SynQor for deceptive trade practices and tortious interference with prospective economic advantage arising from SynQor's attempted enforcement of its patents against us. On May 23, 2016, after extensive discovery, the Texas Action was stayed by the court pending completion of certain inter partes reexamination ("IPRx") proceedings at the United States Patent and Trademark Office ("USPTO") (including any appeals from such proceedings to the Federal Circuit (as defined below)) concerning the SynQor patents, which are described below. That stay remains in force.

In 2011, in response to the filing of the Texas Action, our IPRx proceedings at the USPTO challenged the validity of all claims that were asserted against us by SynQor. The current status of these proceedings is as

follows. Regarding the '190 patent IPRx, the United States Court of Appeals for the Federal Circuit (the "Federal Circuit") issued a decision on March 13, 2015, determining that certain claims were invalid and remanding the matter to the Patent Trial and Appeal Board ("PTAB") of the USPTO for further proceedings. On February 20, 2019, the PTAB issued a decision finding that all of the remaining challenged claims were unpatentable. SynQor has appealed that decision to the Federal Circuit, and the appeal remains pending. On August 30, 2017, the Federal Circuit issued rulings with regard to the IPRx proceedings for the '021, '702 and '290 patents. With respect to the '021 patent, the Federal Circuit affirmed the PTAB's determination that all of the challenged claims of the '021 patent were invalid. The Federal Circuit remanded the case to the PTAB for further consideration of the patentability of certain claims that had been added by amendment during the reexamination. On February 20, 2019, the PTAB issued a decision affirming the examiner's rejections of all challenged claims. SynQor has filed an appeal of that decision in the Federal Circuit, and that appeal remains pending. With respect to the '702 patent, the Federal Circuit affirmed the PTAB's determination that all of the challenged claims of the '702 patent were patentable. With respect to the '290 patent, the Federal Circuit vacated the PTAB's decision upholding the patentability of the '290 patent claims, and remanded the case to the PTAB for further consideration. On February 20, 2019, the PTAB issued a decision reversing its prior affirmance of the examiner's non-adoption of rejections with respect to the '290 patent, and entering rejections of all of the claims of the '290 patent. On May 20, 2019, as permitted by USPTO rules, SynQor requested the USPTO to reopen prosecution of this proceeding to address the new rejections made by the PTAB. While prosecution was reopened, the examiner has yet to issue a further substantive ruling.

On October 31, 2017, we filed a request with the USPTO for ex parte reexamination ("EPRx") of the asserted claims of the '702 patent, based on different prior art references than had been at issue in the previous IPRx of the '702 patent. On September 12, 2018, a patent examiner found that all of the asserted claims were invalid. SynQor has appealed that ruling to the PTAB, where the appeal remains pending. On August 6, 2018, we filed a request with the USPTO for EPRx of the asserted claims of the '190 patent, based on different prior art references than had been at issue in the previous IPRx of the '190 patent. On August 9, 2019, the USPTO issued a final rejection of all of the asserted claims of the '190 patent. SynQor has appealed that ruling to the PTAB, where the appeal remains pending.

On January 23, 2018, the 20-year terms of the '190 patent, the '021 patent, the '702 patent and the '290 patent expired. As a consequence of these expirations, we cannot be liable under any of the SynQor patents for allegedly infringing activities occurring after the patents' respective expiration dates. In addition, any amended claims that may issue as a result of any of the still-pending reexamination proceedings will have no effective term and cannot be the basis for any liability by us.

We continue to believe none of our products, including our unregulated bus converters, infringe any valid claim of the asserted SynQor patents, either alone or when used in an intermediate bus architecture implementation. We believe SynQor's claims lack merit and, therefore, we continue to vigorously defend ourself against SynQor's patent infringement allegations. We do not believe a loss is probable for this matter. If a loss were to be incurred, however, we cannot estimate the amount of possible loss or range of possible loss at this time.

In addition to the SynQor matter, we are involved in certain other litigation and claims incidental to the conduct of our business. While the outcome of lawsuits and claims against us cannot be predicted with certainty, management does not expect any current litigation or claims will have a material adverse impact on our financial position or results of operations.

**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**

Our Common Stock is listed on The NASDAQ Stock Market LLC, under the trading symbol "VICR." Shares of our Class B Common Stock are not registered with the Securities and Exchange Commission, are not listed on any exchange nor traded on any market, and are subject to transfer restrictions under our Restated Certificate of Incorporation, as amended.

As of February 19, 2020, there were 146 holders of record of our Common Stock and 13 holders of record of our Class B Common Stock. These numbers do not reflect persons or entities that hold their shares in nominee or "street name" through various brokerage firms.

**Issuer Purchases of Equity Securities**

<b>Period</b>	<b>Total Number of Shares Purchased</b>	<b>Average Price Paid per Share</b>	<b>Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs</b>	<b>Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plans or Programs</b>
October 1 — 31, 2019	—	\$ —	—	\$ 8,541,000
November 1 — 30, 2019	—	\$ —	—	\$ 8,541,000
December 1 — 31, 2019	—	\$ —	—	\$ 8,541,000
Total	—	\$ —	—	\$ 8,541,000

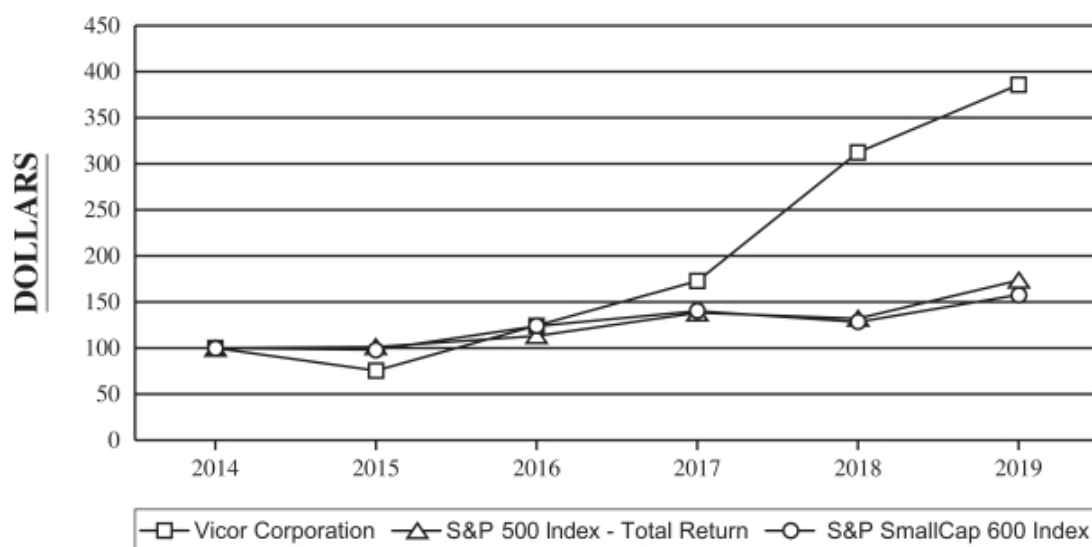
In November 2000, our Board of Directors authorized the repurchase of up to \$30,000,000 of our Common Stock (the "November 2000 Plan"). The November 2000 Plan authorizes us to make such repurchases from time to time in the open market or through privately negotiated transactions. The timing and amounts of Common Stock repurchases are at the discretion of management based on its view of economic and financial market conditions.

**Stockholder Return Performance Graph**

The graph set forth below presents the cumulative, five-year stockholder return for each of the Company’s Common Stock, the Standard & Poor’s 500 Index (“S&P 500 Index”), a value-weighted index made up of 500 of the largest, by market capitalization, listed companies, and the Standard & Poor’s SmallCap 600 Index (“S&P SmallCap 600 Index”), a value-weighted index of 600 listed companies with market capitalizations between \$200,000,000 and \$1,000,000,000.

The graph assumes an investment of \$100 on December 31, 2014, in each of our Common Stock, the S&P 500 Index, and the S&P SmallCap 600 Index, and assumes reinvestment of all dividends. The historical information set forth below is not necessarily indicative of future performance.

**Comparison of Five Year Cumulative Return  
Among Vicor Corporation, S&P 500 Index  
and S&P SmallCap 600 Index**



	2014	2015	2016	2017	2018	2019
Vicor Corporation	\$100.00	\$ 75.37	\$ 124.79	\$ 172.73	\$ 312.31	\$ 386.12
S&P 500 Index	\$100.00	\$ 101.38	\$ 113.51	\$ 138.29	\$ 132.23	\$ 173.86
S&P SmallCap 600 Index	\$100.00	\$ 98.03	\$ 124.06	\$ 140.48	\$ 128.56	\$ 157.85

Our equity plan information required by this item is incorporated by reference to the information in Part III, Item 12 of this Annual Report on Form 10-K.

**ITEM 6. SELECTED FINANCIAL DATA**

The following selected consolidated financial data with respect to our statements of operations for the years ended December 31, 2019, 2018, and 2017, and with respect to our balance sheet as of December 31, 2019 and 2018, are derived from our audited Consolidated Financial Statements, which appear elsewhere in this Annual Report on Form 10-K. The following selected consolidated financial data with respect to our statements of operations for the years ended December 31, 2016 and 2015, and with respect to our balance sheets as of December 31, 2017, 2016, and 2015, are derived from our Consolidated Financial Statements, which are not included herein. The data should be read in conjunction with the Consolidated Financial Statements, related notes and other financial information included herein.

Statement of Operations Data	Year Ended December 31,				
	2019	2018	2017	2016	2015
	(In thousands, except per share data)				
Net revenues	\$262,977	\$291,220	\$227,830	\$200,280	\$220,194
Net income (loss) from operations	13,821	32,059	(1,360)	(6,314)	(267)
Consolidated net income (loss)	14,109	31,846	258	(6,261)	5,159
Net income (loss) attributable to noncontrolling interest	11	121	91	(14)	232
Net income (loss) attributable to Vicor Corporation	14,098	31,725	167	(6,247)	4,927
Net income (loss) per share — basic attributable to Vicor Corporation	0.35	0.80	0.00	(0.16)	0.13
Net income (loss) per share — diluted attributable to Vicor Corporation	0.34	0.78	0.00	(0.16)	0.13
Weighted average shares — basic	40,330	39,872	39,228	38,842	38,754
Weighted average shares — diluted	41,677	40,729	39,933	38,842	39,146

Balance Sheet Data	As of December 31,				
	2019	2018	2017	2016	2015
	(In thousands)				
Working capital	\$149,136	\$129,062	\$90,796	\$89,545	\$94,905
Total assets	240,727	221,068	165,724	154,067	157,545
Total liabilities	34,857	36,978	29,305	23,050	21,460
Total equity	205,870	184,090	136,419	131,017	136,085

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

A discussion regarding our results of operations for the year ended December 31, 2018 compared to the year ended December 31, 2017 was included in the Company's Annual Report on Form 10-K for the year ended December 31, 2018 on pages 32-35 under Part II, Item 7, "Management's Discussion and Analysis of Financial Position and Results of Operations", which was filed with the SEC on February 28, 2019.

We design, develop, manufacture, and market modular power components and power systems for converting electrical power for use in electrically-powered devices. Our competitive position is supported by innovations in product design and achievements in product performance, largely enabled by our focus on the research and development of advanced technologies and processes, often implemented in proprietary semiconductor circuitry, materials, and packaging. Many of our products incorporate patented or proprietary implementations of high-frequency switching topologies enabling power system solutions that are more efficient and much smaller than conventional alternatives. Our strategy emphasizes demonstrable product differentiation and a value proposition based on competitively superior solution performance, advantageous design flexibility,

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and a compelling total cost of ownership. While we offer a wide range of AC and DC power conversion products, we consider our core competencies to be associated with 48V DC distribution, which offers numerous inherent cost and performance advantages over lower distribution voltages, although we offer products addressing other DC voltage standards (e.g., 380V for power distribution in data centers, 110V for rail applications, 28V for military and avionics applications, and 24V for industrial automation).

Based on design, performance, and form factor considerations, as well as the range of evolving applications for which our products are appropriate, we categorize our product portfolios as either “Advanced Products” or “Brick Products.” The Advanced Products category consists of our more recently introduced products, which are largely used to implement our proprietary Factorized Power Architecture™ (“FPA”), an innovative power distribution architecture enabling flexible, rapid power system design using individual components optimized to perform a specific conversion function. The Brick Products category largely consists of our broad and well-established families of integrated power converters, incorporating multiple conversion stages, used in conventional power systems architectures.

Given the growth profiles of the markets we serve with our Advanced Products line and our Brick Products line, our strategy involves a transition in organizational focus, emphasizing investment in our Advanced Products line and targeting high growth market segments with a low-mix, high-volume operational model, while maintaining a profitable business in the mature market segments we serve with our Brick Products line with a high-mix, low-volume operational model.

On June 28, 2019, VI Chip Corporation (“VI Chip”), a subsidiary of Vicor, fully consolidated for financial reporting purposes, was merged with and into the Company (the “Merger”), and the corporate existence of VI Chip ceased. (See Note 18 to the Consolidated Financial Statements, *VI Chip and Picor Mergers*, for further detail). In connection with the Merger, the VI Chip Corporation Amended and Restated 2007 Stock Option and Incentive Plan (the “VI Chip Plan”), under which options for the purchase of shares of the common stock of VI Chip were awarded, was amended and restated, and Vicor assumed the VI Chip Plan and each outstanding option to acquire the common stock of VI Chip (each “VI Chip Option”), whether vested or unvested, awarded under the VI Chip Plan. Each VI Chip Option was, immediately following the Merger, deemed to constitute an option (a “Company Option”) to purchase, on the same terms and conditions as were applicable to the VI Chip Option prior to the Merger, a number of shares of our Common Stock, \$0.01 par value, equal to the product of (i) the number of shares of the common stock of VI Chip subject to the VI Chip Option multiplied by (ii) 0.1418, which was the exchange ratio used in the Merger (the “Exchange Ratio”). The exercise price per share of each Company Option immediately following the Merger was determined by dividing (x) the exercise price per share of the VI Chip Option by (y) the Exchange Ratio.

The VI Chip Plan, which was previously approved by our stockholders at the 2017 Annual Meeting of Stockholders, was amended and restated in connection with the Merger to (i) provide that VI Chip Options granted under the VI Chip Plan, upon exercise, will be settled in shares of our Common Stock, (ii) adjust the number of shares that are issuable under the assumed VI Chip Plan to reflect the Exchange Ratio, (iii) provide that no new awards may be granted under the VI Chip Plan after the completion of the Merger, (iv) permit cashless broker-assisted net exercises of assumed VI Chip Options pursuant to the terms of the assumed VI Chip Plan, and (v) make other conforming and administrative changes to reflect the VI Chip Plan’s assumption by the Company and the effects of the Merger.

On May 25, 2018, the Company’s Board of Directors unanimously approved the merger of Picor Corporation (“Picor”), a subsidiary of Vicor, fully consolidated for financial reporting purposes, with and into the Company. The merger was completed as of May 30, 2018, at which time the separate corporate existence of Picor ceased. To effect the merger, holders of Picor Common Stock and Picor stock options received an equivalent value of Vicor Common Stock and Vicor stock options, respectively, pursuant to the assumption of the Picor Corporation Amended and Restated 2001 Stock Option and Incentive Plan, and options outstanding thereunder, by the Company.



In the second quarter of 2019, management determined, with the approval of our Board of Directors and our Chief Operating Decision Maker (“CODM”), Dr. Vinciarelli, we would report as one segment, rather than under the three segment approach employed since 2007. Our strategy has evolved with a transition in organizational focus, emphasizing investment in Advanced Products, targeting high growth market segments with a low-mix, high-volume operational model, while maintaining a profitable business in mature market segments we serve with Brick Products with a high-mix, low-volume operational model. Dr. Vinciarelli and management began to make incremental changes in management practices and organizational structure based on a management plan established in 2018 for the definitive reconfiguration of the three business units into one business focused on the Advanced Products and Brick Products product line categorizations, including three significant changes: the merger of Picor with and into Vicor, which was completed on May 30, 2018; the reconfiguration of our internal reporting systems, which was completed on December 31, 2018; and the merger of VI Chip with and into Vicor, which was completed on June 28, 2019. Our CODM now determines the allocation of our resources based upon the two product line groupings, which constitute one segment. Both product lines are built in our manufacturing facility in Andover, Massachusetts, employing similar processing and production techniques, are supported by the same sales and marketing organization, and address a continuum of customer applications. As such, we have conformed our segment reporting to the new reporting structure utilized by the CODM.

Revenue from the sale of Advanced Products represents the sum of third-party sales of the products sold under the Advanced Products line, which were sold under the former Picor and VI Chip operating segments during periods prior to the second quarter of 2019. Revenue from the sale of Brick Products represents the sum of third-party sales of the products sold under the Brick Products line, which were sold under the former Brick Business Unit operating segment, inclusive of such sales of our Vicor Custom Power and Vicor Japan Company, Ltd. (“VJCL”) subsidiaries. When reporting such revenue on a consolidated basis, intra-segment revenues are eliminated.

The applications in which our Advanced Products and Brick Products are used are typically in the higher-performance, higher-power segments of the market segments we serve. With our Advanced Products, we generally serve large Original Equipment Manufacturers (“OEMs”), Original Design Manufacturers (“ODMs”), and their contract manufacturers, with sales currently are concentrated in the data center and hyperscaler segments of enterprise computing, in which our products are used for voltage distribution on server motherboards, in server racks, and across datacenter infrastructure, although we also target applications in aerospace and aviation, defense electronics, industrial automation, instrumentation, test equipment, solid state lighting, telecommunications and networking infrastructure, and vehicles (notably in the autonomous driving, electric vehicle, and hybrid vehicle niches of the vehicle segment). With our Brick Products, we generally serve a fragmented base of large and small customers, concentrated in aerospace and defense electronics, industrial automation, industrial equipment, instrumentation and test equipment, and transportation (notably in rail and heavy equipment applications). With our strategic emphasis on larger, high-volume customers, we expect to experience over time a greater concentration of sales among relatively fewer customers.

## **2019 Results**

Our overall operating results declined for 2019, compared to 2018, due to an overall 17.7 % year over year decrease in bookings, with 31.2% and 10.1% decreases in Advanced Products and Brick Products bookings, respectively. Consolidated revenue for 2019 declined 9.7%. Factors contributing to the decline in bookings and revenue were customer delays in the launch of new Advanced Products programs for use in Artificial Intelligence (“AI”) and supercomputing, for which we had achieved design wins, reduced shipments of Advanced Products for existing data center applications due to excess inventory in the server supply chain, reduced bookings and shipments of Brick Products to Chinese customers due to the costs of import tariffs and uncertainties associated with the China — U.S. trade dispute, and continued weakness in industrial market segments served with Brick Products in Japan and certain European countries. We experienced increased bookings and revenue for 2019 in recently targeted market segments (e.g., Advanced Products applications in automotive and commercial lighting applications), but such increases were not of sufficient volume to meaningfully offset declines in larger, established market segments and geographies.

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Gross margins, both in absolute dollars and as a percentage of revenue, decreased year over year, reflecting the decrease in revenue and higher tariff charges paid on raw materials imported from China, although an improved mix of higher-margin products shipped partially offset the effect lower production volume on absorption of manufacturing overhead costs and tariffs. Consolidated gross margin as a percentage of revenue decreased to 46.8% for 2019, from 47.7% for 2018.

Total operating expenses, largely associated with compensation and related personnel costs, grew 2.1% from 2018 to 2019. The number of full-time employees totaled 993 at December 31, 2019, an increase of 17 employees, or 1.7% year over year. In aggregate, Marketing and Sales expenses and Administrative expenses were essentially unchanged, while Research and Development expenses increased year over year, due to higher compensation costs and higher prototyping and related engineering material costs.

We believe the following considerations have the potential to influence our financial performance in 2020:

### *Operational Considerations*

- We operate a highly automated electronics manufacturing facility in Andover, Massachusetts, and our profitability is closely aligned with production unit volumes. We have invested significantly in state-of-the-art systems, equipment, and robotics, which allow us to generate relatively higher profitability when operating at or near factory capacity, even with a high mix of products produced. However, periods of low volume production and/or brief, low volume production runs contribute to lower profitability, largely due to lower absorption of relatively high manufacturing overhead costs associated with our manufacturing model. While direct labor and associated variable costs generally correlate with volume, manufacturing overhead costs are inflexible and, therefore, problematic during periods of low volume or brief production runs.
- We continue to invest in the production machinery and specialized equipment necessary to enhance the efficiency of our current manufacturing capacity. However, if sustained, uniform, high-volume production levels are not achieved, notably in Advanced Products, our product-level profitability likely will not reach the levels necessary to adequately cover our fixed spending, consisting of manufacturing overhead costs and operating costs.
- Our ability to achieve sustained, high volume production levels is tied to our ability to forecast manufacturing requirements for, and the availability of, a range of inputs, notably raw material inventories. Because we utilize a number of components and other materials of proprietary design, our ability to sustain targeted production schedules and meet customer delivery requirements has been vulnerable to delays or shortages of such inventories, which often cause prices of these components and materials to rise. With the implementation in 2018 of Section 301 Tariffs on certain Chinese goods imported into the United States, we are now exposed to higher costs on certain electronic components and devices we import from China for use in the manufacture of our products. For the year ended December 31, 2019, costs associated with duties and tariffs totaled approximately \$5,280,000. We continue to assess the impact of these costs and are actively evaluating alternative sources of raw materials. We also have engaged a consultant to assist us with implementing a “duty drawback” process, by which we may file with U.S. Customs and Border Protection for the recovery of tariffs paid on raw materials used to produce products we subsequently exported. At this time, we are not able to estimate the amount of such recovery or the timing thereof.
- To mitigate supply chain risks, we focus on identifying and reducing potential vulnerabilities to stock-outs, vendor shortages, and similar disruptions. We maintain safety-stock programs for certain critical components and materials, and these programs recently have contributed to increased levels of raw material inventory, primarily for Advanced Products. We also have established second-source supply relationships, in order to reduce exposure to material shortages. Although the global electronics supply chain generally stabilized in 2019, we continue to experience lengthened lead times for certain product

categories, and our product-level profitability and overall performance could be negatively influenced by an unplanned shortage of a particular component or material. We anticipate availability of certain commodity components may remain uncertain through 2020.

*Capacity and Capital Investment Considerations*

- We have been making and will continue to make capital investments for the expansion of manufacturing capacity for the production of Advanced Products at our Andover facility. Based on our extended long-term volume forecast, we anticipate additional capacity will be required to meet expected requirements. We believe the most appropriate manner of meeting our long-term capacity requirements will be to initially expand the production area of our Andover facility by approximately 90,000 square feet, through the addition of a two story wing. In December 2019, we acquired, for approximately \$1.5 million, approximately three acres adjacent to our facility to accommodate our Andover facility expansion. We have completed the design and permitting phase for this project and we are scheduled to begin construction of an approximately 90,000 square feet addition to our existing plant in the spring of 2020 and take occupancy later in the year. Full operational capacity may not be achieved until early 2021. Construction activity can be difficult to schedule, and construction sites can present management and operational challenges. As such, given the proximity of the addition to our existing operations, this construction activity has the potential to disrupt our current operations, which could cause production to be delayed and costs to increase.
- We believe we have adequate manufacturing capacity to meet our requirements through approximately 2021. However, we are proceeding with the evaluation of alternatives for the addition of a second manufacturing facility, should we determine the need for (and timing of) such additional capacity based on forecasts. We have not reached a point in our evaluation at which we could estimate the size, location, capabilities, costs, or timing of construction of such a second facility. The alternatives under consideration include joint ventures and similar collaborative arrangements with third-parties, which increases the complexities and uncertainties of our evaluation and may contribute to additional delays and higher costs.
- In 2019, we entered into a supply agreement with a highly-specialized contractor for meeting our near-term volume expectations for our SM-ChiP line. While commodity electroplating and related surface preparation and finishing services are available from numerous alternate providers, we have developed certain proprietary processes with this contractor. The terms of the supply agreement call for Vicor to acquire and install certain capital equipment at the contractor's premises during 2020. Such equipment will be operated by Vicor employees.

Because of the challenges associated with the proprietary processes required for SM-ChiP production, Vicor and the contractor encountered delays in meeting certain volume and scheduling milestones during 2019 and, as a result, incurred higher costs than anticipated. We believe we have remedied the causes of the delays and are scheduling sufficient production volumes to meet our 2020 forecast for shipments of SM-ChiPs. However, the Company and the contractor expect to be installing and qualifying additional capital equipment through the year, which may cause delays similar to those experienced in 2019.

The terms of the supply agreement also call for the Company and the contractor to collaborate on the design and implementation of a separate facility, to be funded, owned, and operated by Vicor, utilizing the proprietary processes developed for SM-ChiP production. We currently are scheduling this separate facility to be functional during the first half of 2021, but have yet to identify a location for new construction or an existing building for acquisition. As stated above, construction activity can be difficult to schedule, and construction sites can present management and operational challenges. Given our collaboration with the contractor on the design and development of the proposed facility, we believe our design, process installation, and process qualification risks have been identified and minimized. However, given the uncertainties associated with construction and the complex nature of

the proprietary processes to be implemented, we may incur unanticipated delays and costs during 2020 associated with the construction of the proposed facility and the implementation of the proprietary processes, which we anticipate will not be completed until 2021.

*Market and Macroeconomic Considerations*

- We continue to believe the transition from 12V to 48V distribution in data centers is expanding and will be sustained, as an increasing number of hyperscaler and high performance computing customers are evaluating our FPA components and placing orders for Advanced Products solutions. Our Power-on-Package solution powering graphics processing units (“GPUs”) and application-specific integrated circuits (“ASICs”) used in Artificial Intelligence applications continued to receive strong customer interest in 2019, and we secured additional design wins. In April 2019, we entered into a design collaboration with a significant Asia-based vendor of advanced processor packaging solutions.

However, despite greater customer interest and additional design wins, conditions in the data center market segment through 2019 caused customers and potential customers to delay shipments and/or bookings. We believe the excess inventories that existed across the server supply chain from late 2018 through 2019 have been reduced, and that existing customer programs are resuming and new orders will accelerate through 2020. Similarly, we believe the launch of certain new products into which Advanced Products have been designed will no longer be delayed, given improved demand visibility of the customers associated with these new products. Although we believe the inventory excesses in the server supply chain have been remedied, leading to improved customer visibility for hyperscaler and data center customers, recurring uncertainties, such as those associated with the coronavirus outbreak in China, may cause orders from new and existing customers to be delayed, potentially influencing our financial results and capacity expansion plans.

- We also are confident the transition from 12V to 48V distribution in automotive applications is expanding, as automobile manufacturers broaden their offerings of electric vehicles and hybrid-electric vehicles, the performance of which is significantly enhanced through the use of 48V distribution. During 2019, we expanded our dedicated automotive effort to address the increasing interest in our small, light-weight, and efficient Advanced Products. The number of domestic, European, and Japanese OEMs and Tier One suppliers with which we are engaged approximately doubled in 2019, with substantive design wins for certain all-electric and mild-hybrid vehicles models. However, because the design-to-production cycle in the automotive industry exceeds three years, we do not anticipate significant revenue from these engagements or our design wins until 2023. Currently, recognized revenue is limited primarily to development fees and low volume shipments of prototype products. As such, there is a possibility our profitability may be negatively affected by the costs of our expanded automotive effort incurred prior to the volume shipments we expect to begin in 2023.
- With the expanding adoption of 48V distribution in our targeted market segments, we are facing a more complex competitive landscape, with additional challenges and competitors. We continue to believe our new products will be adopted in volume by multiple leading customers, as the level of engagement with high profile, global customers remains high. However, we cannot control the actions by, or the timing of, significant competitors also participating in the market. Many of these competitors possess resources far greater than our resources and have operational and financial flexibility we do not. Many of these vendors also have the ability to aggressively price their products to defend market share. Such aggressive pricing may influence our own pricing and, in turn, our profitability.
- We anticipate aggregate demand for the mature markets we serve with our Brick Products will grow over the long-term at the rate of the overall industrial economy (i.e., in the United States, for example, at the rate of growth approximating that of the industrial segments of gross domestic product). Given our long-term customer relationships and the status of our Brick Products in long-standing customer applications, we anticipate maintaining our share in many of these mature markets. While we are

pursuing opportunities to replace certain Brick Products used in existing customers' applications with Advanced Products, when appropriate, and, similarly, to replace competitors' products in existing applications, we believe such opportunities may not cumulatively contribute to a substantial expansion of our share of the mature markets we serve.

- We have experienced reduced demand for Brick Products in China, due to the imposition of import tariffs of 20% on our products. We believe much of the demand for our Brick Products will recover if the tariffs are substantially reduced or eliminated, as our products benefit from price inelasticity in certain Chinese market segments, due to their differentiated performance and reliability. However, we cannot estimate the timing of such a recovery or if the tariffs will be reduced or eliminated and economic conditions improve, in the foreseeable future. We also believe demand for certain products may not fully recover if tariffs are reduced or eliminated, as the Chinese government increased its pressure on Chinese manufacturers during 2019 to meet the "China 2025" mandate for targeted development of Chinese technology sectors, whereby domestic technology vendors are explicitly favored over foreign vendors such as Vicor. We believe we have experienced reduced demand in certain market segments (e.g., rail), reflecting the significant role of state-owned enterprises in those market segments, and also believe such demand that may not recover for the foreseeable future to historical levels, even if tariffs on Vicor products are reduced or eliminated.
- In February 2020, the global electronics industry became aware of the potentially significant influence of the coronavirus on the industry's supply chain, notably on the future availability of materials and manufacturing capacity in China. We are in frequent contact with both customers and suppliers with meaningful exposure to China and are monitoring conditions there and across Asia.

### **2019 Financial Highlights**

- Net revenues decreased 9.7% to \$262,977,000 for 2019, from \$291,220,000 for 2018, primarily due to an overall decline in 2019 bookings compared to 2018. Bookings decreased 17.7% in 2019 compared to 2018.
- Export sales, as a percentage of total revenues, represented approximately 53.7% in 2019 and 62.0% in 2018.
- Gross margin decreased to \$122,966,000 for 2019, from \$138,971,000 for 2018. Gross margin, as a percentage of net revenues decreased to 46.8% for 2019 from 47.7% for 2018. The decreases were primarily due to the decrease in net revenues.
- Backlog, representing the total of orders for products received for which shipment is scheduled within the next 12 months, was approximately \$104,164,000 at the end of 2019, as compared to \$102,963,000 at the end of 2018.
- Operating expenses for 2019 increased \$2,233,000, or 2.1%, to \$109,145,000 from \$106,912,000 for 2018, due to increases in research and development expenses of \$2,302,000 and selling, general, and administrative expenses of \$333,000. In addition, we recorded severance and other charges of \$402,000 in 2018 in connection with the closure of one of our Vicor Custom Power subsidiaries, Granite Power Technologies, Inc. ("GPT"), as part of our ongoing initiative to streamline operations and improve our cost structure.
- We reported net income for 2019 of \$14,098,000, or \$0.34 per diluted share, compared to net income of \$31,725,000, or \$0.78 per diluted share, for 2018.
- In 2019, depreciation and amortization totaled \$10,334,000, and capital expenditures were \$12,485,000, compared to \$9,254,000 and \$18,211,000, respectively, for 2018.
- Inventories increased by approximately \$1,817,000, or 3.8%, to \$49,187,000 at the end of 2019, as compared to \$47,370,000 at the end of 2018.

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The following table sets forth certain items of selected consolidated financial information as a percentage of net revenues for the years shown, ended December 31. This table and the subsequent discussion should be read in conjunction with the selected financial data and the Consolidated Financial Statements and related footnotes contained elsewhere in this report.

	Year Ended December 31,		
	2019	2018	2017
Net revenues	100.0%	100.0%	100.0%
Gross margin	46.8%	47.7%	44.6%
Selling, general and administrative expenses	23.8%	21.4%	25.5%
Research and development expenses	17.7%	15.2%	19.7%
Income (loss) before income taxes	5.7%	11.3%	(0.0)%

### **Critical Accounting Policies and Estimates**

Management's Discussion and Analysis of Financial Condition and Results of Operations is based upon our Consolidated Financial Statements, which have been prepared in accordance with accounting principles generally accepted in the United States ("U.S. GAAP"). The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, expenses, and related disclosures of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates and assumptions, and our associated judgments, including those related to inventories, income taxes, contingencies, and litigation. We base our estimates, assumptions, and judgments on historical experience, knowledge of current conditions, and on various other factors we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We also have other policies we consider key accounting policies, (See Note 2 to the Consolidated Financial Statements — *Significant Accounting Policies — Recently Adopted Accounting Standards*). However, the application of these other policies does not require us to make significant estimates and assumptions difficult to support quantitatively.

#### ***Inventories***

We employ a variety of methodologies to evaluate inventory that is estimated to be excess, obsolete or unmarketable, in order to write down that inventory to net realizable value. Our estimation process for assessing net realizable value is based upon forecasted future usage which we derive based on backlog, historical consumption, and expected market conditions. For both Brick and Advanced product lines, the methodology used compares on-hand quantities to forecasted usage and historical consumption, such that amounts of inventory on hand in excess of three-year usage or three-year historical consumption, whichever is higher, are fully reserved. While we have used our best efforts and believe we have used the best available information to estimate future demand, due to uncertainty in the economy and our business and the inherent difficulty in forecasting future usage, it is possible actual demand for our products will differ from our estimates. If actual future demand or market conditions are less favorable than those projected by management, additional inventory reserves for existing inventories may need to be recorded in future periods.

#### ***Evaluation of the Realizability of Deferred Tax Assets***

Significant management judgment is required in determining whether deferred tax assets will be realized in full or in part. We assess the need for a valuation allowance on a quarterly basis. We record a valuation allowance to reduce our deferred tax assets to the amount we believe is more likely than not to be realized. In assessing the need for a valuation allowance, we consider all positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies, and past financial performance. While recent positive operating results caused the Company to be in a cumulative income position

as of December 31, 2019, its overall profitability has been declining since the third quarter of 2018, primarily due to overall reduced bookings for both Advanced and Brick products, reflecting U.S.-China trade/tariff dynamics and elements of macro uncertainty. The uncertain impact of the coronavirus on the supply chain and certain process issues with the production of Advanced Products is contributing to near-term uncertainty. As a result, management has concluded a full valuation allowance against all net domestic deferred tax assets is still warranted as of December 31, 2019. The valuation allowances against these deferred tax assets may require adjustment in the future based on changes in the mix of temporary differences, changes in tax laws, and operating performance. If the positive quarterly earnings continue and our concerns about industry uncertainty, process issues with the production of Advanced Products are resolved, and order volumes are alleviated to the point we believe future profits can be more reliably forecasted, we may release all or a portion of the valuation in the near-term. Certain state tax credits, though, will likely never be uncovered by the valuation allowance. If and when we determine the valuation allowance should be released (i.e., reduced), the adjustment would result in a tax benefit reported in that period's Consolidated Statements of Operations, the effect of which would be an increase in reported net income. The amount of any such tax benefit associated with release of our valuation allowance in a particular quarter may be material.

### ***New Accounting Pronouncements***

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board ("FASB") that we adopt as of the specified effective date. Unless otherwise discussed, we believe the impact of recently issued accounting standards will not have a material impact on our future financial condition and results of operations. See Note 2 — *Significant Accounting Policies — Impact of recently issued accounting standards*, to the Consolidated Financial Statements for a description of recently issued and adopted accounting pronouncements, including the dates of adoption and expected impact on our financial position and results of operations.

### ***Lease Accounting***

In February 2016, the FASB issued new guidance for lease accounting, which requires lessees to recognize leases on the balance sheet and disclose key information about leasing arrangements. The new guidance establishes a right-of-use model ("ROU") that requires a lessee to recognize a ROU asset and a lease liability on the balance sheet for all leases with a term longer than twelve months. Leases are classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement. For lessors, the guidance modifies the classification criteria and accounting for sales-type and direct financing leases.

We adopted the new standard as of January 1, 2019, using the effective date as the date of initial application. As a result, financial information has not been updated and the disclosures required under the new standard have not been provided for dates and periods before January 1, 2019. We elected the "package of practical expedients", which permits companies to not reassess under the new standard lease identification, lease classification and initial direct costs. We did not elect the use-of-hindsight or the practical expedient pertaining to land easements, as the latter is not applicable.

The adoption of the standard resulted in the recognition of ROU assets and lease liabilities of approximately \$4,329,000 and \$4,455,000, respectively, as of January 1, 2019. There was no cumulative effect of adopting this new guidance, and the standard did not have a material impact on our consolidated statements of operations or cash flows for the year ended December 31, 2019.

Other new pronouncements issued but not effective until after December 31, 2019 are not expected to have a material impact on our consolidated financial statements.

**Year ended December 31, 2019 compared to Year ended December 31, 2018**

See Note 19, *Segment Information*, to the Consolidated Financial Statements for a discussion of our change to segment reporting in the second quarter of 2019.

Consolidated net revenues for 2019 were \$262,977,000, a decrease of \$28,243,000, or 9.7%, as compared to \$291,220,000 for 2018.

Net revenues, by product line, for the years ended December 31 were as follows (dollars in thousands):

	2019	2018	Increase (decrease)	
			\$	%
Brick Products	\$187,896	\$186,704	\$ 1,192	0.6%
Advanced Products	75,081	104,516	(29,435)	(28.2)%
<b>Total</b>	<b>\$262,977</b>	<b>\$291,220</b>	<b>\$(28,243)</b>	<b>(9.7)%</b>

The overall decrease in consolidated net revenues was primarily due to an overall 17.7% decrease in bookings for the year ended December 31, 2019, compared to the year ended December 31, 2018, as bookings declined by 31.2% and 10.1% for Advanced Products and Brick Products, respectively, for reasons described in the *2019 Results* section, above.

Gross margin for 2019 decreased \$16,005,000, or 11.5%, to \$122,966,000 from \$138,971,000 in 2018. Gross margin as a percentage of net revenues decreased to 46.8% in 2019 from 47.7% in 2018. Both decreases were primarily due to the decrease in net revenues, higher tariff charges of approximately \$5,089,000 and lower production volume on absorption of manufacturing overhead costs, partially offset by an improved mix of higher-margin products shipped.

Selling, general, and administrative expenses were \$62,557,000 for 2019, an increase of \$333,000, or 0.5%, as compared to \$62,224,000 for 2018. As a percentage of net revenues, selling, general, and administrative expenses increased to 23.8% in 2019 from 21.4% in 2018, primarily due to the decrease in net revenues.

The components of the \$333,000 increase in selling, general, and administrative expenses were as follows (dollars in thousands):

	Increase (decrease)	
	\$	%
Depreciation and amortization	\$ 384	15.8%(1)
Outside services	285	15.0%(2)
Advertising expenses	217	7.1%(3)
Facilities allocations	156	10.4%(4)
Commissions	104	3.0%
Bad debt expense	(209)	(321.7)%(5)
Legal fees	(223)	(12.2)%(6)
Compensation	(362)	(0.9)%(7)
Other, net	(19)	(0.2)%
	<b>\$ 333</b>	<b>0.5%</b>

- (1) Increase attributable to an increase in additions of furniture and fixtures and building improvements.
- (2) Increase in use of outside service providers in Andover.
- (3) Increase primarily attributed to increases in sales support expenses, direct mailings, and advertising in trade publications.



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- (4) Increase primarily attributable to an increase in utilities and building maintenance expenses.
- (5) Decrease attributable to favorable historical collections experience over the period analyzed.
- (6) Decrease attributable to a decrease in corporate legal matters.
- (7) Decrease primarily attributable to decreased stock-based compensation expense, partially offset by annual compensation adjustments in May 2019. The decrease in stock-based compensation expense was due to decreased expense in 2019 for certain Vicor stock options held by a non-employee.

Research and development expenses increased \$2,302,000, or 5.2%, to \$46,588,000 in 2019 from \$44,286,000 in 2018. As a percentage of net revenues, research and development expenses increased to 17.7% in 2019 from 15.2% in 2018, primarily due to the decrease in net revenues, an increase in prototype development costs, and a net increase in headcount.

The components of the \$2,302,000 increase in research and development expenses were as follows (dollars in thousands):

	<u>Increase (decrease)</u>	
Compensation	\$ 1,580	5.0%(1)
Project and pre-production materials	1,548	28.4%(2)
Depreciation and amortization	(141)	(7.3)%
Deferred costs	(761)	(77.5)%(3)
Other, net	76	1.2%
	<u>\$ 2,302</u>	<u>5.2%</u>

- (1) Increase primarily attributable to annual compensation adjustments in May 2019 and increased stock-based compensation expense.
- (2) Increase primarily attributable to increased spending for new product development of Advanced Products.
- (3) Decrease primarily attributable to an increase in deferred costs capitalized for certain non-recurring engineering projects for which the related revenues have been deferred.

The significant changes in the components of "Other income (expense), net" for the years ended December 31 were as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>Increase (decrease)</u>
Rental income	\$ 792	\$ 792	\$ —
Interest income	300	257	43
Foreign currency losses, net	(108)	(260)	152
Gain on disposal of equipment	38	57	(19)
Credit gains on available-for-sale securities	4	7	(3)
Other	40	21	19
	<u>\$1,066</u>	<u>\$ 874</u>	<u>\$ 192</u>

Our exposure to market risk fluctuations in foreign currency exchange rates relates to the operations of VJCL, for which the functional currency is the Japanese Yen, and all other subsidiaries in Europe and Asia, for which the functional currency is the U.S. Dollar. These other subsidiaries in Europe and Asia experienced favorable foreign currency exchange rate fluctuations in 2019 compared to 2018. Interest income increased due to an increase in interest rates.

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Income before income taxes was \$14,887,000 in 2019, as compared to \$32,933,000 in 2018.

The provision for income taxes and the effective income tax rate for the years ended December 31 were as follows (dollars in thousands):

	<u>2019</u>	<u>2018</u>
Provision for income taxes	\$778	\$1,087
Effective income tax rate	5.2%	3.3%

The 2019 and 2018 income tax provisions include estimated state and foreign taxes on the Company's pre-tax income. Federal tax expense was offset in both years by net operating loss carryforwards and also by tax credits in 2019.

See Note 16 to the Consolidated Financial Statements for disclosure regarding our current assessment of the full valuation allowance against all domestic net deferred tax assets, and the possible release (i.e., reduction) of the allowance in the future.

Net income per diluted share attributable to Vicor Corporation was \$0.34 for the year ended December 31, 2019, compared to net income per diluted share of \$0.78 for the year ended December 31, 2018.

## LIQUIDITY AND CAPITAL RESOURCES

At December 31, 2019, we had \$84,668,000 in cash and cash equivalents. The ratio of current assets to current liabilities was 6.0:1 at December 31, 2019, as compared to 4.6:1 at December 31, 2018. Net working capital increased \$20,074,000 to \$149,136,000 at December 31, 2019 from \$129,062,000 at December 31, 2018.

The primary working capital changes were due to the following (in thousands):

	<u>Increase (decrease)</u>
Cash and cash equivalents	\$ 14,111
Accounts receivable	(5,558)
Inventories	1,817
Other current assets	3,636
Accounts payable	7,144
Accrued compensation and benefits	247
Accrued expenses	(59)
Sales allowances	(193)
Accrued severance and other charges	234
Short-term lease liabilities	(1,520)
Income taxes payable	653
Short-term deferred revenue and customer prepayments	(438)
	<u>\$ 20,074</u>

The primary sources of cash for the year ended December 31, 2019 were from operating activities of \$22,208,000, and proceeds from the issuance of Common Stock upon the exercise of options under our stock option plans and our 2017 Employee Stock Purchase Plan of \$4,742,000. The primary uses of cash for the year ended December 31, 2019 was the purchase of equipment of \$12,485,000.

In November 2000, our Board of Directors authorized the repurchase of up to \$30,000,000 of Common Stock (the "November 2000 Plan"). The November 2000 Plan authorizes us to make such repurchases from time to time in the open market or through privately negotiated transactions. The timing of such repurchases and the

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number of shares purchased in each transaction are at the discretion of management based on its view of economic and financial market conditions. We did not repurchase shares of Common Stock under the November 2000 Plan during the year ended December 31, 2019. As of December 31, 2019, we had approximately \$8,541,000 remaining for share purchases under the November 2000 Plan.

During the year ended December 31, 2019, three subsidiaries paid a total of \$3,602,000 in cash dividends, of which \$3,463,000 was paid to us and \$139,000 was paid to outside shareholders. Dividends paid to outside shareholders are accounted for as a reduction in noncontrolling interest. During the year ended December 31, 2018, one subsidiary paid a total of \$632,000 in cash dividends, all of which was paid to us.

As of December 31, 2019, we had no off-balance sheet arrangements.

The table below summarizes our contractual obligations for operating leases as of December 31, 2019 (in thousands):

Contractual Obligations	Payments Due by Period				
	Total	Less than 1 Year	Years 2 & 3	Years 4 & 5	More Than 5 Years
Operating lease obligations (1)	\$4,711	\$ 1,657	\$ 1,690	\$ 1,193	\$ 171

(1) For further information, refer to Note 13 of the notes to Consolidated Financial Statements, *Leases*, included in Part II, Item 8 of this Annual Report on Form 10-K.

We had approximately \$3,222,000 of capital expenditure commitments, principally for manufacturing equipment, as of December 31, 2019, which we intend to fund with existing cash. Our primary liquidity needs are for making continuing investments in manufacturing equipment and, if we proceed with the planned construction of 90,000 square feet of additional manufacturing space adjoining our existing Andover manufacturing facility, for funding architectural and construction costs. We believe cash generated from operations and the total of our cash and cash equivalents will be sufficient to fund planned operational needs, capital equipment purchases, and the planned construction, for the foreseeable future.

We do not consider the impact of inflation and changing prices on our business activities or fluctuations in the exchange rates for foreign currency transactions to have been significant during the last three fiscal years.

### ITEM 7A.

We are exposed to a variety of market risks, including changes in interest rates affecting the return on our cash and cash equivalents and fluctuations in foreign currency exchange rates. As our cash and cash equivalents consist principally of cash accounts and money market securities, which are short-term in nature, we believe our exposure to market risk on interest rate fluctuations for these investments is not significant. As of December 31, 2019, our long-term investment portfolio, recorded on our Consolidated Balance Sheet as “Long-term investment, net”, consisted of a single auction rate security with a par value of \$3,000,000, purchased through and held in custody by a broker-dealer affiliate of Bank of America, N.A., that has experienced failed auctions (the “Failed Auction Security”) since February 2008. While the Failed Auction Security is Aaa/AA+ rated by major credit rating agencies, collateralized by student loans and guaranteed by the U.S. Department of Education under the Federal Family Education Loan Program, continued failure to sell at its periodic auction dates (i.e., reset dates) could negatively impact the carrying value of the investment, in turn leading to impairment charges in future periods. Periodic changes in the fair value of the Failed Auction Security attributable to credit loss (i.e., risk of the issuer’s default) are recorded through earnings as a component of “Other income (expense), net”, with the remainder of any periodic change in fair value not related to credit loss (i.e., temporary “mark-to-market” carrying value adjustments) recorded in “Accumulated other comprehensive income (loss)”, a component of Vicor Corporation Stockholders’ Equity. Should we conclude a decline in the fair value of the Failed Auction

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Security is other than temporary, such losses would be recorded through earnings as a component of “Other income (expense), net”. We do not believe there was an “other-than-temporary” decline in value in this security as of December 31, 2019.

We estimate our annual interest income would change by approximately \$30,000 in 2019 for each 100 basis point increase or decrease in interest rates.

Our exposure to market risk for fluctuations in foreign currency exchange rates relates primarily to the operations of VJCL, for which the functional currency is the Japanese Yen, and changes in the relative value of the Yen to the U.S. Dollar. Relative to our Yen exposure as of December 31, 2019, we estimate a 10% unfavorable movement in the value of the Yen relative to the U.S. Dollar would increase our foreign currency loss by approximately \$54,000. The functional currency of all other subsidiaries in Europe and other subsidiaries in Asia is the U.S. Dollar. While we believe risk to fluctuations in foreign currency rates for these subsidiaries is generally not significant, they can be subject to substantial currency changes, and therefore foreign exchange exposures.

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**ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

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**FINANCIAL STATEMENTS**

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## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors  
Vicor Corporation:

### *Opinion on the Consolidated Financial Statements*

We have audited the accompanying consolidated balance sheets of Vicor Corporation and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, cash flows, and equity for each of the years in the three-year period ended December 31, 2019, and the related notes and financial statement schedule listed in Item 15(a)(2), collectively, the consolidated financial statements. In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 28, 2020 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

### *Basis for Opinion*

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated 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.

*Evaluation of the realizability of raw materials inventory*

As discussed in Note 3 to the consolidated financial statements, approximately 73%, or \$35.9 million, of the Company's total inventory balance is comprised of raw materials. The Company periodically analyzes its raw materials inventory and writes down any amounts that have a cost basis in excess of estimated net realizable value. Inventory write downs generally relate to excess quantities, obsolescence, or products that are unmarketable.

We identified evaluation of the realizability of raw materials inventory to be a critical audit matter. Overall, raw materials have a higher risk of a significant write down as the Company generally maintains higher levels of raw materials inventory to manage prolonged lead times for delivery of purchased raw materials within the global electronics supply chain. Specifically, the Company must exercise judgment to estimate excess, obsolete, or unmarketable inventory based on their forecast of future usage. Forecasted future usage considers historical consumption, existing backlog and expected market conditions and requires judgement to predict as changes in customer demand and delivery lead times can fluctuate and are outside the Company's control. Evaluation of the realizability of raw materials inventory required auditor judgment because the Company's estimate is judgmental and is based on a number of quantitative and qualitative assumptions. Changes in forecasted future usage could have a significant impact on the timing and amount of write downs of raw materials inventory.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's process to develop its forecast of usage, including estimating the projected demand based on historical usage and the potential impact of market conditions. We evaluated the Company's estimate of the realizability of raw materials by:

- Assessing historical consumption as a predictor of future product demand by comparing it to trends in industry publications;
- Examining the historical accuracy of the Company's prior estimates by considering subsequent sales and write off activity;
- Evaluating the manual adjustments made to forecast future demand based on historical usage data
- Interviewing operational personnel of the Company involved in purchasing and manufacturing to evaluate product innovations, changes in customer mix, and other factors that may impact expected future sales and usage of raw material inventory.

*Evaluation of the realizability of U.S. deferred tax assets*

As discussed in Note 16 to the consolidated financial statements, the Company had \$30.4 million of U.S. net deferred tax assets as of December 31, 2019 with an offsetting valuation allowance of \$30.4 million. The deferred tax assets consist primarily of U.S. research and development tax credits that can be carried forward to reduce future U.S. income taxes. In evaluating the continued need for a valuation allowance, the Company considers the nature and trend of current and cumulative taxable income or losses, estimates of future taxable income, industry and global economic conditions and the duration of statutory carryforward periods.

We identified the evaluation of the realizability of the U.S. deferred tax assets as a critical audit matter due to the magnitude of the deferred tax assets and the subjectivity involved in evaluating the recoverability of those deferred tax assets. This subjectivity is driven by uncertainty inherent in estimating the Company's ability to generate sufficient taxable income of the appropriate character in the future.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's income tax process, including controls over the assessment of the realizability of deferred tax assets and the application of relevant tax regulations. To assess the Company's ability to forecast, we compared the Company's previous forecasts to actual results. We also

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assessed and evaluated the Company's consideration of the impact of industry and global economic conditions. We also involved federal and state income tax professionals with specialized skills and knowledge, who assisted in assessing the Company's application of the relevant tax regulations and evaluating the realizability of deferred tax assets.

/s/ KPMG LLP

We have served as the Company's auditor since 2013.

Boston, Massachusetts

February 28, 2020



**VICOR CORPORATION**  
**CONSOLIDATED BALANCE SHEETS**  
**December 31, 2019 and 2018**  
(In thousands, except per share data)

	<u>2019</u>	<u>2018</u>
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 84,668	\$ 70,557
Accounts receivable, less allowance of \$59 in 2019 and \$224 in 2018	38,115	43,673
Inventories, net	49,187	47,370
Other current assets	7,096	3,460
Total current assets	<u>179,066</u>	<u>165,060</u>
Long-term deferred tax assets	205	265
Long-term investment, net	2,510	2,526
Property, plant and equipment, net	56,952	50,432
Other assets	1,994	2,785
Total assets	<u>\$ 240,727</u>	<u>\$ 221,068</u>
<b>LIABILITIES AND EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 9,005	\$ 16,149
Accrued compensation and benefits	10,410	10,657
Accrued expenses	2,690	2,631
Sales allowances	741	548
Short-term lease liabilities	1,520	—
Accrued severance and other charges	—	234
Income taxes payable	57	710
Short-term deferred revenue and customer prepayments	5,507	5,069
Total current liabilities	<u>29,930</u>	<u>35,998</u>
Long-term deferred revenue	1,054	232
Contingent consideration obligations	451	408
Long-term income taxes payable	567	238
Long-term lease liabilities	2,855	102
Total liabilities	<u>34,857</u>	<u>36,978</u>
Commitments and contingencies (Note 17)		
Equity:		
Vicor Corporation stockholders' equity:		
Class B Common Stock: 10 votes per share, \$.01 par value, 14,000,000 shares authorized, 11,758,218 shares issued and outstanding in 2019 and 2018	118	118
Common Stock: 1 vote per share, \$.01 par value, 62,000,000 shares authorized 40,403,058 shares issued and 28,768,252 shares outstanding in 2019; 40,066,710 shares issued and 28,430,971 shares outstanding in 2018	405	402
Additional paid-in capital	201,251	193,457
Retained earnings	143,098	129,000
Accumulated other comprehensive loss	(383)	(394)
Treasury stock at cost: 11,634,806 shares in 2019 and 11,635,739 shares in 2018	(138,927)	(138,927)
Total Vicor Corporation stockholders' equity	<u>205,562</u>	<u>183,656</u>
Noncontrolling interest	308	434
Total equity	<u>205,870</u>	<u>184,090</u>
Total liabilities and equity	<u>\$ 240,727</u>	<u>\$ 221,068</u>

See accompanying notes.

**VICOR CORPORATION**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**  
**Years Ended December 31, 2019, 2018 and 2017**  
**(In thousands, except per share amounts)**

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Net revenues	\$262,977	\$291,220	\$ 227,830
Cost of revenues	140,011	152,249	126,174
Gross margin	122,966	138,971	101,656
Operating expenses:			
Selling, general and administrative	62,557	62,224	58,092
Research and development	46,588	44,286	44,924
Severance and other charges	—	402	—
Total operating expenses	109,145	106,912	103,016
Income (loss) from operations	13,821	32,059	(1,360)
Other income (expense), net:			
Total unrealized (losses) gains on available-for-sale securities, net	(16)	1	17
Portion of losses (gains) recognized in other comprehensive income (loss)	20	6	(6)
Net credit gains recognized in earnings	4	7	11
Other income (expense), net	1,062	867	1,251
Total other income (expense), net	1,066	874	1,262
Income (loss) before income taxes	14,887	32,933	(98)
Less: Provision (benefit) for income taxes	778	1,087	(356)
Consolidated net income	14,109	31,846	258
Less: Net income attributable to noncontrolling interest	11	121	91
Net income attributable to Vicor Corporation	<u>\$ 14,098</u>	<u>\$ 31,725</u>	<u>\$ 167</u>
Net income per common share attributable to Vicor Corporation:			
Basic	\$ 0.35	\$ 0.80	\$ 0.00
Diluted	\$ 0.34	\$ 0.78	\$ 0.00
Shares used to compute net income per common share attributable to Vicor Corporation:			
Basic	40,330	39,872	39,228
Diluted	41,677	40,729	39,933

See accompanying notes.

**VICOR CORPORATION**  
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**  
**Years Ended December 31, 2019, 2018 and 2017**  
**(In thousands)**

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Consolidated net income	\$14,109	\$31,846	\$258
Foreign currency translation gains, net of tax benefit (1)	33	98	83
Unrealized (losses) gains on available-for-sale securities, net of tax (1)	<u>(20)</u>	<u>(6)</u>	<u>6</u>
Other comprehensive income	13	92	89
Consolidated comprehensive income	14,122	31,938	347
Less: Comprehensive income attributable to noncontrolling interest	13	129	97
Comprehensive income attributable to Vicor Corporation	<u>\$14,109</u>	<u>\$31,809</u>	<u>\$250</u>

- (1) The deferred tax assets associated with cumulative foreign currency translation gains and cumulative unrealized (losses) gains on available for sale securities are completely offset by a tax valuation allowance as of December 31, 2019, 2018, and 2017. Therefore, there is no income tax benefit (provision) recognized in any of the three years ended December 31, 2019.

See accompanying notes.

**VICOR CORPORATION**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
**Years Ended December 31, 2019, 2018 and 2017**  
(In thousands)

	<u>2019</u>	<u>2018</u>	<u>2017</u>
<b>Operating activities:</b>			
Consolidated net income	\$ 14,109	\$ 31,846	\$ 258
Adjustments to reconcile consolidated net income to net cash provided by (used for) operating activities:			
Depreciation and amortization	10,334	9,254	8,893
Stock-based compensation expense	3,036	3,396	1,735
Increase (decrease) in long-term income taxes payable	329	43	(1)
Deferred income taxes	60	(55)	(172)
Increase (decrease) in long-term deferred revenue	822	(71)	(71)
Increase in other long-term liabilities	—	9	93
Gain on disposal of equipment	(38)	(57)	(14)
(Benefit) provision for doubtful accounts	(144)	65	6
Credit gain on available-for-sale securities	(4)	(7)	(11)
Increase in refundable income taxes	—	—	(736)
Increase in contingent consideration obligations	280	—	650
Change in current assets and liabilities, net	<u>(6,576)</u>	<u>(8,252)</u>	<u>(13,094)</u>
Net cash provided by (used for) operating activities	22,208	36,171	(2,464)
<b>Investing activities:</b>			
Additions to property, plant and equipment	(12,485)	(18,211)	(12,545)
Proceeds from sale of equipment	38	57	14
(Decrease) increase in other assets	(35)	(85)	5
Net cash used for investing activities	<u>(12,482)</u>	<u>(18,239)</u>	<u>(12,526)</u>
<b>Financing activities:</b>			
Proceeds from issuance of Common Stock	4,742	8,656	3,300
Payment of contingent consideration obligations	(237)	(270)	(225)
Noncontrolling interest dividend paid	(139)	—	—
Net cash provided by financing activities	<u>4,366</u>	<u>8,386</u>	<u>3,075</u>
Effect of foreign exchange rates on cash	19	9	(25)
Net increase (decrease) in cash and cash equivalents	14,111	26,327	(11,940)
Cash and cash equivalents at beginning of year	70,557	44,230	56,170
Cash and cash equivalents at end of year	<u>\$ 84,668</u>	<u>\$ 70,557</u>	<u>\$ 44,230</u>
<b>Change in current assets and liabilities, excluding effects of deconsolidation of subsidiary:</b>			
Accounts receivable	\$ 5,714	\$ (8,834)	\$ (9,210)
Inventories, net	(1,812)	(10,827)	(9,309)
Other current assets	(2,895)	176	(357)
Accounts payable and accrued liabilities	(7,339)	7,450	3,186
Accrued severance and other charges	(234)	234	—
Short-term lease payable	12	—	—
Income taxes payable	(653)	410	208
Deferred revenue	631	3,139	2,388
Change in current assets and liabilities, net	<u>\$ (6,576)</u>	<u>\$ (8,252)</u>	<u>\$ (13,094)</u>
<b>Supplemental disclosures:</b>			
Cash paid during the year for income taxes, net of refunds	\$ 2,194	\$ 743	\$ 373

See accompanying notes.

**VICOR CORPORATION**  
**CONSOLIDATED STATEMENTS OF EQUITY**  
**Years Ended December 31, 2019 , 2018 and 2017**  
(In thousands)

	Class B Common Stock	Common Stock	Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Total Vicor Corporation Stockholders' Equity	Noncontrolling Interest	Total Equity
Balance on December 31, 2016	\$ 118	\$ 397	\$ 176,344	\$ 93,438	\$ (561)	\$ (138,927)	\$ 130,809	\$ 208	\$ 131,017
Sales of Common Stock		4	3,296				3,300		3,300
Stock-based compensation expense			1,735				1,735		1,735
Other			20				20		20
Components of comprehensive income, net of tax									
Net income				167			167	91	258
Other comprehensive income					83		83	6	89
Total comprehensive income							250	97	347
Balance on December 31, 2017	118	401	181,395	93,605	(478)	(138,927)	136,114	305	136,419
Sales of Common Stock		6	6,776				6,782		6,782
Stock-based compensation expense			3,396				3,396		3,396
Issuances of stock through employee stock purchase plan		1	1,873				1,874		1,874
Cumulative effect of adoption of new accounting principle (Topic 606)				3,670			3,670		3,670
Other		(6)	17				11		11
Components of comprehensive income, net of tax									
Net income				31,725			31,725	121	31,846
Other comprehensive income					84		84	8	92
Total comprehensive income							31,809	129	31,938
Balance on December 31, 2018	118	402	193,457	129,000	(394)	(138,927)	183,656	434	184,090
Sales of Common Stock		2	2,435				2,437		2,437
Stock-based compensation expense			3,036				3,036		3,036
Issuances of stock through employee stock purchase plan		1	2,304				2,305		2,305
Noncontrolling interest dividend paid								(139)	(139)
Other			19				19		19
Components of comprehensive income, net of tax									
Net income				14,098			14,098	11	14,109
Other comprehensive income					11		11	2	13
Total comprehensive income							14,109	13	14,122
Balance on December 31, 2019	<u>\$ 118</u>	<u>\$ 405</u>	<u>\$ 201,251</u>	<u>\$ 143,098</u>	<u>\$ (383)</u>	<u>\$ (138,927)</u>	<u>\$ 205,562</u>	<u>\$ 308</u>	<u>\$ 205,870</u>

See accompanying notes.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

**1. DESCRIPTION OF BUSINESS**

Vicor Corporation (the “Company” or “Vicor”) designs, develops, manufactures, and markets modular power components and power systems for converting electrical power. The Company also licenses certain rights to its technology in return for recurring royalties. The principal markets for the Company’s power converters and systems are large original equipment manufacturers (“OEMs”), original design manufacturers (“ODMs”) and their contract manufacturers, and smaller, lower volume users, which are broadly distributed across several major market areas.

**2. SIGNIFICANT ACCOUNTING POLICIES**

*Principles of consolidation*

The Consolidated Financial Statements include the accounts of the Company and its subsidiaries. All intercompany transactions and balances have been eliminated upon consolidation.

*Use of estimates*

The preparation of financial statements in conformity with accounting principles generally accepted in the United States (“U.S. GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingencies at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Such estimates and assumptions relate to the useful lives of fixed assets and identified intangible assets, recoverability of long-lived assets, fair value of long-term investments, allowances for doubtful accounts, potential excess, obsolete or unmarketable inventory, potential reserves relating to litigation matters, accrued liabilities, accrued taxes, deferred tax valuation allowances, assumptions pertaining to share-based payments, and other reserves. Actual results could differ from those based on these estimates and assumptions, and such differences may be material to the financial statements.

*Recently Adopted Accounting Standards*

*Lease Accounting*

In February 2016, the Financial Accounting Standards Board (“FASB”) issued new guidance for lease accounting, which requires lessees to recognize leases on the balance sheet and disclose key information about leasing arrangements. The new guidance establishes a right-of-use model (“ROU”) that requires a lessee to recognize a ROU asset and a lease liability on the balance sheet for all leases with a term longer than twelve months. Leases are classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement. For lessors, the guidance modifies the classification criteria and accounting for sales-type and direct financing leases.

The Company adopted the new standard as of January 1, 2019, using the effective date as the date of initial application. As a result, financial information has not been updated and the disclosures required under the new standard have not been provided for dates and periods before January 1, 2019. The Company elected the “package of practical expedients”, which permits companies to not reassess under the new standard lease identification, lease classification and initial direct costs. The Company did not elect the use-of-hindsight or the practical expedient pertaining to land easements, as the latter is not applicable.

The adoption of the standard resulted in the recognition of ROU assets and lease liabilities of approximately \$4,329,000 and \$4,455,000, respectively, as of January 1, 2019. There was no cumulative effect of adopting this new guidance, and the standard did not have a material impact on the Company’s consolidated statements of operations or cash flows for the year ended December 31, 2019.

## VICOR CORPORATION

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

*Revenue Recognition*

In May 2014, the Financial Accounting Standards Board (“FASB”) issued new guidance for revenue recognition (“Topic 606”), which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. The new guidance, which includes several amendments, replaces most of the prior revenue recognition guidance under U.S. GAAP. The Company adopted the new guidance as of January 1, 2018 using the modified retrospective method, as applied to all contracts. As a result, the Company has changed its accounting policy for revenue recognition, as detailed below. The most significant impact of the adoption was on the timing of recognition of sales to the Company’s stocking distributors and including the additional required disclosures under the new standard. Through December 31, 2017, the Company deferred revenue and the related cost of sales on shipments to stocking distributors until the distributors resold the products to their customers. Upon adoption, the Company is no longer permitted to defer revenue until sale by the stocking distributor to the end customer, but rather, is required to estimate the effects of returns and allowances provided to stocking distributors and record revenue at the time of sale to the stocking distributor. In addition, the Company modified the accounting for a contractual arrangement due to a reassessment of the number of performance obligations in the arrangement, and adjusted for the timing of certain royalty revenue. The cumulative effect of adopting this guidance, recorded as an increase to the balance of retained earnings as of January 1, 2018, was approximately \$3,670,000. The comparative information for the year ended December 31, 2017, including disclosures, has not been restated and continues to be reported under the accounting standards in effect for that period.

The following tables summarize the impacts of adopting the new revenue recognition guidance on certain components of the Company’s consolidated financial statements (in thousands):

## a) Consolidated Balance Sheet Items

	As of December 31, 2018		
	As reported	Adjustments	Balances without adoption of Topic 606
Accounts receivable, net	\$ 43,673	\$ (72)	\$ 43,601
Inventories, net	47,370	(110)	47,260
Total assets	221,068	(182)	220,886
Income taxes payable	710	(59)	651
Deferred revenue	5,069	5,768	10,837
Sales allowances	548	(483)	65
Total liabilities	36,978	5,226	42,204
Retained earnings	129,000	(5,408)	123,592
Total equity	184,090	(5,408)	178,682
Total liabilities and equity	221,068	(182)	220,886

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

## b) Consolidated Statement of Operations Items

	<u>Year Ended December 31, 2018</u>		
	<u>As reported</u>	<u>Adjustments</u>	<u>Balances without adoption of Topic 606</u>
Net revenues	\$ 291,220	\$(3,946)	\$ 287,274
Cost of revenues	152,249	(2,149)	150,100
Gross margin	138,971	(1,797)	137,174
Income before income taxes	32,933	(1,797)	31,136
Provision for income taxes	1,087	(59)	1,028
Consolidated net income	31,846	(1,738)	30,108
Net income attributable to Vicor Corporation	31,725	(1,738)	29,987

The impact of the adoption of the new revenue recognition standard on the consolidated statements of comprehensive income (loss) and cash flows for the year ended December 31, 2018 was not material.

Prior to January 1, 2018

Product revenue was recognized in the period when persuasive evidence of an arrangement with a customer existed, the products were shipped and title was transferred to the customer, the price was fixed or determinable, and collection was considered probable.

The Company deferred revenue and the related cost of sales on shipments to stocking distributors until the distributors resold the products to their customers. The agreements with these stocking distributors allowed them to receive price adjustment credits or to return qualifying products for credit, as determined by the Company, in order to reduce the amounts of slow moving, discontinued, or obsolete product from their inventory. These stocking distributors were also granted price adjustment credits in the event of a price decrease subsequent to the date the product was shipped and invoiced to the stocking distributor. Given the uncertainties associated with the levels of price adjustment credits to be granted to stocking distributors, the sales price to the stocking distributor was not fixed or determinable until the stocking distributor resold the products to its customers. Therefore, the Company deferred revenue and the related cost of sales on shipments to stocking distributors until the stocking distributors resold the products to their customers. Accordingly, the Company's revenue fully reflected end-customer purchases and was not impacted by stocking distributor inventory levels. Agreements with stocking distributors limited returns of qualifying product to the Company to a certain percentage of the value of the Company's shipments to that stocking distributor during the prior quarter. In addition, stocking distributors were allowed to return unsold products if the Company terminated the relationship with the stocking distributor. Title to the inventory transferred to the stocking distributor at the time of shipment or delivery to the stocking distributor. Payments from the stocking distributors were due in accordance with the Company's standard payment terms. These payment terms were not contingent upon the stocking distributors' sale of the products to their end-customers. Upon title transfer to stocking distributors, the Company reduced inventory for the cost of goods shipped, the margin (i.e., revenues less cost of revenues) was recorded as deferred revenue, and an account receivable was recorded.

The Company evaluated revenue arrangements with potential multi-element deliverables to determine if there were more than one unit of accounting. A deliverable constituted a separate unit of accounting when it had standalone value and there were no customer-negotiated refund or return rights for the undelivered elements. The Company entered into arrangements containing multiple elements that could include a combination of



**VICOR CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

non-recurring engineering services (“NRE”), prototype units, and production units. The Company determined NRE and prototype units represented one unit of accounting and production units represented a separate unit of accounting, based on an assessment of the respective standalone value. The Company deferred revenue recognition for NRE and prototype units until completion of the final milestone under the NRE arrangement, which was generally the delivery of the prototype. Recognition generally took place within six to twelve months of the initiation of the arrangement. Revenue for the production units was recognized upon shipment, consistent with other product revenue summarized above.

License fees were recognized as earned. The Company recognized revenue on such arrangements only when the contract was signed, the license term had begun, all obligations had been delivered to the customer, and collection was probable.

***Foreign currency translation***

The financial statements of Vicor Japan Company, Ltd. (“VJCL”), a majority-owned subsidiary, for which the functional currency is the Japanese Yen, have been translated into U.S. Dollars using the exchange rate in effect at the balance sheet date for balance sheet amounts and the average exchange rates in effect during the year for income statement amounts. The gains and losses resulting from the changes in exchange rates from year to year have been reported in other comprehensive income.

Transaction gains and losses resulting from the remeasurement of foreign currency denominated assets and liabilities of the Company’s foreign subsidiaries where the functional currency is the U.S. Dollar are included in other income (expense), net. Foreign currency gains (losses) included in other income (expense), net, were approximately \$(108,000), \$(260,000), and \$323,000 in 2019, 2018, and 2017, respectively.

***Cash and cash equivalents***

Cash and cash equivalents include funds held in disbursement (i.e., checking) and money market accounts, certificates of deposit, and debt securities with maturities of less than three months at the time of purchase. Cash and cash equivalents are valued at cost, approximating market value. The Company’s money market securities, which are classified as cash equivalents on the balance sheet, are purchased and redeemed at par value. Their estimated fair value is equal to their cost, and, due to the nature of the securities and their classification as cash equivalents, there are no unrealized gains or losses recorded at the balance sheet dates.

***Long-term investment***

The Company’s principal sources of liquidity are its existing balances of cash and cash equivalents, as well as cash generated from operations. Consistent with the guidelines of the Company’s investment policy, the Company can invest, and has historically invested, its cash balances in demand deposit accounts, money market funds, and auction rate securities meeting certain quality criteria. The Company’s long-term investment is subject to credit, liquidity, market, and interest rate risk.

The Company’s long-term investment, which is a debt security, is classified as an available-for-sale security. The available-for-sale security is recorded at fair value, with unrealized gains and losses, net of tax, attributable to credit loss recorded through the Consolidated Statement of Operations and unrealized gains and losses, net of tax, attributable to other non-credit factors recorded in “Accumulated other comprehensive income (loss),” a component of Total Equity. In determining the amount of credit loss, the Company compares the present value of cash flows expected to be collected to the amortized cost basis of the security, considering credit default risk probabilities and changes in credit ratings, among other factors.

**VICOR CORPORATION****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The amortized cost of the debt security is adjusted for amortization of premiums and accretion of discounts to maturity, the net amount of which, along with interest and realized gains and losses, is included in “Other income (expense), net” in the Consolidated Statements of Operations. The Company periodically evaluates the investment to determine if impairment is required, whether an impairment is other than temporary, and the measurement of an impairment loss. The Company considers a variety of impairment indicators such as, but not limited to, a significant deterioration in the earnings performance, credit rating, or asset quality of the investment.

***Fair value measurements***

The Company accounts for certain financial assets at fair value, defined as the price that would be received to sell an asset or paid to transfer a liability (i.e., an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. A three-level hierarchy is used to show the extent and level of judgment used to estimate fair value measurements:

- |         |  |
|---------|--|
| Level 1 | Inputs used to measure fair value are unadjusted quoted prices available in active markets for the identical assets or liabilities as of the reporting date.   |
| Level 2 | Inputs used to measure fair value, other than quoted prices included in Level 1, are either directly or indirectly observable as of the reporting date through correlation with market data, including quoted prices for similar assets and liabilities in active markets and quoted prices in inactive markets. Level 2 also includes assets and liabilities valued using models or other pricing methodologies that do not require significant judgment since the input assumptions used in the models, such as interest rates and volatility factors, are corroborated by readily observable data from actively quoted markets for substantially the full term of the financial instrument. |
| Level 3 | Inputs used to measure fair value are unobservable inputs supported by little or no market activity and reflect the use of significant management judgment. These values are generally determined using pricing models for which the assumptions utilize management’s estimates of market participant assumptions.   |

The carrying amounts of cash and cash equivalents, accounts receivable and accounts payable approximate fair value because of the short maturity of these financial instruments.

***Inventories***

Inventories are valued at the lower of cost (determined using the first-in, first-out method) or net realizable value. Fixed production overhead is allocated to the inventory cost per unit based on the normal capacity of the production facilities. Abnormal production costs, including fixed cost variances from normal production capacity, if any, are charged to cost of revenues in the period incurred. All shipping and handling costs incurred in connection with the sale of products are included in cost of revenues.

Inventory estimated to be excess, obsolete, or unmarketable is written down to net realizable value. The Company’s estimation process for assessing net realizable value is based upon forecasted future usage which is derived based on backlog, historical consumption and expected market conditions. If the Company’s estimated demand and/or market expectations were to change or if product sales were to decline, the Company’s estimation process may cause larger inventory reserves to be recorded, resulting in larger charges to cost of revenues.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

***Concentrations of risk***

Financial instruments potentially subjecting the Company to significant concentrations of credit risk consist principally of cash and cash equivalents, of which a significant portion is held by one financial institution, its long-term investment, and trade accounts receivable. The Company maintains cash and cash equivalents and certain other financial instruments with various large financial institutions. Generally, amounts invested with these financial institutions are in excess of federal deposit insurance limits. The Company has not experienced any losses in such accounts, and management believes the Company is not exposed to significant credit risk. The Company's long-term investment as of December 31, 2019 consists of a single auction rate security with a par value of \$3,000,000, which is collateralized by student loans. It is a highly rated (Aaa/AA+) municipal and corporate debt security. Through December 31, 2019, auctions held for the Company's auction rate security have failed. The funds associated with an auction rate security that has failed auction may not be accessible until a successful auction occurs, a buyer is found outside of the auction process, the security is called, or the underlying securities have matured. If the credit rating of the issuer of the auction rate security held deteriorates, the Company may be required to adjust the carrying value of the investment for an other-than-temporary decline in value through an impairment charge. The Company's investment policy, approved by the Board of Directors, limits the amount the Company may invest in any issuer, thereby reducing credit risk concentrations.

The Company's products are sold worldwide to customers ranging from smaller, independent manufacturers of highly specialized electronic devices, to larger OEMs, ODMs and their contract manufacturers. See Note 19, *Segment Information*, for a discussion of a change to segment reporting in the second quarter of 2019. The Company's Brick Products' customers are primarily concentrated in the following industries: aerospace and defense electronics, industrial automation, industrial equipment, instrumentation and test equipment, and transportation (notably in rail and heavy equipment applications). The Company's Advanced Products' customers are concentrated in the data center and hyperscaler segments of enterprise computing, in which the Company's products are used for voltage distribution on server motherboards, in server racks, and across datacenter infrastructure, although we also target applications in aerospace and aviation, defense electronics, industrial automation, instrumentation, test equipment, solid state lighting, telecommunications and networking infrastructure, and vehicles (notably in the autonomous driving, electric vehicle, and hybrid vehicle niches of the vehicle segment). While, overall, the Company has a broad customer base and sells into a variety of industries, a substantial portion of the Company's revenue from its Advanced Products line has been derived from a limited number of customers. This concentration of revenue is a reflection of the relatively early stage of adoption of the technologies, architectures and products offered in the Advanced Products line, and the Company's strategy of targeting market leading innovators as initial customers for its Advanced Products. Concentrations of credit risk with respect to trade accounts receivable are limited due to the number of entities comprising the Company's customer base. As of December 31, 2019 and 2018, one customer accounted for approximately 14.3% of trade account receivables.

Components and materials used in the Company's products are purchased from a variety of vendors. While most of the components are available from multiple sources, some key components for certain Advanced Products, in particular, are supplied by single vendors. In instances of single source items, the Company maintains levels of inventories management considers appropriate to enable meeting the delivery requirements of customers. If suppliers or subcontractors cannot provide their products or services on time or to the required specifications, the Company may not be able to meet the demand for its products and its delivery times may be negatively affected.

***Long-lived assets***

The Company reviews property, plant and equipment and finite-lived intangible assets for impairment whenever events or changes in circumstances indicate the carrying value of such assets may not be recoverable.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Management determines whether the carrying value of an asset or asset group is recoverable based on comparison to the undiscounted expected future cash flows the assets are expected to generate over their remaining economic lives. If an asset value is not recoverable, the impairment loss is equal to the amount by which the carrying value of the asset exceeds its fair value, which is determined by either a quoted market price, if any, or a value determined by utilizing a discounted cash flow technique. Evaluation of impairment of long-lived assets requires estimates of future operating results that are used in the preparation of the expected future undiscounted cash flows. Actual future operating results and the remaining economic lives of our long-lived assets could differ from the estimates used in assessing the recoverability of these assets. These differences could result in impairment charges, which could be material.

***Intangible assets***

Values assigned to patents are amortized using the straight-line method over periods ranging from three to 20 years. Patents and other intangible assets are included in "Other assets" in the accompanying Consolidated Balance Sheets.

***Advertising expense***

The cost of advertising is expensed as incurred. The Company incurred approximately \$2,749,000, \$2,610,000, and \$2,150,000 in advertising costs during 2019, 2018, and 2017, respectively.

***Product warranties***

The Company generally offers a two-year warranty for all of its products, though it has extended the warranty period to three years for certain military grade products sold after January 1, 2017. The Company is party to a limited number of supply agreements with certain customers contractually committing the Company to warranty and indemnification requirements exceeding those to which the Company has been exposed in the past. The Company provides for the estimated cost of product warranties at the time product revenue is recognized. Factors influencing the Company's warranty reserves include the number of units sold, historical and anticipated rates of warranty returns, and the cost per return. The Company periodically assesses the adequacy of warranty reserves and adjusts the amounts as necessary. Warranty obligations are included in "Accrued expenses" in the accompanying Consolidated Balance Sheets.

***Revenue recognition***

Subsequent to January 1, 2018, revenue is recognized when control of the promised goods or services is transferred to a customer, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. Sales, value add, and other taxes collected concurrent with revenue producing activities are excluded from revenue. The expected costs associated with product warranties continue to be recognized at the time product revenue is recognized. Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of revenues.

The Company's primary source of net revenue comes from the sale of products, which are modular power components and power systems for converting, regulating and controlling electric current. The principal customers for the Company's power converters and systems are large OEMs, ODMs and the original design manufacturers and contract manufacturers serving them, and smaller, lower volume users, which are broadly distributed across several major market areas. The Company recognizes revenue for product sales at a point in time following the transfer of control of such products to the customer, which typically occurs upon shipment or

**VICOR CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

delivery, depending on the terms of the underlying contract. The Company previously deferred revenue and the related cost of revenues on shipments to stocking distributors until the distributors resold the products to their customers. The Company now records revenue for such transactions at the time of sale to the stocking distributor. The Company establishes sales allowances for estimated future product returns including distributor returns and price adjustment credits, primarily based upon historical and anticipated rates of product returns and allowances.

Certain contracts with customers contain multiple performance obligations, which typically may include a combination of NRE, prototype units, and production units. For these contracts, the individual performance obligations are accounted for separately if they are distinct. Generally, the Company has determined the NRE and prototype units represent one distinct performance obligation and the production units represent a separate distinct performance obligation. For such arrangements, revenue is allocated to each performance obligation based on its relative standalone selling price, based on prices charged to customers or using the expected cost plus a margin approach. The Company defers revenue recognition for NRE and prototype units until the point in time at which the final milestone under the NRE arrangement is completed and control is transferred to the customer, which is generally the shipment or delivery of the prototype. Revenue for production units is recognized upon shipment or delivery, consistent with product revenue summarized above.

The Company licenses its intellectual property under right to use licenses, in which royalties due to the Company are based upon a percentage of the licensee's sales. The Company utilizes the exception under the revenue recognition guidance for the recognition of sales- or usage-based royalties, in which the royalties are not recognized until the later of when 1) the customer's subsequent sales or usages occur, or 2) the performance obligation to which some or all of the sales- or usage-based royalty has been allocated is satisfied or partially satisfied.

Accounts receivable includes amounts billed and currently due from customers. The amounts due are stated at their estimated realizable value. The Company's payment terms vary by the type and location of its customers and the products or services offered, although terms generally include a requirement of payment within 30 to 60 days. The Company maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments, based on assessments of customers' credit-risk profiles and payment histories. If the financial condition of the Company's customers were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required. The Company does not require collateral from its customers, although there have been circumstances when the Company has required cash in advance (i.e., a partial down-payment) to facilitate orders in excess of a customer's established credit limit. To date, such amounts have not been material.

The Company records deferred revenue, which represents a contract liability, when cash payments are received or due in advance of performance under a contract with a customer. During the years ended December 31, 2019 and 2018, the Company recognized revenue of approximately \$76,000 and \$991,000, respectively, that was included in deferred revenue at the beginning of the respective period.

The Company applies the practical expedient for the incremental costs of obtaining a contract for sales commissions, which are expensed when incurred because the amortization period is generally less than one year. These costs are included in selling, general and administrative expenses.

The Company also applies another practical expedient and does not disclose the value of unsatisfied performance obligations for contracts with an original expected length of one year or less.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**Legal Costs**

Legal costs in connection with litigation are expensed as incurred.

**Net income per common share**

The Company computes basic net income per share using the weighted average number of common shares outstanding and diluted net income per share using the weighted average number of common shares outstanding plus the effect of outstanding dilutive stock options, if any. The following table sets forth the computation of basic and diluted net income per share for the years ended December 31 (in thousands, except per share amounts):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
<b>Numerator:</b>			
Net income attributable to Vicor Corporation	<u>\$ 14,098</u>	<u>\$ 31,725</u>	<u>\$ 167</u>
<b>Denominator:</b>			
Denominator for basic net income per share-weighted average shares (1)	40,330	39,872	39,228
Effect of dilutive securities:			
Employee stock options (2)	<u>1,347</u>	<u>857</u>	<u>705</u>
Denominator for diluted net income per share-adjusted weighted-average shares and assumed conversions (3)	<u>41,677</u>	<u>40,729</u>	<u>39,933</u>
Basic net income per share	<u>\$ 0.35</u>	<u>\$ 0.80</u>	<u>\$ 0.00</u>
Diluted net income per share	<u>\$ 0.34</u>	<u>\$ 0.78</u>	<u>\$ 0.00</u>

- (1) Denominator represents weighted average number of Common Shares and Class B Common Shares outstanding.
- (2) Options to purchase 164,367, 67,247 and 53,913 shares of Common Stock in 2019, 2018, and 2017, respectively, were not included in the calculation of net income per share as the effect would have been antidilutive.
- (3) Denominator represents weighted average number of Common Shares and Class B Common Shares outstanding for the year, adjusted to include the dilutive effect, if any, of outstanding options.

**Income taxes**

Deferred tax assets and liabilities are determined based on the differences between the financial reporting and tax bases of assets and liabilities and are measured using the enacted income tax rates and laws expected to be in effect when the temporary differences are expected to reverse. Deferred tax assets are reduced by a valuation allowance if management determines it is more likely than not that some portion or all of the deferred tax assets will not be realized. All deferred tax assets and liabilities are classified as noncurrent.

The Company follows a two-step process to determine the amount of tax benefit to recognize. The first step is to evaluate the tax position to determine the likelihood it would be sustained upon examination by a tax authority. If the tax position is deemed "more-likely-than-not" to be sustained, the second step is to assess the tax position to determine the amount of tax benefit to be recognized in the financial statements. The amount of the benefit that may be recognized is the largest amount that possesses greater than 50 percent likelihood of being

**VICOR CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

realized upon ultimate settlement. If the tax position does not meet the “more-likely-than-not” threshold, then it is not recognized in the financial statements. Additionally, the Company accrues interest and penalties, if any, related to unrecognized tax benefits as a component of income tax expense. The unrecognized tax benefits, including accrued interest and penalties, if any, are included in “Long-term income taxes payable” in the accompanying Consolidated Balance Sheets.

***Stock-based compensation***

The Company uses the Black-Scholes option-pricing model to calculate the fair value of stock option awards, whether they possess time-based vesting provisions or performance-based vesting provisions, and awards granted under the Vicor Corporation 2017 Employee Stock Purchase Plan (“ESPP”), as of their grant date. For stock options with time-based vesting provisions, the calculated compensation expense, net of expected forfeitures, is recognized on a straight-line basis over the service period of the award, which is generally five years for stock options. For stock options with performance-based vesting provisions, recognition of compensation expense, net of expected forfeitures, commences if and when the achievement of the performance criteria is deemed probable. For stock options with performance-based vesting provisions, compensation expense, net of expected forfeitures, when recognized, is recognized over the relevant performance period.

***Comprehensive income (loss)***

The components of comprehensive income (loss) include, in addition to net income (loss), unrealized gains and losses on investments, net of tax and foreign currency translation adjustments related to VJCL, net of tax.

***Impact of recently issued accounting standards***

In December 2019, the FASB issued guidance designed to simplify the accounting for income taxes by eliminating certain exceptions to the general principles in Topic 740, *Income Taxes*, and also improve consistent application of and simplify U.S. GAAP for other areas of Topic 740 by clarifying and amending existing guidance. This new guidance will be effective for the Company for its fiscal year beginning after December 15, 2020, with early adoption permitted. The Company has not yet determined the impact this new guidance will have on its consolidated financial statements and disclosures

In August 2018, the FASB issued guidance which modifies the disclosure requirements on fair value measurements under Topic 820, Fair Value Measurements, including the consideration of costs and benefits. The new guidance is effective for all entities for annual and interim periods in fiscal years beginning after December 15, 2019, with early adoption permitted. It is required to be applied on a retrospective approach with certain elements being adopted prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. The Company does not expect the adoption of the new guidance will have a material impact on its consolidated financial statements and related disclosures.

In June 2016, the FASB issued new guidance which will require measurement and recognition of expected credit losses on certain types of financial instruments. It also modifies the impairment model for available-for-sale debt securities and provides for a simplified accounting model for purchased financial assets with credit deterioration since their origination. The new guidance is effective for interim and annual reporting periods beginning after December 15, 2019, with early adoption permitted. It is required to be applied on a modified-retrospective approach with certain elements being adopted prospectively. The Company does not expect the adoption of the new guidance will have a material impact on its consolidated financial statements and related disclosures.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Other new pronouncements issued but not effective until after December 31, 2019 are not expected to have a material impact on the Company's consolidated financial statements.

**3. INVENTORIES**

Inventories as of December 31 were as follows (in thousands):

	<u>2019</u>	<u>2018</u>
Raw materials	\$ 35,901	\$ 37,696
Work-in-process	5,184	4,740
Finished goods	8,102	4,934
	<u>\$ 49,187</u>	<u>\$ 47,370</u>

**4. LONG-TERM INVESTMENT**

As of December 31, 2019 and 2018, the Company held one auction rate security with a par value of \$3,000,000, purchased through and held in custody by a broker-dealer affiliate of Bank of America, N.A., that has experienced failed auctions (the "Failed Auction Security") since February 2008. The Failed Auction Security held by the Company is Aaa/AA+ rated by major credit rating agencies, is collateralized by student loans, and is guaranteed by the U.S. Department of Education under the Federal Family Education Loan Program. Management is not aware of any reason to believe the issuer of the Failed Auction Security is presently at risk of default. Through December 31, 2019, the Company has continued to receive interest payments on the Failed Auction Security in accordance with the terms of its indenture. Management believes the Company ultimately should be able to liquidate the Failed Auction Security without significant loss primarily due to the overall quality of the issue held and the collateral securing the substantial majority of the underlying obligation. However, current conditions in the auction rate securities market have led management to conclude the recovery period for the Failed Auction Security exceeds 12 months. As a result, the Company continued to classify the Failed Auction Security as long-term as of December 31, 2019.

The following is a summary of the available-for-sale security (in thousands):

	<u>Cost</u>	<u>Gross Unrealized Gains</u>	<u>Gross Unrealized Losses</u>	<u>Estimated Fair Value</u>
<b>December 31, 2019</b>				
Failed Auction Security	<u>\$3,000</u>	<u>\$ —</u>	<u>\$ 490</u>	<u>\$ 2,510</u>
<b>December 31, 2018</b>				
Failed Auction Security	<u>\$3,000</u>	<u>\$ —</u>	<u>\$ 474</u>	<u>\$ 2,526</u>

As of December 31, 2019 and 2018, the Failed Auction Security had been in an unrealized loss position for greater than 12 months.

The amortized cost and estimated fair value of the available-for-sale security on December 31, 2019, by contractual maturities, are shown below (in thousands):

	<u>Cost</u>	<u>Estimated Fair Value</u>
Due in twenty to forty years	<u>\$3,000</u>	<u>\$ 2,510</u>



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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Based on the fair value measurements described in Note 5, the fair value of the Failed Auction Security on December 31, 2019, with a par value of \$3,000,000, was estimated by the Company to be approximately \$2,510,000. The gross unrealized loss of \$490,000 on the Failed Auction Security consists of two types of estimated loss: an aggregate credit loss of \$37,000 and an aggregate temporary impairment of \$453,000. In determining the amount of credit loss, the Company compared the present value of cash flows expected to be collected to the amortized cost basis of the security, considering credit default risk probabilities and changes in credit ratings as significant inputs, among other factors (see Note 5).

The following table represents a rollforward of the activity related to the credit loss recognized in earnings on the available-for-sale auction rate security held by the Company for the years ended December 31 (in thousands):

	2019	2018	2017
Balance at the beginning of the period	\$ 41	\$ 48	\$ 59
Reductions in the amount related to credit gain for which other-than-temporary impairment was not previously recognized	(4)	(7)	(11)
Balance at the end of the period	<u>\$ 37</u>	<u>\$ 41</u>	<u>\$ 48</u>

At this time, the Company has no intent to sell the Failed Auction Security and does not believe it is more likely than not the Company will be required to sell the security. If current market conditions deteriorate further, the Company may be required to record additional unrealized losses. If the credit rating of the security deteriorates, the Company may be required to adjust the carrying value of the investment through impairment charges recorded in the Consolidated Statement of Operations, and any such impairment adjustments may be material.

Based on the Company's ability to access cash and cash equivalents and its expected operating cash flows, management does not anticipate the current lack of liquidity associated with the Failed Auction Security held will affect the Company's ability to execute its current operating plan.

**5. FAIR VALUE MEASUREMENTS**

The Company accounts for certain financial assets at fair value, defined as the price that would be received to sell an asset or paid to transfer a liability (i.e., an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. As such, fair value is a market-based measurement that should be determined based on assumptions market participants would use in pricing an asset or liability. A three-level hierarchy is used to show the extent and level of judgment used to estimate fair value measurements.

Assets and liabilities measured at fair value on a recurring basis included the following as of December 31, 2019 (in thousands):

	Quoted Prices in Active Markets (Level 1)	Using Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total Fair Value as of December 31, 2019
<b>Cash equivalents:</b>				
Money market funds	\$ 9,630	\$ —	\$ —	\$ 9,630
<b>Long-term investments:</b>				
Failed Auction Security	—	—	2,510	2,510
<b>Liabilities:</b>				
Contingent consideration obligations	—	—	(451)	(451)

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Assets measured at fair value on a recurring basis included the following as of December 31, 2018 (in thousands):

	Quoted Prices in Active Markets (Level 1)	Using Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total Fair Value as of December 31, 2018
<b>Cash equivalents:</b>				
Money market funds	\$ 9,433	\$ —	\$ —	\$ 9,433
<b>Long-term investments:</b>				
Failed Auction Security	—	—	2,526	2,526
<b>Liabilities:</b>				
Contingent consideration obligations	—	—	(408)	(408)

As of December 31, 2019, there was insufficient observable auction rate security market information available to determine the fair value of the Failed Auction Security using Level 1 or Level 2 inputs. As such, the Company's investment in the Failed Auction Security was deemed to require valuation using Level 3 inputs. Management, after consulting with advisors, valued the Failed Auction Security using analyses and pricing models similar to those used by market participants (i.e., buyers, sellers, and the broker-dealers responsible for execution of the Dutch auction pricing mechanism by which each issue's interest rate was set). Management utilized a probability weighted discounted cash flow ("DCF") model to determine the estimated fair value of this security as of December 31, 2019. The major assumptions used in preparing the DCF model included: estimates for the amount and timing of future interest and principal payments based on default probability assumptions used to measure the credit loss of 1.0%; the rate of return required by investors to own this type of security in the current environment, which we estimate to be 5.0% above the risk free rate of return; and an estimated time frame of three to five years for successful auctions for this type of security to occur. In making these assumptions, management considered relevant factors including: the formula applicable to each security defining the interest rate paid to investors in the event of a failed auction (the "Penalty Rate"); forward projections of the interest rate benchmarks specified in such formulas; the likely timing of principal repayments; the probability of full repayment considering the guarantees by the U.S. Department of Education of the underlying student loans, guarantees by other third parties, and additional credit enhancements provided through other means; and publicly available pricing data for recently issued student loan asset-backed securities not subject to auctions. In developing its estimate of the rate of return required by investors to own these securities, management compared the Penalty Rate of the Failed Auction Security with yields of actively traded long-term bonds with similar characteristics and, reflecting the limited liquidity for auction rate securities and the discounts to par value seen in recent tender offers by issuers and arm's length market transactions between informed buyers and sellers, estimated the implied yield (i.e., the discount to par value) necessary to complete a sale of the Failed Auction Security. Management has calculated an increase or decrease in the liquidity risk premium of 5.0% referenced above of 1.0% (i.e., 100 basis points) as used in the model, would decrease or increase, respectively, the fair value of the Failed Auction Security by approximately \$100,000.

The significant unobservable inputs used in the fair value measurement of the Company's Failed Auction Security are the cumulative probability of earning the maximum rate until maturity, the cumulative probability of principal return prior to maturity, the cumulative probability of default, the liquidity risk premium, and the recovery rate in default. Significant increases (decreases) in any of those inputs in isolation would result in changes in fair value measurement. Significant increases (decreases) in the cumulative probability of earning the maximum rate until maturity, the cumulative probability of principal return prior to maturity, and the recovery

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

rate in default would result in a higher (lower) fair value measurement, while increases (decreases) in the cumulative probability of default and the liquidity risk premium would result in a (lower) higher fair value measurement.

Generally, the interrelationships are such that a change in the assumption used for the cumulative probability of principal return prior to maturity is accompanied by a directionally similar change in the assumption used for the cumulative probability of earning the maximum rate until maturity and a directionally opposite change in the assumptions used for the cumulative probability of default and the liquidity risk premium. The recovery rate in default is somewhat independent and based upon the securities' specific underlying assets and published recovery rate indices.

Quantitative information about Level 3 fair value measurements as of December 31, 2019 are as follows (dollars in thousands):

	<u>Fair Value</u>	<u>Valuation Technique</u>	<u>Unobservable Input</u>	<u>Weighted Average</u>
Failed Auction Security	\$2,510	Discounted cash flow	Cumulative probability of earning the maximum rate until maturity	0.11%
			Cumulative probability of principal return prior to maturity	93.66%
			Cumulative probability of default	6.24%
			Liquidity risk premium	5.00%
			Recovery rate in default	40.00%

The change in the estimated fair value calculated for the investment valued on a recurring basis utilizing Level 3 inputs (i.e., the Failed Auction Security) for the year ended December 31, 2019 was as follows (in thousands):

Balance at the beginning of the period	\$2,526
Credit gain on available-for-sale security included in Other income (expense), net	4
Gain included in Other comprehensive income (loss)	(20)
Balance at the end of the period	<u>\$2,510</u>

The Company has classified its contingent consideration obligations as Level 3 because the fair value for this liability was determined using unobservable inputs. The liability is based on estimated sales of legacy products over the period of royalty payments at the royalty rate (see Note 9), discounted using the Company's estimated cost of capital.

The change in the estimated fair value calculated for the liabilities valued on a recurring basis utilizing Level 3 inputs (i.e., the Contingent consideration obligations) for the year ended December 31, 2019 was as follows (in thousands):

Balance at the beginning of the period	\$ 408
Increase in estimated contingent consideration obligations (see Note 9)	280
Payments	(237)
Balance at the end of the period	<u>\$ 451</u>

There were no transfers between Level 1 and Level 2 of the fair value hierarchy during the year ended December 31, 2019.

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**6. PROPERTY, PLANT AND EQUIPMENT**

Property, plant and equipment are stated at cost and are depreciated and amortized over a period of three to 39 years generally under the straight-line method for financial reporting purposes and accelerated methods for income tax purposes.

Property, plant and equipment as of December 31 were as follows (in thousands):

	<u>2019</u>	<u>2018</u>
Land	\$ 3,600	\$ 2,089
Buildings and improvements	45,791	45,170
Machinery and equipment	220,405	208,135
Furniture and fixtures	8,231	7,239
Construction in-progress and deposits	4,362	9,251
	<u>282,389</u>	<u>271,884</u>
Accumulated depreciation and amortization	(229,698)	(221,452)
Right of use asset — net	4,261	—
Net balance	<u>\$ 56,952</u>	<u>\$ 50,432</u>

Depreciation expense for the years ended December 31, 2019, 2018 and 2017 was approximately \$10,226,000, \$9,135,000, and \$8,763,000 respectively. As of December 31, 2019, the Company had approximately \$3,222,000 of capital expenditure commitments.

**7. INTANGIBLE ASSETS**

Patent costs, which are included in Other assets in the accompanying Consolidated Balance Sheets, as of December 31 were as follows (in thousands):

	<u>2019</u>	<u>2018</u>
Patent costs	\$ 1,992	\$ 1,979
Accumulated amortization	(1,483)	(1,380)
	<u>\$ 509</u>	<u>\$ 599</u>

Definite lived intangible assets, such as patent rights, are amortized and tested for impairment if a triggering event occurs.

Amortization expense was approximately \$108,000, \$119,000 and \$130,000 in 2019, 2018 and 2017, respectively. The estimated future amortization expense from patent assets held as of December 31, 2019, is projected to be \$104,000, \$95,000, \$63,000, \$52,000 and \$44,000, in fiscal years 2020, 2021, 2022, 2023, and 2024, respectively.

## VICOR CORPORATION

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

**8. PRODUCT WARRANTIES**

Product warranty activity for the years ended December 31 was as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Balance at the beginning of the period	\$ 268	\$ 290	\$ 214
Accruals for warranties for products sold in the period	250	173	346
Fulfillment of warranty obligations	(140)	(117)	(194)
Revisions of estimated obligations	(6)	(78)	(76)
Balance at the end of the period	<u>\$ 372</u>	<u>\$ 268</u>	<u>\$ 290</u>

**9. CONTINGENT CONSIDERATION OBLIGATIONS**

In connection with noncontrolling interest transactions completed in 2015 and 2016, the Company entered into arrangements with the selling principals such that the principals would receive quarterly royalty payments through June 30, 2021 for the sale of certain legacy products manufactured by the remaining Vicor Custom Power entities. The Company increased the liability by approximately \$280,000 in the fourth quarter of 2019 based on a reassessment of the total remaining obligation under the royalty arrangements. The amount is included in selling, general, and administrative expenses.

**10. STOCKHOLDERS' EQUITY**

Each share of Common Stock entitles the holder thereof to one vote on all matters submitted to the stockholders.

Each share of Class B Common Stock entitles the holder thereof to ten votes on all such matters.

Shares of Class B Common Stock are not transferable by a stockholder except to or among the stockholder's spouse, certain of the stockholder's relatives, and certain other defined transferees. Class B Common Stock is not listed or traded on any exchange or in any market. Class B Common Stock is convertible at the option of the holder thereof at any time and without cost to the stockholder into shares of Common Stock on a one-for-one basis.

In November 2000, the Board of Directors of the Company authorized the repurchase of up to \$30,000,000 of the Company's Common Stock (the "November 2000 Plan"). The plan authorizes the Company to make repurchases from time to time in the open market or through privately negotiated transactions. The timing of this program and the amount of the stock that may be repurchased is at the discretion of management based on its view of economic and financial market conditions. There were no repurchases under the November 2000 Plan in 2019, 2018, and 2017. On December 31, 2019, the Company had approximately \$8,541,000 available for share repurchases under the November 2000 Plan.

Dividends are declared at the discretion of the Company's Board of Directors and depend on actual cash from operations, the Company's financial condition and capital requirements and any other factors the Company's Board of Directors may consider relevant at the time. Common Stock and Class B Common Stock participate in dividends and earnings equally.

During the year ended December 31, 2019, three subsidiaries paid a total of \$3,602,000 in cash dividends, of which \$3,463,000 was paid to the Company and eliminated in consolidation and \$139,000 was paid to outside shareholders. Dividends paid to outside shareholders are accounted for as a reduction in noncontrolling interest. During the year ended December 31, 2018, one subsidiary paid a total of \$632,000 in cash dividends, all of which was paid to the Company.

**VICOR CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

On December 31, 2019, 2018, and 2017, there were 20,895,747, 21,233,659, and 21,976,340, respectively, shares of Vicor Common Stock reserved for issuance upon exercise of Vicor stock options, upon conversion of Class B Common Stock and under the ESPP.

**11. REVENUES**

Revenue from the sale of Advanced Products represents the sum of third-party sales of the products sold under the Advanced Products line, which were sold under the former Picor and VI Chip operating segments during periods prior to the second quarter of 2019. Revenue from the sale of Brick Products represents the sum of third-party sales of the products sold under the Brick Products line, which were also sold under the former Brick Business Unit operating segment, inclusive of such sales of our Vicor Custom Power and VJCL subsidiaries. See Note 19, *Segment Information*, for a discussion of changes to the Company's segment reporting.

The following tables present the Company's net revenues disaggregated by geography based on the location of the customer, by product line (in thousands):

	Twelve Months Ended December 31, 2019		
	Brick Products	Advanced Products	Total
United States	\$ 98,822	\$ 22,806	\$ 121,628
Europe	22,172	5,090	27,262
Asia Pacific	62,720	46,107	108,827
All other	4,182	1,078	5,260
	<u>\$ 187,896</u>	<u>\$ 75,081</u>	<u>\$ 262,977</u>

	Twelve Months Ended December 31, 2018		
	Brick Products	Advanced Products	Total
United States	\$ 77,995	\$ 32,784	\$ 110,779
Europe	23,484	4,205	27,689
Asia Pacific	80,097	66,981	147,078
All other	5,128	546	5,674
	<u>\$ 186,704</u>	<u>\$ 104,516</u>	<u>\$ 291,220</u>

The following tables present the Company's net revenues disaggregated by the category of revenue, by product line (in thousands):

	Twelve Months Ended December 31, 2019		
	Brick Products	Advanced Products	Total
Direct customers, contract manufacturers and non-stocking distributors	\$ 159,135	\$ 63,567	\$ 222,702
Stocking distributors, net of sales allowances	27,797	9,802	37,599
Non-recurring engineering	843	1,614	2,457
Royalties	121	24	145
Other	—	74	74
	<u>\$ 187,896</u>	<u>\$ 75,081</u>	<u>\$ 262,977</u>

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Twelve Months Ended December 31, 2018

	Brick Products	Advanced Products	Total
Direct customers, contract manufacturers and non-stocking distributors	\$ 163,206	\$ 91,579	\$ 254,785
Stocking distributors, net of sales allowances	22,362	9,370	31,732
Non-recurring engineering	1,066	3,356	4,422
Royalties	70	140	210
Other	—	71	71
	<u>\$ 186,704</u>	<u>\$ 104,516</u>	<u>\$ 291,220</u>

The following table presents the changes in certain contract assets and (liabilities) (in thousands):

	December 31, 2019	December 31, 2018	Change
Accounts receivable	\$ 38,115	\$ 43,673	\$(5,558)
Short-term deferred revenue and customer prepayments	(5,507)	(5,069)	(438)
Long-term deferred revenue	(1,054)	(232)	(822)
Deferred expenses	1,897	501	1,396
Sales allowances	(741)	(548)	(193)

The decrease in accounts receivable was primarily due to a decrease in net revenues of approximately \$10,595,000 in the fourth quarter of 2019 compared to the fourth quarter of 2018.

Deferred expenses are included in Other current assets, in the accompanying Consolidated Balance Sheets.

Net revenues from unaffiliated customers by country, based on the location of the customer, for the years ended December 31 were as follows (in thousands):

	2019	2018	2017
United States	\$ 121,628	\$ 110,779	\$ 83,871
Europe	27,262	27,689	24,078
Asia Pacific	108,827	147,078	114,365
All other	5,260	5,674	5,516
	<u>\$ 262,977</u>	<u>\$ 291,220</u>	<u>\$ 227,830</u>

During 2019, 2018, and 2017, one customer accounted for approximately 12.7%, 13.4%, and 13.0% of net revenues, respectively, which included net revenues from both business product lines in each of the three years.

Net revenues from customers in China (including Hong Kong), the Company's largest international market, accounted for approximately 22.1% of total net revenues in 2019, 37.4% in 2018 and 35.8% in 2017, respectively.

VICOR CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

12. STOCK-BASED COMPENSATION AND EMPLOYEE BENEFIT PLANS

Vicor currently grants options for the purchase of Common Stock (i.e., “stock options”) under the following equity compensation plan that is stockholder-approved:

*Amended and Restated 2000 Stock Option and Incentive Plan, as amended and restated (the “2000 Plan”) —* Under the 2000 Plan, the Board of Directors or the Compensation Committee of the Board of Directors may grant stock incentive awards based on the Company’s Common Stock, including stock options, stock appreciation rights, restricted stock, performance shares, unrestricted stock, deferred stock, and dividend equivalent rights. Awards may be granted to employees and other key persons, including non-employee directors. Incentive stock options may be granted to employees at a price at least equal to the fair market value per share of the Common Stock on the date of grant, and non-qualified options may be granted to non-employee directors at a price at least equal to 85% of the fair market value of the Common Stock on the date of grant. A total of 10,000,000 shares of Common Stock have been reserved for issuance under the 2000 Plan. The period of time during which an option may be exercised and the vesting periods are determined by the Compensation Committee. The term of each option may not exceed 10 years from the date of grant.

VI Chip Corporation (“VI Chip”) was a privately held, majority-owned subsidiary of Vicor until June 28, 2019, at which date it was merged with and into Vicor, and its separate corporate existence ceased (see Note 18). Until that time, VI Chip could grant stock options under the *VI Chip Corporation Amended and Restated 2007 Stock Option and Incentive Plan* (the “2007 VI Chip Plan”), that had been approved by its Board of Directors. All awards thereunder were approved by the Compensation Committee of the Company’s Board of Directors. To effect the merger, holders of VI Chip Common Stock and VI Chip stock options received an equivalent value of Vicor Common Stock and Vicor stock options, respectively, pursuant (with respect to the stock options) to the assumption of the 2007 VI Chip Plan, and options outstanding thereunder, by Vicor. No additional awards will be granted under the assumed and restated 2007 VI Chip Plan.

Picor Corporation (“Picor”) was a privately held, majority-owned subsidiary of Vicor until May 30, 2018, at which date it was merged with and into Vicor, and its separate corporate existence ceased (see Note 18). Until that time, Picor could grant stock options under the *Picor Corporation Amended and Restated 2001 Stock Option and Incentive Plan* (the “2001 Picor Plan”) that had been approved by its Board of Directors. All awards thereunder were approved by the Compensation Committee of the Company’s Board of Directors. To effect the merger, holders of Picor Common Stock and Picor stock options received an equivalent value of Vicor Common Stock and Vicor stock options, respectively, pursuant (with respect to the stock options) to the assumption of the 2001 Picor Plan, and options outstanding thereunder, by Vicor. No additional awards will be granted under the assumed and restated 2001 Picor Plan.

All time-based (i.e., non-performance-based) options for the purchase of Vicor common stock are granted at an exercise price equal to or greater than the market price for Vicor Common Stock at the date of the grant. All time-based (i.e., non-performance-based) options for the purchase of VI Chip Common Stock and Picor Common Stock prior to the mergers and assumptions of the 2017 VI Chip Plan and of the 2001 Picor Plan, respectively, had been granted at an exercise price equal to or greater than the estimated fair market value of the respective share price, based on valuation methodologies consistent with U.S. GAAP and the requirements of Section 409A of the Internal Revenue Code, as amended (“the Code”).

*Vicor Corporation 2017 Employee Stock Purchase Plan (the “Plan” or the “ESPP”).* Under the ESPP, the Company has reserved 2,000,000 shares of Common Stock for issuance to eligible employees who elect to participate. The ESPP is intended to qualify as an “employee stock purchase plan” under Section 423 of the Internal Revenue Code. The ESPP operates in successive periods of approximately six months, each referred to as an “offering period.” Generally, offering periods commence on or around September 1 and



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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

March 1 and end on or around the following February 28 or August 31, respectively. Under the ESPP, an option is granted to participating employees on the first day of an offering period to purchase shares of the Company's Common Stock at the end of that offering period at a purchase price equal to 85% of the lesser of the fair market value of a share of Common Stock on either the first day or the last day of that offering period. The purchase of shares is funded by means of periodic payroll deductions, which may not exceed 15.0% of the employee's eligible compensation, as defined in the Plan. Among other provisions, the Plan limits the number of shares that can be purchased by a participant during any offering period and cumulatively for any calendar year.

Stock-based compensation expense for the years ended December 31 was as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Cost of revenues	\$ 342	\$ 237	\$ 187
Selling, general and administrative	1,979	2,517	1,125
Research and development	715	642	423
Total stock-based compensation	<u>\$3,036</u>	<u>\$3,396</u>	<u>\$1,735</u>

The increase in stock-based compensation in 2018 compared to 2017 was due to an increase in stock options granted between July 1, 2017 and December 31, 2018, an increase in the fair value of those stock option awards due to an increase in the market price of Vicor Common Stock during that period and ESPP expense, which was recorded for only part of 2017.

Compensation expense by type of award for the years ended December 31 was as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Stock options	\$2,072	\$2,649	\$1,546
ESPP	964	747	189
Total stock-based compensation	<u>\$3,036</u>	<u>\$3,396</u>	<u>\$1,735</u>

The fair value for non-performance-based stock options awarded under the 2000 Plan for the years shown below was estimated at the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Risk-free interest rate	1.8%	2.9%	2.1%
Expected dividend yield	—	—	—
Expected volatility	42%	44%	43%
Expected lives (years)	6.3	6.4	7.1

***Risk-free interest rate:***

The Company uses the yield on zero-coupon U.S. Treasury "Strip" securities for a period that is commensurate with the expected term assumption for each vesting period.

***Expected dividend yield:***

The Company determines the expected dividend yield by annualizing the most recent prior cash dividends declared by the Company's Board of Directors, if any, and dividing that result by the closing stock price on the date of that dividend declaration. Dividends are not paid on options.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

***Expected volatility:***

Vicor uses historical volatility to estimate the grant-date fair value of the options, using the expected term for the period over which to calculate the volatility (see below). The Company does not expect its future volatility to differ from its historical volatility. The computation of the Company's volatility is based on a simple average calculation of monthly volatilities over the expected term.

***Expected term:***

The Company uses historical employee exercise and option expiration data to estimate the expected term assumption for the Black-Scholes grant-date valuation. The Company believes this historical data is currently the best estimate of the expected term of options, and all groups of the Company's employees exhibit similar exercise behavior.

***Forfeiture rate:***

The amount of stock-based compensation recognized during a period is based on the value of the portion of the awards that are ultimately expected to vest. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. The term "forfeitures" is distinct from "cancellations" or "expirations" and represents only the unvested portion of the surrendered option. The forfeiture analysis is re-evaluated annually and the forfeiture rate is adjusted as necessary. Ultimately, the actual expense recognized over the vesting period will only be for those shares that vest.

Based on an analysis of historical forfeitures, the Company applied an annual forfeiture rate of 5.25% in 2019, 2018, and 2017, estimating approximately 85% of its options will actually vest in those three years.

***Vicor Stock Options***

A summary of the activity under the 2000 Plan as of December 31, 2019 and changes during the year then ended, is presented below (in thousands except for share and weighted-average data):

	<b>Options Outstanding</b>	<b>Weighted- Average Exercise Price</b>	<b>Weighted- Average Remaining Contractual Life in Years</b>	<b>Aggregate Intrinsic Value</b>
Outstanding on December 31, 2018	1,382,981	\$ 13.41		
Granted	115,753	\$ 31.76		
Options transferred from VI Chip Merger	1,476,371	\$ 6.79		
Forfeited and expired	(36,228)	\$ 21.37		
Exercised	<u>(250,981)</u>	\$ 9.71		
Outstanding on December 31, 2019	<u>2,687,896</u>	\$ 10.81	4.65	\$ 96,665
Exercisable on December 31, 2019	<u>1,475,947</u>	\$ 8.74	4.10	\$ 56,079
Vested or expected to vest as of December 31, 2019(1)	<u>2,601,076</u>	\$ 10.65	4.62	\$ 93,938

(1) In addition to the vested options, the Company expects a portion of the unvested options to vest at some point in the future. The number of options expected to vest is calculated by applying an estimated forfeiture rate to the unvested options.

**VICOR CORPORATION****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

As of December 31, 2018 and 2017 the Company had options exercisable for 888,257 and 707,244 shares respectively, for which the weighted average exercise prices were \$8.93 and \$8.01, respectively.

During the years ended December 31, 2019, 2018, and 2017, the total intrinsic value of Vicor options exercised (i.e., the difference between the market price at exercise and the price paid by the employee to exercise the options) was approximately \$6,636,000, \$22,938,000, and \$4,395,000, respectively. The total amount of cash received by the Company from options exercised in 2019, 2018, and 2017, was \$2,437,000, \$6,782,000, and \$3,295,000, respectively. The total grant-date fair value of stock options granted during the years ended December 31, 2019, 2018, and 2017 was approximately \$1,657,000, \$2,921,000, and \$774,000, respectively.

As of December 31, 2019, there was approximately \$4,121,000 of total unrecognized compensation cost related to unvested non-performance based awards for Vicor. That cost is expected to be recognized over a weighted-average period of 1.7 years for those awards. The expense will be recognized as follows: \$1,897,000 in 2020, \$1,261,000 in 2021, \$669,000 in 2022, \$184,000 in 2023, and \$110,000 in 2024.

The weighted-average fair value of Vicor options granted was \$14.30, \$17.46, and \$8.71, in 2019, 2018, and 2017, respectively.

**VI Chip Stock Options**

A summary of the activity under the 2007 VI Chip Plan as of June 28, 2019, the date of the merger with and into Vicor and changes during the period then ended, is presented below:

	<u>Options Outstanding</u>	<u>Weighted- Average Exercise Price</u>
Outstanding on December 31, 2018 (1)	10,414,000	\$ 0.96
Granted	—	
Forfeited and expired	—	
Exercised	—	
Options transferred in merger with Vicor	<u>(10,414,000)</u>	\$ 0.96
Outstanding on June 28, 2019	<u>—</u>	

(1) Of the total VI Chip options outstanding on December 31, 2018, 5,500,000 options had been granted to Dr. Vinciarelli, the Company's Chief Executive Officer.

**401(k) Plan**

The Company sponsors a savings plan available to all domestic employees, which qualifies under Section 401(k) of the Internal Revenue Code. Employees may contribute to the plan in amounts representing from 1% to 80% of their pre-tax salary, subject to statutory limitations. The Company matches employee contributions to the plan at a rate of 50%, up to the first 3% of an employee's compensation. The Company's matching contributions currently vest at a rate of 20% per year, based upon years of service. The Company's contributions to the plan were approximately \$1,001,000, \$976,000, and \$937,000 in 2019, 2018, and 2017, respectively.

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**Stock Bonus Plan**

Under the Company's 1985 Stock Bonus Plan, as amended, shares of Common Stock may be awarded to employees from time to time as determined by the Board of Directors. On December 31, 2019, 109,964 shares were available for further award. All shares awarded to employees under this plan have vested. No further awards are contemplated under this plan at the present time.

**13. LEASES**

Substantially all of the Company's leases are classified as operating leases. The majority of the Company's leases are for office and manufacturing space, along with several automobiles and certain equipment. Leases with initial terms of less than twelve months are not recorded on the balance sheet. Expense for these leases is recognized on a straight-line basis over the lease term. The Company's leases have remaining terms of less than one year to just over six years. The majority of the Company's leases do not have options to renew, although several have renewal terms to extend the lease for one five-year term, and one lease contains two five-year renewal options. None of the renewal options are included in determining the term of the lease, used for calculating the associated lease liabilities. None of the Company's leases include variable payments, residual value guarantees or restrictive covenants. A number of the Company's leases for office and manufacturing space include provision for common area maintenance ("CAM"). The Company accounts for CAM separately from lease payments, and therefore costs for CAM are not included in the determination of lease liabilities. The Company is a party to one arrangement as the lessor, for its former Westcor facility located in Sunnyvale, California, with a third party. The lessee under this lease has one option to renew the lease for a term of five years.

As of December 31, 2019, the balance of ROU assets was approximately \$4,261,000, and the balances of short-term and long-term lease liabilities were approximately \$1,520,000 and \$2,855,000, respectively. For the year ended December 31, 2019, the Company recorded operating lease cost, including short-term lease cost, of approximately \$1,870,000. The ROU assets are included in "Property, plant and equipment, net" in the accompanying Consolidated Balance Sheets.

The maturities of the Company's lease liabilities are as follows (in thousands):

2020	\$1,657
2021	995
2022	695
2023	606
2024	587
Thereafter	171
Total lease payments	\$4,711
Less: Imputed interest	336
Present value of lease liabilities	<u>\$4,375</u>

As of December 31, 2019, the weighted-average remaining lease term was 3.9 years and the weighted-average discount rate was 3.78% for the Company's operating leases. The Company developed the discount rates used based on a London Interbank Offered Rate ("LIBOR") over a term approximating the term of the related lease, plus an additional interest factor, which was generally 1.375%.

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

For the year ended December 31, 2019, the Company paid approximately \$247,000 for amounts included in the measurement of lease liabilities through operating cash flows, and obtained approximately \$1,761,000 in ROU assets for the year ended December 31, 2019, in exchange for new operating lease liabilities.

As of December 31, 2018, prior to the adoption of Topic 842, *Leases*, future minimum rental commitments under non-cancelable operating leases with remaining terms in excess of one year were as follows (in thousands):

<u>Year</u>	
2019	\$1,962
2020	1,502
2021	688
2022	447
2023 and thereafter	830
	<u>\$5,429</u>

The maturities of the lease payments to be received by the Company under the lease agreement for its leased facility in California are as follows (in thousands):

2020	\$ 874
2021	901
2022	928
2023	955
2024	402
Total lease payments to be received	<u>\$4,060</u>

For the year ended December 31, 2019, the Company recorded lease income under this lease of approximately \$856,000.

#### **14. SEVERANCE AND OTHER CHARGES**

In May 2018, the Company's management authorized the closure of its Granite Power Technologies, Inc. ("GPT") subsidiary, which was part of the former Brick Business Unit ("BBU") segment, by the end of 2018. The closure was completed in December 2018. GPT, located in Manchester, N.H., was one of three Vicor Custom Power ("VCP") entities. Certain of GPT's products will continue to be manufactured and sold by the two remaining VCP entities. As a result, the Company recorded a pre-tax charge of \$350,000 in the second quarter of 2018, for the cost of severance and other employee-related costs involving cash payments based on each employee's respective length of service. This was recorded as "Severance and other charges" in the Consolidated Statement of Operations. The related liability is presented as "Accrued severance and other charges" in the Consolidated Balance Sheets. Adjustments to reduce the liability were due to certain GPT employees accepting positions with Vicor, and for severance payments made to employees who had left GPT after the authorization of the closure. Adjustments to increase the liability, and the expense, were due to an early termination fee under GPT's lease and for freight costs to transport GPT inventory and fixed assets to the two remaining VCP entities. The adjustments were recorded in the third and fourth quarters of 2018 for a total expense of \$402,000 in 2018, as reported in the Consolidated Statement of Operations.

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**15. OTHER INCOME (EXPENSE), NET**

The major changes in the components of Other income (expense), net for the years ended December 31 were as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Rental income	\$ 792	\$ 792	\$ 792
Interest income	300	257	124
Foreign currency losses, net	(108)	(260)	323
Gain on disposal of equipment	38	57	14
Credit gains on available-for-sale securities	4	7	11
Other	40	21	(2)
	<u>\$1,066</u>	<u>\$ 874</u>	<u>\$1,262</u>

**16. INCOME TAXES**

The tax provision includes estimated federal, state and foreign income taxes on the Company's pre-tax income. The tax provisions also may include discrete items, principally related to increases or decreases in tax reserves, tax provision vs. tax return differences and accrued interest for potential liabilities.

On December 22, 2017, H.R.1., known as the Tax Cuts and Jobs Act (the "Tax Act"), was signed into law. The Tax Act did not have a significant impact on the Company's consolidated financial statements for the year ended December 31, 2017. However, the reduction of the U.S. federal corporate tax rate from 35% to 21% which was effective January 1, 2018, is reflected in the Company's deferred tax table below. Effective for the 2018 tax year, the Tax Act implements certain additional provisions including the Global Intangible Low-Taxes Income ("GILTI") inclusion and the Foreign Derived Intangible Income ("FDII") deduction. The Company is electing to account for the GILTI inclusion as a period cost.

Also, on December 22, 2017, the Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 118 to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Act. The Company recognized the provisional tax impacts related to deemed repatriated earnings and the revaluation of deferred tax assets and liabilities and included these amounts in its consolidated financial statements for the year ended December 31, 2017. The Company did not record any adjustments in the year ended December 31, 2018 to these provisional amounts that were material to its financial statements. As of December 31, 2018, the Company's accounting treatment with regards to the Tax Act was complete.

## VICOR CORPORATION

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

The reconciliation of the federal statutory rate on the income (loss) before income taxes to the effective income tax rate for the years ended December 31 is as follows:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Statutory federal tax rate	21.0%	21.0%	(34.0)%
State income taxes, net of federal income tax benefit	(8.1)	3.6	97.2
Increase (decrease) in valuation allowance	2.2	(9.1)	(936.1)
Permanent items	(3.9)	(5.9)	(861.2)
Tax credits	(15.6)	(5.5)	(1,222.3)
Provision vs. tax return differences	9.0	(1.7)	—
Foreign rate differential and deferred items	0.6	0.7	(91.8)
Change in tax reserves	—	0.1	(5.1)
Rate change due to tax reform	—	—	3,441.1
Refundable income taxes—AMT credit	—	—	(751.0)
Other	—	0.1	(0.1)
	<u>5.2%</u>	<u>3.3%</u>	<u>(363.3)%</u>

In 2019, the Company utilized net operating loss carryforwards and tax credits to offset federal income tax expense.

In 2018, the Company utilized net operating loss carryforwards to offset federal income tax expense.

In 2017, the Company did not recognize a tax benefit for the majority of its losses as it maintained a full valuation allowance against all net domestic deferred tax assets due to the inability to project net future taxable income, as described below. The benefit for income taxes in 2017 was primarily due to the Company's alternative minimum tax ("AMT") credit carryforwards of approximately \$736,000 becoming fully refundable in future years, due to the repeal of the corporate AMT under the Tax Act.

For financial reporting purposes, income (loss) before income taxes for the years ended December 31 include the following components (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Domestic	\$ 13,493	\$ 31,455	\$ (1,591)
Foreign	1,394	1,478	1,493
	<u>\$ 14,887</u>	<u>\$ 32,933</u>	<u>\$ (98)</u>

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Significant components of the provision (benefit) for income taxes for the years ended December 31 are as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Current:			
Federal	\$ —	\$ —	\$(736)
State	268	231	156
Foreign	450	911	396
	<u>718</u>	<u>1,142</u>	<u>(184)</u>
Deferred:			
Foreign	60	(55)	(172)
	<u>60</u>	<u>(55)</u>	<u>(172)</u>
	<u>\$778</u>	<u>\$1,087</u>	<u>\$(356)</u>

The Tax Act eliminates the deferral of U.S. income tax on accumulated foreign earnings by imposing a one-time mandatory transition tax on such earnings. As a result, a provisional amount of approximately \$122,000 was recorded in 2017 as additional tax expense related to approximately \$813,000 of untaxed accumulated unremitted foreign earnings. As noted above, the additional tax of \$122,000 was fully offset by existing net operating losses in the U.S. Effective for the Company's 2018 tax year, foreign earnings were taxed in the U.S. under GILTI and FDII provisions of the Tax Act. As of December 31, 2019 and 2018, unremitted foreign earnings, which were not significant, were permanently re-invested in the Company's foreign subsidiaries. Upon repatriation of those earnings, in the form of dividends or otherwise, the Company could be subject to immaterial withholding taxes payable to the various foreign countries.



## VICOR CORPORATION

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

As noted above, the change in the U.S. federal corporate tax rate, which was effective January 1, 2018, is reflected in the Company's deferred tax table below. Significant components of the Company's deferred tax assets and liabilities as of December 31 were as follows (in thousands):

	2019	2018
<b>Deferred tax assets:</b>		
Research and development tax credit carryforwards	\$ 27,607	\$ 23,244
Investment tax credit carryforwards	2,102	1,976
Stock-based compensation	1,587	3,133
Inventory reserves	1,522	2,109
Vacation accrual	1,280	1,218
Deferred revenue, net	796	66
Lease liabilities	679	—
UNICAP	351	275
Net operating loss carryforwards	328	1,091
International deferred tax assets	205	265
Sales allowances	172	128
Unrealized loss on investments	132	132
Contingent consideration liabilities	98	88
Warranty reserves	66	35
Bad debt reserves	14	52
Other	225	233
Total deferred tax assets	<u>37,164</u>	<u>34,045</u>
Less: Valuation allowance for deferred tax assets	<u>(30,363)</u>	<u>(30,031)</u>
Net deferred tax assets	6,801	4,014
<b>Deferred tax liabilities:</b>		
Depreciation	(5,296)	(3,144)
ROU assets	(653)	—
Prepaid expenses	(552)	(473)
Patent amortization	(91)	(107)
Other	(4)	(25)
Total deferred tax liabilities	<u>(6,596)</u>	<u>(3,749)</u>
Net deferred tax assets (liabilities)	<u>\$ 205</u>	<u>\$ 265</u>

As of December 31, 2019, the Company has a valuation allowance of approximately \$30,363,000 against all domestic deferred tax assets, for which realization cannot be considered more likely than not at this time. Management assesses the need for the valuation allowance on a quarterly basis. In assessing the need for a valuation allowance, the Company considers all positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies, and past financial performance. While recent positive operating results caused the Company to be in a cumulative income position as of December 31, 2019, its overall profitability has been declining since the third quarter of 2018, primarily due to overall reduced bookings for both Advanced and Brick products, reflecting U.S.-China trade/tariff dynamics and elements of macro uncertainty. The uncertain impact of the coronavirus on the supply chain and certain process issues with the production of Advanced Products is contributing to near-term uncertainty. As a result, management has concluded a full valuation allowance against all net domestic deferred tax assets is still warranted as of December 31, 2019. The valuation allowance against these deferred tax assets may require

## VICOR CORPORATION

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

adjustment in the future based on changes in the mix of temporary differences, changes in tax laws, and operating performance. If the positive quarterly earnings continue and the Company's concerns about industry uncertainty, process issues with the production of Advanced Products are resolved, and order volumes are alleviated to the point that the Company believes future profits can be more reliably forecasted, the Company may release all or a portion of the valuation in the near-term. Certain state tax credits, though, will likely never be uncovered by the valuation allowance. If and when the Company determines the valuation allowance should be released (i.e., reduced), the adjustment would result in a tax benefit reported in that period's Consolidated Statements of Operations, the effect of which would be an increase in reported net income.

The state and federal research and development tax credit carryforwards of approximately \$14,451,000 and \$17,744,000, respectively, expire beginning in 2020 for state purposes and in 2025 for federal purposes. The Company has operating loss carryforwards in certain states of approximately \$4,913,000, which expire beginning in 2022 through 2037.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in thousands):

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Balance on January 1	\$ 1,462	\$ 1,104	\$ 946
Additions based on tax positions related to the current year	571	245	138
Additions for tax positions of prior years	43	120	29
Settlements	—	—	(1)
Lapse of statute	(6)	(7)	(8)
Balance on December 31	<u>\$ 2,070</u>	<u>\$ 1,462</u>	<u>\$ 1,104</u>

The Company has reviewed the tax positions taken, or to be taken, in its tax returns for all tax years currently open to examination by a taxing authority. The total amount of unrecognized tax benefits, that is the aggregate tax effect of differences between tax return positions and the benefits recognized in the Company's financial statements, as of December 31, 2019, 2018, and 2017 of \$2,070,000, \$1,462,000, and \$1,104,000, respectively, if recognized, may decrease the Company's income tax provision and effective tax rate. None of the unrecognized tax benefits as of December 31, 2019, are expected to significantly change during the next twelve months.

The Company recognizes accrued interest and penalties, if any, related to unrecognized tax benefits as a component of income tax expense. During the years ended December 31, 2019, 2018, and 2017, the Company recognized approximately \$7,000, \$7,000, and \$6,000, respectively, in net interest expense. As of December 31, 2019 and 2018, the Company had accrued approximately \$41,000 and \$35,000, respectively, for the potential payment of interest.

The Company files income tax returns in the United States and various foreign tax jurisdictions. These tax returns are generally open to examination by the relevant tax authorities from three to seven years from the date they are filed. The tax filings relating to the Company's federal and state taxes are currently open to examination for tax years 2016 through 2018 and 2010 through 2018, respectively. In addition, 2012 and 2014 tax years resulted in losses and the Company generated federal research and development credits in tax years 2005 through 2015. These years may also be subject to examination when the losses or credits are carried forward and utilized in future years.

The Company's subsidiary in Italy, Vicor Italy S.r.l. ("Vicor Italy"), underwent a tax inspection during 2014 for tax years 2009 through 2013, covering corporation, regional and value added taxes. Vicor Italy received a

**VICOR CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

preliminary tax audit report dated June 30, 2014. The Company filed a response to the preliminary tax audit report in the third quarter of 2014. The statute of limitations for the tax authorities in Italy to file an assessment, if any, expired on December 31, 2019 for all years under the inspection. Due to the non-response by Italian authorities after nearly six years, and the lapse of all five years under examination, the Company does not believe there will be any impact to the Company's financial statements.

In May 2017, the Company received notice from the Internal Revenue Service that its federal corporate tax return for tax year 2015 had been selected for examination. The examination was completed in May 2018 resulting in no tax liability to the Company. In January 2018, the Company received notice from the New York State Department of Taxation and Finance that its New York State tax returns for tax years 2014 through 2016 were selected for audit. The audit was completed in the third quarter of 2018, resulting in an immaterial assessment.

There are no income tax examinations or audits currently in process.

**17. COMMITMENTS AND CONTINGENCIES**

The Company is the defendant in a patent infringement lawsuit originally filed on January 28, 2011 by SynQor, Inc. ("SynQor") in the U.S. District Court for the Eastern District of Texas (the "Texas Action"). The complaint, as amended, alleges that the Company's products, including but not limited to, unregulated bus converters used in intermediate bus architecture power supply systems, infringe SynQor's U.S. patent numbers 7,072,190, 7,272,021, 7,564,702, and 8,023,290 ("the '190 patent", "the '021 patent", "the '702 patent", and "the '290 patent", respectively). SynQor's complaint sought an injunction against further infringement and an award of unspecified compensatory and enhanced damages, interest, costs and attorney fees. The Company has denied that its products infringe any of the SynQor patents, and has asserted that the SynQor patents are invalid and/or unenforceable. The Company has also asserted counterclaims seeking damages from SynQor for deceptive trade practices and tortious interference with prospective economic advantage arising from SynQor's attempted enforcement of its patents against the Company.

On May 23, 2016, after extensive discovery, the Texas Action was stayed by the court pending completion of certain inter partes reexamination ("IPRx") proceedings at the United States Patent and Trademark Office ("USPTO") (including any appeals from such proceedings to the Federal Circuit (as defined below)) concerning the SynQor patents, which are described below. That stay remains in force.

In 2011, in response to the filing of the Texas Action, the Company's IPRx proceedings at the USPTO challenged the validity of all claims that were asserted against the Company by SynQor. The current status of these proceedings is as follows. Regarding the '190 patent IPRx, the United States Court of Appeals for the Federal Circuit (the "Federal Circuit") issued a decision on March 13, 2015, determining that certain claims were invalid and remanding the matter to the Patent Trial and Appeal Board ("PTAB") of the USPTO for further proceedings. On February 20, 2019, the PTAB issued a decision finding that all of the remaining challenged claims were unpatentable. SynQor has appealed that decision to the Federal Circuit, and the appeal remains pending. On August 30, 2017, the Federal Circuit issued rulings with regard to the IPRx proceedings for the '021, '702 and '290 patents. With respect to the '021 patent, the Federal Circuit affirmed the PTAB's determination that all of the challenged claims of the '021 patent were invalid. The Federal Circuit remanded the case to the PTAB for further consideration of the patentability of certain claims that had been added by amendment during the reexamination. On February 20, 2019, the PTAB issued a decision affirming the examiner's rejections of all challenged claims. SynQor has filed an appeal of that decision in the Federal Circuit, and that appeal remains pending. With respect to the '702 patent, the Federal Circuit affirmed the PTAB's

**VICOR CORPORATION**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

determination that all of the challenged claims of the '702 patent were patentable. With respect to the '290 patent, the Federal Circuit vacated the PTAB's decision upholding the patentability of the '290 patent claims, and remanded the case to the PTAB for further consideration. On February 20, 2019, the PTAB issued a decision reversing its prior affirmance of the examiner's non-adoption of rejections with respect to the '290 patent, and entering rejections of all of the claims of the '290 patent. On May 20, 2019, as permitted by USPTO rules, SynQor requested the USPTO to reopen prosecution of this proceeding to address the new rejections made by the PTAB. While prosecution was reopened, the examiner has yet to issue a further substantive ruling.

On October 31, 2017, the Company filed a request with the USPTO for ex parte reexamination ("EPRx") of the asserted claims of the '702 patent, based on different prior art references than had been at issue in the previous IPRx of the '702 patent. On September 12, 2018, a patent examiner found that all of the asserted claims were invalid. SynQor has appealed that ruling to the PTAB, where the appeal remains pending. On August 6, 2018, the Company filed a request with the USPTO for EPRx of the asserted claims of the '190 patent, based on different prior art references than had been at issue in the previous IPRx of the '190 patent. On August 9, 2019, the USPTO issued a final rejection of all of the asserted claims of the '190 patent. SynQor has appealed that ruling to the PTAB, where the appeal remains pending.

On January 23, 2018, the 20-year terms of the '190 patent, the '021 patent, the '702 patent and the '290 patent expired. As a consequence of these expirations, the Company cannot be liable under any of the SynQor patents for allegedly infringing activities occurring after the patents' respective expiration dates. In addition, any amended claims that may issue as a result of any of the still-pending reexamination proceedings will have no effective term and cannot be the basis for any liability by the Company.

The Company continues to believe none of its products, including its unregulated bus converters, infringe any valid claim of the asserted SynQor patents, either alone or when used in an intermediate bus architecture implementation. The Company believes SynQor's claims lack merit and, therefore, it continues to vigorously defend itself against SynQor's patent infringement allegations. The Company does not believe a loss is probable for this matter. If a loss were to be incurred, however, the Company cannot estimate the amount of possible loss or range of possible loss at this time.

In addition to the SynQor matter, the Company is involved in certain other litigation and claims incidental to the conduct of its business. While the outcome of lawsuits and claims against the Company cannot be predicted with certainty, management does not expect any current litigation or claims will have a material adverse impact on the Company's financial position or results of operations.

**18. VI CHIP AND PICOR MERGERS**

On June 28, 2019, the Company's Board of Directors unanimously approved the merger of VI Chip, a subsidiary of Vicor that was fully consolidated for financial reporting purposes, with and into the Company. The merger was completed as of June 28, 2019, at which time the separate corporate existence of VI Chip ceased. To effect the merger, holders of VI Chip common stock and VI Chip stock options received an equivalent value of Vicor Common Stock and Vicor stock options, respectively, pursuant (with respect to the stock options) to the assumption of the 2007 VI Chip Plan, and options outstanding thereunder, by the Company.

On May 25, 2018, the Company's Board of Directors unanimously approved the merger of Picor, a subsidiary of Vicor that was fully consolidated for financial reporting purposes, with and into the Company. The merger was completed as of May 30, 2018, at which time the separate corporate existence of Picor ceased. To effect the merger, holders of Picor Common Stock and Picor stock options received an equivalent value of Vicor

**VICOR CORPORATION****NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Common Stock and Vicor stock options, respectively, pursuant (with respect to the stock options) to the assumption of the 2001 Picor Plan, and options outstanding thereunder, by the Company.

There was no net impact on the Company's consolidated financial statements for the years ended December 31, 2019 and 2018 as a result of the mergers.

**19. SEGMENT INFORMATION**

In the second quarter of 2019, management determined, with the approval of the Company's Board of Directors and Chief Operating Decision Maker ("CODM"), Dr. Vinciarelli, the Company would report as one segment, rather than under the three segment approach employed since 2007. The Company's strategy has evolved with a transition in organizational focus, emphasizing investment in Advanced Products, targeting high growth market segments with a low-mix, high-volume operational model, while maintaining a profitable business in mature market segments we serve with Brick Products with a high-mix, low-volume operational model. Dr. Vinciarelli and management began to make incremental changes in management practices and organizational structure based on a management plan established in 2018 for the definitive reconfiguration of the three business units into one business focused on the Advanced Products and Brick Products product line categorizations, including three significant changes: the merger of Picor with and into Vicor, which was completed on May 30, 2018; the reconfiguration of the Company's internal reporting systems, which was completed on December 31, 2018; and the merger of VI Chip with and into Vicor, which, as stated, was completed on June 28, 2019. Our CODM now determines the allocation of resources of the Company based upon the two product groupings, which constitute one segment. Both product lines are built in the Company's manufacturing facility in Andover, Massachusetts employing similar processing and production techniques, and are supported by the same sales and marketing organizations. As such, the Company has conformed the segment reporting to the new reporting structure utilized by the CODM. Accordingly, three-segment information for prior periods has not been presented, to conform with the new presentation.

**20. QUARTERLY RESULTS OF OPERATIONS (Unaudited)**

The following table sets forth certain unaudited quarterly financial data for the years ended December 31 (in thousands, except per share amounts):

	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>	<u>Total</u>
<b>2019:</b>					
Net revenues	\$ 65,725	\$ 63,355	\$ 70,772	\$ 63,125	\$ 262,977
Gross margin	31,086	29,117	33,002	29,761	122,966
Consolidated net income	4,306	2,556	5,932	1,315	14,109
Net income (loss) attributable to noncontrolling interest	20	(7)	(5)	3	11
Net income attributable to Vicor Corporation	4,286	2,563	5,937	1,312	14,098
Net income per share attributable to Vicor Corporation:					
Basic	0.11	0.06	0.15	0.03	0.35
Diluted	0.10	0.06	0.14	0.03	0.34

**VICOR CORPORATION**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

	<u>First</u>	<u>Second</u>	<u>Third</u>	<u>Fourth</u>	<u>Total</u>
<b>2018:</b>					
Net revenues	\$ 65,269	\$ 74,196	\$ 78,035	\$ 73,720	\$ 291,220
Gross margin	30,211	35,883	39,004	33,873	138,971
Consolidated net income	3,982	7,909	13,048	6,907	31,846
Net income (loss) attributable to noncontrolling interest	39	49	36	(3)	121
Net income attributable to Vicor Corporation	3,943	7,860	13,012	6,910	31,725
Net income per share attributable to Vicor Corporation:					
Basic	0.10	0.20	0.32	0.17	0.80
Diluted	0.10	0.19	0.32	0.17	0.78

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

None.

**ITEM 9A. CONTROLS AND PROCEDURES**

Attached as exhibits to this Annual Report on Form 10-K are certifications of our CEO and Chief Financial Officer (“CFO”), which are required in accordance with Rule 13a-14 of the Exchange Act. This “Controls and Procedures” section includes information concerning the controls and controls evaluation referred to in the certifications.

**(a) Evaluation of disclosure controls and procedures**

As required by Rule 13a-15 under the Exchange Act, management, with the participation of our CEO and CFO, conducted an evaluation regarding the effectiveness of our disclosure controls and procedures, as of the end of the last fiscal year. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. We recognize any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and we necessarily apply our judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of the Company’s disclosure controls and procedures as of December 31, 2019, the CEO and CFO concluded, as of such date, the Company’s disclosure controls and procedures were effective at the reasonable assurance level.

**(b) Management’s Report on Internal Control Over Financial Reporting**

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Internal control over financial reporting includes those policies and procedures: (a) pertaining to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets; (b) providing 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 are being made only in accordance with authorizations of our management and Board of Directors; and (c) providing reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of our assets that could have a material effect on our financial statements.

Management assessed our internal control over financial reporting as of December 31, 2019, the end of our fiscal year. Management based its assessment on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Management’s assessment included evaluation of such elements as the design and operating effectiveness of key financial reporting controls, process documentation, accounting policies, and our overall control environment.

Based on our assessment, management has concluded that our internal control over financial reporting was effective as of December 31, 2019.

The effectiveness of our internal control over financial reporting as of December 31, 2019 has been audited by KPMG LLP, our independent registered public accounting firm, as stated in their report which is included immediately below.

## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors  
Vicor Corporation:

### *Opinion on Internal Control Over Financial Reporting*

We have audited Vicor Corporation and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, cash flows, and equity for each of the years in the three-year period ended December 31, 2019, and the related notes and financial statement schedule listed in Item 15(a)(2) (collectively, the consolidated financial statements), and our report dated February 28, 2020 expressed an unqualified opinion on those consolidated 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 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 of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included 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.



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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/ KPMG LLP

Boston, Massachusetts  
February 28, 2020

### **(c) Inherent Limitations on Effectiveness of Controls**

The Company's management, including the CEO and CFO, does not expect that our disclosure controls or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within the Company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of controls effectiveness to future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

### **(d) Changes in Internal Control Over Financial Reporting**

There was no change in our internal control over financial reporting that occurred during the fiscal quarter ended December 31, 2019, that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

**ITEM 9B.**

None.

**PART III**

**ITEM 10. *DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE***

Incorporated by reference from the Company's Definitive Proxy Statement for its 2020 annual meeting of stockholders.

**ITEM 11. *EXECUTIVE COMPENSATION***

Incorporated by reference from the Company's Definitive Proxy Statement for its 2020 annual meeting of stockholders.

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

Incorporated by reference from the Company's Definitive Proxy Statement for its 2020 annual meeting of stockholders.

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

Incorporated by reference from the Company's Definitive Proxy Statement for its 2020 annual meeting of stockholders.

**ITEM 14. *PRINCIPAL ACCOUNTANT FEES AND SERVICES***

Incorporated by reference from the Company's Definitive Proxy Statement for its 2020 annual meeting of stockholders.

**PART IV**

**ITEM 15.**

(a) (1) *Financial Statements*

See index in Item 8.

(a) (2) *Schedules*

Schedule II Valuation and Qualifying Accounts

All other schedules for which provision is made in the applicable accounting regulation of the Securities and Exchange Commission are not required under the related instructions or are inapplicable, and therefore have been omitted.

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### (b) Exhibits

<u>Exhibits</u>	<u>Description of Document</u>
3.1	<a href="#">Restated Certificate of Incorporation, dated February 28, 1990 (1)</a>
3.2	<a href="#">Certificate of Ownership and Merger Merging Westcor Corporation, a Delaware Corporation, into Vicor Corporation, a Delaware Corporation, dated December 3, 1990 (1)</a>
3.3	<a href="#">Certificate of Amendment of Restated Certificate of Incorporation, dated May 10, 1991 (1)</a>
3.4	<a href="#">Certificate of Amendment of Restated Certificate of Incorporation, dated June 23, 1992 (1)</a>
3.5	<a href="#">Bylaws, as amended (8)</a>
4.1	Specimen Common Stock Certificate (2)
4.2	<a href="#">Description of Securities Registered under Section 12 of the Exchange Act (16)</a>
10.1*	<a href="#">1998 Stock Option and Incentive Plan (3)</a>
10.2*	<a href="#">Vicor Corporation Amended and Restated 2000 Stock Option and Incentive Plan, as amended and restated (4)</a>
10.3*	<a href="#">Form of Non-Qualified Stock Option under the Vicor Corporation Amended and Restated 2000 Stock Option and Incentive Plan (5)</a>
10.4*	<a href="#">Sales Incentive Plan (6)</a>
10.5*	<a href="#">Picor Corporation Amended and Restated 2001 Stock Option and Incentive Plan, dated May 30, 2018 (14)</a>
10.6*	<a href="#">Form of Non-Qualified Stock Option under the Picor Corporation 2001 Stock Option and Incentive Plan (7)</a>
10.7*	<a href="#">VI Chip Corporation Amended and Restated 2007 Stock Option and Incentive Plan (11)</a>
10.8*	<a href="#">Form of Non-Qualified Stock Option Agreement under the VI Chip Corporation Amended 2007 Stock Option and Incentive Plan (9)</a>
10.9*	<a href="#">Form of Incentive Stock Option Agreement under the VI Chip Corporation Amended 2007 Stock Option and Incentive Plan (10)</a>
10.10*	<a href="#">Form of Stock Restriction Agreement under the VI Chip Corporation Amended 2007 Stock Option and Incentive Plan (10)</a>
10.11*	<a href="#">Vicor Corporation 2017 Employee Stock Purchase Plan (13)</a>
10.12*	<a href="#">VI Chip Corporation Amended and Restated 2007 Stock Option and Incentive Plan, as Amended and Restated (15)</a>
21.1	<a href="#">Subsidiaries of the Company (16)</a>
23.1	<a href="#">Consent of KPMG LLP (16)</a>
31.1	<a href="#">Certification of Chief Executive Officer pursuant to Rule 13a-14(a) of the Exchange Act (16)</a>
31.2	<a href="#">Certification of Chief Financial Officer pursuant to Rule 13a-14(a) of the Exchange Act (16)</a>
32.1	<a href="#">Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (16)</a>
32.2	<a href="#">Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (16)</a>
101.INS**	Inline XBRL Instance Document — the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH**	Inline XBRL Taxonomy Extension Schema Document.
101.CAL**	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF**	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB**	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE**	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

\* Indicates a management contract or compensatory plan or arrangement required to be filled pursuant to Item 15(b) of Form 10-K.

\*\* Filed with this Annual Report on Form 10-K for the year ended December 31, 2019 are the following documents formatted in iXBRL (Inline Extensible Business Reporting Language): (i) the Consolidated

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Balance Sheets for the years ended December 31, 2019 and 2018; (ii) the Consolidated Statements of Operations for the years ended December 31, 2019, 2018 and 2017; (iii) the Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, 2018 and 2017; (iv) the Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017; (v) the Consolidated Statements of Equity for the years ended December 31, 2019, 2018 and 2017; and (vi) the Notes to Consolidated Financial Statements.

- (1) Filed as an exhibit to the Company's Annual Report on Form 10-K filed on March 29, 2001 and incorporated herein by reference.
- (2) Filed as an exhibit to the Company's Registration Statement on Form 10, as amended, under the Securities Exchange Act of 1934 (File No. 0-18277), and incorporated herein by reference. (P)
- (3) Filed as an exhibit to the Company's Registration Statement on Form S-8, as amended, under the Securities Act of 1933 (No. 333-61177), and incorporated herein by reference.
- (4) Filed as Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed with the SEC on May 1, 2017 (File No. 000-18277), and incorporated herein by reference.
- (5) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q filed on November 4, 2004 (File No. 0-18277) and incorporated herein by reference.
- (6) Filed as an exhibit to the Company's Annual Report on Form 10-K filed on March 16, 2005 (File No. 0-18277) and incorporated herein by reference.
- (7) Filed as an exhibit to the Company's Annual Report on Form 10-K filed on March 14, 2006 (File No. 0-18277) and incorporated herein by reference.
- (8) Filed as an exhibit to the Company's Quarterly Report on Form 10-Q filed on November 8, 2006 (File No. 0-18277) and incorporated herein by reference.
- (9) Filed as an exhibit to the Company's Current Report on Form 8-K, dated June 6, 2007 (File No. 0-18277) and incorporated herein by reference.
- (10) Filed as an exhibit to the Company's Current Report and Form 8-K, dated March 6, 2008 (File No. 0-18277) incorporated herein by reference.
- (11) Filed as Appendix B to the Company's Definitive Proxy Statement on Schedule 14A filed with the SEC on May 1, 2017 (File No. 000-18277), and incorporated herein by reference.
- (12) Filed as Appendix C to the Company's Definitive Proxy Statement on Schedule 14A filed with the SEC on May 1, 2017 (File No. 000-18277), and incorporated herein by reference.
- (13) Filed as Appendix D to the Company's Definitive Proxy Statement on Schedule 14A filed with the SEC on May 1, 2017 (File No. 000-18277), and incorporated herein by reference.
- (14) Filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the SEC on June 5, 2018 (File No. 000-18277), and incorporated herein by reference.
- (15) Filed as Exhibit 10.1 to the Company's Registration Statement on Form S-8, under the Securities Act of 1933 (No. 333-232864), and incorporated herein by reference.
- (16) Filed herewith.

### **ITEM 16. FORM 10-K SUMMARY**

None.

**VICOR CORPORATION**  
**SCHEDULE II**  
**VALUATION AND QUALIFYING ACCOUNTS**  
**Years ended December 31, 2019, 2018 and 2017**

<u>Description</u>	<u>Balance at Beginning of Period</u>	<u>Charge (Recovery) to Costs and Expenses</u>	<u>Other Charges, Deductions (1)</u>	<u>Balance at End of Period</u>
Allowance for doubtful accounts:				
Year ended:				
December 31, 2019	\$224,000	\$ (144,000)	\$ (21,000)	\$ 59,000
December 31, 2018	159,000	65,000	—	224,000
December 31, 2017	153,000	6,000	—	159,000

(1) Reflects uncollectible accounts written off, net of recoveries.

**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.

Vicor Corporation

By: /s/ James A. Simms  
James A. Simms  
Vice President, Chief Financial Officer

Date: February 28, 2020

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 in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Patrizio Vinciarelli</u> Patrizio Vinciarelli	President, Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	February 28, 2020
<u>/s/ James A. Simms</u> James A. Simms	Chief Financial Officer and Vice President (Principal Financial Officer and Principal Accounting Officer)	February 28, 2020
<u>/s/ Estia J. Eichten</u> Estia J. Eichten	Director	February 28, 2020
<u>/s/ Michael S. McNamara</u> Michael S. McNamara	Director	February 28, 2020
<u>/s/ Samuel J. Anderson</u> Samuel J. Anderson	Director	February 28, 2020
<u>/s/ Claudio Tuozzolo</u> Claudio Tuozzolo	Director	February 28, 2020
<u>/s/ Jason L. Carlson</u> Jason L. Carlson	Director	February 28, 2020
<u>/s/ Philip D. Davies</u> Philip D. Davies	Director	February 28, 2020

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

Vicor Corporation ("Vicor" or the "Company") has two classes of common stock outstanding: shares of Common Stock, par value \$0.01 per share ("Common Stock"), which are registered pursuant to Section 12(b) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and listed on The NASDAQ Stock Market LLC under the ticker symbol "VICR", and shares of our Class B Common Stock, par value \$0.01 per share ("Class B Common Stock"), which are not subject to registration pursuant to Section 12 of the Exchange Act and are not listed on any exchange.

**Description of Capital Stock**

The following description of our capital stock is a summary and does not purport to be complete. It is subject to, and qualified in its entirety by reference to, our Restated Certificate of Incorporation, as amended (the "Certificate of Incorporation"), and our By-Laws, as amended (the "By-Laws"), each of which are incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit 4.2 is a part. We encourage you to read our Certificate of Incorporation, our By-Laws and the applicable provisions of the Delaware General Corporation Law for additional information.

**Authorized Shares of Capital Stock**

Our authorized capital stock consists of 77,000,000 shares, of which 62,000,000 are designated as Common Stock, 14,000,000 are designated as Class B Common Stock, and 1,000,000 are designated as Preferred Stock, par value \$0.01 per share ("Preferred Stock"). Of the Preferred Stock, 175,000 shares were designated as Series A Convertible Preferred Stock (the "Series A Preferred"), 110,000 shares were designated as Series B Convertible Preferred Stock (the "Series B Preferred") and 75,001 shares were designated as Series C Convertible Preferred Stock (the "Series C Preferred" and, together with the Series A Preferred and the Series B Preferred, collectively, the "Designated Preferred Stock").

As of December 31, 2019, 28,768,252 shares of Common Stock, 11,758,218 shares of Class B Common Stock, and no shares of Preferred Stock were outstanding.

**Common Stock**

*Outstanding Shares.* As of December 31, 2019, 28,768,252 shares of Common Stock were outstanding.

A share of Class B Common Stock is convertible into one share of Common Stock in certain circumstances, as described below under "Class B Common Stock."

*Voting Rights.* Each holder of Common Stock is entitled to one vote for each share held on matters submitted to a vote of stockholders. Holders of shares of Common Stock and holders of shares of Class B Common Stock vote together as a single class on all matters lawfully submitted to a vote of stockholders, except as otherwise required by law and except as otherwise provided in our Certificate of Incorporation. See "Class B Common Stock" and "Preferred Stock" below for a discussion of certain circumstances under which holders of shares of Common Stock and holders of shares of Class B Common Stock do not vote together as a single class.

The provisions of Articles Fourth and Ninth of our Certificate of Incorporation (which address the rights of the Company's capital stock and amendments to the Certificate of Incorporation) may not be modified, revised, altered, amended, repealed or rescinded, except by the affirmative vote of the holders of a majority in interest of each class of the Company's outstanding capital stock entitled to vote generally in the election of the directors, voting as separate classes.

Our Certificate of Incorporation does not provide for cumulative voting for the election of directors.

*Dividends.* Subject to preferences that may apply to any outstanding shares of Preferred Stock, dividends may be declared by the Board of Directors upon and paid to the holders of Common Stock and Class B Common Stock out of funds legally available therefor. Such dividends, when, as and if declared and paid, shall be so declared and paid to such holders pro rata according to the number of shares of Common Stock and Class B Common Stock held by each such holder (with the number of shares of outstanding Common Stock and Class B Common Stock being aggregated and considered a single class for this purpose). No dividend or other distribution may be declared upon the Common Stock, whether payable in cash or in shares of Common Stock or otherwise, unless a comparable dividend shall be declared upon the Class B Common Stock and vice versa. If the dividend declared upon the

Common Stock is payable in shares of Common Stock, the comparable dividend declared upon the Class B Common Stock shall be payable in shares of Class B Common Stock, and vice versa.

*Liquidation Rights.* In the event of the liquidation, dissolution, or winding up of the Company, after payment or provision for payment of the debts and liabilities of the Company and the amounts to which holders of Preferred Stock, if any, may be entitled, holders of shares of Common Stock will be entitled to share ratably as one class with the holders of shares of Class B Common Stock in the remaining assets of the Company.

*Preemptive, Conversion, or Redemption Rights.* Holders of Common Stock have no preemptive rights and no right to convert their Common Stock into other securities. There are no redemption or sinking fund provisions applicable to our Common Stock.

*Listing.* Our Common Stock is listed on The NASDAQ Global Select Market under the symbol "VICR."

*Transfer Agent and Registrar.* The Transfer Agent and Registrar for our Common Stock is Computershare Trust Company, N.A., located at College Station, Texas.

A discussion of the rights of the Class B Common Stock and the Preferred Stock, which affect or may affect the rights of the Common Stock, follows.

### **Class B Common Stock**

*Outstanding Shares; Increases in Authorized and Outstanding Shares.* As of December 31, 2019, 11,758,218 shares of Class B Common Stock were outstanding.

Under our Certificate of Incorporation, we may not increase the authorized number of shares of Class B Common Stock without the affirmative vote of a majority of all votes entitled to be cast by the holders of the Common Stock and Class B Common Stock, voting as separate classes. We also may not issue any shares of Class B Common Stock, other than in connection with stock dividends and similar transactions, unless that issuance is approved by the affirmative vote of at least two-thirds in interest of the holders of our Common Stock and Class B Common Stock, voting as separate classes.

*Voting Rights.* Each holder of Class B Common Stock is entitled to 10 votes for each such share held on matters submitted to a vote of stockholders. Holders of shares of Common Stock and holders of shares of Class B Common Stock vote together as a single class on all matters lawfully submitted to a vote of stockholders, except as otherwise required by law and except as otherwise provided in our Certificate of Incorporation.

*Dividends.* See "Common Stock – Dividends" above.

*Liquidation Rights.* In the event of the liquidation, dissolution, or winding up of the Company, after payment or provision for payment of the debts and liabilities of the Company and the amounts to which holders of Preferred Stock, if any, may be entitled, holders of shares of Class B Common Stock will be entitled to share ratably as one class with the holders of shares of Common Stock in the remaining assets of the Company.

*Preemptive, Conversion, or Redemption Rights.* Holders of Class B Common Stock have no preemptive rights, and there are no redemption or sinking fund provisions applicable to Class B Common Stock.

Each share of Class B Common Stock may, at any time, at the option of the holder, be converted into one share of Common Stock. Each outstanding share of Class B Common Stock will be converted into one share of Common Stock at such time as the total number of outstanding shares of Class B Common Stock represents less than 10% of the aggregate number of outstanding shares of Common Stock and Class B Common Stock. All shares of Class B Common Stock converted into Common Stock as described in this paragraph will be retired and revert to the status of authorized and unissued shares of Class B Common Stock.

*Restrictions on Transfer.* While certain transfers of shares of Class B Common Stock to certain "permitted transferees" for tax and estate planning purposes are authorized in our Certificate of Incorporation, shares of Class B Common Stock are generally subject to restrictions on sale or other transfers. Any transfer of shares of Class B Common Stock not permitted under the Certificate of Incorporation will result in the automatic conversion of those shares of Class B Common Stock into an equal number of shares of Common Stock.



## Preferred Stock

Our authorized capital stock includes 1,000,000 shares designated as Preferred Stock, of which 175,000 were designated as Series A Preferred, 110,000 were designated as Series B Preferred, and 75,001 were designated as Series C Preferred. As of December 31, 2019, no shares of Preferred Stock were issued and outstanding. All previously issued and outstanding shares of Designated Preferred Stock have been converted into shares of our Common Stock and are not available for reissuance.

In the future, our Board of Directors may, without further action by holders of our capital stock, fix the rights, preferences, and restrictions of up to the remaining 639,999 authorized shares of Preferred Stock in one or more series and authorize their issuance; provided, however, that the issuance of any shares of Preferred Stock carrying in excess of one vote per share or convertible into shares of Class B Common Stock will require the prior approval of at least two-thirds in interest of the holders of the Common Stock and Class B Common Stock, voting as separate classes.

The rights and preferences of the Preferred Stock issued could include voting rights, dividend rights, conversion rights, redemption rights, liquidation preferences, and sinking fund terms, any or all of which may be greater than or superior to the rights of our Common Stock or Class B Common Stock. Accordingly, the issuance of Preferred Stock could adversely affect the voting power of holders of Common Stock or Class B Common Stock and the likelihood that such holders will receive dividend payments and payments upon liquidation, dissolution, or winding up of the Company. In addition, the issuance of Preferred Stock could have the effect of delaying, deferring, or preventing a change of control or other corporate action.

## Voting Control and Anti-Takeover Provisions

The ownership of our Common Stock and Class B Common Stock is concentrated primarily between Dr. Vinciarelli, Chairman of the Board, President, and Chief Executive Officer of the Company, and a limited number of institutional investors. As of December 31, 2019, Dr. Vinciarelli was the beneficial owner of 9,861,605 shares of Common Stock plus an additional 311,954 shares which Dr. Vinciarelli has the right to acquire upon exercise of options to purchase Common Stock within 60 days of December 31, 2019. He also holds 11,023,648 shares of Class B Common Stock, together (with the Common Stock) representing 81.6% of the voting power of the outstanding capital stock of the Company. Accordingly, Dr. Vinciarelli has significant influence over all matters requiring stockholder approval, including the election of directors and significant corporate transactions, such as a change of control event (e.g., a merger or sale of the Company or its assets) or a liquidation, dissolution, or winding up of the Company.

## Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

- before such date, the Board of Directors approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (i) by persons who are directors and also corporate officers and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or after such date, the business combination is approved by the Board of Directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines business combination to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;

- 
- any sale, transfer, pledge, or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
  - subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
  - any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or
  - the receipt by the interested stockholder of the benefit of any loss, advances, guarantees, pledges, or other financial benefits by or through the corporation.

In general, Section 203 defines an “interested stockholder” as an entity or person who, together with the person’s affiliates and associates, beneficially owns, or within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

**EXHIBIT 21.1****SUBSIDIARIES OF THE COMPANY**

<u>Name</u>	<u>State or Jurisdiction of Incorporation</u>
VI Chip Corporation	Delaware, USA
VLT, Inc.	California, USA
Vicor GmbH	Germany
VICR Securities Corporation	Massachusetts, USA
Vicor France SARL	France
Vicor Italy SRL	Italy
Vicor Hong Kong Ltd.	Hong Kong
Vicor U.K. Ltd.	United Kingdom
Vicor Japan Company, Ltd.	Japan
Vicor KK	Japan
Vicor Trading (Shanghai) Limited	China
Vicor Development Corporation	Delaware, USA
Freedom Power Systems, Inc.	Delaware, USA
Northwest Power, Inc.	Delaware, USA
560 Oakmead LLC	California, USA

**Consent of Independent Registered Public Accounting Firm**

The Board of Directors  
Vicor Corporation:

We consent to the incorporation by reference in the registration statement (Nos. 333-232864, 333-225500, 333-219760, 333-99423, 333-44790) on Forms S-8 of Vicor Corporation of our reports dated February 28, 2020, with respect to the consolidated balance sheets of Vicor Corporation and subsidiaries as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income, cash flows and equity, for each of the years in the three-year period ended December 31, 2019, and the related notes, and financial statement schedule listed in Item 15(a)(2) (collectively, the consolidated financial statements), and the effectiveness of internal control over financial reporting as of December 31, 2019, which reports appear in the December 31, 2019 annual report on Form 10-K of Vicor Corporation.

/s/ KPMG LLP

Boston, Massachusetts  
February 28, 2020

CHIEF EXECUTIVE OFFICER CERTIFICATION

I, Patrizio Vinciarelli, certify that:

1. I have reviewed this report on Form 10-K of Vicor Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers 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 in the United States;
  - 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.

Dated: February 28, 2020

/s/ Patrizio Vinciarelli  
Patrizio Vinciarelli  
Chief Executive Officer

CHIEF FINANCIAL OFFICER CERTIFICATION

I, James A. Simms, certify that:

1. I have reviewed this report on Form 10-K of Vicor Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers 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 in the United States;
  - 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.

Dated: February 28, 2020

/s/ James A. Simms

James A. Simms

Vice President, Chief Financial Officer

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

In connection with the Annual Report of Vicor Corporation (the "Company") on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Patrizio Vinciarelli, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (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/ Patrizio Vinciarelli

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Patrizio Vinciarelli  
President, Chairman of the Board and  
Chief Executive Officer

February 28, 2020

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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

In connection with the Annual Report of Vicor Corporation (the "Company") on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, James A. Simms, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (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/ James A. Simms

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James A. Simms

Vice President, Chief Financial Officer

February 28, 2020

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.