fuelcellenergy

2020 ANNUAL REPORT
AND FORM 10-K

FuelCell Energy, Inc. (NASDAQ: FCEL) is a global leader in sustainable clean energy technologies that address some of the world's most critical challenges around energy, safety and global urbanization. As a leading global manufacturer of proprietary fuel cell technology platforms, FuelCell Energy is uniquely positioned to serve customers worldwide with sustainable products and solutions for businesses, utilities, governments and municipalities. Our solutions are designed to enable a world empowered by clean energy, enhancing the quality of life for people around the globe. We target large-scale power users with our megawatt-class installations globally, and currently offer sub-megawatt solutions for smaller power consumers in Europe. To provide a frame of reference, one megawatt is adequate to continually power approximately 1,000 average sized U.S. homes. We develop turn-key distributed power generation solutions and operate and provide comprehensive service for the life of the power plant. Our fuel cell solution is a clean, efficient alternative to traditional combustion-based power generation, and is complementary to an energy mix consisting of intermittent sources of energy, such as solar and wind turbines. Our customer base includes utility companies, municipalities, universities, hospitals, government entities/ military bases and a variety of industrial and commercial enterprises. Our leading geographic markets are currently the United States and South Korea, and we are pursuing opportunities in other countries around the world. FuelCell Energy, based in Connecticut, was founded in 1969.

Dear Shareholders:

During our last fiscal year, we embarked on our ambitious Powerhouse strategy to transform, strengthen and grow FuelCell Energy's business to benefit our stakeholders and team members. Our mission remains unchanged: to enable a world to live a life empowered by clean energy.

I am pleased to report that we have made progress in reimagining our company and positioning us for future success. In this report, we are pleased to share with you our progress and preview our plans for the future.

Over the past year, we have substantially improved FuelCell's financial foundation with the goal of creating a capital structure that will provide for efficient financing of our growth strategy. We completed equity financings that enabled us to pay down debt, improve our cost of capital, and provide expanded liquidity to support the execution of our backlog, which was almost $1.3 billion at October 31, 2020. These financings also helped position us for future growth, by allowing us to accelerate our efforts to commercialize our product platform extensions, such as carbon separation and utilization, and our solid oxide platforms, including electrolysis, hydrogen production and long duration energy storage.

Over the past year, we made notable progress in a variety of our projects, including:

- Achieving commercial operations of our TulareBioMAT platform.
- Progressing substantially toward the completion of our 7.4 MW platform located on the U.S. Naval Submarine Base in Groton, Connecticut
- Nearing completion of construction on our 1.4 MW biofuels power platform at the San Bernardino, California Municipal Water Department.

In January 2021, we embarked on the transformation of our operating business model by incorporating Objectives and Key Results (OKRs). OKR is a critical thinking framework that provides

clarity, transparency, alignment, and accountability across the organization. The OKR framework will drive our team members to identify FuelCell's highest priorities and work collectively to achieve success for our stakeholders. Using OKRs will help us ensure we are accomplishing the most important work at every level of our organization.

We have made investments that enhance performance of our technology, advance product commercialization, reduce costs, and position us to scale our business. We have also increased our focus on differentiated applications, product sales, and customer segments to build our sales pipeline. These investments support our efforts to target growth opportunities in key geographies, including South Korea and across Asia, Europe, the United States and the Middle East.

These results are the outcome of the consistent hard work, dedication and excellence of our team members, contributing individually and collectively, all while managing through a global pandemic and challenging social issues.

Going forward, we will continue to implement our Powerhouse business strategy to execute on our project commitments, build on our technical leadership, deliver improved financial results for our stakeholders, and play a critical role in environmentally sustainable energy solutions, including baseload energy, hydrogen, hydrogen energy storage, carbon capture, carbon utilization, and carbon sequestration.

This was a pivotal year for FuelCell Energy. We set ambitious goals, worked hard to achieve them and advanced our business and financial condition in the midst of a global pandemic and significant racial and social justice challenges. We are pleased that we were able to support our team members, their families and their communities through this difficult time, just as they supported us.

I am excited by our steady progress, and the FuelCell leadership team is committed to advancing our business and increasing our commitment to environmental, social and governance goals as we grow.

As I said at the outset, FuelCell Energy's mission remains unchanged: to enable a world to live a life empowered by clean energy. We are excited about the role we play in enabling our customers to achieve their sustainability goals, while meeting their critical business needs. Given the policies of the current administration, it is clear that our current and future solutions will be front and center for the world. We are up to the challenge.

Jason Few
President, Chief Executive Officer and Chief Commercial Officer of FuelCell Energy, Inc.

fuelcellenergy

FORM 10-K

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

FORM 10-K

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

For the fiscal year ended October 31, 2020

OR

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

For the transition period from _____ to

Commission file number: 1-14204

FUELCELL ENERGY, INC.

(Exact name of registrant as specified in its charter)

Delaware	**06-0853042**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
3 Great Pasture Road **Danbury, Connecticut**	**06810**
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code: (203) 825-6000

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

Title of each class	Trading Symbol (s)	Name of each exchange on which registered
Common Stock, $0.0001 par value per share	FCEL	The Nasdaq Stock Market LLC (Nasdaq Global Market)

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes No ☒

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

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

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

Large accelerated filer ☐ Accelerated filer ☐ Non-accelerated filer ☒ Smaller reporting company ☒
Emerging growth company ☐

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

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

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

As of April 30, 2020, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was $426,040,826 based on the closing sale price of $2.02 as reported on the NASDAQ Global Market.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date.

Class	Outstanding at January 15, 2021
Common Stock, $0.0001 par value per share	322,412,341

DOCUMENT INCORPORATED BY REFERENCE

Document	Parts Into Which Incorporated
Definitive Proxy Statement for the 2021 Annual Meeting of Stockholders	Part III

FUELCELL ENERGY, INC.
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PART I

Item 1. BUSINESS

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Forward-Looking Statement Disclaimer

This Annual Report on Form 10-K contains statements that the Company believes to be "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 (the "PSLRA"). All statements other than statements of historical fact included in this Form 10-K, including statements regarding the Company's future financial condition, results of operations, plans, objectives, expectations, future performance, business operations and business prospects, are forward-looking statements. Words such as "expects," "anticipates," "estimates," "goals," "projects," "intends," "plans," "believes," "predicts," "should," "seeks," "will," "could," "would," "may," "forecast," and similar expressions and variations of such words are intended to identify forward-looking statements and are included, along with this statement, for purposes of complying with the safe harbor provisions of the PSLRA. Forward-looking statements are neither historical facts, nor assurances of future performance. Instead, such statements are based only on our beliefs, expectations and assumptions regarding the future. As such, the realization of matters expressed in forward looking statements involves inherent risks and uncertainties. Such statements relate to, among other things, the following:

- the development and commercialization by FuelCell Energy, Inc. and its subsidiaries ("FuelCell Energy," "Company," "we," "us" and "our") of fuel cell technology and products and the market for such products,
- expected operating results such as revenue growth and earnings,
- our belief that we have sufficient liquidity to fund our business operations,
- future funding under Advanced Technologies contracts,
- future financing for projects, including publicly issued bonds, equity and debt investments by investors and commercial bank financing,
- the expected cost competitiveness of our technology, and
- our ability to achieve our sales plans, market access and market expansion goals, and cost reduction targets.

The forward-looking statements contained in this report are subject to risks and uncertainties, known and unknown, that could cause actual results and future events to differ materially from those set forth in or contemplated by the forward-looking statements, including, without limitation, the risks described under Item 1A - Risk Factors of this report and the following factors:

- general risks associated with product development and manufacturing,
- general economic conditions,
- changes in the utility regulatory environment,
- changes in the utility industry and the markets for Distributed Generation, Distributed Hydrogen, and fuel cell power plants configured for Carbon Capture or Carbon Separation,
- potential volatility of energy prices,
- availability of government subsidies and economic incentives for alternative energy technologies,
- our ability to remain in compliance with U.S. federal and state and foreign government laws and regulations and the listing rules of The Nasdaq Stock Market ("Nasdaq"),
- rapid technological change,
- competition,
- the risk that our bid awards will not convert to contracts or that our contracts will not convert to revenue,
- market acceptance of our products,
- changes in accounting policies or practices adopted voluntarily or as required by accounting principles generally accepted in the United States ("GAAP"),
- factors affecting our liquidity position and financial condition,

- government appropriations,
- the ability of the government and third parties to terminate their development contracts at any time,
- the ability of the government to exercise "march-in" rights with respect to certain of our patents,
- the arbitration and other legal proceedings with POSCO Energy Co., Ltd. ("POSCO Energy"),
- our ability to implement our strategy,
- our ability to reduce our levelized cost of energy and our cost reduction strategy generally,
- our ability to protect our intellectual property,
- litigation and other proceedings,
- the risk that commercialization of our products will not occur when anticipated,
- our need for and the availability of additional financing,
- our ability to generate positive cash flow from operations,
- our ability to service our long-term debt,
- our ability to increase the output and longevity of our power plants and to meet the performance requirements of our contracts,
- our ability to expand our customer base and maintain relationships with our largest customers and strategic business allies,
- changes by the U.S. Small Business Administration (the "SBA") or other governmental authorities to, or with respect to the implementation or interpretation of, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"), the Paycheck Protection Program or related administrative matters, and
- concerns with, threats of, or the consequences of, pandemics, contagious diseases or health epidemics, including the 2019 novel coronavirus ("COVID-19"), and resulting supply chain disruptions, shifts in clean energy demand, impacts to our customers' capital budgets and investment plans, impacts to our project schedules, impacts to our ability to service existing projects, and impacts on the demand for our products.

We cannot assure you that:

- we will be able to meet any of our development or commercialization schedules,
- any of our new products or technology, once developed, will be commercially successful,
- our SureSource power plants will be commercially successful,
- the government will appropriate the funds anticipated by us under our government contracts,
- the government will not exercise its right to terminate any or all of our government contracts, or
- we will be able to achieve any other result anticipated in any other forward-looking statement contained herein.

The forward-looking statements contained herein speak only as of the date of this report and readers are cautioned not to place undue reliance on these forward-looking statements. Except for ongoing obligations to disclose material information under the federal securities laws, we expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any such statement to reflect any change in our expectations or any change in events, conditions or circumstances on which any such statement is based.

Risk Factor Summary

Our business is subject to numerous risks and uncertainties, including those described in Item 1A "*Risk Factors*". These risks include, but are not limited to the following:

- We have a limited number of shares of common stock available for issuance, which limits our ability to raise equity capital.
- Our business and operations may be adversely affected by the COVID-19 outbreak or other similar outbreaks.
- Our Paycheck Protection Program loan ("PPP Loan") may not be forgiven, may subject us to challenges regarding qualification for the PPP Loan, enforcement actions, fines and penalties, and has resulted in an informal SEC inquiry into our financial disclosures.
- We have incurred losses and anticipate continued losses and negative cash flows. Our cost reduction strategy may not succeed or may be significantly delayed, which may result in our inability to deliver improved margins.
- We have debt outstanding and may incur additional debt in the future, which may adversely affect our financial condition and future financial results.
- Unanticipated increases or decreases in business growth may result in adverse financial consequences for us.
- If our goodwill and other intangible assets, long-lived assets, inventory or project assets become impaired, we may be required to record a significant charge to operations.
- Our Advanced Technologies contracts are subject to the risk of termination by the contracting party and we may not realize the full amounts allocated under some contracts due to the lack of Congressional appropriations or early termination.
- Utility companies may resist the adoption of Distributed Generation (as defined below) and could impose customer fees or interconnection requirements on our customers that could make our products less desirable.
- We depend on third party suppliers for the development and supply of key raw materials and components for our products.
- We derive significant revenue from contracts awarded through competitive bidding processes involving substantial costs and risks. Our contracted projects may not convert to revenue, and our project awards and sales pipeline may not convert to contracts, which may have a material adverse effect on our revenue and cash flows.
- We have signed product sales contracts, engineering, procurement and construction contracts ("EPCs"), power purchase agreements ("PPAs") and long-term service agreements with customers subject to contractual, technology, operating and commodity risks as well as market conditions that may affect our operating results.
- We extend product warranties for our products, which products are complex and could contain defects and may not operate at expected performance levels, which could impact sales and market adoption of our products, affect our operating results or result in claims against us.
- We currently face and will continue to face significant competition, including from products using other energy sources that may be lower priced or have preferred environmental characteristics. Our plans are dependent on market acceptance of our products.
- Our products use inherently dangerous, flammable fuels, operate at high temperatures and use corrosive carbonate material, each of which could subject our business to product liability claims.
- We are increasingly dependent on information technology, and disruptions, failures or security breaches of our information technology infrastructure could have a material adverse effect on our operations and the operations of our power plant platforms. In addition, increased information technology security threats and more sophisticated computer crime pose a risk to our systems, networks, products and services.

- We are required to maintain effective internal control over financial reporting. Our management previously identified a material weakness in our internal control over financial reporting which was remediated in the fourth quarter of fiscal year 2020. If other control deficiencies are identified in the future, we may not be able to report our financial results accurately, prevent fraud or file our periodic reports in a timely manner, which may adversely affect investor confidence in our Company and, as a result, the value of our common stock.
- Our results of operations could vary as a result of changes to our accounting policies or the methods, estimates and judgments we use in applying our accounting policies.
- We may be affected by environmental and other governmental regulation.
- A negative government audit could result in an adverse adjustment of our revenue and costs and could result in civil and criminal penalties.
- Exports of certain of our products are subject to various export control regulations and may require a license or permission from the U.S. Department of State, the U.S. Department of Energy or other agencies.
- Provisions of Delaware and Connecticut law and of our certificate of incorporation and by-laws may make a takeover more difficult. Our by-laws provide that the Court of Chancery of the State of Delaware is the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a judicial forum deemed favorable by the stockholder for disputes with us or our directors, officers or employees.
- We will need to raise additional capital, and such capital may not be available on acceptable terms, if at all. If we do raise additional capital utilizing equity, existing stockholders will suffer dilution. If we do not raise additional capital, our business could fail or be materially and adversely affected.
- We depend on our intellectual property, and our failure to protect that intellectual property could adversely affect our future growth and success. The U.S. government has certain rights relating to our intellectual property, including the right to restrict or take title to certain patents.
- Our stock price has been and could remain volatile. Financial markets worldwide have experienced heightened volatility and instability which may have a material adverse impact on our Company, our customers and our suppliers.
- Future sales of substantial amounts of our common stock could affect the market price of our common stock.
- The rights of our 5% Series B Cumulative Convertible Perpetual Preferred Stock ("Series B Preferred Stock") could negatively impact our cash flows and dilute the ownership interest of our common stockholders. The Series B Preferred Stock ranks senior to our common stock with respect to payments upon liquidation, dividends and distributions.
- Litigation could expose us to significant costs and adversely affect our business, financial condition, and results of operations. The pending legal proceedings with POSCO Energy could expose us to costs of such legal proceedings or an adverse judgment.
- Our future success will depend on our ability to attract and retain qualified management, technical and other personnel.
- We are subject to risks inherent in international operations.

Background

Information contained in this report concerning the electric power supply industry and the Distributed Generation market, the Distributed Hydrogen market, the energy storage market and the Carbon Capture market, our general expectations concerning these industries and markets, and our position within these industries and markets are based on market research, industry publications, other publicly available information and assumptions made by us based on this information and our knowledge of these industries and markets, which we believe to be reasonable. Although we believe that the market research, industry publications and other publicly available information, including the sources that we cite in this report, are reliable, they have not been independently verified by us and, accordingly, we cannot

assure you that such information is accurate in all material respects. Our estimates, particularly as they relate to our general expectations concerning the electric power supply industry and the Distributed Generation market, the Distributed Hydrogen market, the energy storage market and the Carbon Capture market, involve risks and uncertainties and are subject to change based on various factors, including those discussed under Item 1A - Risk Factors of this report.

As used in this report, all degrees refer to Fahrenheit ("F"); kilowatt ("kW") and megawatt ("MW") numbers designate nominal or rated capacity of the referenced power plant; "efficiency" or "electrical efficiency" means the ratio of the electrical energy generated in the conversion of a fuel to the total energy contained in the fuel (lower heating value, the standard for power plant generation, assumes the water in the product is in vapor form; as opposed to higher heating value, which assumes the water in the product is in liquid form, net of parasitic load); kW means 1,000 watts; MW means 1,000,000 watts; "kilowatt hour" ("kWh") is equal to 1kW of power supplied to or taken from an electric circuit steadily for one hour; and one British Thermal Unit ("Btu") is equal to the amount of heat necessary to raise one pound of pure water from 59ºF to 60ºF at a specified constant pressure.

All dollar amounts are in U.S. dollars unless otherwise noted.

Additional Technical Terms and Definitions

Advanced Technologies - Advanced Technologies projects involve the development of new products or applications based on existing carbonate or solid oxide technologies or new electrochemical technologies. Examples are Carbon Capture, Distributed Hydrogen, Solid Oxide Fuel Cells and Solid Oxide Electrolysis Cell technologies. Advanced Technologies projects are typically externally funded by government or private sources and executed by our Advanced Technologies Group.

Availability - A measure of the amount of time a system is available to operate, as a fraction of total calendar time. For power generation equipment, an industry standard (IEEE (The Institute of Electrical and Electronics Engineers) 762, "Definitions for Use in Reporting Electric Generating Unit Reliability, Availability and Productivity") is used to compute Availability. "Availability percentage" is calculated as total period hours since Commercial Operations Date less hours not producing electricity due to planned and unplanned maintenance divided by total period hours. Grid disturbances, force majeure events and site-specific issues such as a lack of available fuel supply or customer infrastructure repair do not penalize the calculation of Availability according to this standard.

Carbonate Fuel Cell - Carbonate Fuel Cells, such as the fuel cell power plants produced and sold by FuelCell Energy, are high-temperature fuel cells that use an electrolyte composed of a carbonate salt mixture suspended in a porous, chemically inert ceramic-based matrix. Carbonate Fuel Cells operate at high temperatures, enabling the use of a nickel-based catalyst, a lower cost alternative to precious metal catalysts used in some other fuel cell technologies.

Carbon Capture – The process of extracting dilute carbon dioxide from the flue gas exhaust of fossil or Biogas fueled power plants or thermal processes and purifying the carbon dioxide to the purity required for sequestration or utilization. Carbon Capture is conventionally done using absorption systems that require energy to produce high purity carbon dioxide. Carbon Capture can also be done with Carbonate Fuel Cell systems while they produce power. To our knowledge, this ability to capture carbon dioxide from a power plant or boiler while producing additional power is unique to Carbonate Fuel Cell systems.

Carbon Separation – The process of extracting carbon dioxide from a Carbonate Fuel Cell system or Solid Oxide Fuel Cell system to reduce or eliminate carbon dioxide emissions. Carbon Separation does not involve carbon dioxide from an external source, as in Carbon Capture, but is the extraction and purification of carbon dioxide produced internally by the fuel cell from a fossil or Biogas fuel. Extracted carbon dioxide can be sequestered or used in industrial or food and beverage applications.

Combined Heat & Power - A power plant configuration or mode of operation featuring simultaneous on-site generation from the same unit of fuel of both electricity and heat with the heat used to produce steam, hot water or heated air for both heating and cooling applications.

Commercial Operations Date - The date that testing and commissioning of a fuel cell project is completed, and the fuel cell power plant is operational with power being generated and sold to the end-user.

Distributed Generation - Electric power that is generated where it is needed (distributed throughout the power grid) rather than from a central location. Centrally generated power requires extensive transmission networks that require maintenance and experience efficiency losses during transmission while Distributed Generation does not. Distributed Generation is typically classified as small to mid-size power plants, typically generating 75 MW or less. Central generation is typically classified as large power plants generating hundreds or even thousands of MW.

Distributed Hydrogen – Hydrogen that is produced near the end user or users of the hydrogen, rather than from a central location. Large central hydrogen production plants create emissions in their operations and add cost and additional emissions by needing to deliver the gas over long distances to end users. Distributed Hydrogen can be provided by Carbonate Fuel Cell based Trigeneration systems or Solid Oxide Electrolysis Cell based systems.

Hydrogen Based Long Duration Energy Storage – Energy storage involving the production of hydrogen from power by electrolysis, where hydrogen is stored to be used later to produce power. The storage duration can be extended to long periods of time by providing sufficient hydrogen storage. High round trip storage efficiency can be achieved if the electrolysis and power generation processes are each high efficiency processes, such as Solid Oxide Electrolysis Cell based systems and Solid Oxide Fuel Cell based systems, or systems using Reversible Solid Oxide Fuel Cell stacks that alternate between fuel cell and electrolysis mode.

Microgrids - Microgrids are localized electric grids that can disconnect from the traditional electric grid to operate autonomously and strengthen grid resiliency. Microgrids can be composed only of SureSource power plants due to their continual power output or combine a variety of power generation types such as fuel cells and solar arrays.

Nitrogen Oxides ("NOx") - Generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the NOx are colorless and odorless; however, they are a major precursor to smog production and acid rain. One common pollutant, Nitrogen Dioxide, along with particles in the air, can often be seen as a reddish-brown layer over an urban area. NOx form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NOx are motor vehicles, traditional fossil fuel fired electric utility generation, and other industrial, commercial and residential sources that burn fuels.

Particulate Matter ("PM") - Solid or liquid particles emitted into the air that are generally caused by the combustion of materials or dust generating activities. Particulate Matter caused by combustion can be harmful to humans as the fine particles of chemicals, acids and metals may get lodged in lung tissue.

Power Purchase Agreement ("PPA") - A Power Purchase Agreement is a contract that enables a power user to purchase energy under a long-term contract where the user agrees to pay a predetermined rate for the kilowatt-hours delivered from a power generating asset while avoiding the need to own the equipment and pay the upfront capital cost. The PPA rate is typically fixed (with an escalation clause tied to a consumer price index or similar index) or pegged to a floating index that is on par with or below the current electricity rate being charged by the local utility company. A PPA is typically for a term of 10 to 20 years.

Reformer / Electrolyzer / Purifier ("REP") – A system which uses a Carbonate Fuel Cell stack (or stacks) in reverse mode (consuming power instead of producing power) to produce hydrogen by electrolysis simultaneous with production of hydrogen from a hydrocarbon fuel by reforming. The Carbonate Fuel Cell reactions also purify the hydrogen by transferring carbon dioxide from the hydrogen stream.

Renewable Biogas or Biogas - Renewable Biogas is fuel produced by biological breakdown of organic material. Biogas is commonly produced in biomass digesters employing bacteria in a heated and controlled oxygen environment. These digesters are typically used at wastewater treatment facilities or food processors to break down solid waste and the Biogas produced is a byproduct of the waste digestion. Biogas can be used as a renewable fuel source for SureSource fuel cell plants located on site where the Biogas is produced with gas cleanup, or it can be processed further to meet pipeline fuel standards and injected into a gas pipeline network, which is termed "Directed Biogas". Directed Biogas requires additional processing to increase the Btu content of the gas, which increases cost and consumes power. Use of Biogas at the point of production (on-site) is more efficient and more economical.

Reversible Solid Oxide Fuel Cell ("RSOFC") – Reversible Solid Oxide Fuel Cell systems use solid oxide cell stacks that alternate between operation in electrolysis mode (as SOEC stacks) or power generation mode (as SOFC stacks). The ability to use one stack set for both processes reduces cost in Hydrogen Based Long Duration Energy Storage systems.

Solid Oxide Electrolysis Cell ("SOEC") - Solid Oxide Electrolysis Cells are electrochemical cells with the same cell and stack structure as Solid Oxide Fuel Cells, but are operated in reverse – instead of producing power from fuel and oxygen, SOEC cells produce hydrogen and oxygen from steam when supplied with power.

Solid Oxide Fuel Cell ("SOFC") - Solid Oxide Fuel Cells are electrochemical cells with a non-porous ceramic material as the electrolyte. SOFCs operate at high temperatures (slightly higher than Carbonate Fuel Cells) eliminating the need for costly precious-metal catalysts, thereby reducing cost. Like Carbonate Fuel Cells, the high operating temperature enables internal reforming of the hydrogen rich fuel source. The Solid Oxide Fuel Cell platform can be operated in fuel cell mode (producing power from fuel) or electrolysis mode (producing hydrogen from power) and can alternate between the two.

Sulfur Oxide ("SOx") - Sulfur oxide refers to any one of the following: sulfur monoxide, sulfur dioxide ("SO_2") and sulfur trioxide. SO_2 is a byproduct of various industrial processes. Coal and petroleum contain sulfur compounds and generate SO_2 when burned. SOx compounds are particulate and acid rain precursors.

At a Glance

Today, FuelCell Energy is a global leader in sustainable clean energy technologies that address some of the world's most critical challenges around energy, safety and global urbanization. In the future, FuelCell Energy plans to commercialize our hydrogen and carbon capture technologies intended to drive next generation solutions as the world strives for a smaller carbon footprint.

Overview

As a leading global manufacturer of proprietary fuel cell technology platforms, we are uniquely positioned to serve customers worldwide with sustainable products and solutions for businesses, utilities, governments, and municipalities. FuelCell Energy's solutions are designed to enable a world empowered by clean energy, enhancing the quality of life for people around the globe. We target large-scale power users with our megawatt-class installations globally, and currently offer sub-megawatt solutions for smaller power consumers in Europe. To provide a frame of reference, one megawatt is adequate to continually power approximately 1,000 average sized U.S. homes. Our customer base includes utility companies, municipalities, universities, hospitals, government entities/military bases and a variety of industrial and commercial enterprises. Our leading geographic markets are currently the United States and South Korea, and we are pursuing opportunities in other countries around the world.

History

FuelCell Energy, based in Connecticut, was founded in 1969 as a New York corporation to provide applied research and development services on a contract basis. We completed our initial public offering in 1992 and reincorporated in Delaware in 1999. We began selling stationary fuel cell power plants commercially in 2003.

Leadership

We believe our leadership in clean energy has significant benefits for our customers and the sustainability of our planet.

- **Early Mover:** We aim to be a leader in key areas of the clean energy value chain. We have the only fuel cell that is California Air Resource Board ("CARB") certified utilizing Biogas. Our proprietary Carbon Capture solution is the only solution that we know of that produces power rather than consuming it and is also capable of producing hydrogen for distributed applications and electrolysis.
- **Customer Enablement:** Our fuel cell platforms are designed to be clean, efficient and reliable and help our customers achieve their sustainability goals while meeting their critical business needs. These efficient and environmentally friendly products support the "Triple Bottom Line" concept of sustainability, consisting of environmental, social and economic considerations.
- **Intellectual Property:** FuelCell Energy's innovation is embodied in our intellectual property, including 102 U.S. patents and 186 patents in other jurisdictions covering our fuel cell technology (in certain cases covering the same technology in multiple jurisdictions).

- **International Standard Pacesetter:** FuelCell Energy is certified for compliance to ISO 14001:2015 which allows organizations to improve environmental performance through more efficient use of resources and reduction of waste.
- **Engineered for Reuse:** Our solutions are engineered for recycling and reuse, which sets us apart from other sources of clean energy technology such wind turbines, solar cells and batteries that are typically discarded in landfills.

Our Team

Our senior leadership team is comprised of industry veterans, representing over 200 years of collective experience in the power industry, alternative energy, advanced manufacturing and disruptive technologies.

Business Model, Strategy and Competitive Advantages

Our Business Model

Our business model is based on multiple revenue streams, including power platform and component sales; recurring service revenue, mainly through long-term service agreements; recurring electricity, capacity and renewable attribute sales under PPAs and tariffs for projects we retain in our generation portfolio; and revenue from public and private industry research contracts under Advanced Technologies.

We are a complete solutions provider, controlling the design, manufacturing, sales, installation, operations and maintenance of our patented fuel cell technology under long-term power purchase and service agreements. When utilizing long-term PPAs, the end-user of the power or utility hosts the installation and only pays for power as it is delivered, avoiding up-front capital investment. We also develop projects and sell equipment directly to customers, providing a complete solution of engineering, installing and servicing the fuel cell power plant under an engineering, procurement and construction agreement ("EPC") and a long-term maintenance and service agreement. FuelCell Energy maintains the long-term recurring service obligation and associated revenues running conterminous with the life of such projects.

Our Product Offerings and Opportunities

FuelCell Energy is focused on using our proprietary technology to pursue four significant energy opportunities, each of which we believe is important to the achievement of the global energy transition currently underway, and which promote desired sustainability and environmental stewardship outcomes.

1. Distributed Generation
    a. Microgrid/Grid Resiliency
    b. Combined Heat & Power ("CHP")
    c. Carbon Capture, Separation and Utilization
    d. Multi-Fuel Capabilities
2. Distributed Hydrogen
    a. Hydrogen production at the point of use, removing transportation cost
    b. Hydrogen co-produced with power, water, and thermal energy
3. Hydrogen Energy Storage and Hydrogen Power Generation
    a. High Efficiency Solid Oxide Electrolysis
    b. Carbonate Electrolysis with Reforming and Purification
    c. Carbon free power generation
    d. Unlimited storage opportunity

4. Carbon Capture

   a. Capture carbon while simultaneously producing power to offset the costs of Carbon Capture

   b. Climate mitigation — reduce CO_2 emissions

   c. Enables the continued use of abundant fossil fuels

FuelCell Energy's technology across these four opportunities creates significant optionality for the Company.

To date, the Company has delivered commercial Distributed Generation solutions to our customers. As further described below, we are in the process of commercializing solutions for Distributed Hydrogen, Hydrogen Energy Storage, Hydrogen Power Generation and Carbon Capture.

We market different configurations and applications of our SureSource platform to meet specific market needs, including:

- ***On-Site Power (Behind the Meter):*** Customers benefit from improved power reliability and energy security from on-site power that reduces reliance on the electric grid in an environmentally responsible manner. Utilization of the high-quality thermal energy produced by the fuel cell in a CHP configuration supports economic and sustainability goals by lessening or even avoiding the need for combustion-based boilers for heat and its associated cost, pollutants and carbon emissions. Heat can be used to produce hot water or steam or to drive high efficiency absorption chillers for cooling applications for commercial and industrial customers. The SureSource platform can also deliver hydrogen and carbon dioxide for product use such as the production of dry ice.
- ***Utility Grid Support****:* Our SureSource power platforms are scalable, which enables siting multiple fuel cell power plants together in a fuel cell park. Fuel cell parks enable utilities to add clean and continuous multi-megawatt power generation on a very small footprint when and where needed and enhance the resiliency of the electric grid by reducing reliance on large central generation plants and the associated transmission system. Deploying our SureSource power platforms throughout a utility service territory can also help utilities comply with government-mandated clean energy regulations, meet air quality standards, maintain continuous power output and improve grid reliability. Our fuel cells can firm-up the total utility power generation solution when combined with intermittent power generation, such as solar or wind, or less efficient combustion-based equipment that provides peaking or load following power.
- ***Microgrid Applications:*** SureSource platforms can also be configured as a Microgrid, either independently or with other forms of power generation, with the goal of providing continuous power and a seamless transition during times of grid outages. We have multiple installations of our solutions operating within Microgrids, some individually and some with other forms of power generation.
- ***Distributed Hydrogen:*** SureSource platforms are configurable to deliver on-site hydrogen for transportation, industrial applications, natural gas blending, and repowering combustion-based equipment with zero carbon hydrogen. The SureSource Hydrogen platform utilizes proprietary fuel cells configured to simultaneously generate three value streams — power generation, hydrogen, and thermal energy.
- ***Carbon Utilization:*** SureSource platforms do not combust fuel, and because fuel and air are reacted separately before mixing, carbon dioxide from the fuel is not initially diluted by air and can be easily extracted from the system for utilization or sequestration, significantly reducing the carbon footprint of the generated power. A few attractive applications for this developing Carbon Separation technology are the on-site production of carbon dioxide for industrial use, production of dry ice/ultra-cold freezing, and use in beverage and food applications.

Consistent with our overall strategy, our engineers and scientists focus our innovation on developing sophisticated technical solutions that meet customer needs. Our sales and marketing teams focus on presenting solutions that we expect will lead to long term and repeatable sales opportunities. We have structured our sales efforts along our differentiated capabilities and major end-user market offerings.

Our Long-Term Strategy

In 2019, we launched our "Powerhouse" strategy to strengthen our business, maximize operational efficiencies and position us for future growth. Looking ahead, we have updated and may continue to update the pillars of our Powerhouse Strategy to reflect our future focus and to affirm our commitment to leadership in sustainability.

Transform — Build a Durable Financial Foundation and Enhance Financial Results

Continuing from the transformational groundwork originally laid out in 2019, building balance sheet strength (including enhancing liquidity) is an ongoing focus as FuelCell Energy grows:

- *Enhanced liquidity:* In fiscal year 2020, we executed a public offering of common stock and at-the-market sales of common stock, improving the Company's liquidity with net proceeds during fiscal year 2020 of more than $170 million at an efficient cost of capital, which has improved the Company's financial foundation as we work to execute our strategy.

- *Capital structure*: In fiscal year 2020 and subsequent to the end of the fiscal year, we enhanced our liquidity and we expect to continue to do so. In addition, we continue to focus on reducing the cost of borrowing to deliver an overall lower cost of capital, with the goal of creating a capital structure that provides for efficient financing across our platforms and subsidiaries enabled by continued deployment of our projects, advancement of our technologies, and execution of our strategy.

Strengthen — Drive Operational Excellence

- *Capital deployment:* Making investments that further enhance performance, advance product commercialization, reduce costs and generate target returns on our investments
- *Operational excellence:* Executing on our project backlog; lean resource management driving rational cost management across our business

Grow — Penetrate Significant Market Opportunities Where We Can Win

- *Optimization of core business:* Capitalizing on our core technological strengths in key product markets, including biofuels, Microgrids, Distributed Hydrogen, and Carbon Separation and utilization
- *Commercial excellence:* Strengthening customer relationships and building a customer-centric reputation; building our sales pipeline by increasing focus on targeted differentiated applications, product sales and geographic market and customer segment expansion
- *Innovation:* Successfully delivering extended life stack modules; expanding commercialization of new technologies including proprietary gas treatment systems, advancing hydrogen and Carbon Capture, utilization, and sequestration
- *Geographic and market expansion:* Targeting growth opportunities in South Korea and across Asia, Europe, the United States and the Middle East

The pillars and goals of our Powerhouse Strategy will continue to evolve over time as goals are met and the Company and market dynamics change.

Our Durable Competitive Advantages

Given the long history of investment in and deployment of our solutions, we believe the Company has competitive advantages including:

- *Innovation and Sustainability:*
  - **Intellectual property** that we believe makes new entry to the market challenging
  - **A product portfolio** that consists of several technologies that are attractive based on market economics, not government mandate
  - **Products characterized by sustainability over their full lifecycle** versus other "clean" technologies such as wind turbines, solar panels and batteries for which recycling is neither economical nor practical, and that often rely on limited supply minerals, disruptive mining and geopolitical risk
  - **Technologies that fulfill society's fundamental need for energy** without requiring that users/ society change the way they live or use energy

- *Excellence:*
  - **Operational excellence** programs and lean resource management aim to maximize cost- reduction opportunities while improving safety and product quality
  - **Lean management** which drives proprietary manufacturing processes that increase speed to market and cost competitiveness
  - **Technical expertise** through a high level of employee engagement with a tenured, highly skilled workforce, operating complex processes to deliver our platform solutions
- *Engagement & Understanding:*
  - **Strategic innovation and development relationships** with the U.S. Department of Energy ("DOE") and ExxonMobil Research and Engineering Company ("EMRE") provide funding and encourage technology development
  - **Geographic Footprint** in the United States, Asia and Europe provides strategic channels of distribution and allows economical product support

Products

Our core fuel cell products offer clean, highly efficient and affordable power generation for customers. The plants are scalable for multi-megawatt utility applications, Microgrid applications, Distributed Hydrogen, or use of the 'platforms' thermal attributes for on-site heat and chilling applications for a broad range of applications.

Our commercial product line includes:

- SureSource 1500 ™, our 1.4 MW platform;
- SureSource 3000™, our 2.8 MW platform;
- SureSource 4000™, our 3.7 MW high efficiency platform;
- SureSource 250 (Europe only), our 250 kW platform;
- SureSource 400 (Europe only), our 400 kW platform; and
- SureSource Hydrogen™, our 2.3 MW platform that produces 1,200 kg of hydrogen per day.

Our proprietary, patented Carbonate Fuel Cell technology generates electricity directly from a hydrogen-rich fuel, such as natural gas or Renewable Biogas, by reforming the fuel inside the fuel cell to produce the needed hydrogen. This internal, proprietary "one-step" reforming process results in a simpler, more efficient, and cost-effective energy conversion system compared with external reforming fuel cells. Additionally, we benefit from multi-fuel capability,

which enables the SureSource platform to leverage the established natural gas infrastructure that is readily available in our existing and target markets, compared to some types of fuel cells that can only operate on high purity hydrogen. In addition, our proprietary gas clean-up skid technology allows us to utilize on-site Biogas as production of on-site Biogas is rapidly growing around the world. Our fuel-flexible platforms mainly utilize clean natural gas and Renewable Biogas generated by the customer on-site or Directed Biogas generated at a distant location and transported via the existing common carrier gas pipeline networks.

Our global SureSource product line is uniformly based on the same Carbonate Fuel Cell technology, and offers the following advantages:

- ***Sustainable***: Our solutions produce electricity electrochemically − without combustion – which enables siting of the power plants in dense, urban areas with clean air permitting regulations and represents an important public health benefit. Fuel cells also reduce carbon emissions compared to less efficient combustion-based power generation.

- ***Flexible***: Our solutions can operate on natural gas, on-site Renewable Biogas, Directed Biogas, flare gas and propane to offer CHP and are scalable to add power incrementally as demand grows. The unique chemistry of our Carbonate Fuel Cells allows them to directly use low Btu on-site Biogas with no reduction in output or efficiency compared to operation on natural gas. We have developed proprietary Biogas cleanup and contaminant monitoring equipment which, combined with the inherent suitability of the Carbonate Fuel Cell chemistry, gives us an advantage in on-site Biogas applications. Our SureSource 1500 and SureSource 3000 power plants are the only fuel cell systems certified to CARB emissions standards under the Distributed Generation Certification Program for operation with on-site Biogas. In addition, we have demonstrated operation of our Carbonate Fuel Cell technology with other fuel sources including coal syngas and propane.

- ***Reliable:*** Our solutions improve power reliability and energy security by lessening reliance on the transmission and distribution infrastructure of the electric grid. Unlike solar and wind power, fuel cells are able to operate continuously regardless of weather, time of day, or geographic location.

- ***Standardized:*** Our solutions use a standard cell design globally, enabling supply chain volume-based cost reduction, optimal resource utilization and long-life product enhancements.

- ***Attractive Thermal Attributes:*** In addition to electricity, our standard fuel cell configuration produces high quality thermal energy (approximately 700° F), suitable for heating facilities or water, or steam for industrial processes or for absorption cooling. When configured for CHP, our system efficiencies can potentially reach up to 90%, depending on the application. When configured for Distributed Hydrogen our plants produce hydrogen in addition to power, with an effective efficiency (counting the fuel that would have been used to produce hydrogen conventionally) of up to 80% before considering waste heat utilization, which can raise the total efficiency even higher.

- ***Use of Readily Available Catalyst Material:*** As our fuel cells operate at approximately 1,100° F, our platform solution has a key advantage afforded high temperature fuel cells, specifically that they do not require the use of precious metal electrodes required by lower temperature fuel cells, such as proton-exchange membrane ("PEM") fuel cells. As a result, we are able to use less expensive and readily available industrial metals, primarily nickel and stainless steel, as catalysts for our fuel cell components.

- ***Easy to Site:*** Our fuel cell power platforms are easily sited with a relatively small footprint given the amount of power produced. There is minimal noise produced by the mechanical balance of plant ("BOP") and a clean emissions profile, making our fuel cell power platforms ideally suited for urban locations and in building suburban applications at or near the point of energy consumption.

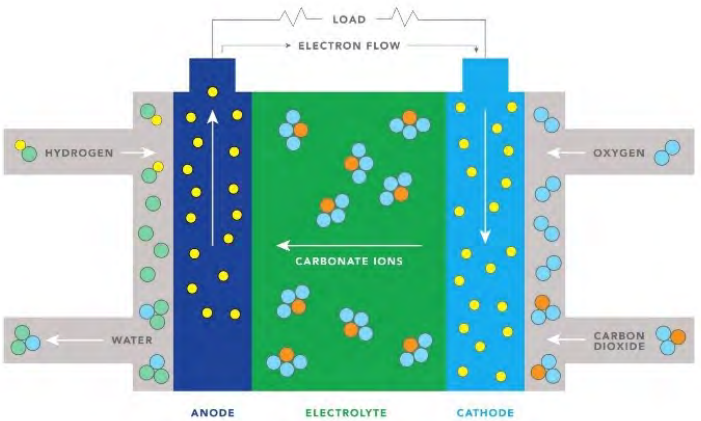
- ***Scalable:*** Our solutions are scalable, providing a cost-effective solution to adding power incrementally as demand grows, such as multi-megawatt fuel cell parks supporting the electric grid and large scale commercial and industrial operations.

How Our Patented Fuel Cell Works

- Fuel cells cleanly and efficiently convert chemical energy from hydrogen-rich fuels into electrical power and high-quality heat via an electrochemical process.

- The process is highly efficient and emits water rather than pollutants as there is no burning of fuel.

- Similar to a battery, a fuel cell is comprised of many individual cells that are grouped together to form a fuel cell stack, but, unlike a battery, a fuel cell will continue producing power from hydrogen or hydrocarbon fuels as long as fuel and oxidant are continuously supplied to it.
- When a hydrogen-rich fuel such as clean natural gas or Renewable Biogas enters the fuel cell stack, it reacts chemically to produce hydrogen and electrochemically with oxygen to produce electric power, heat and water.
- FuelCell Energy's SureSource power platforms are based on Carbonate Fuel Cell technology and FuelCell Energy is advancing its Solid Oxide Fuel Cell technology closer to commercialization.
- To produce electricity, Carbonate Fuel Cells generate hydrogen directly from a fuel source, such as natural gas or Renewable Biogas, via an internal reforming process; this approach, which is patented by FuelCell Energy, is a distinct competitive advantage of Carbonate Fuel Cells. Carbonate Fuel Cells produce power from hydrogen by reacting hydrogen in one electrode to make electrons and oxygen in another electrode to consume electrons. This electron circuit generates the power, and the circuit is completed by carbonate ions that diffuse from the oxygen electrode to the hydrogen electrode. The carbonate ions are converted to carbon dioxide and recycled back to the cathode, where they react to regenerate the carbonate ion. The cell concept is illustrated in the following figure.



Schematic of Carbonate Fuel Cell Chemical Reactions

Advantages of Carbonate Fuel Cells

Fuel cell technologies are generally classified according to the electrolyte used by each fuel cell type. Our SureSource technology utilizes a carbonate electrolyte. Carbonate-based fuel cells are well-suited for megawatt-class applications, offering a number of advantages over other types of fuel cells in our target markets.

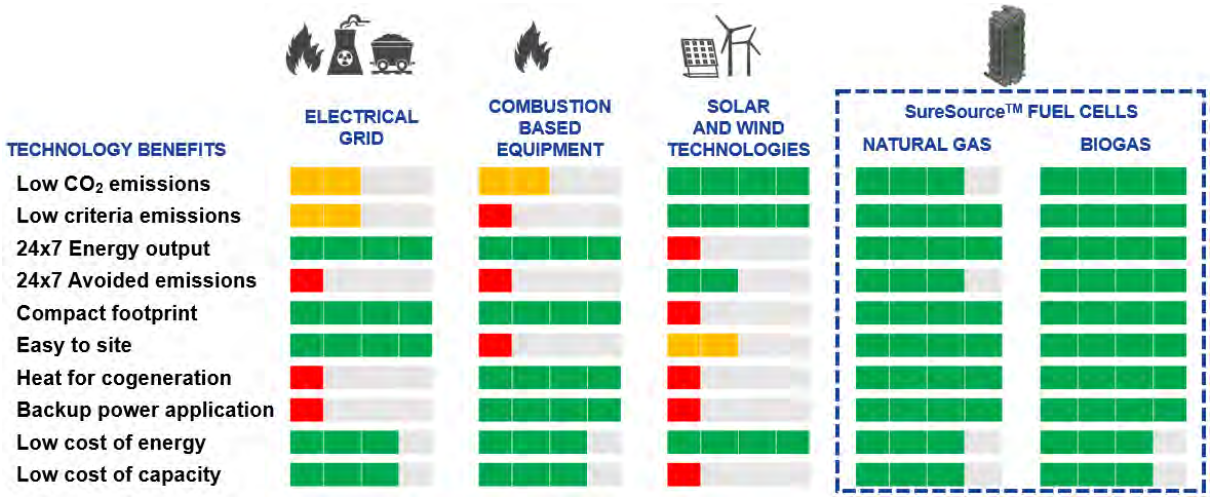
These advantages include:

- The ability of Carbonate Fuel Cells to generate electricity directly from readily available fuels such as natural gas or Renewable Biogas;
- Lower raw material costs as the high temperature of the fuel cell enables the use of commodity metals rather than precious metals;
- Scalability to leverage on-site components to reduce cost;
- High-quality heat suitable for CHP applications; and

- The ability to perform advanced applications, including Carbon Capture and hydrogen production to provide fuel for fuel cell vehicles.

SureSource Attributes, Benefits and Emissions Profile

Fuel cells are non-combustion devices that directly convert chemical energy in fuel into electricity. Because fuel cells generate power electrochemically rather than by burning fuels, they are more efficient than combustion-based power sources (and as a result they produce less CO_2 per kWh of power generated because they use less fuel), and they produce only trace levels of criteria pollutants (e.g., NO_X, SO_X, and Particulate Matter). In addition to the low emissions profile, FuelCell Energy's fuel cell platforms offer additional benefits such as ease of siting, cogeneration heat, fuel flexibility, and compact footprint. The following table illustrates our view of some of the key attributes and benefits of our SureSource power plants:



Intermittent renewables, such as solar- and wind-based power, offer near zero emissions, but only for a small percentage of time and not reliably. To address capacity needs, solar and wind need to be backed up with conventional power generation, battery storage or, ideally, clean baseload fuel cells.

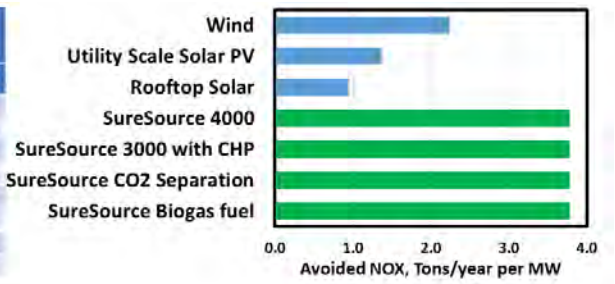
The high efficiency of our products results in significantly less CO_2 per unit of power production compared to the average U.S. fossil fuel power plant, and carbon emissions are reduced even further when configured for CHP applications or biofuels. When our power platforms are operating on Renewable Biogas, government agencies and regulatory bodies generally classify them as carbon neutral due to the renewable nature of the fuel source. In addition, we have developed the Carbon Separation feature which can be added to a SureSource power plant, allowing CO_2, which would otherwise be emitted to be captured and purified for on site use or sequestration.

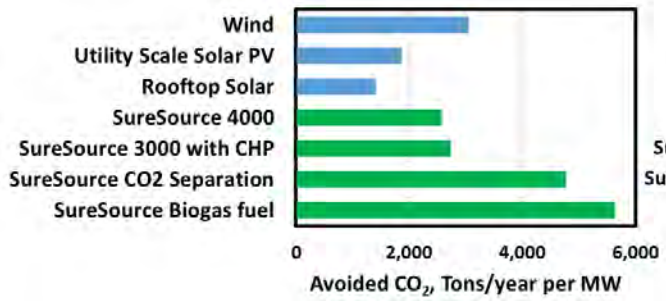
The low CO_2 emissions and low criteria pollutants from SureSource power plants have a significant impact on sustainability and air quality because they avoid emissions 24 hours a day. The high capacity factor of baseload SureSource platforms maximizes the impact of their environmental benefits. While wind and solar renewable power sources may completely avoid these emissions while operating, they avoid fewer emissions than fuel cells because they operate for fewer hours per day. When wind and solar renewable power sources are not operating, higher emission resources may be required to operate, thus diluting the benefits. Additionally, all renewable power sources have life cycle emissions associated with manufacture and disposal.

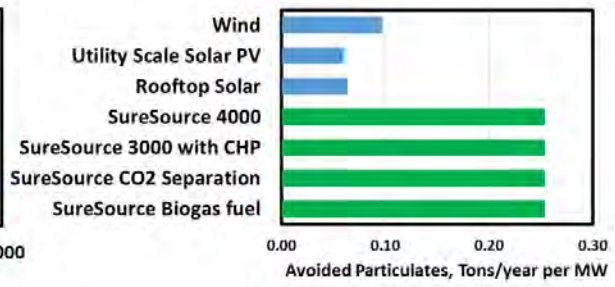
The following table and figures illustrate how the high capacity factor of our SureSource solutions, combined with their low emissions, result in more avoided emissions on an annual basis than wind and solar per MW of installed

capacity. Avoided emissions are calculated based on how much lower in emissions each source is relative to the grid, and the percentage of time the source operates.

	Capacity Factor, %	Emissions, lb./MWh			Avoided Emissions, Tons/y per MW		
		NOX	PM	CO2	NOX	PM10	CO2
Average US Grid		0.97[1]	0.06[2]	1432[1]			
SureSource Biogas fuel[5]	90%	0.01	0.00	0	3.8	0.25	5,646
SureSource w CO_2 Separation[5]	90%	0.01	0.00	221	3.8	0.25	4,773
SureSource 3000 w CHP[5]	90%	0.01	0.00	738	3.8	0.25	2,737
SureSource 4000	90%	0.01	0.00	778	3.8	0.25	2,577
Rooftop Solar	23%[3]				1.0	0.06	1,411
Utility Scale Solar PV[4]	29%[3]				1.4	0.06	1,874
Wind	47%[3]				2.2	0.10	3,057







Sources for the above tables and figures include:

1. Grid emissions rates for NO_X and CO_2 are from EPA eGrid 2018, US Average non-baseload rates.
2. Grid particulate emissions rate is from EPA eGrid PM 2.5 US average for 2018.
3. Solar and Wind capacity factors are average of range from Lazard LCOE Analysis version 13, November 2019.
4. Utility scale avoided emissions assumes 5% transmission and distribution losses.
5. SureSource estimates are based on Company specifications and estimates.

We are also actively developing other technologies, which are discussed below in the "Advanced Technologies Programs" section.

Advanced Technologies Programs

Our Advanced Technologies programs, including our Carbon Separation, Carbon Capture, Solid Oxide Fuel Cells, and Solid Oxide Electrolysis Cells for hydrogen production and energy storage represent future market, product and revenue opportunities for the Company beyond our current product line. We undertake both privately funded and publicly funded research and development to develop these opportunities, reduce costs, and expand our technology portfolio. One of our Advanced Technologies programs, Distributed Hydrogen, is transitioning from being categorized as Advanced Technologies to being categorized as a commercial product as we execute our first commercial project with Toyota at the Port of Long Beach, California, which will produce hydrogen for the fueling of passenger vehicles and heavy duty trucks while providing power to Toyota's facilities and the local grid.

Our multi-featured power plant platforms can be configured to provide a number of value streams, including clean electricity, high quality usable heat, water and hydrogen suitable for vehicle fueling, industrial purposes or power generation, and to concentrate and separate CO_2 from coal, biomass and natural gas fired power plants and industrial applications.

Our Advanced Technologies programs are currently focused on commercializing solutions within four strategic areas:

1) **Distributed Hydrogen** production;

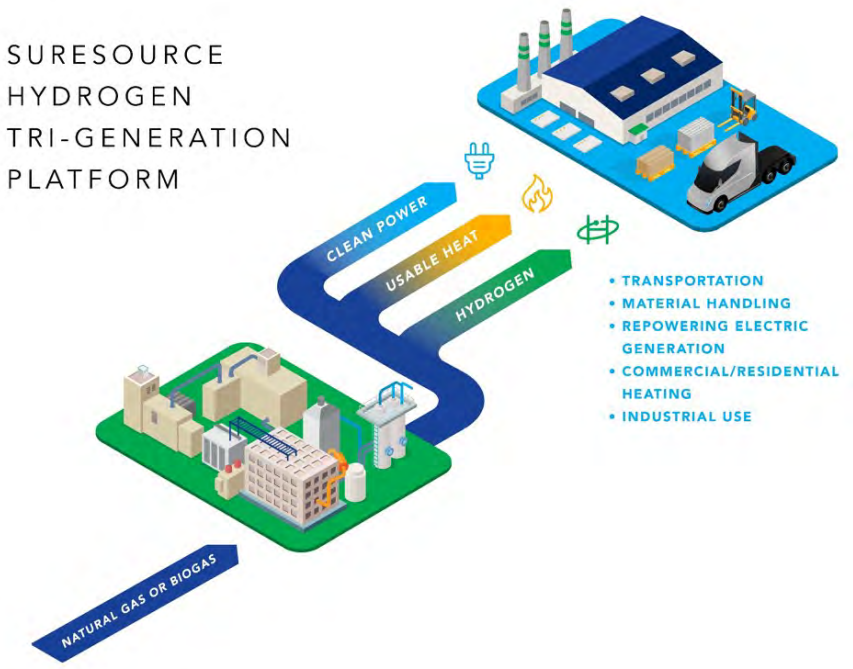
2) **Solid Oxide Fuel Cell** for stationary power generation, **Solid Oxide Electrolysis Cell** for electrolysis and long duration energy storage, and **Reversible Solid Oxide Fuel Cell** for the ability to switch between SOFC and SOEC;

3) **Carbon Capture** for emissions reduction in traditional fossil fuel fired generation and industrial applications combined with power generation; and

4) **Carbon Separation** for emissions reduction from our fuel cell platforms by extracting and purifying CO_2 for sequestration or local use.

Distributed Hydrogen Production - On-site or distributed hydrogen generation, produced cleanly, represents an attractive and expansive market. Our high temperature fuel cells generate electricity directly from a fuel by reforming the fuel inside the fuel cell to supply hydrogen for the electrical generation process. We have developed a process by which gas separation technology can be added to our core fuel cell to capture hydrogen that is not used by the electrical generation process, and we refer to this configuration as SureSource Hydrogen™.

The SureSource Hydrogen product has the potential to be a compelling solution for industrial users of hydrogen and in transportation fueling applications. The 2.3 MW SureSource Hydrogen plant is expected to have a hydrogen output of approximately 1,200 kg per day, in addition to the electricity, thermal energy and water generated by the fuel cell. Hydrogen is typically made from natural gas in large central steam methane reforming ("SMR") plants. The conventional SMR reforming process involves burning fossil fuel to produce steam and to heat a fuel/steam mixture to a high temperature, which is then passed over a catalyst that converts the methane/water mixture to carbon dioxide and hydrogen. The need to burn fossil fuel to provide thermal energy for the SMR process produces additional carbon dioxide and criteria pollutant emissions, and SMRs are significant water consumers. A similar, but environmentally sustainable, process happens in SureSource internal reforming: methane (from natural gas or Biogas) reacts with water to produce hydrogen, but, in the internal reforming process, the water and the heat are byproducts of the fuel cell reaction. There is no need to burn fuel to supply heat, and there is no need to supply water. In fact, a SureSource Hydrogen plant is designed to be a net water producer, not a water consumer. When operated on Biogas, SureSource Hydrogen systems produce renewable hydrogen, also known as Green Hydrogen, but, even when fueled with natural gas, they produce hydrogen with a lower carbon and criteria pollutant impact than conventional SMR because of the use of internal heat instead of burning fuel. Adding Carbon Separation or Carbon Capture to the SureSource Hydrogen platform when fueled with natural gas will deliver Blue Hydrogen (i.e., hydrogen produced with Carbon Capture). The following figure illustrates the concept of the SureSource Hydrogen platform and identifies typical applications for Distributed Hydrogen.



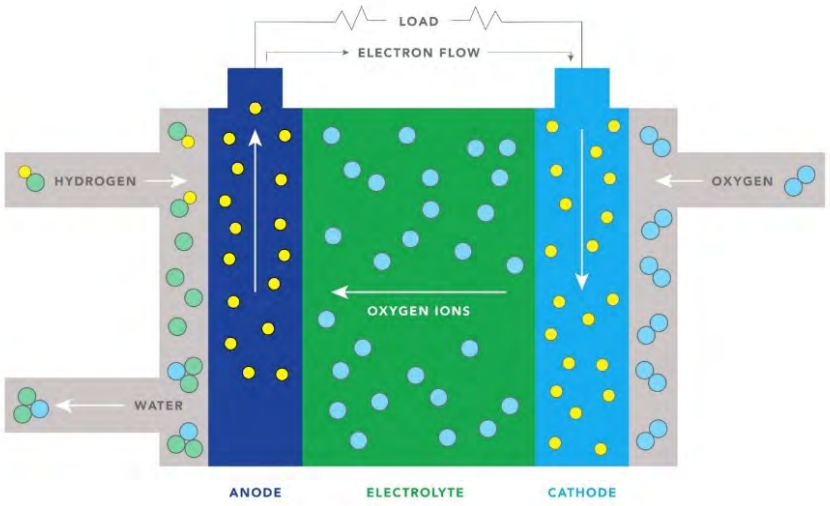
Trigeneration Distributed Hydrogen Platform

SOFC/SOEC/RSOFC and Hydrogen Based Long Duration Energy Storage – We are developing a solution for long duration energy storage using our proprietary solid oxide technology. Our solid oxide stacks are designed to be capable of alternating between electrolysis and power generation mode. Instead of producing power from fuel and air, a Solid Oxide Fuel Cell stack in electrolysis mode splits water into hydrogen and oxygen using supplied electricity. A storage system based on SOFC/SOEC/RSOFC technology will start with stored water, which will be converted to hydrogen during charging by electrolysis in the solid oxide stacks. The hydrogen will be stored as compressed gas in cylinders, pipelines, or underground, creating the ability to produce a virtually limitless supply. When discharge power is needed, the stored hydrogen will be sent back to the solid oxide stacks, which react it with air to produce power and to regenerate the water, which will be stored for the next cycle.

The key aspect of this approach is that the reactant (water) is inexpensive and plentiful, consisting of an initial charge of water that will be regenerated with each discharge cycle. Except for a small amount of makeup water, the system will operate in closed loop mode without continuous water consumption during electrolysis. Long duration storage can be achieved by adding water and hydrogen storage capacity, without the need to add excessive amounts of conventional battery reactants (e.g. Lithium, Cobalt, etc.), which have supply constraints for broad adoption and which present disposal challenges. Long duration energy storage is expected to be required at large scale during time periods ranging from hourly to seasonal in order to manage the forecasted high penetration of intermittent renewable resources globally, and this water/hydrogen based approach of our SOFC/SOEC/RSOFC technology has the potential to be a key enabler of long duration storage.

SOFC power platform design and manufacturing will be complementary to our carbonate-based megawatt-scale platforms and will afford us the opportunity to leverage our field operating history, our existing expertise in power platform design, fuel processing and high volume manufacturing capabilities, and our existing installation and service infrastructure. Additionally, the primary market for storage applications is electric utilities, which is a market in which we are already active.

The following figure shows the basic reactions of a solid oxide cell in fuel cell power generation mode. Hydrogen is reacted with oxygen ions at the anode electrodes to produce water and electrons, which flow to the cathode to produce the electrical circuit. The cathode reaction consumes the electrons and oxygen (from air) and produces oxygen ions which migrate to the anode to complete the circuit.



Schematic of Solid Oxide Fuel Cell Reactions

We perform SOFC/SOEC/RSOFC research and development at our Danbury, Connecticut headquarters, as well as at our dedicated SOFC/SOEC/RSOFC facility in Calgary, Alberta, Canada. We are working under a variety of awards from the DOE for development and commercialization of both SOFC and SOEC. Our solid oxide development activities are focused on three applications: power generation from hydrogen or other fuels (SOFC), electrolysis-hydrogen production (SOEC), and Hydrogen Based Long Duration Energy Storage (which is a combination of the first two). During fiscal year 2019, we conducted our first prototype field test of a 250kW natural gas fueled SOFC power plant at the Clearway Energy Center in downtown Pittsburgh, Pennsylvania. We are currently operating an advanced electrolysis system in our Danbury, Connecticut headquarters, and during fiscal year 2020, we were awarded funding from the DOE to convert the electrolysis system to a reversible storage facility after the electrolysis testing is complete in late 2021.

FuelCell Energy Hydrogen Technologies – Our Distributed Hydrogen Trigeneration platform produces clean power, heat, and hydrogen from natural gas or Biogas near the point of use without water consumption. We are building the first full scale commercial system for Toyota at the Port of Long Beach for onsite vehicle fueling. Our Solid Oxide Electrolysis technology is expected to produce hydrogen from water and power with high electrical efficiency and have the ability to increase efficiency further by using waste heat. We are currently commissioning a sub scale demonstration of this technology in our Danbury test facility and have been awarded a project to provide a packaged 150 kg/day system for demonstration at Idaho National Laboratory. We have also been developing a hybrid reforming/electrolysis technology which uses Carbonate Fuel Cell stacks in electrolysis mode, combined with in-stack reforming of natural gas or Biogas to produce hydrogen while extracting CO_2 from the hydrogen stream. This technology, called Reformer / Electrolysis / Purification, or REP, is particularly amenable to Blue Hydrogen production. This portfolio of technologies addresses a broad range of applications with the ability to maximize value depending on factors such as fuel availability and cost, power cost, and water consumption concerns. In addition to these approaches to hydrogen production, our Solid Oxide Fuel Cell platform is capable of power generation with pure hydrogen fuel, and our Carbonate Fuel Cell platforms are capable of operation with a blend of hydrogen and natural gas or Biogas.

Carbon Capture – Power generation and industrial applications are the source of two-thirds of the world's carbon emissions. Coal and natural gas are abundant, low-cost resources that are widely used to generate electricity in developed and developing countries, but burning these fuels, as well as burning biomass, results in the emission of criteria pollutants and CO_2. Cost effective and efficient Carbon Capture from power generation and industrial applications globally represents a large market because it could enable clean use of all available fuels. The SureSource Capture™ system is being designed to separate and concentrate CO_2 from the flue gases of natural gas, biomass or

coal-fired power plants or industrial facilities as a side reaction that extracts and purifies the CO_2 in the flue gas during the power generation process and destroys approximately 70% of NOx emissions during the power generation process.

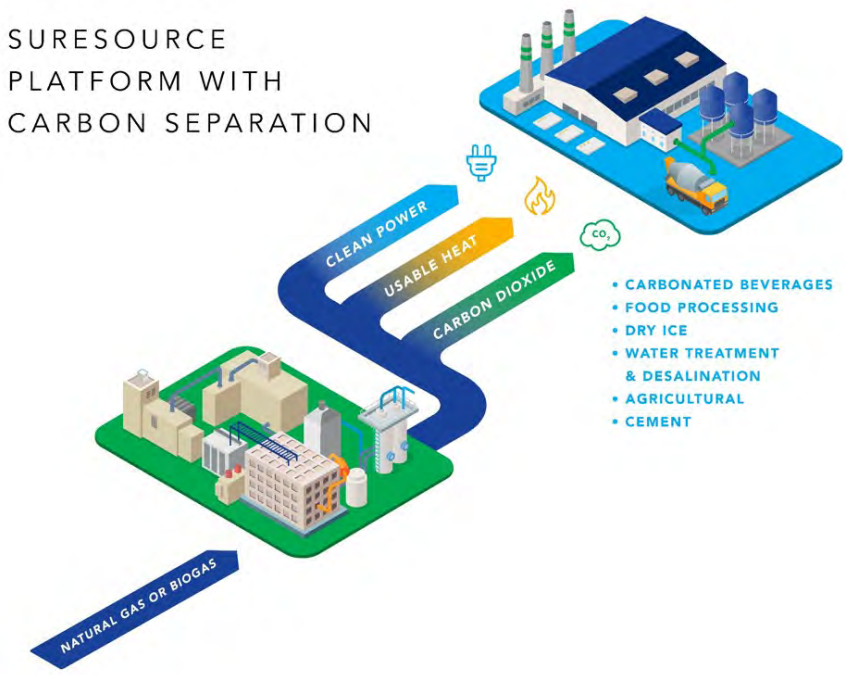
The production of additional power during the Carbon Capture process, as opposed to consuming power, differentiates the SureSource Capture system from other forms of Carbon Capture. This could make the SureSource Capture system more cost effective than other systems which are being considered for Carbon Capture. SureSource Capture systems can be implemented in increments, managing capital outlay to match decarbonization objectives and regulatory requirements. Since our solution generates a return on capital resulting from the fuel cell's production of electricity rather than an increase in operating expense required by other Carbon Capture technologies, it can extend the life of existing power plants and be economically applied to industrial thermal systems. We have a joint development agreement with EMRE, which was effective as of October 31, 2019, to develop and commercialize this application of our core technology. See additional discussion concerning our relationship with EMRE under the section below entitled "*License Agreements and Royalty Income; Relationship with POSCO Energy*". During fiscal year 2020, we completed a Carbon Capture project study with Drax Power Station, the largest single-site renewable power generator in the United Kingdom.

We believe there are significant market opportunities for Distributed Hydrogen production, Carbon Capture, Solid Oxide Fuel Cell solutions and energy storage that represent potential future revenue opportunities for the Company. The projects described above allow us to leverage third-party resources and funding to accelerate the commercialization and realize the market potential of each of these solutions and virtually eliminate the need to rely on and use limited supply minerals.

Carbon Separation – In addition to the ability to capture carbon dioxide from an external source, our platforms have the ability to extract and purify carbon dioxide produced by the fuel cell power generation process. Because the fuel is not pre-mixed with air, the depleted fuel gas leaving the fuel electrode chambers contains the carbon dioxide reaction product before it is diluted with large amounts of air. Our Carbon Separation technology allows carbon dioxide to be easily extracted from this stream and purified to the appropriate level for utilization or sequestration, significantly reducing the carbon footprint of the generated power. This requires a simple modification to the fuel cell module which can be provided with new systems and retrofitted for existing systems.

One attractive application for this technology is the on-site production of carbon dioxide for use in beverage and food production, in addition to industrial uses. A 1.8 MW SureSource system can produce 20 tons high purity carbon dioxide per day, and the power and carbon dioxide production levels can be optimized (e.g., to produce more power and less carbon dioxide) depending on the needs of the application. The system can also provide more than 2 million Btu/hour of useful thermal energy, offsetting fuel consumption in on-site boilers (if not eliminating the need for on-site boilers) and further avoiding carbon dioxide emissions. Additional beverage, food, and/or industrial carbon can be produced by capturing the carbon emissions from on-site boilers through the carbon concentration and capture capabilities of our platform, reducing the carbon footprint of onsite boilers even further**.**

The ability to provide clean power, heat, and useable carbon dioxide is a unique feature profile that we believe is only available with our SureSource platform. Our systems are modular and scalable, so they can be deployed in a wide variety of applications where on-site carbon dioxide is consumed as a product solution, or carbon dioxide is delivered to multiple nearby consumers. Distributed power and heat generation combined with carbon dioxide production, which has the potential to drive significant reductions in carbon emissions, is a compelling product offering built on our current Carbonate Fuel Cell platform. An illustration of the Carbon Separation application is shown in the following figure, which also shows potential applications for locally produced carbon dioxide.



SureSource Platform with Carbon Separation

We believe there are significant market opportunities for Distributed Hydrogen production, Solid Oxide Fuel Cell solutions and energy storage, Carbon Capture and Carbon Separation. With Distributed Generation and Carbon Separation available now, and Carbon Capture and Solid Oxide Fuel Cell solutions in advanced stages of development, these platforms represent potential future revenue opportunities for the Company.

We have historically worked on technology development with various U.S. government departments and agencies, including the DOE, the Department of Defense ("DOD"), the Environmental Protection Agency ("EPA"), the Defense Advanced Research Projects Agency ("DARPA"), the Office of Naval Research ("ONR"), and the National Aeronautics and Space Administration ("NASA"). Government funding, principally from the DOE, provided 9%, 6% and 8% of our revenue for the fiscal years ended October 31, 2020, 2019, and 2018, respectively. Beyond the DOE programs, the Company intends to prudently invest capital to accelerate SOFC/SOEC/RSOFC commercialization.

Markets

Vertical Markets

Access to clean, affordable and reliable power has transformed how most of the world lives today. The ability to provide power cleanly and efficiently is taking on greater importance and urgency in many regions of the world. FuelCell Energy's products and services are specifically designed to deliver such clean, efficient power globally.

Central generation and its associated transmission requirements and distribution grid are difficult to site, costly, prone to interruption and generally take many years to permit and build. Some types of power generation that were widely adopted in the past, such as nuclear and coal power, are no longer welcome in certain regions of the world. The cost and impact to public health and the environment of pollutants and greenhouse gas emissions impact the siting of new power generation. The attributes of our SureSource power platforms address these challenges by providing virtually Particulate Matter-free baseload power and, where desired, thermal energy at the point of use in a highly efficient process that is affordable to consumers.

We target distinct markets, including:

- Utilities and independent power producers;
- Industrial and process applications;
- Education and health care;
- Data centers and communication;
- Wastewater treatment;
- Government;
- Commercial and hospitality; and
- Microgrids.

The utilities and independent power producers market is our largest vertical market with customers that include utilities on the East and West coasts of the United States, such as UIL Holdings Corporation, Inc. (owned by Avangrid, Inc.), the Long Island Power Authority ("LIPA"), Southern California Edison and Pacific Gas & Electric. In Europe, utility customers include E.ON Connecting Energies, one of the largest utilities in the world. In South Korea, we are contracted to operate and maintain a 20 MW power plant project (comprised of five SureSource 3000 plants) for Korea Southern Power Company ("KOSPO").

Our SureSource power platforms are producing power for a variety of industrial, commercial, municipal and government customers, including manufacturing facilities, pharmaceutical processing facilities, universities, healthcare facilities and wastewater treatment facilities. These institutions desire efficient, clean and continuous power to reduce operating expenses, reduce greenhouse gas emissions and avoid pollutant emissions to meet their sustainability goals, while boosting resiliency and limiting dependence on the distribution grid. CHP applications further support economic and sustainability initiatives by minimizing or avoiding the use of combustion-based boilers for heat. Our SureSource power platforms are unique in their ability to run on Biogas.

With the growing market for anaerobic digestion (the production of Biogas from the breakdown of biodegradable materials in the absence of oxygen) and increasingly stringent regulations regarding air quality, we see a growing market opportunity that is perfectly suited for our fuel cell design. SureSource power platforms operating on Renewable Biogas are an especially compelling value proposition as they convert a waste product into clean electricity and heat, while reducing or eliminating flaring, which addresses certain economic, environmental justice, and sustainability challenges faced by our customers and the communities in which they operate. Biogas is generated by the decay of organic material (i.e., biomass). This decaying organic material releases methane, or Biogas. As a harmful greenhouse gas, Biogas cannot be released directly into the atmosphere. Flaring creates pollutants and wastes this potential fuel source. Capturing and using Biogas as a fuel addresses these challenges and provides a carbon-neutral renewable fuel source. Our patented, proprietary clean-up skid, SureSource Treatment™, provides an economical and reliable system for treating Biogas for use on-site at the Biogas production facility.

Wastewater treatment facilities, food and beverage processors and agricultural operations produce Biogas as a byproduct of their operations. Disposing of this greenhouse gas can be harmful to the environment if released into the atmosphere or flared. Our SureSource power platforms convert this Biogas into electricity and heat efficiently and economically. Wastewater facilities with anaerobic digesters are an attractive market for our SureSource solution including the power platform as well as treatment of the Biogas. Many wastewater treatment plants currently flare Biogas produced in the anaerobic digestion process, emitting NOx, SOx and Particulate Matter into the atmosphere, which does not meet many air quality regulations. Since our fuel cells operate on the Renewable Biogas produced by the wastewater treatment process and the heat is used to support daily operations at the wastewater treatment facility, the overall thermal efficiency of these installations is high, supporting economics and sustainability. In addition, the fuel cell does not emit the harmful NOx, SOx and Particulate Matter that come out of a flare or that would result from the use of traditional combustion-based power generation. On-site Biogas projects are more efficient and more economical than Directed Biogas projects because less gas processing is required compared to the processing needed to get the on-site Biogas to pipeline quality. Also, on-site Biogas projects avoid the potential cost of constructing pipelines if the source of the Biogas is not located near an existing natural gas pipeline. The unique chemistry of Carbonate Fuel Cells allows them to use low Btu on-site Biogas with no reduction in output or efficiency compared

to operation on natural gas. We have developed proprietary Biogas cleanup and contaminant monitoring equipment which, combined with the inherent suitability of the Carbonate Fuel Cell chemistry, gives us an advantage in on-site Biogas applications. Our SureSource 1500 and SureSource 3000 power platforms are the only systems certified to CARB emissions standards under the Distributed Generation Certification Program for operation with on-site Biogas.

Our fuel cell solutions are also well suited for Microgrid applications, either as the sole source of power generation or integrated with other forms of power generation. We have fuel cells operating as Microgrids at universities and municipalities, including one university Microgrid owned by Clearway Energy and a municipal-based Microgrid owned by UIL Holdings Corporation, in addition to the Microgrids at the University of California, San Diego and the Santa Rita Jail (as discussed below). For the municipal-based system owned by UIL Holdings Corporation, under normal operation, the fuel cell supplies power to the grid. If the grid is disrupted, the fuel cell plant will automatically disconnect from the grid and power a number of critical municipal buildings. Heat from this municipal-based fuel cell platform is used by the local high school. As mentioned below, our fuel cell based Microgrids have continued operating during Public Safety Power Shutoffs events in California.

Growth and Market Adoption Targets

We target for expansion and development vertical markets and geographic regions that:

- Benefit from and value clean Distributed Generation;
- Are located where there are high energy costs, poor grid reliability, and/or challenged transmission and distribution lines;
- Have a need for Distributed Hydrogen for transportation or industry;
- Can leverage the multiple value streams delivered by our SureSource platforms (electricity, hydrogen, water, and Carbon Separation); and
- Are aligned with regulatory frameworks that harmonize energy, economic and environmental policies.

Our business model focuses on providing these vertical markets and geographic regions with highly efficient and affordable Distributed Generation that delivers de-centralized power in a low-carbon, virtually pollutant-free manner. Geographic markets that meet these criteria and where we are already well established include the Northeastern United States and California. We have also installed and are operating plants in Europe and Asia, mainly South Korea, in addition to North America.

The Company has made significant progress with reducing costs and creating markets since the commercialization of our products in 2003, with more than 255 MW of our SureSource technology currently installed and operating.

We believe that we can accelerate and expand the adoption of our distributed power generation solutions through:

- further reductions in the total cost of ownership;
- continued education regarding the value that our solutions provide;
- geographic and segment expansion;
- growing demand for on-site generation;
- Microgrid expansion; and
- product expansion across biofuels, Carbon Separation and utilization, Carbon Capture and local hydrogen.

Fuel Cell Power Plant Ownership Structures

Historically, in the United States, customers or developers typically purchased our fuel cell power plants outright. As the size of our fuel cell projects has grown and the availability of project capital has improved, project structures in the U.S. have transitioned to predominantly PPAs.

Under a PPA, the utility or end-user of the power commits to purchase power as it is produced for an extended period of time, typically 10-to-20 years. Examples of customers that have previously entered into PPAs include universities, a pharmaceutical company, hospitals and utilities. A primary advantage for the customer under a PPA structure is that it does not need to commit its own capital or own a power generating asset, yet it enjoys the benefits of fuel cell power generation.

The project may be sold to a project investor or retained by the Company. If the project is sold, revenue from the product sale is recognized, and the Company recognizes revenue separately for the long-term maintenance and service agreement over the term of that agreement. If the project is retained, electricity, capacity and/or renewable energy credits are recognized monthly over the term of the PPA. We report the financial performance of retained projects as generation revenue and cost of generation revenues.

Our decision to retain certain projects is based in part on the recurring, predictable cash flows these projects can offer us, the proliferation of PPAs in the industry and the potential access to capital. Retaining PPAs affords the Company the full benefit of future cash flows under the PPAs, which are higher than if we sell the projects, although it requires more upfront capital investment and financing. As of October 31, 2020, our operating portfolio of retained projects totaled 32.6 MW with an additional 40.7 MW under development or construction.

The Company plans to continue to grow this portfolio prudently and in a balanced manner, while also selling projects to investors when selling presents the best value and opportunity for the Company's capital or meets the customer's desired ownership structure.

Levelized Cost of Energy

Our fuel cell projects deliver power at a rate comparable to pricing from the grid in our targeted markets. Policy programs that help to support adoption of clean distributed power generation often lead to below-grid pricing. We measure power costs by calculating the Levelized Cost of Energy ("LCOE") over the life of the project.

There are several primary elements to LCOE for our fuel cell projects, including:

- Capital cost;
- Operations and maintenance cost; and
- Fuel expense.

Given the level of integration in our business model of manufacturing, installing and operating fuel cell power plants, there are multiple areas and opportunities for cost reductions. We are actively managing and reducing costs in all three LCOE areas as follows:

- ***Capital Cost*** - Capital costs of our projects include costs to source material, manufacture, install, interconnect, finance and complete any on-site application requirements, such as configuring for a Microgrid and/or heating and cooling applications. We have reduced the product cost of our megawatt-class power platforms by more than 60% from the first commercial installation in 2003. We expect to achieve further cost reductions, primarily through higher production volumes and engineering efficiencies, which may be achieved through the application of lean manufacturing techniques and supply chain initiatives.
- ***Operations and Maintenance Cost*** – Through secure connections, we remotely monitor, operate, and maintain our fuel cell power platforms to optimize performance and meet or exceed expected operating parameters throughout the operational lives of the plants. Operations and maintenance ("O&M") is a key driver for power plants to deliver on projected electrical output and revenue.

  Each model of our SureSource power platforms has a design life of 25 to 30 years. There are two major components of our platforms:

  1. Our fuel cell modules are currently manufactured with a 7-year cell design life, up from the 5-year design last manufactured in 2018. Thus, for a standard 20-year PPA project, our fuel cell modules are expected to require two replacements, compared to three replacements with the 5-year modules, significantly reducing the O&M and increasing up-time operation.

2. The BOP systems, which consist of conventional mechanical and electrical equipment, with a design life of 25 to 30 years, are maintained over the project life.

The price for planned periodic fuel cell stack replacements is included in our long-term service agreements or in the per kWh price of the PPA.

We expect to continually drive down the cost of O&M with an expanding fleet, which will leverage our investments in this area. Additionally, we are continuing to develop fuel cells that have longer useful lives, which is intended to reduce O&M costs by increasing our scheduled module replacement period to greater than seven years.

- ***Fuel Expense*** - Our fuel cells directly convert chemical energy (fuel) into electricity, heat, water, and, in certain configurations, other value streams such as high purity hydrogen. Our power plants can operate on a variety of existing and readily available fuels, including pipeline natural gas, delivered liquid natural gas or compressed natural gas, Renewable Biogas, Directed Biogas, propane, and other hydrocarbons such as syngas or blends with hydrogen. Our SureSource power plants deliver electrical efficiencies of 47% for systems targeting CHP applications and 60% for systems targeting electric-only applications, such as grid support and data centers. In a CHP configuration, our plants can deliver even higher system efficiency, depending on the application. Considering utilized waste heat in CHP applications, total efficiency of systems using our power plants is typically 60% to 80% and can be as high as 90%. These efficiencies compare to average U.S. fossil fuel plant generation efficiency of about 40% with grid line losses. Increasing electrical efficiency and reducing fuel costs is a key element of our operating cost reduction efforts and a competitive advantage against traditional combustion-based technologies.

An important and differentiating factor that benefits fuel cells when comparing LCOE to other forms of power generation is that our solutions provide delivered electricity that minimizes or even avoids the costs of high voltage and distributed transmission.

Energy can be produced right at the point of use.

When comparing LCOE across different forms of power generation, transmission should be considered. Power generation far from where the power is used requires transmission, which is a cost to ratepayers, creates risk of system outages, increases cybersecurity attack risk, and is inefficient due to line losses of power in the transmission process. Events, including hurricanes along the Gulf Coast and Puerto Rico, wildfires in California, and significant snow and ice storms in the Northeastern U.S., prove that transmission systems are more vulnerable to storm-related and other interruptions than locally generated energy.

California has been affected by Public Safety Power Shutoffs ("PSPS"), a preemptive effort by utility companies in the state to prevent wildfires from being started by electrical equipment during strong and dry wind conditions by shutting off the power to targeted neighborhoods and substations. Two FuelCell Energy platforms, installed in Microgrids and operated by FuelCell Energy, remained operational as part of their respective Microgrids in areas impacted by PSPS. These platforms provided steady, reliable power to the University of California, San Diego and the Santa Rita Jail during a time when over 3 million people were generally without power due to PSPS, demonstrating the value of FuelCell Energy's Distributed Generation platforms.

Producing power near the point of use also facilitates the development of CHP applications, since it is easier to find a user for fuel cell waste heat in distributed applications. Using waste heat to avoid burning fuel for thermal applications reduces LCOE (by avoiding fuel cost) and avoids additional carbon emissions and criteria pollutants.

Manufacturing and Service Facilities

We operate a 167,000 square-foot manufacturing facility in Torrington, Connecticut where we produce the individual cell packages and assemble the fuel cell modules. This facility also houses our global service center. Our completed modules are conditioned in Torrington and shipped directly to customer sites. Annual capacity (module manufacturing, final assembly, testing and conditioning) is 100 MW per year under the Torrington facility's current configuration when being fully utilized. The Torrington facility is sized to accommodate eventual annual production capacity of 200 MW per year.

We design and manufacture the core SureSource fuel cell components that are stacked on top of each other to build a fuel cell stack. For megawatt-scale power plants, four fuel cell stacks are combined to build a fuel cell module. To complete the power platform, the fuel cell module or modules are combined with the BOP. The mechanical BOP processes the incoming fuel such as natural gas or Renewable Biogas and includes various fuel handling and processing equipment such as pipes and blowers. The electrical BOP processes the power generated for use by the customer and includes electrical interface equipment such as an inverter. The BOP components are either purchased directly from suppliers or the manufacturing is outsourced based on our designs and specifications. This strategy allows us to leverage our manufacturing capacity, focusing on the critical aspects of the power plant where we have specialized knowledge and expertise and possess extensive intellectual property. BOP components are shipped directly to a project site and are then assembled with the fuel cell module into a complete power plant.

The Torrington production and service facility and the Danbury corporate headquarters and research and development facility are ISO 9001:2015 and ISO 14001:2015 certified and our Field Service operation (which maintains the installed fleet of our platforms) is ISO 9001:2015 certified, reinforcing the tenets of FuelCell Energy's quality management system and our core values of continual improvement and commitment to quality, environmental stewardship, and customer satisfaction. Sustainability is promoted throughout our organization. We manufacture SureSource products and manage them through end-of-life using environmentally friendly business processes and practices, certified to ISO 14001:2015. We continually strive to improve how we plan and execute across the entire product life cycle. We strive for "cradle-to-cradle" sustainable business practices, incorporating sustainability in our corporate culture. We utilize "Design for Environment" principles in the design, manufacture, installation and servicing of our power platforms. "Design for Environment" principles aim to reduce the overall human health and environmental impact of a product, process or service, when such impacts are considered across the product's lifecycle. We maintain a chain of custody and responsibility of our SureSource products throughout the product life cycle. When our platforms reach the end of their useful lives, we can refurbish and re-use certain parts and then recycle most of what we cannot re-use. By weight, approximately 93% of the entire power plant can be re-used or recycled at the end of its useful life.

We have a manufacturing and service facility in Taufkirchen, Germany that has the capability to perform final module assembly for up to 20 MW per year of sub-megawatt fuel cell power platforms to service the fuel cell demand in the European market. Our European service activities are also operated out of this location. Our operations in Europe are certified under both ISO 9001:2015 and ISO 14001:2015.

We have a research and development facility in Calgary, Alberta, Canada that is focused on the engineering and development of the Company's SOFC and SOEC technology. This facility includes equipment for the manufacturing of solid oxide cells and stacks, including advanced automated stack manufacturing processes which have been developed to ensure that the low material cost of the stack is matched with low labor and overhead cost. The images below show our automated printing line used for solid oxide cells and our robotic cell-stack assembly facility. The automated system performs the stack build at ~12 seconds per repeat layer, including optical part inspection, cell leak test and thickness measurement, interconnect spot weld and leak test, and part-marking for stack quality assurance.

Automated Screen Printing and Stack Assembly Facilities

Part inspection, leak test, thickness measurements, and stacking are done in this robot-based system

Raw Materials and Supplier Relationships

We use various commercially available raw materials and components to construct a fuel cell module, including nickel and stainless steel, which are key inputs in our manufacturing process. Our fuel cell stack raw materials are sourced from multiple vendors and are not considered precious metals. We have a global integrated supply chain with qualified sources of supply, many of which are located locally in the regions in which we have established manufacturing and service operations including Europe and Asia. While we manufacture the fuel cells in our Torrington facility, the electrical and mechanical BOPs are assembled by and procured from several suppliers. All of our suppliers must undergo a stringent and rigorous qualification process. We continually evaluate and qualify new suppliers as we diversify our supplier base in our pursuit of lower costs and consistent quality. We purchase mechanical and electrical BOP components from third party vendors, based on our own proprietary designs.

Engineering, Procurement and Construction ("EPC")

We provide customers with complete turn-key solutions, including development, engineering, procurement, construction, interconnection and operations for our fuel cell projects. From an EPC standpoint, we have an extensive history of safe and timely delivery of turn-key projects. We have developed relationships with many design firms and licensed general contractors and have a repeatable, safe, and efficient execution philosophy that has been successfully demonstrated in numerous jurisdictions, both domestically and abroad, all with an exemplary safety record. The ability to rapidly and safely execute installations minimizes high-cost construction period financing and can assist customers in certain situations when the Commercial Operations Date is time sensitive.

Services and Warranty Agreements

We offer a comprehensive portfolio of services, including engineering, project management and installation, and long-term operating and maintenance programs, including trained technicians that remotely monitor and operate our platforms around the world, 24 hours a day and 365 days a year. We directly employ field technicians to service the power platforms and maintain service centers near our customers to support the high Availability of our platforms.

For all operating fuel cell platforms not under a PPA, customers purchase long-term service agreements, some of which have terms of up to 20 years. Pricing for service contracts is based upon the value of service assurance and the markets in which we compete and includes all future maintenance and fuel cell module exchanges. Each model of our SureSource power platform has a design life of 25-to-30 years. The fuel cell modules, with legacy modules having a 5-year cell design life and current production modules having a 7-year cell design life, go through periodic replacement, while the BOP systems, which consist of conventional mechanical and electrical equipment, are maintained over the life of the project.

Under the typical provisions of both our service agreements and PPAs, we provide services to monitor, operate and maintain power platforms to meet specified performance levels. Operations and maintenance is a key driver for power platforms to deliver their projected revenue and cash flows. The service aspects of our business model provide a recurring and predictable revenue stream for the Company. We have committed future production for scheduled fuel cell module exchanges under service agreements and PPAs through the year 2038. The pricing structure of the service agreements incorporates these scheduled fuel cell module exchanges and the committed nature of this production facilitates our production planning. Many of our PPAs and service agreements include guarantees for system performance, including electrical output and heat rate. Should the power platform not meet the minimum performance levels, we may be required to replace the fuel cell module with a new or used replacement module and/or pay performance penalties. Our goal is to optimize the power platforms to meet expected operating parameters throughout their contracted service term.

In addition to our service agreements, we provide a warranty for our products against manufacturing or performance defects for a specific period of time. The warranty term in the U.S. is typically 15 months after shipment or 12 months after acceptance of our products. We accrue for estimated future warranty costs based on historical experience.

License Agreements and Royalty Income; Relationship with POSCO Energy

License Agreement with ExxonMobil Research and Engineering Company

EMRE and FuelCell Energy began working together in 2016 under an initial joint development agreement with a focus on better understanding the fundamental science behind Carbonate Fuel Cells for use in advanced applications and specifically how to increase efficiency in separating and concentrating carbon dioxide from the exhaust of natural gas-fueled power generation.

In June 2019, we entered into a license agreement with EMRE, a wholly-owned subsidiary of ExxonMobil Corporation, to facilitate the further development of our SureSource Capture™ product (the "EMRE License Agreement"). Pursuant to the EMRE License Agreement, the Company granted EMRE and its affiliates a non-exclusive, worldwide, fully-paid, perpetual, irrevocable, non-transferable license and right to use our patents, data, know-how, improvements, equipment designs, methods, processes and the like to the extent it is useful to research, develop and commercially exploit Carbonate Fuel Cells in applications in which the fuel cells concentrate carbon dioxide from industrial and power sources and for any other purpose attendant thereto or associated therewith, in exchange for a $10 million payment. Such right and license is sublicenseable to third parties performing work for or with EMRE or its affiliates, but shall not otherwise be sublicenseable.

The EMRE License Agreement facilitated the execution of a new Joint Development Agreement with EMRE, effective October 31, 2019 and executed in fiscal year 2020 (the "EMRE Joint Development Agreement"), pursuant to which we are continuing exclusive research and development efforts with EMRE to evaluate and develop new and/or improved Carbonate Fuel Cells to reduce carbon dioxide emissions from industrial and power sources, in exchange for (a) payment of (i) an exclusivity and technology access fee of $5.0 million, (ii) up to $45.0 million for research and development efforts, and (iii) milestone-based payments of up to $10.0 million after certain technological milestones are met, and (b) certain licenses. As a result of the execution of the EMRE Joint Development Agreement in fiscal year 2020, the associated backlog was recorded in fiscal year 2020 and the related revenue is expected to be recognized through fiscal year 2021.

License Agreements with POSCO Energy

From approximately 2007 through 2015, we relied on POSCO Energy to develop and grow the South Korean and Asian markets for our products and services.

Through June of 2020, we recorded license fees and were entitled to receive royalty income from POSCO Energy pursuant to manufacturing and technology transfer agreements entered into with POSCO Energy, including the Alliance Agreement dated February 7, 2007 (and amendments thereto), the Technology Transfer, License and Distribution Agreement dated February 7, 2007 (and amendments thereto), the Stack Technology Transfer and License Agreement dated October 27, 2009 (and amendments thereto), and the Cell Technology Transfer and License Agreement dated October 31, 2012 (and amendments thereto) (collectively, the "License Agreements"). The Cell Technology Transfer and License Agreement ("CTTA") provided POSCO Energy with the exclusive technology rights to manufacture, sell, distribute and service our SureSource 300, SureSource 1500 and SureSource 3000 fuel cell technology in the South Korean and broader Asian markets. POSCO Energy built a cell manufacturing facility in Pohang, South Korea which became operational in late 2015, but is no longer operating.

In October 2016, the Company and POSCO Energy extended the terms of certain of the License Agreements to be consistent with the term of the CTTA, which was to expire on October 31, 2027. The CTTA required POSCO Energy to pay us a 3.0% royalty on POSCO Energy net product sales, as well as a royalty on scheduled fuel cell module replacements under service agreements for modules that were built by POSCO Energy and installed at plants in Asia under the terms of long-term service agreements between POSCO Energy and its customers. Due to certain actions and inactions of POSCO Energy, the Company has not realized any new material revenues, royalties or new projects developed by POSCO Energy since late 2015.

In March 2017, we entered into a memorandum of understanding ("MOU") with POSCO Energy to permit us to directly develop the Asian fuel cell business, including the right for us to sell SureSource solutions in South Korea and the broader Asian market. In June 2018, POSCO Energy advised us in writing that it was terminating the MOU effective July 15, 2018. Pursuant to the terms of the MOU, notwithstanding its termination, we continued to execute on sales commitments in Asia secured in writing prior to July 15, 2018, including the 20 MW power plant installed for KOSPO.

In November 2019, POSCO Energy spun-off its fuel cell business into a new entity, Korea Fuel Cell Co., Ltd. ("KFC"), without our consent. As part of the spin-off, POSCO Energy transferred manufacturing and service rights under the License Agreements to KFC, but retained distribution rights and severed its own liability under the License Agreements. We formally objected to POSCO Energy's spin-off, and POSCO Energy posted a bond to secure any liabilities to FuelCell Energy arising out of the spin-off. In September 2020, the Korean Electricity Regulatory Committee found that POSCO Energy's spin-off of the fuel cell business to KFC may have been done in violation of South Korean law.

On February 19, 2020, we notified POSCO Energy in writing that it was in material breach of the License Agreements by (i) its actions in connection with the spin-off of the fuel cell business to KFC, (ii) its suspension of performance through its cessation of all sales activities since late 2015 and its abandonment of its fuel cell business in Asia, and (iii) its disclosure of material nonpublic information to third parties and its public pronouncements about the fuel cell business on television and in print media that have caused reputational damage to the fuel cell business, the Company and its products. We also notified POSCO Energy that, under the terms of the License Agreements, it had 60 days to fully cure its breaches to our satisfaction and that failure to so cure would lead to termination of the License Agreements. Further, on March 27, 2020, we notified POSCO Energy of additional instances of its material breach of the License Agreements based on POSCO Energy's failure to pay royalties required to be paid in connection with certain module replacements.

On April 27, 2020, POSCO Energy initiated a series of three arbitration demands against us at the International Court of Arbitration of the International Chamber of Commerce seated in Singapore alleging certain warranty defects in a sub-megawatt conditioning facility at its facility in Pohang, South Korea and seeking combined damages of approximately $3.3 million. Prior to filing the arbitrations, POSCO Energy obtained provisional attachments from the Seoul Central District Court attaching certain revenues owed to us by KOSPO as part of such warranty claims, which has delayed receipt of certain payments owed to us. POSCO Energy subsequently sought additional provisional attachments on KOSPO revenues from the Seoul Central District Court based on unspecified warranty claims not yet filed in an additional amount of approximately $7 million, and additional provisional attachments on KOSPO revenues from the Seoul Central District Court based on its alleged counterclaims in the license termination arbitration described below in an additional amount of approximately $110 million. As of October 31, 2020, outstanding accounts receivable due from KOSPO were $4.8 million.

On June 28, 2020, we terminated the License Agreements with POSCO Energy and filed a demand for arbitration against POSCO Energy and KFC in the International Court of Arbitration of the International Chamber of Commerce based on POSCO Energy's (i) failure to exercise commercially reasonable efforts to sell our technology in the South Korean and Asian markets, (ii) disclosure of our proprietary information to third parties, (iii) attack on our stock price and (iv) spin-off of POSCO Energy's fuel cell business into KFC without our consent. We have requested that the arbitral tribunal (a) confirm through declaration that POSCO Energy's exclusive license to market our technology and products in South Korea and Asia is null and void as a result of the breaches of the License Agreements and that we have the right to pursue direct sales in these markets, (b) order POSCO Energy and KFC to compensate us for losses and damages suffered in the amount of more than $200 million, and (c) order POSCO Energy and KFC to pay our arbitration costs, including counsel fees and expenses. We have retained outside counsel on a contingency basis to pursue our claims, and outside counsel has entered into an agreement with a litigation finance provider to fund the legal fees and expenses of the arbitration. In October 2020, POSCO Energy filed a counterclaim in the arbitration (x) seeking approximately $880 million in damages based on allegations that we misrepresented the capabilities of our fuel cell technology to induce POSCO Energy to enter into the License Agreements and failed to turn over know-how sufficient for POSCO Energy to successfully operate its business; (y) seeking a declaration that the License Agreements remain in full force and effect and requesting the arbitral tribunal enjoin us from interfering in POSCO Energy's exclusive rights under the License Agreements and (z) seeking an order that we pay POSCO Energy's arbitration costs, including counsel fees and expenses.

On August 28, 2020, POSCO Energy filed a complaint in the Court of Chancery of the State of Delaware (the "Court") purportedly seeking to enforce its rights as a stockholder of the Company to inspect and make copies and extracts of certain books and records of the Company and/or the Company's subsidiaries pursuant to Section 220 of the Delaware General Corporation Law and/or Delaware common law. POSCO Energy alleges that it is seeking to inspect these documents for a proper purpose reasonably related to its interests as a stockholder of the Company, including investigating whether the Company's Board of Directors and its management breached their fiduciary duties of loyalty, due care, and good faith. POSCO Energy seeks an order of the Court permitting POSCO Energy to inspect and copy the demanded books and records, awarding POSCO Energy reasonable costs and expenses, including reasonable attorney's fees incurred in connection with the matter, and granting such other and further relief as the Court deems just and proper.

On September 14, 2020, POSCO Energy filed a complaint in the United States District Court for the Southern District of New York alleging that the Company delayed the removal of restrictive legends on certain share certificates held by POSCO Energy in 2018, thus precluding POSCO Energy from selling the shares and resulting in claimed losses in excess of $1,000,000.

The Company does not believe that any of the arbitrations or legal proceedings brought against the Company by POSCO Energy are for a proper purpose. Further, the Company believes that all such arbitrations and legal proceedings are in fact simply fulfillment of POSCO Energy's prior threats to file a series of actions against the Company and are attempts to obtain leverage over the Company and, in certain proceedings, gain advantage in the pending arbitration filed by the Company against POSCO Energy. The Company will vigorously defend itself against POSCO Energy's claims in all forums and believes it will be apparent at the conclusion of each matter that each action was filed for an improper purpose.

Company Funded Research and Development

In addition to research and development performed under research contracts, including as described under the heading "Advanced Technologies Programs" above, we also fund our own research and development activities to support the commercial fleet with product enhancements and improvements. During fiscal year 2018, we launched our seven-year life stacks, which extended our stack life from five years to seven years. Greater power output and improved longevity are expected to lead to improved gross margin profitability on a per-unit basis for each power plant sold and improved profitability of service contracts, which are expected to support expanding gross margins for the Company.

In addition to output and life enhancements, we designed and introduced the 3.7 MW SureSource 4000 configuration with increased electrical efficiency, and we continually invest in cost reduction and improving the performance, quality and serviceability of our plants. These efforts are intended to improve our value proposition.

Company-funded research and development is included in Research and development expenses (operating expenses) in our consolidated financial statements. The total research and development expenditures in the consolidated statement of operations, including third party and Company-funded expenditures, are as follows:

	Years Ended October 31,		
(dollars in thousands)	2020	2019	2018
Cost of Advanced Technologies contract revenues	$ 16,254	$ 12,884	$ 10,360
Research and development expenses	4,797	13,786	22,817
Total research and development	$ 21,051	$ 26,670	$ 33,177

Backlog

Backlog represents definitive agreements executed by the Company and our customers.

Backlog as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Commercial:		
Product	$ —	$ —
Service	146,810	169,371
Generation	1,067,228	1,114,366
License	22,182	22,931
Total Commercial	$ 1,236,220	$ 1,306,668
Advanced Technologies		
Non-U.S. Government	37,652	389
U.S. Government - Funded	$ 11,281	$ 11,369
U.S. Government - Unfunded	220	220
Total Advanced Technologies	$ 49,153	$ 11,978
Total Backlog	$ 1,285,373	$ 1,318,646

Service and generation backlog as of October 31, 2020 had a weighted average term of approximately 18 years, with weighting based on dollar backlog and utility service contracts of up to 20 years in duration at inception. Generally, our government funded and privately funded research and development contracts are subject to the risk of termination at the convenience of the contract counterparty.

Our backlog amount outstanding is not indicative of amounts to be earned in the upcoming fiscal year. The specific elements of backlog may vary in terms of timing and revenue recognition from less than one year to up to 20 years.

The Company may choose to sell or retain operating power plants on the balance sheet, thus creating variability in timing of revenue recognition. Accordingly, the timing and the nature of our business makes it difficult to predict what portion of our backlog will be filled in the next fiscal year.

Competition

Our platforms are based on a range of technologies and target a variety of applications, each of which have incumbent and developing competitors.

Our SureSource Carbonate Fuel Cell power plants compete in the marketplace for stationary Distributed Generation fueled by natural gas or Biogas. Several companies in the U.S. are engaged in fuel cell development, although, to our knowledge, we are the only domestic company engaged in manufacturing and deployment of stationary natural gas or Biogas fueled Carbonate Fuel Cells. Other suppliers of stationary fuel cell systems include Doosan Fuel Cell Co. Ltd, which manufactures medium-temperature phosphoric acid fuel cell systems and is developing solid oxide systems, and Bloom Energy, a supplier of solid oxide based systems. Other companies are developing solid oxide systems and other hydrogen-based fuel cell systems for small residential or vehicle auxiliary power units, which are applications we are not pursing. Examples of these developers include Ceres Power Holdings, Ceramic Fuel Cells Ltd, SOLIDPower, Aris Energy, Plug Power, Altergy and Cummins, Inc.

In addition to different types of stationary fuel cells, some other technologies that compete in the Distributed Generation marketplace include micro-turbines, turbines, and reciprocating gas engines. Companies we may compete with that offer this type of equipment include Caterpillar, Cummins, Wartsila, MTU/Rolls Royce, and Detroit Diesel, which manufacture combustion-based distributed power generation equipment, including various engines and turbines, and have established manufacturing and distribution operations along with product operating and cost features. Competition on larger MW projects may also come from gas turbine companies like General Electric, Caterpillar Solar Turbines and Kawasaki.

We also compete against the electric grid, which is readily available to prospective customers. The electric grid is supplied by traditional centralized power plants, including coal, gas and nuclear, with transmission lines used to transport the electricity to the point of use.

Our stationary fuel cell power plants also compete against large scale solar and wind technologies, although we complement the unreliable intermittent nature of solar and wind power with the continuous, reliable power output of the fuel cells. Solar and wind power require specific geographies and weather profiles, require transmission for utility-scale applications, and require a source of back up capacity for when the sun or wind is not available. They also require a significant amount of land compared to our fuel cell power plants, making it difficult to site megawatt-class solar and wind projects in urban areas, unlike our solutions. While fuel cells emit negligible amounts of NOx, SOx and Particulate Matter, fuel cells do emit some carbon dioxide when fueled with natural gas, but less per kWh compared to other less-efficient systems. In many markets, baseload fuel cells avoid more emissions than wind or solar systems of similar capacity because they operate for many more hours of the day compared to these intermittent resources.

We are also developing distributed power generation systems based on our Solid Oxide Fuel Cell technology, and these systems will have the same competition described above.

Our solid oxide systems can operate on pure hydrogen, but we are not developers of hydrogen fueled systems for mobility or material handling applications, such as the PEM-based systems developed by Ballard Power Systems, Plug Power, Toyota, Hyundai, Honda and GM, so we do not compete with these companies for those applications. However, Ballard Power Systems and Plug Power have developed stationary hydrogen fueled systems in the past, and we could compete against some of these developers in the future if a market for hydrogen fueled stationary power generation systems develops.

In addition to distributed power generation, we are also developing systems for hydrogen production. Our Distributed Hydrogen solution, with co-production of power and hydrogen from natural gas or Biogas, competes against traditional centralized hydrogen generation as well as conventional electrolyzers used for distributed applications. Hydrogen is typically generated at a central location in large quantities by combustion-based steam reforming and is then distributed to end users by diesel truck. As such, centralized hydrogen production systems produce more emissions per kg of hydrogen than our Distributed Hydrogen platform and have added transportation costs and emissions.

Electrolysis can compete with our Distributed Hydrogen solution if the cost of power is low. Low-cost power reduces the cost of hydrogen produced by electrolysis, and it reduces the revenue from power sales for a Distributed Hydrogen system. In areas with high power cost, the added revenue for the power sales from a Trigeneration Distributed Hydrogen platform reduces the price of hydrogen. Companies providing electrolysis systems for hydrogen production include NEL, ITM Power, Plug Power and Cummins, Inc.

We are also developing advance electrolysis systems based on our Solid Oxide Electrolysis platform, which can operate at higher electrical efficiency than currently available electrolysis technologies. Applications for this technology include hydrogen for production for mobility or industrial users as well as large scale hydrogen production from curtailed renewable or nuclear power. We will compete with conventional electrolysis providers in these applications but will have the advantage of the higher electrical efficiency and the ability to increase electrical efficiency even higher by using waste heat from industrial systems or nuclear plants. Other companies are also developing solid oxide-based electrolysis systems, including Bloom Energy and Sunfire GmbH.

Our Reversible Solid Oxide Fuel Cell technology can also be used in energy storage applications, since our fuel cell stacks can alternate between electrolysis mode (using power to produce hydrogen which is stored) and fuel cell mode (producing power from stored hydrogen). Our competition in this application will be conventional battery energy storage (e.g., lead-acid or lithium) or developing storage systems such as flow batteries. Hydrogen based energy storage offers an advantage for long duration applications because the cost of the reactant (an initial fill of water) is very low. Sunfire GmbH is also developing reversible solid oxide systems, and Bloom Energy has recently discussed hydrogen storage concepts with separate systems for hydrogen production and consumption (i.e., not with reversible stacks).

Our Carbonate Fuel Cell based Carbon Capture solution is unique in that it is the only Carbon Capture approach that, to our knowledge, can capture CO2 from a power plant or boiler while simultaneously producing power. Our competition in this application will be conventional Amine-based absorption systems, and systems under development using solid adsorbents or membrane CO2 separation. All these alternatives have power requirements that will decrease the output of a host power plant or add cost to capture from industrial boilers. Our co-production of power provides a revenue stream that reduces the cost of Carbon Capture and is unique among the technologies being considered for this application.

Regulatory and Legislative Environment

Distributed Generation addresses certain power generation issues that central generation does not and legal, government and regulatory policy can impact deployment of Distributed Generation. The policies that affect our products are not always the same as those imposed on our competitors, and while some policies can make our products less competitive, others may provide an advantage. Certain utility policies may also pose barriers to our installation or interconnection with the utility grid, such as backup, standby or departing load charges that make installation of our products not economically attractive for our customers. Regulatory and legislative support encompasses policy, incentive programs, and defined sustainability initiatives such as Renewable Portfolio Standards ("RPS").

Various states and municipalities in the U.S. have adopted programs for which our products qualify, including programs supporting self-generation, clean air power generation, combined heat and power applications, carbon reduction, grid resiliency/Microgrids and utility ownership of fuel cell projects.

Many states in the U.S. have enacted legislation adopting Clean Energy Standards ("CES") or RPS mechanisms. Under these standards, regulated utilities and other load serving entities are required to procure a specified percentage of their total electricity sales to end-user customers from eligible resources. CES and RPS legislation and implementing regulations vary significantly from state to state, particularly with respect to the percentage of renewable energy required to achieve the state's mandate, the definition of eligible clean and renewable energy resources, and the extent to which renewable energy credits (certificates representing the generation of renewable energy) qualify for CES or RPS compliance. Fuel cells using Biogas qualify as renewable power generation technology in all of the CES and RPS states in the U.S., and some states specify that fuel cells operating on natural gas are also eligible for these initiatives in recognition of the high efficiency and low pollutants of fuel cells. Other states are moving away from generation utilizing fossil fuels in favor of zero carbon resources.

In February 2018, the U.S. Congress reinstated the 30% Investment Tax Credit ("ITC") for fuel cells and also extended and significantly expanded the existing Carbon Oxide Sequestration Credit. The ITC phased down to 26% in 2020 and was scheduled to phase down to 22% by 2022 and expire in 2023. The reinstatement of the ITC for fuel cells provided equal access to tax incentives for U.S. fuel cell manufacturers when compared with other clean energy solutions. The ITC phase down was extended by two years pursuant to the Consolidated Appropriations Act, 2021 passed by Congress in December 2020 and signed by the President on December 27, 2020, thus extending the 26% ITC until 2022 and the expiration to 2025.

Internationally, South Korea has an RPS to promote clean energy, reduce carbon emissions, and develop local manufacturing of clean energy generation products to accelerate economic growth. The RPS is designed to increase new and renewable power generation to 10% of total power generation by 2023 from 2% when the RPS began in 2012. Twenty-two of the largest power generators are obligated to achieve the RPS requirements in their generation or purchase offsetting renewable energy certificates. Financial penalties are levied by the government for non-compliance. European governments are supportive of hydrogen-based generation and efficient CHP applications, and some European governments such as Germany, the UK and the Netherlands, provide incentives in the form of tax incentives, grants and waivers of regulatory fees for such installations.

Government Regulation

Our Company and our products are subject to various federal, provincial, state and local laws and regulations relating to, among other things, land use, safe working conditions, handling and disposal of hazardous and potentially hazardous substances and emissions of pollutants into the atmosphere. Negligible emissions of SOx and NOx from our power plants are substantially lower than conventional combustion-based generating stations and are far below existing and proposed regulatory limits. The primary emissions from our power plants, assuming no cogeneration application, are humid flue gas that is discharged at temperatures of 700-800° F, water that is discharged at temperatures of 10-20° F above ambient air temperatures, and CO_2 in per kW hour amounts that are much less than conventional fossil fuel central generation power plants due to the high efficiency of fuel cells. The discharge of water from our power plants requires permits that depend on whether the water is to be discharged into a storm drain or into the local wastewater system.

We are also subject to federal, state, provincial and/or local regulation with respect to, among other things, siting. In addition, utility companies and several states in the U.S. have created and adopted, or are in the process of creating and adopting, interconnection regulations covering both technical and financial requirements for interconnection of fuel cell power plants to utility grids. Our power plants are designed to meet all applicable laws, regulations and industry standards for use in the international markets in which we operate. Our SureSource solutions are CARB 2007 certified, and our SureSource 1500 and SureSource 3000, when operating on Biogas, are certified for the CARB 2013 Biogas standard.

Proprietary Rights and Licensed Technology

Our intellectual property consists of patents, trade secrets and institutional knowledge and know-how that we believe is a competitive advantage and represents a barrier to entry for potential competitors. Our Company was founded in 1969 as an applied research company and began focusing on Carbonate Fuel Cells in the 1980s, with our first fully-commercialized SureSource power plant sold in 2003. Over this time, we have gained extensive experience in designing, manufacturing, operating and maintaining fuel cell power plants. This experience cannot be easily or quickly replicated and, combined with our trade secrets, proprietary processes and patents, safeguards our intellectual property rights.

As of October 31, 2020, we (excluding our subsidiaries) had 102 U.S. patents and 186 patents in other jurisdictions covering our fuel cell technology (in certain cases covering the same technology in multiple jurisdictions), with patents directed to various aspects of our SureSource technology, SOFC technology, PEM fuel cell technology and applications thereof. As of October 31, 2020, we also had 55 patent applications pending in the U.S. and 107 patent applications pending in other jurisdictions. Our U.S. patents will expire between 2020 and 2039, and the current average remaining life of our U.S. patents is approximately 9.5 years.

As of October 31, 2020, our subsidiary, Versa Power Systems, Ltd. ("Versa"), had 32 U.S. patents and 93 international patents covering SOFC technology (in certain cases covering the same technology in multiple jurisdictions), with an average remaining U.S. patent life of approximately 4.7 years. As of October 31, 2020, Versa also had 3 pending U.S. patent applications and 14 patent applications pending in other jurisdictions. In addition, as of October 31, 2020, our subsidiary, FuelCell Energy Solutions, GmbH, had license rights to 2 U.S. patents and 7 patents outside the U.S. for Carbonate Fuel Cell technology licensed from Fraunhofer IKTS.

Five patents expired in 2019 and 6 patents expired in 2020 for FuelCell Energy and Versa, but none of these expirations, individually or in the aggregate, is expected to have any material impact on our current or anticipated operations. As has historically been the case, we are continually innovating and have a significant number of invention disclosures that we are reviewing that may result in additional patent applications.

Certain of our U.S. patents are the result of government-funded research and development programs, including our DOE programs. U.S. patents we own that resulted from government-funded research are subject to the government potentially exercising "march-in" rights. We believe that the likelihood of the U.S. government exercising these rights is remote and would only occur if we ceased our commercialization efforts and there was a compelling national need to use the patents.

Significant Customers and Information about Geographic Areas

We contract with a concentrated number of customers for the sale of our products and for research and development. For the years ended October 31, 2020, 2019 and 2018, our top customers, EMRE, UIL Holdings Corporation, Connecticut Light and Power, the DOE, Clearway Energy (formerly NRG Yield, Inc.), Pfizer, Inc., Dominion Bridgeport Fuel Cell, LLC, POSCO Energy, Hanyang Industrial Development Co., Ltd, and AEP Onsite Partners, LLC, accounted for an aggregate of 86%, 81% and 88%, respectively, of our total annual consolidated revenue. Revenue percentage by major customer for the last three fiscal years is as follows:

	Years Ended October 31,		
	2020	2019	2018
ExxonMobil Research and Engineering Company (EMRE)	32%	40%	6%
UIL Holdings Corporation	18%	1%	2%
Connecticut Light and Power	17%	11%	—%
U.S. Department of Energy (DOE)	9%	6%	8%
Clearway Energy (formerly NRG Yield, Inc.)	6%	1%	15%
Pfizer, Inc.	4%	6%	4%
Dominion Bridgeport Fuel Cell, LLC (a)	—%	13%	3%
POSCO Energy	—%	3%	5%
Hanyang Industrial Development Co., Ltd. (HYD)	—%	—%	35%
AEP Onsite Partners, LLC	—%	—%	10%
Total	86%	81%	88%

(a) All of the outstanding membership interests in Dominion Bridgeport Fuel Cell, LLC were acquired by the Company on May 9, 2019. As a result of this acquisition, revenue is now (subsequent to the acquisition) recognized under the related PPA for electricity sales to Connecticut Light and Power.

See Item 7 – "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8 – "Financial Statements and Supplementary Data" for further information regarding our revenue and revenue recognition policies.

We have marketing and manufacturing operations both within and outside the United States. We source raw materials and BOP components from a diverse global supply chain. In 2020, the foreign country with the greatest concentration risk was South Korea, accounting for 3% of our consolidated net revenues. The Company was entitled to receive royalties from POSCO Energy on the sale of power plants and module replacements related to service of fuel cell power plants in Asia, and the Company received approximately $0.4 million in such royalties during the fiscal year ended October 31, 2019 as part of a net settlement of an arbitration brought by POSCO Energy in 2018. As part of our strategic plan, we are in the process of diversifying our sales mix from both a customer specific and geographic perspective. See Item 1A "Risk Factors" - "*The pending legal proceedings with POSCO Energy could expose us to costs of such legal proceedings or an adverse judgment*."

The international nature of our operations subjects us to a number of risks, including fluctuations in exchange rates, adverse changes in foreign laws or regulatory requirements and tariffs, taxes, and other trade restrictions. See Item 1A "Risk Factors" – "*We are subject to risks inherent in international operations*." See also Note 17. "Segment Information," to the consolidated financial statements in Part II, Item 8, "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K for information about our net sales by geographic region for the years ended October 31, 2020, 2019, and 2018. See also Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," for other information about our operations and activities in various geographic regions.

Sustainability

FuelCell Energy's clean, efficient and reliable fuel cell power platforms assist our customers in achieving their environmental and sustainability goals. Our patented FuelCell Energy products offer a sustainable alternative to traditional internal combustion-based power generation. Traditional power plants create harmful emissions, such as NOx, SOx and Particulate Matter, that are a serious public health concern. Alternatively, the FuelCell Energy power platforms use a combustion-free power generation process that is virtually free of pollutants. Our platforms are highly efficient and environmentally friendly products that support the "Triple Bottom Line" concept of sustainability, consisting of environmental, social and economic considerations. As an enterprise, we are proud that, in October 2018, we were certified ISO 14001:2015 compliant, having demonstrated the establishment of and adherence to an environmental management system standard. We believe that FuelCell Energy is the only fuel cell manufacturer to have received this certification.

Product efficiency

The electrical efficiency of our Carbonate Fuel Cell solutions ranges from approximately 47% to 60% depending on the configuration. When configured for CHP, our system efficiencies can potentially reach up to 90%, depending on the application. This compares favorably to the average efficiency of the U.S. electrical grid of about 40%. Our solutions deliver this high electrical efficiency where the power is used, avoiding transmission. Transmission line losses average about 5% for the U.S. grid, which represents inefficiency and is a hidden cost to ratepayers.

Product end-of-life management

Our commitment to sustainability is evident in the design, manufacturing, installation and servicing of our fuel cell power platforms, which are engineered for recycling and reuse. We start with a commitment to sustainability best practices as part of our corporate culture, then apply this core belief to the design, manufacture, installation and servicing of our fuel cell power platforms. For example, when our plants reach the end of their useful lives, we have the capability to refurbish and re-use certain parts and also recycle most of what we cannot re-use. This is a departure from other power generation methods that typically produce a significant amount of waste. The BOP has an operating life of 25-to-30 years, at which time metals such as steel and copper are reclaimed for scrap value. For context, by weight, approximately 93% of the entire power plant can be re-used or recycled at the end of its useful life.

Our manufacturing process has a very low carbon footprint, utilizing an assembly-oriented production strategy. While we continue to enhance and adopt sustainable business practices, we recognize this is an ongoing effort with more to be accomplished, such as further reducing the direct and indirect aspects of our carbon footprint.

Materials sourcing

Assuring the absence of conflict minerals in our power plants is a continuing initiative. Our fuel cells, including the fuel cell components and completed fuel cell module, do not utilize any 3TG minerals (i.e., tin, tungsten, tantalum and gold) that are classified as conflict minerals. We do utilize componentry in the BOP such as computer circuit boards that utilize trace amounts of 3TG minerals. For perspective, total shipments in fiscal year 2019 weighed approximately 1.8 million pounds, of which 8.0 pounds, or 0.000450%, represented 3TG minerals, so the presence of these minerals is minimal. Our conflict mineral disclosure filed with the Securities and Exchange Commission ("SEC") on Form SD contains specific information on the actions we are taking to avoid the use of conflict minerals.

Human Capital Resources

As of October 31, 2020, we had 316 full-time employees, of whom 121 were located at the Torrington, Connecticut manufacturing facility, 160 were located at the Danbury, Connecticut facility or other field offices within the U.S., and 35 were located abroad. We did not have any part-time employees. None of our U.S. employees are represented by a labor union or covered by a collective bargaining agreement. We believe our relations with our employees are good.

Workforce Health and Safety

We take workplace safety very seriously and are proud of the fact that we have never had a workplace fatality at any of our facilities or power plant installations. Our robust safety program, bolstered over the past five years, ensures that we are constantly evaluating our safety protocols in an effort to keep our facilities safe for our workers.

We work to continually improve what we believe is a robust safety program. This is demonstrated by an improving safety trend over each of the past 5 years. Our Experience Modification Rates ("EMR") for the past 5 years are as follows:2015: 1.0, 2016: 0.81, 2017: 0.65, 2018: 0.62, 2019: 0.65, and 2020: 0.59. We have maintained an "A" rating since 2016 providing "Safety Tier 1" performance with ISNetworld, a database for online contractor safety management designed to streamline companies' and contractors' compliance pre-qualification processes.

During fiscal year 2020, the Company launched a proactive response to the escalating COVID-19 outbreak and temporarily suspended operations at its Torrington, Connecticut manufacturing facility in March 2020. The Company also commenced remote work protocol for those employees worldwide that were capable of working from home. The Company took these actions to secure the safety of the Company's employees, our corporate community as a whole, and the communities in which our team members live, and to adhere to Center for Disease Control (CDC) recommendations of social distancing and limited public exposure in connection with the COVID-19 pandemic. All employees that were not able to work from home during the manufacturing facility shutdown due to their job function received full wages and benefits during such time. We did not implement any furlough, layoff or shared work program during such time. The Company resumed manufacturing in June 2020 and the Torrington, Connecticut manufacturing facility employees returned to work. The Company continues to encourage a remote work protocol for portions of the workforce due to the continuing pandemic. We continue to evaluate our ability to operate in light of recent resurgences of COVID-19 and the advisability of continuing operations based on federal, state and local guidance, evolving data concerning the pandemic and the best interests of our employees, customers and stockholders.

Compensation and Benefits

As part of our compensation philosophy, we believe that we must offer and maintain market competitive compensation and benefit programs for our employees in order to attract and retain superior talent. In addition to competitive base wages, additional programs include an annual Management Incentive Plan, Long-Term Equity Incentive Plans, a Company matched 401(k) Plan, healthcare and insurance benefits, health savings and flexible spending accounts, paid time off, family leave, and employee assistance programs.

Diversity and Inclusion

We are committed to our continued efforts to increase diversity and foster an inclusive work environment that supports the global workforce and the communities we serve. We recruit the best qualified employees regardless of gender, ethnicity or other protected traits and it is our policy to fully comply with all laws (domestic and foreign) applicable to discrimination in the workplace. Our diversity, equity and inclusion principles are also reflected in our employee training and policies. We continue to enhance our diversity, equity and inclusion policies which are guided by our executive leadership team.

Available Information

We file annual, quarterly and current reports, proxy statements and other information electronically with the SEC. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports are made available free of charge through the Investor Relations section of the Company's website (http://www.fuelcellenergy.com) as soon as practicable after such material is electronically filed with, or furnished to,

the SEC. Material contained on our website is not incorporated by reference in this report. Our executive offices are located at 3 Great Pasture Road, Danbury, CT 06810. The SEC also maintains an Internet website that contains reports and other information regarding issuers that file electronically with the SEC located at http://www.sec.gov.

Information about our Executive Officers

NAME	AGE	PRINCIPAL OCCUPATION
Jason B. Few President, Chief Executive Officer and Chief Commercial Officer	54	Mr. Few was appointed President and Chief Executive Officer in August 2019 and Chief Commercial Officer in September 2019 and has served as a director since 2018. Mr. Few chairs the Executive Committee of the Board of Directors (the "Board"). Prior to joining FuelCell Energy, Mr. Few served as President of Sustayn Analytics LLC, a cloud-based software waste and recycling optimization company, since 2018, and as the Founder and Senior Managing Partner of BJF Partners LLC, a privately held strategic consulting firm, since 2016. Mr. Few has over 30 years of experience increasing enterprise value for Global Fortune 500 and privately-held technology, telecommunications, technology and energy firms. He has overseen transformational opportunities across the technology and industrial energy sectors, in roles including Founder and Senior Managing Partner of BJF Partners, LLC; President and Chief Executive Officer of Continuum Energy, an energy products and services company, from 2013-2016; various roles including Executive Vice President and Chief Customer Officer of NRG Energy, Inc., an integrated energy company, from 2011 to 2012; President of Reliant Energy, from 2009 to 2012 and Vice President, Smart Energy, a retail electricity provider, from 2008 to 2009. Mr. Few also has served as a Senior Advisor to Verve Industrial Protection, an industrial cybersecurity software company, since 2016. Mr. Few was elected to the board of Marathon Oil (NYSE: MRO) effective April 1, 2019, and is a member of Marathon Oil's Audit and Finance and Corporate Governance and Nominating Committees. Mr. Few received his Bachelor's Degree in Computer Systems in Business from Ohio University, and a MBA from Northwestern University's J.L. Kellogg Graduate School of Management.
Michael S. Bishop Executive Vice President, Chief Financial Officer and Treasurer	52	Mr. Bishop was appointed Executive Vice President in June 2019 and has served as the Company's Chief Financial Officer and Treasurer since June 2011. Mr. Bishop previously served as Senior Vice President of the Company from June 2011 to June 2019. He has more than 20 years of experience in financial operations and management with public high growth technology companies with a focus on capital raising, project finance, debt/treasury management, investor relations, strategic planning, internal controls, and organizational development. Since joining the Company in 2003, Mr. Bishop has held a succession of financial leadership roles, including Assistant Controller, Corporate Controller and Vice President and Controller. Prior to joining the Company, Mr. Bishop held finance and accounting positions at TranSwitch Corporation, Cyberian Outpost, Inc. and United Technologies, Inc. He is a certified public accountant and began his professional career at McGladrey and Pullen, LLP (now RSM US LLP). Mr. Bishop also served four years in the United States Marine Corps.

NAME	AGE	PRINCIPAL OCCUPATION
		Mr. Bishop received a Bachelor of Science in Accounting from Boston University and a MBA from the University of Connecticut.
Jennifer D. Arasimowicz, Esq. Executive Vice President, General Counsel, Chief Administrative Officer and Corporate Secretary	48	Ms. Arasimowicz was appointed Chief Administrative Officer in September 2019 and has served as Executive Vice President since June 2019, General Counsel since April 2017 and Corporate Secretary since April 2017. In her current position (and in her prior positions), Ms. Arasimowicz, a licensed attorney in Connecticut, New York and Massachusetts, is (and was) the chief legal, compliance and administrative officer of the Company, having responsibility for oversight of all of the Company's legal and government affairs, and providing leadership in all aspects of the Company's business, including compliance, corporate governance and board activities. Ms. Arasimowicz joined the Company in 2012 as Associate Counsel and was promoted to Vice President in 2014, to General Counsel and Corporate Secretary in 2017 and to Senior Vice President also in 2017. Ms. Arasimowicz also previously served as Interim President from June 2019 to August 2019 and as Chief Commercial Officer from June 2019 to September 2019. Prior to joining the Company, Ms. Arasimowicz served as General Counsel of Total Energy Corporation, a New York based diversified energy products and service company providing a broad range of specialized services to utilities and industrial companies. Previously, Ms. Arasimowicz was a partner at Shipman & Goodwin in Hartford, Connecticut, chairing the Utility Law Practice Group and began her legal career as an associate at Murtha Cullina, LLP. Ms. Arasimowicz earned her Juris Doctor at Boston University School of Law and holds a Bachelor's degree in English from Boston University.
Michael Lisowski Executive Vice President, Chief Operating Officer	51	Mr. Lisowski was appointed Executive Vice President and Chief Operating Officer in June 2019. Mr. Lisowski has served as the Company's Vice President of Global Operations since 2018, and, from 2001 to 2018, held various other positions within the Company, including Vice President of Supply Chain from 2010 to 2018. Mr. Lisowski is a senior global operations leader with 27 years of progressive operations experience in technology-driven businesses. In his position as the Company's Chief Operating Officer (and in his prior position as the Company's Vice President of Global Operations), Mr. Lisowski is (and was) responsible for the Supply Chain, Manufacturing, Quality, Project Management, Environmental Health and Safety, and Plant Engineering functions of the Company. Additionally, Mr. Lisowski and his team are responsible for the development and qualification of strategic suppliers for critical direct materials, as well as procurement of capital equipment in support of operations. Mr. Lisowski earned his Bachelor's Degree in Communications and Business Administration at Western New England University and a Master's Degree in Management, Global Supply Chain Integrations from Rensselaer Polytechnic Institute.

NAME	AGE	PRINCIPAL OCCUPATION
Anthony Leo Executive Vice President, Chief Technology Officer	63	Mr. Leo was appointed Executive Vice President and Chief Technology Officer in June 2019 and, prior to that, served as Vice President of Applications and Advanced Technologies since 2014. From 1978 to 2014, Mr. Leo has held various other positions with the Company, including Vice President of Application Engineering and Advanced Technology Development, Vice President of Applications and OEM Engineering, and Vice President of Product Engineering. Mr. Leo has held key leadership roles in the Company's research, development, and commercialization of stationary fuel cell power plants for more than 30 years. In his current position and in his position as the Company's Vice President of Applications and Advanced Technologies, Mr. Leo is and has been responsible for Applications and Advanced Technology Development. In Mr. Leo's other positions with the Company, he has been responsible for managing advanced research and development of rechargeable batteries and fuel cells, managing the first large-scale demonstration stationary fuel cell project, and establishing the Product Engineering Group. Mr. Leo earned his Bachelor of Science Degree in Chemical Engineering from Rensselaer Polytechnic Institute and is currently serving on the U.S. Department of Energy Hydrogen and Fuel Cell Technical Advisory Committee.

ITEM 1A. RISK FACTORS

An investment in our common stock involves a high degree of risk. Prior to making a decision about investing in our securities, you should carefully consider the specific risk factors discussed below. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. If any such risks actually occur, our business, financial condition, or results of operations could be materially and adversely affected. In such cases, the trading price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to Our Business, Industry and Supply Chain

Our business and operations may be adversely affected by the 2019 novel coronavirus (COVID-19) outbreak or other similar outbreaks.

Any outbreaks of contagious diseases, including the recent outbreak of the 2019 novel coronavirus ("COVID-19") that was first detected in Wuhan, China in December 2019 and has since developed into a global pandemic, and other adverse public health developments in countries where we and our suppliers operate, could have a material and adverse effect on our business, financial condition and results of operations. These effects could include disruptions to or restrictions on our employees' ability to travel, as well as temporary closures of our facilities or the facilities of our customers, suppliers, or other vendors in our supply chain. In addition, COVID-19 has resulted in a widespread health crisis that has adversely affected, and may continue to adversely affect, the economies and financial markets of many countries, resulting in an economic downturn that could affect demand for our products or our ability to obtain financing for our business or projects. COVID-19 may impact the health of our team members, directors or customers, reduce the availability of our workforce or those of companies with which we do business, or otherwise cause human impacts that may negatively impact our business. Any of these events, which may result in disruptions to our supply chain or customer demand, could materially and adversely affect our business and our financial results. The extent to which COVID-19 will impact our business and our financial results will depend on future developments, which are highly uncertain and cannot be predicted. Such developments may include the geographic spread of COVID-19, the severity of the disease, the duration of the outbreak, the actions that may be taken by various governmental authorities in response to the outbreak, such as quarantine or "shelter-in-place" orders and business closures imposed by various states within the United States, and the impact on the U.S. or global economy. For example, on March 18, 2020, in response to the escalating global COVID-19 outbreak, we temporarily suspended operations at our Torrington, Connecticut manufacturing facility, and also ordered those employees that could work from home to do so. While we

resumed operations in the manufacturing facility on June 22, 2020, we continue to evaluate our ability to operate in light of recent resurgences of COVID-19 and the advisability of continuing operations, based on federal, state and local guidance, evolving data concerning the pandemic and the best interests of our employees, customers and stockholders. Accordingly, there can be no assurance that any of our facilities will remain open (in full or in part), that our employees that continue to work remotely will return to the office or that our other operations will continue at full or limited capacity. If we again have to shut down production either due to a worsening of the COVID-19 pandemic or due to an outbreak in one of our facilities, our project schedules and associated financing could be adversely affected. An extended period of remote working by our employees could strain our technology resources and introduce operational risks, including heightened cybersecurity risk. Further, we have experienced, and may continue to experience, increased costs and expenses, including as a result of (i) conducting daily "fitness-for-duty" assessments for employees, including symptom checks and providing personal protective equipment, (ii) the expansion of benefits to our employees, including the provision of additional time off for employees who have contracted COVID-19 or are required to be quarantined or who are unable to obtain childcare to return to work, (iii) implementing increased health and safety protocols at all of our facilities, including increased cleaning/ sanitization of workspaces, restricting visitor access, mandating social distancing guidelines and increasing the availability of sanitization products, and (iv) the increased cost of personal protective equipment. Although we believe the Company is currently considered an "essential" business in its operating markets, if any of the applicable exceptions or exemptions are curtailed or revoked in the future, or any of these exemptions or exceptions do not extend to any of our key suppliers, our business, operating results and financial condition could be adversely impacted. While we have attempted to continue business development activities during the pandemic, state and local shutdowns, shelter-in-place orders and travel restrictions have impeded our ability to meet with customers and solicit new business, and certain bids and solicitations in which we typically participate have been postponed. As a result, at this time, it is impossible to predict the overall impact of COVID-19 on our business, liquidity, capital resources, supply chain and financial results or its effect on clean energy demand, capital budgets of our customers, or demand for our products. Additionally, while we have continued to prioritize the health and safety of our team members and customers as we continue to operate during the pandemic, we face an increased risk of litigation related to our operating environments. Even after the COVID-19 pandemic has subsided, we may continue to experience adverse impacts to our business as a result of any economic recession that has occurred or may occur in the future because of the pandemic, or because the pandemic worsens again. Additional public health crises could also emerge in the future, including other pandemics or epidemics. Any such public health crisis could pose further risks to us and could also have a material adverse effect on our business, results of operations and financial position.

Our PPP Loan may not be forgiven, may subject us to challenges regarding qualification for the PPP Loan, enforcement actions, fines and penalties, and has resulted in an informal SEC inquiry into our financial disclosures.

On April 20, 2020, we entered into a Paycheck Protection Program Promissory Note, dated April 16, 2020 (the "PPP Note"), evidencing a loan to the Company from Liberty Bank under the CARES Act. Pursuant to the PPP Note, we received total proceeds of approximately $6.5 million on April 24, 2020. In accordance with the requirements of the CARES Act, as amended by the Paycheck Protection Program Flexibility Act of 2020 (the "PPP Flexibility Act"), the PPP Loan may be fully forgiven if (i) proceeds are used to pay eligible payroll costs, rent, mortgage interest and utilities and (ii) full-time employee headcount and salaries are either maintained during the 24-week period following disbursement of the PPP Loan or restored by December 31, 2020. If not so maintained or restored, forgiveness of the PPP Loan will be reduced in accordance with regulations to be issued by the SBA. In order to obtain the consent of the Orion Agent and the lenders under the Orion Credit Agreement (each as defined below) to enter into the PPP Note, the Orion Agent and such lenders required us to apply for forgiveness within 30 days after the last day of the loan forgiveness period as designated under regulations in effect as of June 6, 2020. We used 100% of the proceeds of the PPP Loan to pay eligible payroll costs, and on October 29, 2020, we applied for forgiveness of the PPP Loan. While we believe we have met all of the requirements of the CARES Act, as amended by the PPP Flexibility Act, no assurance can be given that any portion of the PPP Loan will be forgiven. In addition, based on guidance from the United States Department of the Treasury, since the total PPP Loan proceeds exceeded $2.0 million, our forgiveness application will be subject to audit by the SBA, including with respect to our certification that the economic uncertainty at the time of our application made our request for a PPP Loan necessary to support our ongoing operations. Such certification does not contain any objective criteria and is subject to interpretation. If we are found to have been ineligible to receive the PPP Loan under the PPP Note, or in violation of any of the laws or regulations that may apply to us in connection with the PPP Note, including the False Claims Act, we may be subject to enforcement actions, fines and penalties, including significant civil, criminal and administrative penalties, and could be required to repay the PPP Note. In addition, our receipt of the PPP Loan and our submission of a forgiveness application may result in adverse publicity and damage to our reputation, governmental investigations, inquiries, reviews and audits, such as the SEC inquiry described below,

which could consume significant financial and management resources. Any of these events could harm our business, results of operations and financial condition.

On or about May 11, 2020, the Division of Enforcement of the SEC sent the Company an inquiry requesting that we voluntarily provide information to the SEC pertaining to our application and resulting PPP Loan and how the need for the PPP Loan compares with our filings, disclosures and financial condition. While this request for information is voluntary and the Company was not obligated to respond, we are cooperating and have provided information to the SEC.

We have incurred losses and anticipate continued losses and negative cash flows.

We have transitioned from a research and development company to a commercial products manufacturer, services provider and developer. We have not been profitable since our year ended October 31, 1997. We expect to continue to incur net losses and generate negative cash flows until we can produce sufficient revenues and gross profit to cover our costs. We may never become profitable. Even if we do achieve profitability, we may be unable to sustain or increase our profitability in the future. For the reasons discussed in more detail below, there are uncertainties associated with our achieving and sustaining profitability. We have, from time to time, sought financing in the public markets in order to fund operations and will continue to do so. Our future ability to obtain such financing could be impaired by a variety of factors, including, but not limited to, the price of our common stock, our lack of available shares and general market conditions.

Our cost reduction strategy may not succeed or may be significantly delayed, which may result in our inability to deliver improved margins.

Our cost reduction strategy is based on the assumption that increases in production will result in economies of scale. In addition, our cost reduction strategy relies on advancements in our manufacturing process, global competitive sourcing, engineering design, reducing the cost of capital and technology improvements (including stack life and projected power output). Failure to achieve our cost reduction targets could have a material adverse effect on our results of operations and financial condition.

We have debt outstanding and may incur additional debt in the future, which may adversely affect our financial condition and future financial results.

As of October 31, 2020, our total consolidated debt outstanding ("indebtedness") was $174.2 million ($165.1 million, net of finance costs and debt discounts), of which an aggregate of $80.0 million ($72.7 million, net of finance costs and debt discounts) was senior secured indebtedness under the Orion Credit Agreement with the Orion Agent (in each case as defined elsewhere herein) and certain of its affiliates, which was entered into in connection with our $200.0 million senior secured credit facility (which is referred to herein as the Orion Facility), and an aggregate of $94.2 million ($92.4 million, net of finance costs and debt discounts) was other secured indebtedness.

On December 7, 2020, the Company repaid all outstanding debt under the Orion Facility. Concurrently with the Orion Agent's receipt of full payment pursuant to the Orion Payoff Letter (as defined elsewhere herein), the Orion Agent released all of the collateral from the liens granted under the security documents associated with the Orion Facility (which included the release of $11.2 million of restricted cash to the Company), and the Company and its subsidiaries were unconditionally released from their respective obligations under the Orion Credit Agreement (and related loan documents) and the Orion Facility without further action.

Our ability to make scheduled payments of principal and interest and other required repayments depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not generate cash flows from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flows, we may be required to adopt one or more alternatives, such as selling assets, restructuring operations, restructuring debt or obtaining additional equity capital on terms that may be onerous or dilutive.

We may incur additional indebtedness in the future in the ordinary course of business, which could include onerous restrictions on us. If new debt is added to current debt levels, the risks described above could intensify. Our debt agreements contain representations and warranties, affirmative and negative covenants, and events of default that entitle the lenders to cause our indebtedness under such debt agreements to become immediately due and payable.

Unanticipated increases or decreases in business growth may result in adverse financial consequences for us.

If our business grows more quickly than we anticipate, our existing and planned manufacturing facilities may become inadequate and we may need to seek out new or additional space, or retrofit or further equip our existing facilities, at considerable cost to us. If our business does not grow as quickly as we expect, our existing and planned manufacturing facilities would, in part, represent excess capacity for which we may not recover the cost. In that circumstance, our revenues may be inadequate to support our committed costs and our planned growth, and our gross margins and business strategy would be adversely affected.

If our goodwill and other intangible assets, long-lived assets, inventory or project assets become impaired, we may be required to record a significant charge to operations.

We have in the past recorded charges and may in the future be required to record a significant charge to operations in our financial statements should we determine that our goodwill, other indefinite-lived intangible assets (i.e., in process research and development ("IPR&D")), other long-lived assets (i.e., property, plant and equipment and definite-lived intangible assets), inventory, or project assets are impaired. Such a charge might have a significant impact on our reported financial condition and results of operations.

As required by accounting rules, we review our goodwill for impairment at least annually as of July 31 or more frequently if facts and circumstances indicate that it is more likely than not that the fair value of a reporting unit that has goodwill is less than its carrying value. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill might not be recoverable include a significant decline in projections of future cash flows and lower future growth rates in our industry. We review IPR&D for impairment on an annual basis as of July 31 or more frequently if facts and circumstances indicate the fair value is less than the carrying value. If the technology has been determined to be abandoned or not recoverable, we would be required to record a charge reflecting impairment of the asset. We review inventory, long-lived assets and project assets for impairment whenever events or changes in circumstances indicate the carrying amount may not be recoverable. We consider a project commercially viable and recoverable if such project is anticipated to be sellable for a profit, or generates positive cash flows, in excess of the cost of the project once it is either fully developed or fully constructed. If any of our projects are not considered commercially viable or costs are not deemed to be recoverable, we would be required to record a charge reflecting the impairment of such project assets.

Our Advanced Technologies contracts are subject to the risk of termination by the contracting party and we may not realize the full amounts allocated under some contracts due to the lack of Congressional appropriations or early termination.

A portion of our revenues has been derived from long-term cooperative agreements and other contracts with the DOE and other U.S. government agencies. These agreements are important to the continued development of our technology and our products. We also contract with private sector companies under certain Advanced Technologies contracts to develop strategically important and complementary offerings.

Generally, our privately funded Advanced Technologies contracts, including our EMRE Joint Development Agreement, and our government research and development contracts are subject to the risk of termination at the convenience of the contracting party and may contain certain milestones and deliverables which we may not be able to meet if actual results differ materially from our original estimates. Furthermore, with respect to government-funded contracts, irrespective of the amounts allocated by the contracting agency, such contracts are subject to annual Congressional appropriations and the results of government or agency sponsored reviews and audits of our cost reduction projections and efforts. We can only receive funds under government-funded contracts ultimately made available to us annually by Congress as a result of the appropriations process. Accordingly, we cannot be sure whether we will receive the full amounts awarded under our privately funded, government research and development or other contracts. Termination of the contracts or failure to receive the full amounts under any of our Advanced Technologies contracts could materially and adversely affect our business prospects, results of operations and financial condition.

Utility companies may resist the adoption of Distributed Generation and could impose customer fees or interconnection requirements on our customers that could make our products less desirable.

Investor-owned utilities may resist adoption of Distributed Generation fuel cell plants as such plants are disruptive to the utility business model that primarily utilizes large central generation power plants and associated transmission and distribution. On-site Distributed Generation that is on the customer-side of the electric meter competes with the utility. Distributed Generation on the utility-side of the meter generally has power output that is significantly less than central

generation power plants and may be perceived by the utility as too small to materially impact its business, limiting its interest. Additionally, perceived technology risk may limit utility interest in stationary fuel cell power plants.

Utility companies commonly charge fees to larger, industrial customers for disconnecting from the electric grid or for having the capacity to use power from the electric grid for back up purposes. These fees could increase the cost to our customers of using our SureSource products and could make our products less desirable, thereby harming our business prospects, results of operations and financial condition.

We depend on third party suppliers for the development and supply of key raw materials and components for our products.

We use various raw materials and components to construct a fuel cell module, including nickel and stainless steel that are critical to our manufacturing process. We also rely on third-party suppliers for the BOP components in our products. Suppliers must undergo a qualification process, which takes four to twelve months. We continually evaluate new suppliers, and we are currently qualifying several new suppliers. There are a limited number of suppliers for some of the key components of our products. We do not know whether we will be able to maintain long-term supply relationships with our critical suppliers, or secure new long-term supply relationships on terms that will allow us to achieve our objectives, if at all. A supplier's failure to develop and supply components in a timely manner or to supply components that meet our quality, quantity or cost requirements or our technical specifications, or our inability to obtain alternative sources of these components on a timely basis or on terms acceptable to us, could each harm our ability to manufacture our SureSource products. In addition, to the extent the processes that our suppliers use to manufacture components are proprietary, we may be unable to obtain comparable components from alternative suppliers, all of which could harm our business prospects, results of operations and financial condition.

Risks Related to Sales of our Products

We derive significant revenue from contracts awarded through competitive bidding processes involving substantial costs and risks. Our contracted projects may not convert to revenue, and our project awards and sales pipeline may not convert to contracts, which may have a material adverse effect on our revenue and cash flows.

We expect a significant portion of the business that we will seek in the foreseeable future will be awarded through competitive bidding against other fuel cell technologies and other forms of power generation. The competitive bidding process involves substantial costs and a number of risks, including the significant cost and managerial time to prepare bids and proposals for contracts that may not be awarded to us and our failure to accurately estimate the resources and costs that will be required to fulfill any contract we win. In addition, following a contract award, we may encounter significant expense, delay or contract modifications or award revocation as a result of our competitors protesting or challenging contracts awarded to us in competitive bidding. Our failure to compete effectively in this procurement environment could adversely affect our revenue and/or profitability.

Some of the project awards we receive and orders we accept from customers require certain conditions or contingencies (such as permitting, interconnection, financing or regulatory approval) to be satisfied, some of which are outside of our control. Certain awards are cancelable or revocable at any time prior to contract execution. The time periods from receipt of an award to execution of a contract, or receipt of a contract to installation may vary widely and are determined by a number of factors, including the terms of the award, governmental policies or regulations that go into effect after the award, the terms of the customer contract and the customer's site requirements. These same or similar conditions and contingencies may be required by financiers in order to draw on financing to complete a project. If these conditions or contingencies are not satisfied, or changes in laws affecting project awards occur, or awards are revoked or cancelled, project awards may not convert to contracts, and installations may be delayed or canceled. This could have an adverse impact on our revenue and cash flow and our ability to complete construction of a project.

We have signed product sales contracts, EPCs, PPAs and long-term service agreements with customers subject to contractual, technology, operating and commodity risks as well as market conditions that may affect our operating results.

We apply the transfer of control over time revenue recognition method under Accounting Standards Codification Topic 606: Revenue from Contracts with Customers to certain service contracts which are subject to estimates. On a quarterly basis, we perform a review process to help ensure that total estimated contract costs include estimates of costs to complete that are based on the most recent available information. The amount of costs incurred on a cumulative to

date basis as a function of estimated costs at completion is applied to contract consideration to determine the cumulative revenue that should be recognized to date.

In certain instances, we have executed PPAs with the utility, end-user of the power or site host of the fuel cell power plant. We may then sell the PPA and power plant to a project investor or retain the project and collect revenue from the sale of power over the term of the PPA, recognizing electricity revenue as power is generated and sold. Our growing portfolio of project assets used to generate and sell power under PPAs and utility tariff programs exposes us to operational risks and uncertainties, including, among other things, lost revenues due to prolonged outages, replacement equipment costs, risks associated with facility start-up operations, failures in the availability or acquisition of fuel, the impact of severe adverse weather conditions, natural disasters, terrorist attacks, cybersecurity attacks, risks of property damage or injury from energized equipment, availability of adequate water resources and ability to intake and discharge water, use of new or unproven technology, fuel commodity price risk and fluctuating market prices, and lack of alternative available fuel sources.

We have contracted under long-term service agreements with certain customers to provide service on our products over terms up to 20 years. Under the provisions of these contracts, we provide services to maintain, monitor, and repair customer power plants to meet minimum operating levels. Pricing for service contracts is based upon estimates of future costs including future module replacements. While we have conducted tests to determine the overall life of our products, we have not run certain of our products over their projected useful life or in all potential conditions prior to large scale commercialization. As a result, we cannot be sure that these products will last to their expected useful life or perform as anticipated in all conditions, which could result in warranty claims, performance penalties, maintenance and module replacement costs in excess of our estimates, losses on service contracts and/or a negative perception of our products.

Our ability to proceed with projects under development and complete construction of projects on schedule and within budget may be adversely affected by escalating costs for materials, tariffs, labor and regulatory compliance, inability to obtain necessary permits, interconnections or other approvals on acceptable terms or on schedule and by other factors. If any development project or construction is not completed, is delayed or is subject to cost overruns, we could become obligated to make delay or termination payments or become obligated for other damages under contracts, experience diminished returns or write off all or a portion of our capitalized costs in the project. Each of these events could have an adverse effect on our business, financial condition, results of operations and prospects.

We extend product warranties for our products, which products are complex and could contain defects and may not operate at expected performance levels, which could impact sales and market adoption of our products, affect our operating results or result in claims against us.

We develop complex and evolving products and we continue to advance the capabilities of our fuel cell stacks and are now producing stacks in the United States with a net rated power output of 350 kilowatts and an expected seven-year life. We provide for a warranty of our products for a specific period of time against manufacturing or performance defects. We accrue for warranty costs based on historical warranty claim experience; however, actual future warranty expenses may be greater than we have assumed in our estimates. We are still gaining field operating experience with respect to our products, and despite experience gained from our growing installed base and testing performed by us, our customers and our suppliers, issues may be found in existing or new products. This could result in a delay in recognition or loss of revenues, loss of market share or failure to achieve broad market acceptance. The occurrence of defects could also cause us to incur significant warranty, support and repair costs in excess of our estimates, could divert the attention of our engineering personnel from our product development efforts, and could harm our relationships with our customers. Although we seek to limit our liability, a product liability claim brought against us, even if unsuccessful, would likely be time consuming, could be costly to defend, and may hurt our reputation in the marketplace. Our customers could also seek and obtain damages from us for their losses.

We currently face and will continue to face significant competition, including from products using other energy sources that may be lower priced or have preferred environmental characteristics.

We compete on the basis of our products' reliability, efficiency, environmental considerations and cost. Technological advances in alternative energy products, improvements in the electric grid or other sources of power generation that use lower priced fuel or no fuel, or other fuel cell technologies may negatively affect the development or sale of some or all of our products or make our products less economically attractive, non- competitive or obsolete prior to or after commercialization. Significant decreases in the price of alternative technologies or grid delivered electricity, or

significant increases in the price of our fuels could have a material adverse effect on our business because other generation sources could be more economically attractive to consumers than our products. Additionally, in certain markets, consumers and regulators have expressed a preference for zero-carbon generating resources over fueled resources, which could adversely affect sales of our products in such markets.

Other companies, some of which have substantially greater resources than ours, are currently engaged in the development of products and technologies that are similar to, or may be competitive with, our products and technologies. Several companies in the U.S. are engaged in fuel cell development, although we are the only domestic company engaged in manufacturing and deployment of stationary Carbonate Fuel Cells. Other emerging fuel cell technologies (and the companies developing them) include small or portable PEM fuel cells (Ballard Power Systems, Plug Power, and increasing activity by numerous automotive companies including Toyota, Hyundai, Honda and GM), stationary phosphoric acid fuel cells (Doosan), stationary Solid Oxide Fuel Cells (Bloom Energy and Doosan), and small residential Solid Oxide Fuel Cells (Ceres Power Holdings and Ceramic Fuel Cells Ltd.). Each of these competitors has the potential to capture market share in our target markets. There are also other potential fuel cell competitors internationally that could capture market share.

Other than fuel cell developers, we must also compete with companies that manufacture combustion-based distributed power equipment, including various engines and turbines, and have well-established manufacturing, distribution, operating and cost features. Electrical efficiency of these products can be competitive with our SureSource power plants in certain applications. Significant competition may also come from gas turbine companies and large scale solar and wind technologies.

Our plans are dependent on market acceptance of our products.

Our plans are dependent upon market acceptance of, as well as enhancements to, our products. Fuel cell systems represent an emerging market, and we cannot be sure that potential customers will accept fuel cells as a replacement for traditional power sources or non-fuel based power sources, hydrogen generation sources or storage. As is typical in a rapidly evolving industry, demand and market acceptance for recently introduced products and services are subject to a high level of uncertainty and risk. Since the Distributed Generation, hydrogen and storage markets are still evolving, it is difficult to predict with certainty the size of these markets and their growth rates. The development of a market for our products may be affected by many factors that are out of our control, including:

- the cost competitiveness of our fuel cell products including availability and output expectations and total cost of ownership;
- the future costs of natural gas, renewable natural gas (biofuels), and other fuels used by our fuel cell products;
- customer reluctance to try a new product;
- the market for Distributed Generation, hydrogen and storage and government policies that affect those markets;
- government incentives, mandates or other programs favoring zero carbon energy sources;
- local permitting and environmental requirements;
- customer preference for non-fuel based technologies; and
- the emergence of newer, more competitive technologies and products.

If a sufficient market fails to develop or develops more slowly than we anticipate, we may be unable to recover the losses we will have incurred in the development of our products, and we may never achieve profitability.

Our products use inherently dangerous, flammable fuels, operate at high temperatures and use corrosive carbonate material, each of which could subject our business to product liability claims.

Our business exposes us to potential product liability claims that are inherent in products that use hydrogen. Our products utilize fuels such as natural gas and convert these fuels internally to hydrogen that is used by our products to generate electricity. Although our platforms do not combust fuels for the generation of electricity, the fuels we use are

combustible and may be toxic. In addition, our SureSource products operate at high temperatures and use corrosive carbonate material, which could expose us to potential liability claims. Although we have incorporated a robust design and redundant safety features in our power plants, have established comprehensive safety, maintenance, and training programs, follow third-party certification protocols, codes and standards, and do not store natural gas or hydrogen at our power plants, we cannot guarantee that there will not be accidents. Any accidents involving our products or other hydrogen-using products could materially impede widespread market acceptance and demand for our products. In addition, we might be held responsible for damages beyond the scope of our insurance coverage. We also cannot predict whether we will be able to maintain adequate insurance coverage on acceptable terms.

Risks Related to Privacy, Data Protection and Cybersecurity

We are increasingly dependent on information technology, and disruptions, failures or security breaches of our information technology infrastructure could have a material adverse effect on our operations and the operations of our power plant platforms. In addition, increased information technology security threats and more sophisticated computer crime pose a risk to our systems, networks, products and services.

We rely on information technology networks and systems, including the Internet, to process, transmit and store electronic and financial information and to manage a variety of business processes and activities, including communication with power plants owned by us or our customers and production, manufacturing, financial, logistics, sales, marketing and administrative functions. Additionally, we collect and store data that is sensitive to us and to third parties. Operating these information technology networks and systems and processing and maintaining this data, in a secure manner, are critical to our business operations and strategy. We depend on our information technology infrastructure to communicate internally and externally with employees, customers, suppliers and others. We also use information technology networks and systems to comply with regulatory, legal and tax requirements and to operate our fuel cell power plants. These information technology systems, many of which are managed by third parties or used in connection with shared service centers, may be susceptible to damage, disruptions or shutdowns due to failures during the process of upgrading or replacing software, databases or components thereof, power outages, hardware failures, computer viruses, attacks by computer hackers or other cybersecurity risks, telecommunication failures, user errors, natural disasters, terrorist attacks or other catastrophic events. If any of our significant information technology systems suffer severe damage, disruption or shutdown, and our disaster recovery and business continuity plans do not effectively resolve the issues in a timely manner, our product sales, financial condition and results of operations may be materially and adversely affected, and we could experience delays in reporting our financial results, or our fuel cell power plant operations may be disrupted, exposing us to performance penalties under our contracts with customers.

In addition, information technology security threats — from user error to cybersecurity attacks designed to gain unauthorized access to our systems, networks and data — are increasing in frequency and sophistication. Cybersecurity attacks may range from random attempts to coordinated and targeted attacks, including sophisticated computer crime and advanced persistent threats. These threats pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of our data.

Cybersecurity attacks could also include attacks targeting customer data or the security, integrity and/or reliability of the hardware and software installed in our products. We have experienced, and may continue to experience in the future, cybersecurity attacks that have resulted in unauthorized parties gaining access to our information technology systems and networks and, in one instance, gaining control of the information technology system at one of our power plants. However, to date, no cybersecurity attack has resulted in any material loss of data, interrupted our day-to-day operations or had a material impact on our financial condition, results of operations or liquidity. While we actively manage information technology security risks within our control, there can be no assurance that such actions will be sufficient to mitigate all potential risks to our systems, networks and data. In addition to the direct potential financial risk as we continue to build, own and operate generation assets, other potential consequences of a material cybersecurity attack include reputational damage, litigation with third parties, disruption to systems, unauthorized release of confidential or otherwise protected information, corruption of data, diminution in the value of our investment in research, development and engineering, and increased cybersecurity protection and remediation costs, which in turn could adversely affect our competitiveness, results of operations and financial condition. The amount of insurance coverage we maintain may be inadequate to cover claims or liabilities relating to a cybersecurity attack.

Additionally, the legal and regulatory environment surrounding information security and privacy in the U.S. and international jurisdictions is constantly evolving. Violation or non-compliance with any of these laws or regulations, contractual requirements relating to data security and privacy, or our own privacy and security policies, either intentionally or unintentionally, or through the acts of intermediaries could have a material adverse effect on our brand, reputation, business, financial condition and results of operations, as well as subject us to significant fines, litigation losses, third-party damages and other liabilities.

Tax, Accounting, Compliance and Regulatory Risks

We are required to maintain effective internal control over financial reporting. Our management previously identified a material weakness in our internal control over financial reporting that has been remediated. If other control deficiencies are identified in the future, we may not be able to report our financial results accurately, prevent fraud or file our periodic reports in a timely manner, which may adversely affect investor confidence in our Company and, as a result, the value of our common stock.

We are required, pursuant to Section 404 of the Sarbanes-Oxley Act ("Section 404"), to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting. Complying with Section 404 requires a rigorous compliance program as well as adequate time and resources. We may not be able to complete our internal control evaluation, testing and any required remediation in a timely fashion. Additionally, if we identify one or more material weaknesses in our internal control over financial reporting, we will not be able to assert that our internal controls are effective. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

We initially disclosed in our Form 10-Q for the quarter ended April 30, 2019 that we did not have resources to sufficiently address asset impairments on a timely basis or the accounting considerations and disclosures related to our amended credit facilities. As a result, we concluded that there was a material weakness in internal control over financial reporting, as we did not maintain effective controls over the accounting for and disclosures in the consolidated financial statements related to asset impairments and credit facilities. As disclosed in our Annual Report on Form 10-K for the fiscal year ended October 31, 2019, this control deficiency was not remediated as of October 31, 2019 and we further identified that we did not have resources to sufficiently address certain other non-routine transactions and disclosures. This material weakness resulted in material misstatements that were corrected in the 2019 consolidated financial statements prior to issuance. This material weakness was remediated as of October 31, 2020.

We cannot be certain that other material weaknesses and control deficiencies will not occur in the future. If other material weaknesses are identified in the future, or if we are not able to comply with the requirements of Section 404 in a timely manner, our reported financial results could be materially misstated and we could be subject to investigations or sanctions by regulatory authorities, which would require additional financial and management resources, and the value of our common stock could decline.

To the extent we identify future weaknesses or deficiencies, there could be material misstatements in our consolidated financial statements and we could fail to meet our financial reporting obligations. As a result, our ability to obtain additional financing on favorable terms or at all could be materially and adversely affected which, in turn, could materially and adversely affect our business, our financial condition and the value of our common stock. If we are unable to assert that our internal control over financial reporting is effective in the future, investor confidence in the accuracy and completeness of our financial reports could be further eroded, which would have a material adverse effect on the price of our common stock.

Our results of operations could vary as a result of changes to our accounting policies or the methods, estimates and judgments we use in applying our accounting policies.

The methods, estimates and judgments we use in applying our accounting policies have a significant impact on our results of operations. Such methods, estimates and judgments are, by their nature, subject to substantial risks, uncertainties and assumptions, and factors may arise over time that could lead us to reevaluate our methods, estimates and judgments.

In future periods, management will continue to reevaluate its estimates for contract margins, service agreements, loss accruals, warranty, performance guarantees, liquidated damages and inventory valuation allowances. Changes in those estimates and judgments could significantly affect our results of operations and financial condition. We will also adopt changes required by the Financial Accounting Standards Board and the SEC.

We may be affected by environmental and other governmental regulation.

We are subject to various federal, state and local laws and regulations relating to, among other things, land use, safe working conditions, handling and disposal of hazardous and potentially hazardous substances and emissions of carbon dioxide and pollutants into the atmosphere. Our business exposes us to the risk of harmful substances escaping into the environment, resulting in personal injury or loss of life, damage to or destruction of property, and natural resource damage. Depending on the nature of the claim, our current insurance policies may not adequately reimburse us for costs incurred in settling environmental damage claims, and in some instances, we may not be reimbursed at all. In addition, it is possible that industry-specific laws and regulations will be adopted covering matters such as transmission scheduling, distribution, emissions, and the characteristics and quality of our products, including installation and servicing. These regulations could limit the growth in the use of Carbonate Fuel Cell products, decrease the acceptance of fuel cells as a commercial product and increase our costs and, therefore, the price of our products. We believe that our businesses are operating in compliance in all material respects with applicable environmental laws; however, these laws and regulations have changed frequently in the past and it is reasonable to expect additional and more stringent changes in the future. Accordingly, compliance with existing or future laws and regulations could have a material adverse effect on our business prospects, results of operations and financial condition. If we fail to comply with applicable environmental laws and regulations, governmental authorities may seek to impose fines and penalties on us or to revoke or deny the issuance or renewal of operating permits and private parties may seek damages from us. Under those circumstances, we might be required to curtail or cease operations, conduct site remediation or other corrective action, or pay substantial damage claims.

Given that some of our product configurations run on fossil fuels, we may be negatively impacted by CO_2-related changes in applicable laws, regulations, ordinances, rules or the requirements of the incentive programs on which we and our customers currently rely. Changes in any of the laws, regulations, ordinances or rules that apply to our installations and new technology could make it illegal or more costly for us or our customers to install and operate our products at particular sites. Additionally, our customers and potential customers' energy procurement policies may prohibit or limit their willingness to procure our products. Our business prospects may be negatively impacted if we are prevented from completing new installations or our installations become more costly as a result of laws, regulations, ordinances, or rules applicable to our products, or by our customers' and potential customers' energy procurement policies.

In addition, certain of our products benefit from federal, state and local governmental incentives, mandates or other programs promoting clean energy generation. Any changes to or termination of these programs could reduce demand for our products, impair sales financing, and adversely impact our business results.

A negative government audit could result in an adverse adjustment of our revenue and costs and could result in civil and criminal penalties.

Government agencies, such as the Defense Contract Audit Agency, routinely audit and investigate government contractors. These agencies review a contractor's performance under its contracts, cost structure, and compliance with applicable laws, regulations, and standards. If the agencies determine through these audits or reviews that we improperly allocated costs to specific contracts, they will not reimburse us for these costs. Therefore, an audit could result in adjustments to our revenue and costs.

Further, although we have internal controls in place to oversee our government contracts, no assurance can be given that these controls are sufficient to prevent isolated violations of applicable laws, regulations and standards. If the agencies determine that we or one of our subcontractors engaged in improper conduct, we may be subject to civil or criminal penalties and administrative sanctions, payments, fines, and suspension or prohibition from doing business with the government, any of which could materially affect our results of operations and financial condition.

Exports of certain of our products are subject to various export control regulations and may require a license or permission from the U.S. Department of State, the U.S. Department of Energy or other agencies.

As an exporter, we must comply with various laws and regulations relating to the export of products, services and technology from the U.S. and other countries having jurisdiction over our operations. We are subject to export control laws and regulations, including the International Traffic in Arms Regulation, the Export Administration Regulation, and the Specially Designated Nationals and Blocked Persons List, which generally prohibit U.S. companies and their intermediaries from exporting certain products, importing materials or supplies, or otherwise doing business with restricted countries, businesses or individuals, and require companies to maintain certain policies and procedures to ensure compliance. We are also subject to the Foreign Corrupt Practices Act, which prohibits improper payments to foreign governments and their officials by U.S. and other business entities. Under these laws and regulations, U.S. companies may be held liable for their actions and actions taken by their strategic or local partners or representatives. If we, or our intermediaries, fail to comply with the requirements of these laws and regulations, or similar laws of other countries, governmental authorities in the United States or elsewhere, as applicable, could seek to impose civil and/or criminal penalties, which could damage our reputation and have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Our Need for Additional Capital

We will need to raise additional capital, and such capital may not be available on acceptable terms, if at all. If we do raise additional capital utilizing equity, existing stockholders will suffer dilution. If we do not raise additional capital, our business could fail or be materially and adversely affected.

The implementation of our business plan and strategy requires additional capital to fund operations as well as investment by us in project assets. If we are unable to raise additional capital in the amounts required, on terms acceptable to us, or at all, we will not be able to successfully implement our business plan and strategy. Our capital-intensive business model increases the risks of our being able to successfully implement our plans, if we do not raise additional capital in the amounts required.

In addition, if we raise additional funds through further issuances of our common stock, or securities convertible into or exchangeable for shares of our common stock, into the public market, including shares of our common stock issued upon exercise of options or warrants, holders of our common stock could suffer significant dilution, and any new equity securities we issue could have rights, preferences and privileges superior to those of our then-existing capital stock. Any debt financing secured by us in the future could involve restrictive covenants relating to our capital raising activities and other financial and operational matters, which may make it more difficult for us to obtain additional capital and to pursue business opportunities. If we cannot raise additional funds when we need them, our business and prospects could fail or be materially and adversely affected. In addition, if additional funds are not secured in the future, we will have to modify, reduce, defer or eliminate parts of our present and anticipated future projects, or sell some or all of our assets.

Risks Related to our Intellectual Property and Technology Licenses

We depend on our intellectual property, and our failure to protect that intellectual property could adversely affect our future growth and success.

Failure to protect our existing intellectual property rights may result in the loss of our exclusivity or the right to use our technologies. If we do not adequately ensure our freedom to use certain technology, we may have to pay others for rights to use their intellectual property, pay damages for infringement, misappropriation, or other violation, or be enjoined from using such intellectual property. We rely on patent, trade secret, trademark and copyright law to protect our intellectual property.

We previously licensed certain of our Carbonate Fuel Cell manufacturing intellectual property to POSCO Energy on an exclusive basis in the South Korean and broader Asian markets, but we terminated our license agreements with POSCO Energy on June 28, 2020, which termination POSCO Energy is disputing. In addition, effective as of June 11, 2019, we entered into the EMRE License Agreement, pursuant to which we agreed, subject to the terms of the EMRE License Agreement, to grant EMRE and its affiliates a non-exclusive, worldwide, fully paid, perpetual, irrevocable,

non-transferrable license and right to use our patents, data, know-how, improvements, equipment designs, methods, processes and the like to the extent it is useful to research, develop, and commercially exploit Carbonate Fuel Cells in applications in which the fuel cells concentrate carbon dioxide from industrial and power sources and for any other purpose attendant thereto or associated therewith. Such right and license is sublicensable to third parties performing work for or with EMRE or its affiliates, but shall not otherwise be sublicensable. Furthermore, on November 5, 2019, we entered into the EMRE Joint Development Agreement, pursuant to which we agreed to grant EMRE and its affiliates a worldwide, non-exclusive, royalty- free, irrevocable, perpetual, sub-licensable, non-transferable (subject to certain exceptions) right and license to practice certain Company background intellectual property (to the extent not already licensed pursuant to the EMRE License Agreement) for new Carbonate Fuel Cell technology in Carbon Capture applications and hydrogen applications. We depend on POSCO Energy and EMRE to also protect our intellectual property rights, but we cannot assure you that POSCO Energy or EMRE will do so. For example, we have filed a demand for arbitration against POSCO Energy in the International Court of Arbitration of the International Chamber of Commerce based, in part, on POSCO Energy's disclosure of our proprietary information to third parties.

As of October 31, 2020, we (excluding our subsidiaries) had 102 U.S. patents and 186 patents in other jurisdictions covering our fuel cell technology (in certain cases covering the same technology in multiple jurisdictions), with patents directed to various aspects of our SureSource technology, SOFC technology, PEM fuel cell technology and applications thereof. As of October 31, 2020, we also had 55 patent applications pending in the U.S. and 107 patent applications pending in other jurisdictions. Our U.S. patents will expire between 2021 and 2039, and the current average remaining life of our U.S. patents is approximately 9.5 years. As of October 31, 2020, our subsidiary, Versa Power Systems, Ltd., had 32 U.S. patents and 93 international patents covering SOFC technology (in certain cases covering the same technology in multiple jurisdictions), with an average remaining U.S. patent life of approximately 4.7 years. As of October 31, 2020, Versa Power Systems, Ltd. also had 3 pending U.S. patent applications and 14 patent applications pending in other jurisdictions. In addition, as of October 31, 2020, our subsidiary, FuelCell Energy Solutions, GmbH, had license rights to 2 U.S. patents and 7 patents outside the U.S. for Carbonate Fuel Cell technology licensed from Fraunhofer IKTS.

Some of our intellectual property is not covered by any patent or patent application and includes trade secrets and other know-how that is not able to be patented, particularly as it relates to our manufacturing processes and engineering design. In addition, some of our intellectual property includes technologies and processes that may be similar to the patented technologies and processes of third parties. If we are found to be infringing, misappropriating or otherwise violating third-party intellectual property, we do not know whether we will be able to obtain licenses to use such intellectual property on acceptable terms, if at all. Our patent position is subject to complex factual and legal issues that may give rise to uncertainty as to the validity, scope, and enforceability of a particular patent.

We cannot assure you that any of the U.S. or international patents owned by us (including our subsidiaries) or other patents that third parties license to us will not be invalidated, circumvented, challenged, rendered unenforceable or licensed to others, or that any of our owned or licensed pending or future patent applications will be issued with the breadth of claim coverage sought by us or our licensors, if issued at all. In addition, effective patent, trademark, copyright and trade secret protection may be unavailable, limited or not applied for in certain foreign countries.

We also seek to protect our proprietary intellectual property, including intellectual property that may not be patented or able to be patented, in part by confidentiality agreements and, if applicable, inventors' rights agreements with our subcontractors, vendors, suppliers, consultants, strategic business associates and employees. We cannot assure you that these agreements will not be breached, that we will have adequate remedies for any breach or that such persons or institutions will not assert rights to intellectual property arising out of these relationships. Certain of our intellectual property has been licensed to us on a non-exclusive basis from third parties that may also license such intellectual property to others, including our competitors. If our licensors are found to be infringing, misappropriating or otherwise violating third-party intellectual property, we do not know whether we will be able to obtain licenses to use the intellectual property licensed to us on acceptable terms, if at all.

If necessary or desirable, we may seek extensions of existing licenses or further licenses under the patents or other intellectual property rights of others. However, we can give no assurances that we will obtain such extensions or further licenses or that the terms of any offered licenses will be acceptable to us. The failure to obtain a license from a third party for intellectual property that we use at present could cause us to incur substantial liabilities, and to suspend the manufacture or shipment of products or our use of processes requiring the use of that intellectual property.

While, other than with respect to claims we have made against POSCO Energy in the arbitration for disclosure of our proprietary information to third parties, we are not currently engaged in any intellectual property litigation, we could become subject to lawsuits in which it is alleged that we have infringed, misappropriated or otherwise violated the intellectual property rights of others or commence lawsuits against others who we believe are infringing, misappropriating or otherwise violating our rights or violating their agreements to protect our intellectual property. Our involvement in intellectual property litigation could result in significant expense to us, adversely affecting the development of sales of the challenged product or intellectual property and diverting the efforts of our technical and management personnel, whether or not that litigation is resolved in our favor.

The U.S. government has certain rights relating to our intellectual property, including the right to restrict or take title to certain patents.

Multiple U.S. patents that we own have resulted from government-funded research and are subject to the risk of exercise of "march-in" rights by the government. March-in rights refer to the right of the U.S. government or a government agency to exercise its non-exclusive, royalty-free, irrevocable worldwide license to any technology developed under contracts funded by the government if the contractor fails to continue to develop the technology. These "march-in" rights permit the U.S. government to take title to these patents and license the patented technology to third parties if the contractor fails to utilize the patents.

The pending legal proceedings with POSCO Energy could expose us to costs of such legal proceedings or an adverse judgment.

From approximately 2007 through 2015, we relied on POSCO Energy to develop and grow the South Korean and Asian markets for our products and services. We entered into the License Agreements with POSCO Energy between February 2007 and October 2012. The License Agreements provided POSCO Energy with the exclusive technology rights to manufacture, sell, distribute and service our SureSource 300, SureSource 1500 and SureSource 3000 fuel cell technology in the South Korean and broader Asian markets. Due to certain actions and inactions of POSCO Energy, we have not realized any new material revenues, royalties or new projects developed by POSCO Energy since late 2015.

In November 2019, POSCO Energy spun-off its fuel cell business into a new entity, KFC, without our consent. As part of the spin-off, POSCO Energy transferred manufacturing and service rights under the License Agreements to KFC, but retained distribution rights and severed its own liability under the License Agreements. We formally objected to POSCO Energy's spin-off, and POSCO Energy posted a bond to secure any liabilities to the Company arising out of the spin-off. In September 2020, the Korean Electricity Regulatory Committee found that POSCO Energy's spin-off of the fuel cell business to KFC may have been done in violation of South Korean law.

On February 19, 2020, we notified POSCO Energy in writing that it was in material breach of the License Agreements by (i) its actions in connection with the spin-off of the fuel cell business to KFC, (ii) its suspension of performance through its cessation of all sales activities since late 2015 and its abandonment of its fuel cell business in Asia, and (iii) its disclosure of material nonpublic information to third parties and its public pronouncements about the fuel cell business on television and in print media that have caused reputational damage to the fuel cell business, the Company and its products. We also notified POSCO Energy that, under the terms of the License Agreements, it had 60 days to fully cure its breaches to our satisfaction and that failure to so cure would lead to termination of the License Agreements. Further, on March 27, 2020, we notified POSCO Energy of additional instances of its material breach of the License Agreements based on POSCO Energy's failure to pay royalties required to be paid in connection with certain module replacements.

On April 27, 2020, POSCO Energy initiated a series of three arbitration demands against us at the International Court of Arbitration of the International Chamber of Commerce seated in Singapore alleging certain warranty defects in a sub-megawatt conditioning facility at its facility in Pohang, South Korea and seeking combined damages of approximately $3.3 million. Prior to filing the arbitrations, POSCO Energy obtained provisional attachments from the Seoul Central District Court attaching certain revenues owed to us by KOSPO as part of such warranty claims, which has delayed receipt of certain payments owed to us. POSCO Energy subsequently sought additional provisional attachments on KOSPO revenues from the Seoul Central District Court based on unspecified warranty claims not yet filed in an additional amount of approximately $7 million, and additional provisional attachments on KOSPO revenues from the Seoul Central District Court based on its alleged counterclaims in the license termination arbitration described below in an additional amount of approximately $110 million. As of October 31, 2020, outstanding accounts receivable due from KOSPO were $4.8 million.

On June 28, 2020, we terminated the License Agreements with POSCO Energy and filed a demand for arbitration against POSCO Energy and KFC in the International Court of Arbitration of the International Chamber of Commerce based on POSCO Energy's (i) failure to exercise commercially reasonable efforts to sell our technology in the South Korean and Asian markets, (ii) disclosure of our proprietary information to third parties, (iii) attack on our stock price and (iv) spin-off of POSCO Energy's fuel cell business into KFC without our consent. We have requested that the arbitral tribunal (a) confirm through declaration that POSCO Energy's exclusive license to market our technology and products in South Korea and Asia is null and void as a result of the breaches of the License Agreements and that we have the right to pursue direct sales in these markets, (b) order POSCO Energy and KFC to compensate us for losses and damages suffered in the amount of more than $200 million, and (c) order POSCO Energy and KFC to pay our arbitration costs, including counsel fees and expenses. We have retained outside counsel on a contingency basis to pursue our claims, and outside counsel has entered into an agreement with a litigation finance provider to fund the legal fees and expenses of the arbitration. In October 2020, POSCO Energy filed a counterclaim in the arbitration (x) seeking approximately $880 million in damages based on allegations that we misrepresented the capabilities of our fuel cell technology to induce POSCO Energy to enter into the License Agreements and failed to turn over know-how sufficient for POSCO Energy to successfully operate its business; (y) seeking a declaration that the License Agreements remain in full force and effect and requesting the arbitral tribunal enjoin us from interfering in POSCO Energy's exclusive rights under the License Agreements and (z) seeking an order that we pay POSCO Energy's arbitration costs, including counsel fees and expenses.

On August 28, 2020, POSCO Energy filed a complaint in the Court of Chancery of the State of Delaware (the "Court") purportedly seeking to enforce its rights as a stockholder of the Company to inspect and make copies and extracts of certain books and records of the Company and/or the Company's subsidiaries pursuant to Section 220 of the Delaware General Corporation Law and/or Delaware common law. POSCO Energy alleges that it is seeking to inspect these documents for a proper purpose reasonably related to its interests as a stockholder of the Company, including investigating whether the Company's Board of Directors and its management breached their fiduciary duties of loyalty, due care, and good faith. POSCO Energy seeks an order of the Court permitting POSCO Energy to inspect and copy the demanded books and records, awarding POSCO Energy reasonable costs and expenses, including reasonable attorney's fees incurred in connection with the matter, and granting such other and further relief as the Court deems just and proper.

On September 14, 2020, POSCO Energy filed a complaint in the United States District Court for the Southern District of New York alleging that the Company delayed the removal of restrictive legends on certain share certificates held by POSCO Energy in 2018, thus precluding POSCO Energy from selling the shares and resulting in claimed losses in excess of $1,000,000.

We cannot predict the outcome of the arbitration proceedings against POSCO Energy and KFC, the litigation and arbitration proceedings filed by POSCO Energy against us, or any future discussions with, or other actions or legal proceedings against or involving, POSCO Energy or KFC, if they occur, the future status or scope of our relationship with POSCO Energy or KFC, whether our relationship with POSCO Energy or KFC will continue in the future, whether we will become involved in additional mediations, arbitrations, litigation or other proceedings with POSCO Energy or KFC, what the costs of any such current or future proceedings will be or the effect of such current or future proceedings on the market. We also cannot predict collection timing of any receipts which are currently being delayed as a result of these proceedings. Any such current or future proceedings could result in significant expense to us, distract management's attention from the operation of our business and adversely affect our business and financial condition and reputation in the market, whether or not such proceedings are resolved in our favor.

Additionally, although we believe that termination of the License Agreements affords us with the ability to market our products and services in South Korea and the broader Asian market, POSCO Energy is disputing the termination of the License Agreements, and we cannot predict whether our efforts to access the South Korean and Asian markets, which are complex markets, will be successful or will be limited, hindered or delayed.

Risks Related to Our Common and Preferred Stock

Our stock price has been and could remain volatile.

The market price for our common stock has been and may continue to be volatile and subject to extreme price and volume fluctuations in response to market and other factors, including the following, some of which are beyond our control:

- failure to meet commercialization milestones;
- failure to win contracts through competitive bidding processes, or the loss of project awards previously announced or anticipated prior to entering into definitive contracts;
- the loss of a major customer or a contract;
- variations in our quarterly operating results from the expectations of securities analysts or investors;
- downward revisions in securities analysts' estimates or changes in general market conditions;
- changes in the securities analysts that cover us or failure to regularly publish reports;
- announcements of technological innovations or new products or services by us or our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- additions or departures of key personnel;
- investor perception of our industry or our prospects;
- insider selling or buying;
- demand for our common stock;
- dilution from issuances of our common stock;
- general market trends or preferences for non-fueled resources;
- the COVID-19 pandemic, including any worsening of the pandemic;
- general technological or economic trends; and
- changes in United States or foreign political environment and the passage of laws, including, tax, environmental or other laws, affecting the product development business.

Our stock price has increased during the past thirteen months from an intra-day low price of $0.48 on December 10, 2019 to an intra-day high price of $20.94 on January 13, 2021. The closing price of our common stock on January 15, 2021 was $15.84. There can be no assurance that the current stock price will be maintained, and it is possible that our stock price could drop significantly. In the past, following periods of volatility in the market price of their stock, companies have been the subject of securities class action litigation. If we become involved in securities class action litigation in the future, it could result in substantial costs and diversion of management's attention and resources and could harm our stock price, business prospects, results of operations and financial condition.

Future sales of substantial amounts of our common stock could affect the market price of our common stock.

Future sales of substantial amounts of our common stock, or securities convertible into or exchangeable for shares of our common stock, into the public market, including shares of our common stock issued upon exercise of options or warrants, or perceptions that those sales could occur, could adversely affect the prevailing market price of our common stock and our ability to raise capital in the future.

We have a limited number of shares of common stock available for issuance, which will limit our ability to raise equity capital in the future.

We have historically relied on the equity markets to raise capital to fund our business and operations. As of December 31, 2020, excluding 56,411 treasury shares which may be issued, we had 15,093,242 shares of common stock available for issuance, of which 5,185,674 shares were reserved for issuance under various warrants and equity awards, upon conversion of preferred stock, and under our employee stock purchase and equity incentive plans. As of December 31, 2020, we had 322,406,758 shares of common stock outstanding. Though we may in the future seek stockholder approval to increase the number of shares of common stock we are authorized to issue under our Certificate of Incorporation, as amended, there can be no assurance we will be successful in obtaining such approval. The limited number of shares of our common stock available for issuance will limit our ability to raise capital in the equity markets and satisfy obligations with shares instead of cash, which could adversely affect our business and operations.

Provisions of Delaware and Connecticut law and of our certificate of incorporation and by-laws may make a takeover more difficult.

Provisions in our Certificate of Incorporation, as amended ("Certificate of Incorporation"), and Amended and Restated By-Laws ("By-laws") and in Delaware and Connecticut corporate law may make it difficult and expensive for a third-party to pursue a tender offer, change in control or takeover attempt that is opposed by our management and board of directors. These anti-takeover provisions could substantially impede the ability of public stockholders to benefit from a change in control or change in our management and board of directors.

Our By-laws provide that the Court of Chancery of the State of Delaware is the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a judicial forum deemed favorable by the stockholder for disputes with us or our directors, officers or employees.

Our By-laws provide that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our Certificate of Incorporation or our By-laws, any action to interpret, apply, enforce, or determine the validity of our Certificate of Incorporation or By-laws, or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that the stockholder finds favorable for disputes against us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision contained in our By-laws to be inapplicable or unenforceable in such an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

The rights of our Series B Preferred Stock could negatively impact our cash flows and dilute the ownership interest of our stockholders.

The terms of our Series B Preferred Stock also provide rights to their holders that could negatively impact us. Holders of the Series B Preferred Stock are entitled to receive cumulative dividends at the rate of $50 per share per year, payable either in cash or in shares of our common stock. To the extent the dividend is paid in shares of our common stock, additional issuances could be dilutive to our existing stockholders and the sale of those shares could have a negative impact on the price of our common stock. A share of our Series B Preferred Stock may be converted at any time, at the option of the holder, into 0.5910 shares of our common stock (which is equivalent to an initial conversion price of $1,692 per share), plus cash in lieu of fractional shares. Furthermore, the conversion rate applicable to the Series B Preferred Stock is subject to additional adjustment upon the occurrence of certain events.

The Series B Preferred Stock ranks senior to our common stock with respect to payments upon liquidation, dividends, and distributions.

The rights of the holders of our Series B Preferred Stock rank senior to our obligations to our common stockholders. Upon our liquidation, the holders of Series B Preferred Stock are entitled to receive $1,000.00 per share plus all

accumulated and unpaid dividends (the "Liquidation Preference"). Until the holders of Series B Preferred Stock receive the Liquidation Preference with respect to their shares of Series B Preferred Stock in full, no payment will be made on any junior shares, including shares of our common stock. The existence of senior securities such as the Series B Preferred Stock could have an adverse effect on the value of our common stock.

General Risk Factors

Litigation could expose us to significant costs and adversely affect our business, financial condition, and results of operations.

We are, or may become, party to various lawsuits, arbitrations, mediations, regulatory proceedings and claims, which may include lawsuits, arbitrations, mediations, regulatory proceedings or claims relating to commercial liability, product recalls, product liability, product claims, employment matters, environmental matters, breach of contract, intellectual property, indemnification, stockholder suits, derivative actions or other aspects of our business. Litigation (including the other types of proceedings identified above) is inherently unpredictable, and although we may believe we have meaningful defenses in these matters, we may incur judgments or enter into settlements of claims that could have a material adverse effect on our business, financial condition, and results of operations. The costs of responding to or defending litigation may be significant and may divert the attention of management away from our strategic objectives. There may also be adverse publicity associated with litigation that may decrease customer confidence in our business or our management, regardless of whether the allegations are valid or whether we are ultimately found liable.

Financial markets worldwide have experienced heightened volatility and instability which may have a material adverse impact on our Company, our customers and our suppliers.

Financial market volatility can affect the debt, equity and project finance markets. This may impact the amount of financing available to all companies, including companies with substantially greater resources, better credit ratings and more successful operating histories than ours. It is impossible to predict future financial market volatility and instability and the impact on our Company, and it may have a materially adverse effect on us for a number of reasons, such as:

- The long-term nature of our sales cycle can require long lead times between application design, order booking and product fulfillment. For such sales, we often require substantial cash down payments in advance of delivery. For our generation business, we must invest substantial amounts in application design, manufacture, installation, commissioning and operation, which amounts are returned through energy sales over long periods of time. Our growth strategy assumes that financing will be available for us to finance working capital or for our customers to provide down payments and to pay for our products. Financial market issues may delay, cancel or restrict the construction budgets and funds available to us or our customers for the deployment of our products and services.
- Projects using our products are, in part, financed by equity investors interested in tax benefits, as well as by the commercial and governmental debt markets. The significant volatility in the U.S. and international stock markets causes significant uncertainty and may result in an increase in the return required by investors in relation to the risk of such projects.
- If we, our customers or our suppliers cannot obtain financing under favorable terms, our business may be negatively impacted.

Our future success will depend on our ability to attract and retain qualified management, technical, and other personnel.

Our future success is substantially dependent on the services and performance of our executive officers and other key management, engineering, scientific, manufacturing and operating personnel. The loss of the services of any such personnel could materially adversely affect our business. Our ability to achieve our commercialization plans and to increase production at our manufacturing facility in the future will also depend on our ability to attract and retain additional qualified personnel, and we cannot assure you that we will be able to do so. Recruiting personnel for the

fuel cell industry is competitive. Our inability to attract and retain additional qualified personnel, or the departure of key employees, could materially and adversely affect our development, commercialization and manufacturing plans and, therefore, our business prospects, results of operations and financial condition. In addition, our inability to attract and retain sufficient personnel to quickly increase production at our manufacturing facility when and if needed to meet increased demand may adversely impact our ability to respond rapidly to any new product, growth or revenue opportunities. Our inability to attract and retain sufficient qualified personnel to staff our government or third party funded research contracts may result in our inability to complete such contracts or terminations of such contracts, which may adversely impact financial conditions and results of operations.

We are subject to risks inherent in international operations.

Since we market our products both inside and outside the U.S., our success depends in part on our ability to secure international customers and our ability to manufacture products that meet foreign regulatory and commercial requirements in target markets. We have limited experience developing and manufacturing our products to comply with the commercial and legal requirements of international markets. In addition, we are subject to tariff regulations and requirements for export licenses, particularly with respect to the export of some of our technologies. We face numerous challenges in our international expansion, including unexpected changes in regulatory requirements and other geopolitical risks, fluctuations in currency exchange rates, longer accounts receivable requirements and collections, greater bonding and security requirements, difficulties in managing international operations, potentially adverse tax consequences, restrictions on repatriation of earnings and the burdens of complying with a wide variety of international laws. Any of these factors could adversely affect our results of operations and financial condition.

We source raw materials and parts for our products on a global basis, which subjects us to a number of potential risks, including the impact of export duties and quotas, trade protection measures imposed by the U.S. and other countries including tariffs, potential for labor unrest, changing global and regional economic conditions and current and changing regulatory environments. Changes to these factors may have an adverse effect on our ability to source raw materials and parts in line with our current cost structure.

Although our reporting currency is the U.S. dollar, we conduct our business and incur costs in the local currency of most countries in which we operate. As a result, we are subject to currency translation and transaction risk. Changes in exchange rates between foreign currencies and the U.S. dollar could affect our net sales and cost of sales and could result in exchange gains or losses. We cannot accurately predict the impact of future exchange rate fluctuations on our results of operations.

We could also expand our business into new and emerging markets, many of which have an uncertain regulatory environment relating to currency policy. Conducting business in such markets could cause our exposure to changes in exchange rates to increase, due to the relatively high volatility associated with emerging market currencies and potentially longer payment terms for our proceeds. Our ability to hedge foreign currency exposure is dependent on our credit profile with financial institutions that are willing and able to do business with us. Deterioration in our credit position or a significant tightening of the credit market conditions could limit our ability to hedge our foreign currency exposure and, therefore, result in exchange gains or losses.

Item 1B. UNRESOLVED STAFF COMMENTS

None.

Item 2. PROPERTIES

The following is a summary of our offices and locations:

Location	Business Use	Square Footage	Lease Expiration Dates
Danbury, Connecticut	Corporate Headquarters, Research and Development, Sales, Marketing, Service, Purchasing and Administration	72,000	Company owned
Torrington, Connecticut	Manufacturing and Administrative	167,000	December 2030[(1)]
Taufkirchen, Germany	Manufacturing and Administrative	20,000	June 2023
Calgary, Alberta, Canada	Research and Development	32,220	January 2023

(1) In November 2015, this lease was extended until December 2030, with the option to extend for three additional five-year periods thereafter.

Item 3. LEGAL PROCEEDINGS

SEC Proceedings

The discussion under the heading "*SEC Proceedings*" in Note 22. "Commitments and Contingencies" to the consolidated financial statements is incorporated herein by reference.

POSCO Energy Matters

The discussion in Part I, Item 1. "Business–License Agreements and Royalty Income; Relationship with POSCO Energy—*License Agreements with POSCO Energy*" regarding the pending legal proceedings with POSCO Energy is incorporated herein by reference.

Other Legal Proceedings

From time to time, the Company is involved in other legal proceedings, including, but not limited to, regulatory proceedings, claims, mediations, arbitrations and litigation, arising out of the ordinary course of its business ("Other Legal Proceedings"). Although the Company cannot assure the outcome of such Other Legal Proceedings, management presently believes that the result of such Other Legal Proceedings, either individually, or in the aggregate, will not have a material adverse effect on the Company's consolidated financial statements, and no material amounts have been accrued in the Company's consolidated financial statements with respect to these matters.

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

FuelCell Common Stock

Our common stock has been publicly traded since June 25, 1992. Our common stock trades under the symbol "FCEL" on the Nasdaq Global Market.

On January 15, 2021, the closing price of our common stock on the Nasdaq Global Market was $15.84 per share. As of January 15, 2021, there were 109 holders of record of our common stock. This does not include the number of persons whose stock is in nominee or "street" name accounts through brokers.

We have never paid a cash dividend on our common stock and do not anticipate paying any cash dividends on our common stock in the foreseeable future. In addition, the terms of our Series B Preferred Stock prohibit the payment of dividends on our common stock unless all dividends on the Series B Preferred Stock have been paid in full.

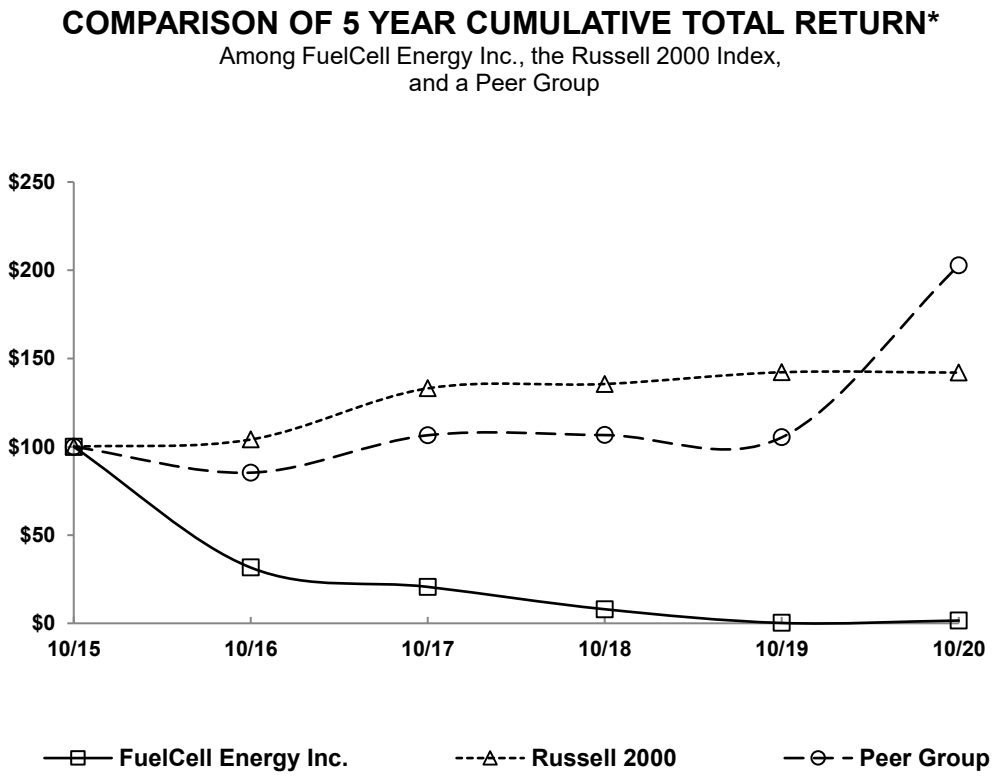
On May 8, 2020, the Company obtained stockholder approval at the reconvened 2020 Annual Meeting of Stockholders to increase the number of shares of common stock we are authorized to issue under our Certificate of Incorporation, as amended. Our stockholders approved a 112.5 million increase in the number of authorized shares of common stock. Accordingly, on May 11, 2020, the Company filed a Certificate of Amendment of the Certificate of Incorporation of the Company with the Delaware Secretary of State increasing the total number of authorized shares of common stock from 225.0 million shares to 337.5 million shares.

FuelCell Preferred Stock

Information concerning the Company's Series B Preferred Stock and the Class A Preferred Shares issued by FCE FuelCell Energy Ltd. (also referred to herein as the Series 1 Preferred Shares) is incorporated herein by reference to Note 16. "Redeemable Preferred Stock" of the Notes to the Consolidated Financial Statements. All obligations under the Series 1 Preferred Shares were paid off and satisfied subsequent to October 31, 2020, as disclosed in Note 25. "Subsequent Events" of the Notes to the Consolidated Financial Statements.

Performance Graph

The following graph compares the annual change in the Company's cumulative total stockholder return on its common stock for the five fiscal years ended October 31, 2020 with the cumulative stockholder total return on the Russell 2000 Index, a peer group consisting of Standard Industry Classification Group Code 3690 companies listed on the Nasdaq Global Market and New York Stock Exchange and a customized 19 company peer group which includes FuelCell Energy, Inc. It assumes $100.00 invested on October 31, 2015 with dividends reinvested.



*$100 invested on 10/31/15 in stock or index, including reinvestment of dividends.
Fiscal year ending October 31.

Equity Compensation Plan Information

See Part III, Item 12 for information regarding securities authorized for issuance under our equity compensation plans.

Stock Repurchases

The following table sets forth information with respect to purchases made by us or on our behalf of our common stock during the periods indicated:

Period	Total Number of Shares Purchased [1]	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Programs	Maximum Number of Shares that May Yet be Purchased Under the Plans or Programs
August 1 – August 31	739	$ 2.23	—	—
September 1 – September 30	—	—	—	—
October 1 – October 31	—	—	—	—
Total	739	$ 2.23	—	—

(1) Includes only shares that were surrendered by employees to satisfy statutory tax withholding obligations in connection with the vesting of stock-based compensation awards.

Item 6. SELECTED FINANCIAL DATA

The selected consolidated financial data presented below as of the end of each of the years in the five-year period ended October 31, 2020 have been derived from our audited consolidated financial statements together with the notes thereto. The data set forth below is qualified by reference to, and should be read in conjunction with our consolidated financial statements and their notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this Annual Report on Form 10-K.

Consolidated Statement of Operations Data:
(Amounts presented in thousands, except for per share amounts)

	2020	2019	2018	2017	2016
Revenues (1):					
Product sales	$ -	$ 481	$ 52,490	$ 43,047	$ 62,563
Service agreements and license revenues	25,133	26,618	15,757	27,050	31,491
Generation revenues	19,943	14,034	7,171	7,233	1,267
Advanced Technologies contract revenues	25,795	19,619	14,019	18,336	12,931
Total revenues	70,871	60,752	89,437	95,666	108,252
Cost of revenues:					
Cost of product sales	9,924	18,552	54,504	49,843	63,474
Cost of service agreements and license revenues	24,545	18,943	15,059	25,285	32,592
Cost of generation revenues	27,873	31,642	6,421	5,076	664
Cost of Advanced Technologies contract revenues	16,254	12,884	10,360	12,728	11,879
Total cost of revenues	78,596	82,021	86,344	92,932	108,609
Gross (loss) profit	(7,725)	(21,269)	3,093	2,734	(357)
Operating expenses:					
Administrative and selling expenses	26,644	31,874	24,908	25,916	25,150
Research and development costs	4,797	13,786	22,817	20,398	20,846
Restructuring expense	—	—	—	1,355	—
Total costs and expenses	31,441	45,660	47,725	47,669	45,996
Loss from operations	(39,166)	(66,929)	(44,632)	(44,935)	(46,353)
Interest expense	(15,294)	(10,623)	(9,055)	(9,171)	(4,958)
Change in fair value of common stock warrant liability	(37,086)	—	—	—	—
Gain on extinguishment of financing obligation	1,801	—	—	—	—
Other income, net	684	93	3,338	247	622
Loss before (provision) benefit for income taxes	(89,061)	(77,459)	(50,349)	(53,859)	(50,689)
(Provision) benefit for income tax	(46)	(109)	3,015	(44)	(519)
Net loss	(89,107)	(77,568)	(47,334)	(53,903)	(51,208)
Net loss attributable to noncontrolling interest	—	—	—	—	251
Net loss attributable to FuelCell Energy, Inc.	(89,107)	(77,568)	(47,334)	(53,903)	(50,957)
Series A warrant exchange	—	(3,169)	—	—	—
Series B Preferred stock dividends	(3,331)	(3,231)	(3,200)	(3,200)	(3,200)
Series C Preferred stock deemed dividends and redemption value adjustment, net	—	(6,522)	(9,559)	—	—
Series D Preferred deemed dividends and redemption accretion	—	(9,755)	(2,075)	—	—
Net loss attributable to common stockholders	$ (92,438)	$(100,245)	$ (62,168)	$ (57,103)	$ (54,157)
Net loss attributable to common stockholders					
Basic	$ (0.42)	$ (1.82)	$ (9.01)	$ (13.73)	$ (21.83)
Diluted	$ (0.42)	$ (1.82)	$ (9.01)	$ (13.73)	$ (21.83)
Weighted average shares outstanding					
Basic	221,960	55,081	6,896	4,160	2,481
Diluted	221,960	55,081	6,896	4,160	2,481

Consolidated Balance Sheets Data:

(Amounts presented in thousands, except for per share amounts)

	2020	2019	2018	2017	2016
Cash and cash equivalents (2)	$ 192,052	$ 39,778	$ 80,239	$ 87,448	$ 118,316
Working capital	175,082	23,087	70,182	105,432	150,206
Total current assets	233,981	84,319	130,303	203,510	202,204
Total assets (3)	523,538	333,446	340,421	383,786	340,729
Total current liabilities (3)	58,899	62,732	60,121	98,078	51,998
Total non-current liabilities (3)	210,234	135,120	103,377	96,895	114,478
Redeemable preferred stock	59,857	59,857	94,729	87,557	59,857
Total equity	194,548	75,737	82,194	101,256	114,396
Book value per share	$ 0.66	$ 0.39	$ 10.31	$ 17.48	$ 39.03

(1) Revenues for the fiscal years ended October 31, 2020 and 2019 reflect the adoption of Accounting Standards Update ("ASU") No. 2014-09, "Revenue from Contracts with Customers (Topic 606)". The Company adopted this ASU on November 1, 2018 using the modified retrospective transition method.

(2) Includes short-term and long-term restricted cash and cash equivalents.

(3) Total assets, Total current liabilities and Total non-current liabilities for fiscal year 2020 include additional amounts recorded in connection with the adoption of ASU 842, "Leases (Topic 842)". The Company adopted this ASU on November 1, 2019 and upon adoption recorded a $10.3 million operating lease right of use asset and a $10.1 million operating lease liability.

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

The following discussion should be read in conjunction with the information included in Item 8 of this Annual Report on Form 10-K. Unless otherwise indicated, the terms "Company", "FuelCell Energy", "we", "us", and "our" refer to FuelCell Energy, Inc. and its subsidiaries. All tabular dollar amounts are in thousands.

In addition to historical information, this discussion and analysis contains forward-looking statements. All forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from those projected. Please see the section of this Annual Report entitled "Forward-Looking Statement Disclaimer" for a discussion of the uncertainties, risks and assumptions associated with these statements, as well as the other risks set forth in our filings with the SEC including those set forth under the section entitled "Item 1A — Risk Factors" in this Annual Report.

Overview

FuelCell Energy is a global leader in sustainable clean energy technologies that address some of the world's most critical challenges around energy, safety, and global urbanization. As a leading global manufacturer of proprietary fuel cell technology platforms, we are uniquely positioned to serve customers worldwide with sustainable products and solutions for businesses, utilities, governments, and municipalities. Our solutions are designed to enable a world empowered by clean energy, enhancing the quality of life for people around the globe. We target large-scale power users with our megawatt-class installations globally, and currently offer sub-megawatt solutions for smaller power consumers in Europe. To provide a frame of reference, one megawatt is adequate to continually power approximately 1,000 average sized U.S. homes. Our customer base includes utility companies, municipalities, universities, hospitals, government entities/military bases and a variety of industrial and commercial enterprises. Our leading geographic markets are currently the United States and South Korea, and we are pursuing opportunities in other countries around the world.

FuelCell Energy, based in Connecticut, was founded in 1969 as a New York corporation to provide applied research and development services on a contract basis. We completed our initial public offering in 1992 and reincorporated in Delaware in 1999. We began selling stationary fuel cell power plants commercially in 2003.

Recent Developments

The events described in this "Recent Developments" section relate, in part, to matters discussed in more detail below in this "Management's Discussion and Analysis of Financial Condition and Results of Operations" section and/or in the Notes to the Consolidated Financial Statements. In certain instances, the capitalized terms used in this "Recent Developments" section are defined elsewhere in this Annual Report on Form 10-K, including in the Notes to the Consolidated Financial Statements.

Shared Clean Energy Facilities Project Awards

On September 29, 2020, we announced multiple project awards by the local Connecticut electric distribution companies totaling 11.2 MW, as part of the state-sponsored Shared Clean Energy Facility program. After reaffirming the project selection process on multiple occasions, on November 16, 2020, the Public Utilities Regulatory Authority ("PURA") inexplicably reversed itself and issued a ruling ordering one of the local electric distribution utilities to re-examine and re-evaluate the bids and submit any revisions to its selected winners on December 4, 2020. On December 4, 2020, we were notified by one of the electric distribution utilities that 3 of our 4 bid awards totaling 8.4 MW, would not be honored. On December 7, 2020, the electric distribution utility notified PURA that it had selected new winners, and our projects were not among those selected. We have filed a motion for reconsideration with PURA, a motion to stay confirmation of the new award selections, and we have filed an administrative appeal with the Connecticut Superior Court. While we believe PURA's action to be unlawful and contrary to established precedent, there can be no assurance that we will prevail or have our project awards restored. In addition, there can be no assurance that any such project awards, if they are restored, will result in executed power purchase contracts.

Long Island Power Authority Project Awards

In July 2017, we were awarded three projects on Long Island totaling 39.8 MW. In December 2018, we executed a contract for one of the three awards, which is currently reflected in our backlog. The other two awards, which are not part of our backlog, do not yet have signed contracts as we have been progressing through the required interconnect process. Contrary to assertions made by Long Island Power Authority ("LIPA"), we do not believe that the New York Climate Leadership and Community Protection Act negates the two project awards for which there are not signed contacts. We believe these projects should move forward and we have continued to pursue them in good faith, including with our advancement of the interconnect process. There can be no assurance that any project awards, including these two LIPA awards for which we do not have signed contracts, will result in executed PPAs.

December Common Stock Offering

In December of 2020, the Company and the lenders under the Orion Credit Agreement (the "Selling Stockholders") (see Note 14. "Debt" for the names of the lenders/Selling Stockholders) completed a public offering of the Company's common stock. In connection with this public offering, the Company and the Selling Stockholders entered into an underwriting agreement pursuant to which (i) the Company agreed to issue and sell to the underwriters 19,822,219 shares of the Company's common stock, plus up to 5,177,781 shares of common stock pursuant to an option to purchase additional shares, and (ii) the Selling Stockholders agreed to sell to the underwriters 14,696,320 shares of common stock, in each case at a price to the public of $6.50 per share. The underwriters exercised their option to purchase additional shares, resulting in the issuance and sale by the Company at the closing of the offering of a total of 25,000,000 shares of common stock. The offering closed on December 4, 2020.

Gross proceeds from the sale of common stock by the Company in the offering were $162.5 million. The Company did not receive any proceeds from the sale of common stock in the offering by the Selling Stockholders. Upon closing of the offering, the number of shares of the Company's common stock outstanding was 319,706,758.

The Company and the Selling Stockholders paid underwriting discounts and commissions of $0.2275 per share, and net proceeds to the Company were approximately $156.3 million after deducting such underwriting discounts and commissions and other estimated offering expenses.

In addition, in connection with the offering, the Company and its directors and officers entered into a customary 90-day lock-up agreement with the underwriters party to the underwriting agreement. As part of the offering, J.P. Morgan Securities LLC waived lock-up restrictions entered into in connection with the common stock offering consummated on October 2, 2020 with respect to all of the shares sold in this offering by the Company and the Selling Stockholders. J.P. Morgan Securities LLC also waived all remaining lock-up restrictions applicable to the Selling Stockholders, including with respect to the then-outstanding warrants held by the Selling Stockholders to purchase up to 2,700,000 shares of common stock (which warrants were issued pursuant to the Orion Credit Agreement), and the Selling Stockholders did not enter into new lock-up agreements in connection with the offering.

Orion Credit Agreement -- Payoff of All Obligations

On November 30, 2020, the Company, its subsidiary guarantors, and the Orion Agent entered into a payoff letter with respect to the Orion Credit Agreement (the "Orion Payoff Letter"). Pursuant to the Orion Payoff Letter, on December 7, 2020, the Company paid a total of $87.3 million to the Orion Agent, representing the outstanding principal, accrued but unpaid interest, prepayment premium, fees, costs and other expenses due and owing under the Orion Facility and the Orion Credit Agreement and related loan documents, in full repayment of the Company's outstanding indebtedness under the Orion Facility and the Orion Credit Agreement and related loan documents. In accordance with the Orion Payoff Letter, the aggregate prepayment premium set forth in the Orion Credit Agreement was reduced from approximately $14.9 million to $4 million and the Orion Agent, on behalf of itself and the lenders, agreed that any portion of the prepayment premium that would otherwise be required to be paid pursuant to the Orion Credit Agreement in excess of $4 million was waived by the Orion Agent and the lenders.

Concurrently with the Orion Agent's receipt of full payment pursuant to the Orion Payoff Letter, the Orion Agent released all of the collateral from the liens granted under the security documents associated with the Orion Facility (which included the release of $11.2 million of restricted cash to the Company, which became unrestricted cash), and the Company and its subsidiaries were unconditionally released from their respective obligations under the Orion Credit Agreement (and related loan documents) and the Orion Facility without further action. With the termination of the Orion Facility and the Orion Credit Agreement and related loan documents, the lenders no longer have the right to appoint representatives to attend the Company's Board of Director meetings as observers.

Warrant Exercise

On December 7, 2020, all remaining Orion Warrants (as defined elsewhere herein) were exercised to purchase a total of 2,700,000 shares of the Company's common stock for an aggregate exercise price of $653,400 (or $0.242 per share). A discussion of the key terms and conditions of the Orion Warrants is included in Note 15. "Stockholders' Equity and Warrant Liabilities" to the consolidated financial statements under the heading "Orion Warrants".

Enbridge/Series 1 Preferred Shares – Payoff of All Obligations

In December 2020, the Company, FCE Ltd., and Enbridge (in each case as defined elsewhere herein) entered into a payoff letter (the "Enbridge Payoff Letter") pursuant to which the Company paid all amounts owed to Enbridge under the terms of the Series 1 Preferred Shares. As of December 31, 2020, the amount owed to Enbridge under the Series 1 Preferred Shares totaled Cdn. $27.4 million, which included Cdn. $4.3 million of principal and Cdn. $23.1 million of accrued dividends.

On December 18, 2020, the Company remitted payment totaling Cdn. $27.4 million, or approximately $21.5 million U.S. dollars, to Enbridge. Concurrent with receipt of the payment from the Company, Enbridge surrendered its shares in FCE Ltd., and the Guarantee and the January 2020 Letter Agreement (in each case as defined elsewhere herein) were terminated. All obligations related to the Series 1 Preferred Shares were extinguished upon payment. A discussion of the key terms and conditions of the Series 1 Preferred Shares is included in Note 16. "Redeemable Preferred Stock" to the consolidated financial statements under the heading "Class A Preferred Shares (the "Series 1 Preferred Shares") of FCE FuelCell Energy Ltd".

Results of Operations

Management evaluates our results of operations and cash flows using a variety of key performance indicators, including revenues compared to prior periods and internal forecasts, costs of our products and results of our cost reduction initiatives, and operating cash use. These are discussed throughout the "Results of Operations" and "Liquidity and Capital Resources" sections. Results of Operations are presented in accordance with GAAP.

The following discussion and analysis of our Results of Operations and Liquidity and Capital Resources includes a comparison of fiscal year 2020 to fiscal year 2019. A similar discussion and analysis that compares fiscal year 2019 to fiscal year 2018 may be found in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," of our Form 10-K for the fiscal year ended October 31, 2019.

Comparison of the Years Ended October 31, 2020 and 2019

Revenues and Costs of revenues

Revenues and costs of revenues for the years ended October 31, 2020 and 2019 were as follows:

	Years Ended October 31,		Change	
(dollars in thousands)	2020	2019	$	%
Total revenues	$ 70,871	$ 60,752	$ 10,119	17%
Total costs of revenues	78,596	82,021	(3,425)	(4)%
Gross loss	$ (7,725)	$ (21,269)	$ 13,544	64%
Gross margin	(10.9)%	(35.0)%		

Total revenues for the year ended October 31, 2020 increased $10.1 million, or 17%, to $70.9 million from $60.8 million for the year ended October 31, 2019. Total costs of revenues for the year ended October 31, 2020 decreased by $3.4 million, or 4%, to $78.6 million from $82.0 million for the year ended October 31, 2019. The

Company's gross margin was (10.9)% in fiscal year 2020, as compared to a gross margin of (35.0)% in fiscal year 2019. The increase in revenues is attributable to expanded generation and Advanced Technologies activities during fiscal year 2020. A discussion of the changes in product sales, service and license revenues, generation revenues and Advanced Technologies contract revenues follows.

Product sales

Product sales, cost of product sales and gross loss from product sales for the years ended October 31, 2020 and 2019 were as follows:

	Years Ended October 31,		Change	
(dollars in thousands)	2020	2019	$	%
Product sales	$ -	$ 481	$ (481)	(100)%
Cost of product sales	9,924	18,552	(8,628)	(47)%
Gross loss from product sales	$ (9,924)	$ (18,071)	$ 8,147	45%
Product sales gross margin	N/A	(3757.0)%		

There were no product sales for the year ended October 31, 2020 compared to product sales of $0.5 million for the year ended October 31, 2019 which consisted solely of $0.5 million of power plant revenue.

Cost of product sales decreased $8.6 million for the year ended October 31, 2020 to $9.9 million, compared to $18.6 million for the year ended October 31, 2019. Both periods were impacted by the under-absorption of fixed overhead costs due to low production volumes, but there were lower overall manufacturing costs for the year ended October 31, 2020 due to the Company's reduction in workforce that was implemented during April of 2019 and the temporary shutdown of our Torrington manufacturing facility from March 18, 2020 to June 22, 2020 due to the COVID-19 pandemic. The Company incurred approximately $2.1 million of manufacturing variances during the year ended October 31, 2020 due to the manufacturing facility shutdown, which negatively impacted overall gross margin. Manufacturing variances, primarily related to low production volumes and unabsorbed overhead costs, totaled approximately $8.7 million (including the $2.1 million of manufacturing variances mentioned above) for the year ended October 31, 2020 compared to approximately $14.5 million for the year ended October 31, 2019. Cost of product sales for the year ended October 31, 2019 also includes a charge for a specific construction in process asset related to automation equipment for use in manufacturing with a carrying value of $2.8 million, which was impaired due to uncertainty as to whether the asset would be completed as a result of our liquidity position and continued low level of production rates.

For the year ended October 31, 2020, we operated at an annualized production rate of approximately 17.0 MW, which is the same as the annualized production rate for the year ended October 31, 2019. The fiscal year 2020 production rate was primarily a result of the manufacturing facility shutdown that was implemented in response to the COVID-19 pandemic, while the fiscal year 2019 production rate was impacted primarily by the layoffs that occurred in April 2019.

As of October 31, 2020 and 2019, there was no product sales backlog.

Service agreements and license revenues

Service agreements and license revenues and associated cost of revenues for the years ended October 31, 2020 and 2019 were as follows:

	Years Ended October 31,		Change	
(dollars in thousands)	2020	2019	$	%
Service agreements and license revenues	$ 25,133	$ 26,618	$ (1,485)	(6)%
Cost of service agreements and license revenues	24,545	18,943	5,602	30%
Gross profit from service agreements and license revenues	$ 588	$ 7,675	$ (7,087)	(92)%
Service agreements and license revenues gross margin	2.3%	28.8%		

Revenues for the year ended October 31, 2020 from service agreements and license fee agreements decreased $1.5 million to $25.1 million from $26.6 million for the year ended October 31, 2019. Service agreements and license revenues decreased primarily due to the fact that $10 million of license revenues were recorded during the year ended October 31, 2019 in connection with the EMRE License Agreement, whereas only $4 million of license revenues were recorded during the year ended October 31, 2020 in connection with the EMRE Joint Development Agreement. In addition, the year ended October 31, 2019 included revenue recorded for the Bridgeport Fuel Cell Project service agreement. As a result of the purchase by the Company of the Bridgeport Fuel Cell Project on May 9, 2019, revenue under this service agreement was no longer recognized after May 9, 2019. In addition to the $4.0 million associated with the EMRE Joint Development Agreement noted above, service agreements and license revenues for the year ended October 31, 2020 also includes revenue recognized from routine maintenance and module replacements.

Cost of service agreements and license revenues increased $5.6 million to $24.5 million for the year ended October 31, 2020 from $18.9 million for the year ended October 31, 2019, due, in part, to a $2.2 million increase in our loss accrual during the year ended October 31, 2020 to reflect changes in the expected timing of future module replacements under one service agreement (with respect to the 2.8 MW project at the Tulare, California wastewater treatment facility, which was originally commissioned in fiscal year 2018 and is owned by Clearway Energy, Inc.) in order to improve operating performance. In addition, site specific issues at the Tulare facility required an earlier than expected module replacement and the Company opted to replace another module earlier than expected at the same site to maximize facility efficiencies. As a result, we incurred a charge, which is included in the loss accrual increase described above, during the year ended October 31, 2020, but which is expected to result in improved margins in the future through enhanced performance. Cost of service agreements and license revenues includes maintenance and operating costs and module replacements. The remaining increase in cost of service agreements and license revenues for the year ended October 31, 2020 compared to the year ended October 31, 2019 relates to planned maintenance at several plants during the year ended October 31, 2020.

Overall gross profit from service agreements and license revenues was $0.6 million for the year ended October 31, 2020, which represents a decrease of $7.1 million from a gross profit of $7.7 million for the year ended October 31, 2019. This decrease is primarily due to the fact that $10 million of license revenues were recorded during the year ended October 31, 2019 in connection with the EMRE License Agreement, whereas only $4 million of license revenues were recorded during the year ended October 31, 2020 in connection with the EMRE Joint Development Agreement. As a result of both decreased service agreements and license revenues and increased cost of service agreements and license revenues, the service agreements and license revenues gross margin decreased to 2.3% for the year ended October 31, 2020 from a gross margin of 28.8% for the year ended October 31, 2019.

As of October 31, 2020, service agreements and license backlog totaled $169.0 million compared to $192.3 million as of October 31, 2019. This backlog is for service agreements of up to 20 years at inception and is expected to generate positive margins and cash flows based on current estimates. Service agreements and license backlog also includes future license revenue.

Generation revenues

Generation revenues and related costs for the years ended October 31, 2020 and 2019 were as follows:

	Years Ended October 31,		Change	
(dollars in thousands)	2020	2019	$	%
Generation revenues	$ 19,943	$ 14,034	$ 5,909	42%
Cost of generation revenues	27,873	31,642	(3,769)	(12)%
Gross loss from generation revenues	$ (7,930)	$ (17,608)	$ 9,678	55%
Generation revenues gross margin	(39.8)%	(125.5)%		

Revenues from generation for the year ended October 31, 2020 totaled $19.9 million, which represents an increase of $5.9 million from revenues from generation recognized of $14.0 million for the year ended October 31, 2019. Generation revenues for the years ended October 31, 2020 and 2019 reflect revenue from electricity generated under our PPAs. Generation revenues increased for the year ended October 31, 2020 compared to the year ended October 31, 2019 due to additional revenue that was recorded for the PPA associated with the Bridgeport Fuel Cell Project, which was acquired on May 9, 2019, and the Tulare BioMAT project, which commenced operations in December 2019.

Cost of generation revenues totaled $27.9 million in the year ended October 31, 2020, which represents a decrease from the year ended October 31, 2019. Cost of generation revenues included depreciation of approximately $12.9 million and $6.8 million for the years ended October 31, 2020 and 2019, respectively.

The decrease in Cost of generation revenues was primarily a result of the inclusion of an impairment charge in the year ended October 31, 2019 for each of (i) the Triangle Street Project and (ii) the Bolthouse Farms Project, which are described below. Cost of generation revenues for the year ended October 31, 2020 includes an impairment charge, which was recorded for the Triangle Street Project during the fourth quarter of fiscal year 2020 and is also described below:

i. *Impairment charge for the Triangle Street Project:* In the fourth quarter of fiscal year 2019, management determined that it would not be able to secure a PPA with terms acceptable to the Company for the Triangle Street Project. Therefore, it was management's intention in fiscal year 2019 to operate the project under a merchant model for 5 years and use the project as a development platform for the Company's advanced applications. The project sells power through the Connecticut grid under wholesale tariff rates and Renewable Energy Credits (RECs) to market participants. As a result of management's decision to operate the project in this manner, an impairment charge of $14.4 million was recorded in the fourth quarter of fiscal year 2019. The amount of the impairment charge was determined by comparing the estimated discounted cash flows of the project and the expected residual value of the project to its carrying value.

   In the fourth quarter of fiscal year 2020, the Company reviewed the Triangle Street Project and as a result of output and revenue projections given then-current development plans, recorded an additional impairment charge of $2.4 million. The Triangle Street Project is used by the Company as a development platform for the Company's advanced applications. As a result, revenue generation is impacted by these activities.

ii. *Impairment charge for the Bolthouse Farms Project*: In the fourth quarter of fiscal year 2019, an impairment charge for the Bolthouse Farms Project was recorded as management decided to pursue termination of the PPA given regulatory changes impacting the future cost profile for the Company and Bolthouse Farms. Since it was considered probable that the PPA would be terminated, a $3.1 million impairment charge was recorded, which reflects the difference between the carrying value of the asset and the value of the components that were expected to be redeployed to other projects. This project was removed from the Company's backlog as of October 31, 2019 and the PPA was terminated.

The overall gross loss from generation revenues was $7.9 million for the year ended October 31, 2020, which represents an improvement of $9.7 million from a gross loss of $17.6 million for the year ended October 31, 2019. This improvement is primarily a result of the lower impairment charges in the year ended October 31, 2020, as discussed above.

As of October 31, 2020 and 2019, generation backlog totaled $1.1 billion.

Advanced Technologies contracts

Advanced Technologies contract revenues and related costs for the years ended October 31, 2020 and 2019 were as follows:

(dollars in thousands)	Years Ended October 31, 2020	2019	Change $	Change %
Advanced Technologies contract revenues	$ 25,795	$ 19,619	$ 6,176	31%
Cost of Advanced Technologies contract revenues	16,254	12,884	3,370	26%
Gross profit	$ 9,541	$ 6,735	$ 2,806	42%
Advanced Technologies contract gross margin	37.0%	34.3%		

Advanced Technologies contract revenues for the year ended October 31, 2020 were $25.8 million, which reflects an increase of $6.2 million when compared to $19.6 million of Advanced Technologies contract revenues for the year ended October 31, 2019. Advanced Technologies contract revenues were higher for the year ended October 31, 2020 due to revenues recognized in connection with the EMRE Joint Development Agreement (which was entered into on November 5, 2019). The year ended October 31, 2019 also included revenues recognized in connection with the EMRE Joint Development Agreement. Cost of Advanced Technologies contract revenues increased $3.4 million to $16.3 million for the year ended October 31, 2020, compared to $12.9 million for the year ended October 31, 2019, primarily as a result of costs incurred in connection with the EMRE Joint Development Agreement. Advanced Technologies contracts for the year ended October 31, 2020 generated a gross margin of $9.5 million compared to a gross margin of $6.7 million for the year ended October 31, 2019. The increase in Advanced Technologies contract gross margin is related to the timing and mix of contracts, which were more heavily weighted to revenue recognized under the EMRE Joint Development Agreement during the year ended October 31, 2020, compared to the year ended October 31, 2019 which had lower EMRE Joint Development Agreement-related revenue and gross margin.

As of October 31, 2020, Advanced Technologies contract backlog totaled $49.2 million compared to $12.0 million at October 31, 2019.

Administrative and selling expenses

Administrative and selling expenses were $26.6 million and $31.9 million for the year ended October 31, 2020 and 2019, respectively. The decrease in the year ended October 31, 2020 primarily relates to proceeds from a legal settlement of $2.2 million received during the year ended October 31, 2020, which was recorded as an offset to administrative and selling expenses, and higher legal and consulting costs incurred during the year ended October 31, 2019 in connection with the restructuring and refinancing initiatives undertaken by the Company in fiscal year 2019.

Research and development expenses

Research and development expenses decreased to $4.8 million for the year ended October 31, 2020, compared to $13.8 million for the year ended October 31, 2019. The decrease related to the reduction in spending resulting from the restructuring initiatives implemented in fiscal year 2019 and the reduction in the resources being allocated to internal research and development (as resources were instead allocated to Advanced Technologies projects).

Loss from operations

Loss from operations for the year ended October 31, 2020 was $39.2 million compared to $66.9 million for the year ended October 31, 2019. The decrease in the loss from operations was primarily a result of the lower gross loss for the year, which was primarily a result of impairment charges of $20.4 million recorded for the year ended October 31, 2019. The decrease is also a result of lower operating expenses for the year ended October 31, 2020 due to lower spending (personnel and overhead costs) resulting from the restructuring initiatives implemented in 2019, the legal settlement of $2.2 million received during fiscal year 2020 which was an offset to administrative and selling expenses and the reduction in the resources being allocated to research and development for the year ended October 31, 2020.

Interest expense

Interest expense for the year ended October 31, 2020 and 2019 was $15.3 million and $10.6 million, respectively. Interest expense for both periods includes interest expense related to sale-leaseback transactions and interest for the amortization of the redeemable preferred stock of subsidiary fair value discount. The increase in interest expense during the year ended October 31, 2020 primarily represents additional interest on the $80.0 million outstanding during such period under the Orion Credit Agreement and interest on the loans made by Fifth Third Bank and Liberty Bank in connection with the acquisition of the Bridgeport Fuel Cell Project. In addition, interest expense during the year ended October 31, 2019 also included interest on outstanding amounts during such period under our loan and security agreement with Hercules Capital, Inc. ("Hercules") and a modification fee of $0.8 million that was recorded in connection with the amendment of our loan agreement with NRG Energy, Inc.

Change in fair value of common stock warrant liability

The $37.1 million expense for the year ended October 31, 2020 represents an adjustment to the estimated fair value of the warrants issued to the lenders under the Orion Credit Agreement. The expense is primarily a result of increases in the Company's stock price during the year ended October 31, 2020, which were used as an input to remeasure the warrants to fair value on a quarterly basis using a Black-Scholes model at the dates of exercise and period-end for the remaining unexercised warrants, compared to the stock price used in the Black-Scholes model upon the issuance of the warrants.

Gain on extinguishment of financing obligation

The $1.8 million gain for the year ended October 31, 2020 represents the difference between the amount of the payoff of the lease with respect to, and the repurchase of the UCI Fuel Cell, LLC project asset and the carrying amount of the related financing obligation.

Other income, net

Other income, net of $0.7 million and $0.1 million was recorded for the years ended October 31, 2020 and 2019, respectively. Other income, net for the year ended October 31, 2020 primarily relates to a net non-cash gain on the extinguishment accounting related to the modification of the Series 1 Preferred Stock and the extinguishment related to the embedded derivatives (refer to Note 16. "Redeemable Preferred Stock" for additional information). Other income, net for the year ended October 31, 2020 also included a foreign exchange gain of $0.2 million related to the remeasurement of the Canadian Dollar denominated preferred stock obligation of our U.S. Dollar functional currency Canadian subsidiary, offset by a loss of approximately $0.3 million related to the remeasurement of the interest rate swap on the Bridgeport Fuel Cell Project loans. Other income, net for the year ended October 31, 2019 includes income of $0.6 million for refundable research and development tax credits and a foreign exchange gain related to the remeasurement of the Canadian Dollar denominated preferred stock obligation for our U.S. Dollar functional currency Canadian subsidiary, offset by expense of $0.6 million for the remeasurement of the interest rate swap on the Bridgeport Fuel Cell Project loans.

Provision for income taxes

We have not paid federal or state income taxes in several years due to our history of net operating losses, although we have paid foreign income and withholding taxes in South Korea. Income tax recorded for the years ended October 31, 2020 and 2019 was $0.0 million and $0.1 million, respectively.

Series A warrant exchange

On February 21, 2019, we entered into an Exchange Agreement (the "Exchange Agreement") with the holder of the Series A Warrant to Purchase Common Stock issued by us on July 12, 2016 (the "Series A Warrant"). Pursuant to the Exchange Agreement, we agreed to issue to the warrant holder 500,000 shares of our common stock in exchange for the Series A Warrant. During the year ended October 31, 2019, we recorded a charge to common stockholders for the difference between the fair value of the Series A Warrant prior to the modification of $0.3 million and the fair value of the common shares issuable at the date of the Exchange Agreement of $3.5 million.

Series B preferred stock dividends

Dividends recorded on our Series B Preferred Stock were $3.3 million and $3.2 million for the years ended October 31, 2020 and 2019, respectively.

Series C preferred stock deemed contributions and redemption value adjustment, net

During the year ended October 31, 2019, conversions of our Series C Convertible Preferred Stock ("Series C Preferred Stock") resulted in a variable number of shares of our common stock being issued to settle the conversion amounts and were treated as a partial redemption of our Series C Preferred Stock. Conversions during the year ended October 31, 2019 that were settled in a variable number of shares and treated as partial redemptions resulted in deemed contributions of $1.6 million. The deemed contributions represent the difference between the fair value of the common shares issued to settle the conversion amounts and the carrying value of the Series C Preferred Stock.

The Company also accounted for an extinguishment of the Series C Preferred Stock by recording a deemed contribution of $0.5 million during the year ended October 31, 2019. A charge to common stockholders of $8.6 million was recorded during the year ended October 31, 2019 because of equity conditions failures under the Certificate of Designations for the Series C Preferred Stock.

The last outstanding shares of Series C Preferred Stock were converted into common stock on May 23, 2019, so there were no shares of Series C Preferred Stock outstanding during the year ended October 31, 2020.

Series D preferred stock deemed dividends and redemption accretion

During the year ended October 31, 2019, conversions of our Series D Convertible Preferred Stock ("Series D Preferred Stock") in which the conversion price was below the initial conversion price (as adjusted for the reverse stock split that occurred in May 2019) of $16.56 per share resulted in a variable number of shares of our common stock being issued to settle the conversion amounts and were treated as a partial redemption of the shares of our Series D Preferred Stock. Conversions during the year ended October 31, 2019 that were settled in a variable number of shares and treated as redemptions resulted in deemed dividends of $6.0 million. The deemed dividends represent the difference between the fair value of the common shares issued to settle the conversion amounts and the carrying value of the Series D Preferred Stock.

Redemption accretion of $3.8 million was recorded during the year ended October 31, 2019 and reflects the accretion of the difference between the carrying value of the Series D Preferred Stock and the amount that would have been redeemed if stockholder approval had not been obtained for the issuance of common stock equal to 20% or more of our outstanding voting stock prior to the issuance of the Series D Preferred Stock. If we had been unable to obtain such stockholder approval and were therefore prohibited from issuing shares of common stock as a result of this limitation (the "Exchange Cap Shares") to a holder of Series D Preferred Stock at any time after April 30, 2019, we would have been required to pay cash to such holder in exchange for the redemption of such number of Series D Preferred Shares held by such holder that would not have been convertible into such Exchange Cap Shares. Stockholder approval was obtained at the annual meeting of the Company's stockholders on April 4, 2019 and no further accretion was required.

The last outstanding shares of Series D Preferred Stock were converted into common stock on October 1, 2019, so there were no shares of Series D Preferred Stock outstanding during the year ended October 31, 2020.

Net loss attributable to common stockholders and loss per common share

Net loss attributable to common stockholders for the year ended October 31, 2020 represents the net loss for the period less the preferred stock dividends on the Series B Preferred Stock. Net loss attributable to common stockholders for the year ended October 31, 2019 represents the net loss for the period less the charge associated with the Series A Warrant exchange, the preferred stock dividends on the Series B Preferred Stock, the preferred stock deemed contributions and redemption value adjustment, net on the Series C Preferred Stock and the Series D Preferred Stock deemed dividends and redemption accretion. For the years ended October 31, 2020 and 2019, net loss attributable to common stockholders was $92.2 million and $100.2 million, respectively, and loss per common share was $0.42 and $1.82, respectively. The decrease in the net loss attributable to common stockholders for the year ended October 31, 2020 is primarily due to the lower gross loss due to lower impairment charges in fiscal year 2020 and lower operating expenses, partially offset by the change in fair value of the common stock warrant liability discussed above and the

fact that there were no amounts recorded for the Series A Warrants and the Series C and D Preferred Stock as none were outstanding during the year. The lower loss per common share for the year ended October 31, 2020 primarily is due to the higher weighted average shares outstanding due to share issuances since October 31, 2019.

LIQUIDITY AND CAPITAL RESOURCES

Overview, Cash Position, Sources and Uses

Our principal sources of cash have been sales of our common stock through public equity offerings, proceeds from third party debt such as borrowings under our credit facilities, project financing and tax monetization transactions, proceeds from the sale of our projects as well as research and development and service and license agreements with third parties. We have utilized this cash to develop and construct power plants, develop Advanced Technologies, pay down existing outstanding indebtedness, and meet our other cash and liquidity needs.

As of October 31, 2020, unrestricted cash and cash equivalents totaled $149.9 million compared to $9.4 million as of October 31, 2019.

Subsequent to the end of fiscal year 2020, in December 2020, the Company closed an underwritten offering of 25.0 million shares of the Company's common stock. Net proceeds to the Company were approximately $156.3 million after deducting underwriting discounts and commissions and other offering expenses. Proceeds from this offering have been utilized as follows:

- *Extinguishment of Senior Secured Debt*: On December 7, 2020, the Company paid $87.3 million to settle the outstanding principal, accrued but unpaid interest, prepayment premium, fees, costs and other expenses due and owing to the Orion Agent and the lenders under the Orion Facility and the Orion Credit Agreement (in each case as defined elsewhere herein) and related loan documents. Concurrently, the Orion Agent released all of the collateral from the liens granted under the security documents associated with the Orion Facility, which included the release of $11.2 million of restricted cash to the Company.
- *Payment Under the Series 1 Preferred Shares*: On December 17, 2020, the Company paid all amounts owed to Enbridge Inc. ("Enbridge") under the Series 1 Preferred Shares (as defined elsewhere herein), totaling Cdn. $27.4 million, or approximately $21.5 million in U.S. dollars. Following such payment, Enbridge surrendered its shares in FCE Ltd. (as defined elsewhere herein) and the related Guarantee and January 2020 Letter Agreement (in each case, as defined elsewhere herein) were terminated.
- *Working Capital:* The remaining $47.5 million of proceeds from the offering is unrestricted cash and may be used to accelerate the development and commercialization of our solid oxide platform and for project development, project financing, working capital support and other general corporate purposes.

We believe that our unrestricted cash and cash equivalents, expected receipts from our contracted backlog, and release of short-term restricted cash less expected disbursements over the next twelve months will be sufficient to allow the Company to meet its obligations for at least one year from the date of issuance of these financial statements.

To date, we have not achieved profitable operations or sustained positive cash flow from operations. The Company's future liquidity will depend on its ability to (i) timely complete current projects in process within budget, (ii) increase cash flows from its generation portfolio, including by meeting conditions required to timely commence operation of new projects, operating its generation portfolio in compliance with minimum performance guarantees and operating its generation portfolio in accordance with revenue expectations, (iii) obtain financing for project construction, (iv) obtain permanent financing for its projects once constructed, (v) increase order and contract volumes, which would lead to additional product sales, services agreements and generation revenues, (vi) obtain funding for and receive payment for research and development under current and future Advanced Technologies contracts, (vii) implement the cost reductions necessary to achieve profitable operations, (viii) manage working capital and the Company's unrestricted cash balance and (ix) access the capital markets to raise funds through the sale of equity securities, convertible notes, and other equity-linked instruments, all of which will require an increase in authorized shares, and/or other debt instruments.

Our business model requires substantial outside financing arrangements and satisfaction of the conditions of such financing arrangements to construct and deploy our projects and facilitate the growth of our business. We have obtained financing through the debt and equity markets during and subsequent to the fiscal year ended October 31,

2020. In future periods, the Company expects to seek lower-cost long-term debt and tax equity (e.g., sale-leaseback and partnership transactions) for its project asset portfolio as these projects commence commercial operations. The proceeds of any such financing, if obtained, may allow the Company to fund other projects. We may also seek to obtain additional financing in both the debt and equity markets in the future. If financing is not available to us on acceptable terms if and when needed, or on terms acceptable to us or our lenders, if we do not satisfy the conditions of our financing arrangements, if we spend more than the financing approved for projects, if project costs exceed an amount that the Company can finance, or if we do not generate sufficient revenues or obtain capital sufficient for our corporate needs, we may be required to reduce or slow planned spending, reduce staffing, sell assets, seek alternative financing and take other measures, any of which could have a material adverse effect on our financial condition and operations.

As of December 31, 2020, we had 15,093,242 shares of common stock available for issuance, excluding treasury stock, of which 5,185,674 shares were reserved for issuance under various warrants and equity awards, upon conversion of preferred stock, and under our employee stock purchase and equity incentive plans. The limited number of shares of our common stock available for issuance will limit our ability to raise capital in the equity markets and satisfy obligations with shares instead of cash, which could adversely affect our business and operations. We plan to seek stockholder approval to increase the number of shares of common stock we are authorized to issue, but such approval may not be obtained.

Generation/Operating Portfolio, Projects and Backlog

To grow our generation portfolio, the Company will invest in developing and building turn-key fuel cell projects which will be owned by the Company and classified as project assets on the balance sheet. This strategy requires liquidity and the Company expects to continue to have increasing liquidity requirements as project sizes increase and more projects are added to backlog. We may commence building project assets upon the award of a project or execution of a multi-year PPA with an end-user that has a strong credit profile. Project development and construction cycles, which span the time between securing a PPA and commercial operation of the plant, vary substantially and can take years. As a result of these project cycles and strategic decisions to finance the construction of certain projects, we may need to make significant up-front investments of resources in advance of the receipt of any cash from the sale or long-term financing of such projects. To make these up-front investments, we may use our working capital, seek to raise funds through the sale of equity or debt securities, or seek other financing arrangements. Delays in construction progress and completing current projects in process within budget, or in completing financing or the sale of our projects may impact our liquidity in a material way.

Our operating portfolio (32.6 MW as of October 31, 2020) contributes higher long-term cash flows to the Company than if these projects had been sold. These projects generated $19.9 million in annual revenue for the fiscal year ended October 31, 2020, but this amount may fluctuate from year to year depending on plant output, operational performance and management and site conditions. The Company plans to continue to grow this portfolio while also selling projects to investors. As of October 31, 2020, the Company had projects representing an additional 40.7 MW in various stages of development and construction, which projects are expected to generate operating cash flows in future periods, if completed. Retaining long-term cash flow positive projects, combined with our service fleet, is expected to result in reduced reliance on new project sales to achieve cash flow positive operations, however, operations and performance issues could impact results. We have worked with and are continuing to work with lenders and financial institutions to secure construction financing, long-term debt, tax equity and sale-leasebacks for our project asset portfolio, but there can be no assurance that such financing can be attained, or that, if attained, it will be retained and sufficient.

As of October 31, 2020, net debt outstanding related to project assets was $119.0 million. Future required payments totaled $99.9 million as of October 31, 2020. The outstanding financing obligation under our sale-leaseback transactions, which totaled $49.3 million as of October 31, 2020, includes an embedded gain of $29.0 million, which will be recognized at the end of the applicable lease terms. As noted above, subsequent to the end of fiscal year 2020, the Company repaid all amounts outstanding under the Orion Credit Agreement and terminated the Orion Facility.

Our operating portfolio provides us with the full benefit of future cash flows, net of any debt service requirements.

The following table summarizes our operating portfolio as of October 31, 2020:

Project Name	Location	Power Off-Taker	Rated Capacity (MW)	Actual Commercial Operation Date (FuelCell Energy Fiscal Quarter)	PPA Term (Years)
Central CT State University ("CCSU")	New Britain, CT	CCSU (CT University)	1.4	Q2 '12	10
UCI Medical Center ("UCI")	Orange, CA	UCI (CA University Hospital)	1.4	Q1 '16	19
Riverside Regional Water Quality Control Plant	Riverside, CA	City of Riverside (CA Municipality)	1.4	Q4 '16	20
Pfizer, Inc.	Groton, CT	Pfizer, Inc.	5.6	Q4 '16	20
Santa Rita Jail	Dublin, CA	Alameda County, California	1.4	Q1 '17	20
Bridgeport Fuel Cell Project	Bridgeport, CT	Connecticut Light and Power Company (CT Utility)	14.9	Q1 '13	15
Tulare BioMAT	Tulare, CA	Southern California Edison (CA Utility)	2.8	Q1'20	20
Triangle St	Danbury, CT	Tariff - Eversource (CT Utility)	3.7	Q2'20	Tariff
		Total MW Operating:	**32.6**		

The following table summarizes projects in process, all of which are in backlog, as of October 31, 2020:

Project Name	Location	Power Off-Taker	Rated Capacity (MW)	PPA Term (Years)
Groton Sub Base	Groton, CT	CMEEC (CT Electric Co-op)	7.4	20
Toyota	Los Angeles, CA	Southern California Edison; Toyota	2.3	20
San Bernardino	San Bernardino, CA	City of San Bernardino Municipal Water Department	1.4	20
LIPA 1	Long Island, NY	PSEG / LIPA, LI NY (Utility)	7.4	20
CT RFP-1	Hartford, CT	Eversource/United Illuminating (CT Utilities)	7.4	20
CT RFP-2	Derby, CT	Eversource/United Illuminating (CT Utilities)	14.8	20
		Total MW in Process:	**40.7**	

The projects listed in the above table are in various stages of development or on-site construction and installation. Current project updates are as follows:

- In the third fiscal quarter of 2020, the Company completed the majority of its scope of work on the 7.4 MW project at the U.S. Navy Base in Groton, Connecticut, and the Company is currently awaiting the interconnection to be completed prior to commissioning and commercial operation.
- Additionally, construction activity has been substantially completed for the 1.4 MW project at the San Bernardino, California wastewater treatment facility. The Company is working with the local utility on the interconnection process prior to commissioning and commencing commercial operation.
- We also recently began early-stage construction activity on 24.5 MW of projects, including the Toyota hydrogen project at the Port of Long Beach, and utility scale projects in Yaphank on Long Island in New York and Derby, Connecticut.

Backlog by revenue category is as follows:

- Service agreements and license backlog totaled $169.0 million as of October 31, 2020, compared to $192.3 million as of October 31, 2019. Service agreements and license backlog includes future contracted revenue from maintenance and scheduled module exchanges for power plants under service agreements.
- Generation backlog totaled $1.1 billion as of October 31, 2020 and October 31, 2019. Generation backlog represents future contracted energy sales under contracted PPAs or approved utility tariffs.
- There was no product sales backlog as of October 31, 2020 or October 31, 2019.
- Advanced Technologies contract backlog totaled $49.2 million as of October 31, 2020 compared to $12.0 million as of October 31, 2019. Advanced Technologies contract backlog represents remaining revenue under the EMRE Joint Development Agreement and government projects.

Backlog represents definitive agreements executed by the Company and our customers. Projects for which we have a PPA are included in generation backlog, which represents future revenue under long-term PPAs. Projects sold to customers (and not retained by the Company) are included in product sales and service agreements and license backlog and the related generation backlog is removed upon sale.

Factors that may impact our liquidity

Factors that may impact our liquidity in fiscal year 2021 and beyond include:

- The Company's cash on hand and access to additional liquidity. As of October 31, 2020, unrestricted cash and cash equivalents totaled $150.0 million. Subsequent to the end of the fiscal year, in December 2020, the Company closed an underwritten offering of 25.0 million shares of the Company's common stock. Net proceeds to the Company were approximately $156.3 million after deducting underwriting discounts and commissions and other offering expenses. As discussed in greater detail above, $87.3 million of such proceeds was used to extinguish the Company's debt under the Orion Facility, $21.5 million of such proceeds was used to payoff all obligations to Enbridge under the terms of the Series 1 Preferred Shares and the remaining $47.5 million of such proceeds is unrestricted cash of the Company.

- We bid on large projects in diverse markets that can have long decision cycles and uncertain outcomes. We manage production rate based on expected demand and projects schedules. Changes to production rate take time to implement. The annualized production rate as of October 31, 2020 was 17 MW, which was impacted by the manufacturing facility shutdown from March 18, 2020 to June 22, 2020 that was implemented in response to the COVID-19 pandemic. During fiscal year 2020, we made a number of improvements in our manufacturing processes and capabilities, focusing on increasing throughput and simplifying and streamlining production steps, while implementing applicable social distancing protocols. As a result of these improvements, the Company now has the capability to increase our annualized production rate up to 45 MW on a single production shift. For fiscal year 2021, the Company is currently increasing its production rate and expects achieve an annualized production rate of 45 MW per year.
- As project sizes and the number of projects evolves, project cycle times may increase. We may need to make significant up-front investments of resources in advance of the receipt of any cash from the financing or sale of our projects. These amounts include development costs, interconnection costs, costs associated with posting of letters of credit, bonding or other forms of security, and engineering, permitting, legal, and other expenses.
- The amount of accounts receivable and unbilled receivables as of October 31, 2020 and 2019 was $26.5 million ($8.9 million of which is classified as "Other assets") and $14.5 million ($3.6 million of which is classified as "Other assets"), respectively. Unbilled accounts receivable represent revenue that has been recognized in advance of billing the customer under the terms of the underlying contracts. Such costs have been funded with working capital and the unbilled amounts are expected to be billed and collected from customers once we meet the billing criteria under the contracts. Our accounts receivable balances may fluctuate as of any balance sheet date depending on the timing of individual contract milestones and progress on completion of our projects.

- The amount of total inventory as of October 31, 2020 and 2019 was $60.0 million ($9.0 million is classified as long-term inventory) and $56.7 million ($2.2 million is classified as long-term inventory), respectively, which includes work in process inventory totaling $38.2 million and $31.2 million, respectively. Work in process inventory can generally be deployed rapidly while the balance of our inventory requires further manufacturing prior to deployment. To execute on our business plan, we must produce fuel cell modules and procure BOP components in required volumes to support our planned construction schedules and potential customer contractual requirements. As a result, we may manufacture modules or acquire BOP components in advance of receiving payment for such activities. This may result in fluctuations in inventory and in use of cash as of any given balance sheet date.
- The amount of total project assets as of October 31, 2020 and 2019 was $161.8 million and $144.1 million, respectively. Project assets consist of capitalized costs for fuel cell projects that are operating and producing revenue or are under construction. Project assets as of October 31, 2020 consisted of $70.5 million of completed, operating installations and $91.3 million of projects in development. As of October 31, 2020, we had 32.6 MW of operating project assets that generated $19.9 million of revenue in the year ended October 31, 2020.
- As of October 31, 2020, the Company had 40.7 MW of projects under development and construction, some of which are expected to generate operating cash flows beginning in fiscal years 2021 and 2022. To build out this portfolio, for fiscal year 2021, we forecast project asset expenditures to range between $50.0 million and $75.0 million compared to $31.5 million for fiscal year 2020. To fund such expenditures, the Company expects to use unrestricted cash on hand and to seek sources of construction financing. In addition, once the projects under development become operational, the Company will seek to obtain permanent financing (tax equity and debt) which would be expected to return cash to the business.
- Capital expenditures are expected to range between $5.0 million to $10.0 million for fiscal year 2021 compared to capital expenditures of $0.4 million in fiscal year 2020 as we make investments in our factories, laboratories and business systems.
- Company funded research and development activities are expected to increase to $18 to $20 million in fiscal year 2021 (compared to approximately $4.8 million in fiscal year 2020) as we expect to accelerate commercialization of our Advanced Technologies solutions including Distributed Hydrogen, Hydrogen Based Long Duration Energy Storage and hydrogen power generation.
- Under the terms of certain contracts, the Company will provide performance security for future contractual obligations. As of October 31, 2020, we had pledged approximately $6.5 million of our cash and cash equivalents as collateral for performance security and for letters of credit for certain banking requirements and contracts. This balance may increase with a growing backlog and installed fleet.

Depreciation and Amortization

As the Company builds project assets and makes capital expenditures, depreciation and amortization expenses are expected to increase. For the years ended October 31, 2020 and 2019, depreciation and amortization totaled $19.4 million and $12.4 million, respectively (of these totals, approximately $13.9 million and $7.4 million for the years ended October 31, 2020 and 2019, respectively, relate to depreciation and amortization of project assets in our generation portfolio and generation intangible assets).

Cash Flows

Cash and cash equivalents and restricted cash and cash equivalents totaled $192.1 million as of October 31, 2020, compared to $39.8 million as of October 31, 2019. As of October 31, 2020, restricted cash and cash equivalents was $42.2 million, of which $9.2 million was classified as current and $33.0 million was classified as non-current, compared to $30.3 million total restricted cash and cash equivalents as of October 31, 2019, of which $3.5 million was classified as current and $26.9 million was classified as non-current.

The following table summarizes our consolidated cash flows:

(dollars in thousands)	2020	2019	2018
Consolidated Cash Flow Data:			
Net cash (used in) provided by operating activities	$ (36,781)	$ (30,572)	$ 16,322
Net cash used in investing activities	(32,520)	(69,300)	(51,260)
Net cash provided by financing activities	221,667	59,655	27,717
Effects on cash from changes in foreign currency rates	(92)	(244)	12
Net increase (decrease) in cash and cash equivalents	$ 152,274	$ (40,461)	$ (7,209)

The key components of our cash inflows and outflows were as follows:

Operating Activities – Net cash used in operating activities was $36.8 million during fiscal year 2020 compared to net cash used in operating activities of $30.6 million in fiscal year 2019 and net cash provided by operating activities of $16.3 million in fiscal year 2018.

Net cash used in operating activities during fiscal year 2020 was primarily the result of the net loss of $89.1 million, increases in accounts receivables of $6.3 million, unbilled receivables of $5.6 million and inventory of $2.1 million and a decrease in accounts payable of $7.1 million. These amounts were partially offset by increases in accrued liabilities of $5.5 million and deferred revenue of $1.7 million and net non-cash adjustments of $68.5 million.

Net cash used in operating activities during fiscal year 2019 was primarily the result of the net loss of $77.6 million and increases in inventory of $6.4 million and unbilled receivables of $4.5 million. These amounts were offset by increases in deferred revenue of $6.0 million and accrued liabilities of $2.4 million, decreases in accounts receivable of $4.8 million and other assets of $2.1 million and net non-cash adjustments of $42.7 million.

Net cash provided by operating activities during fiscal year 2018 was primarily the result of decreases in accounts receivable of $48.7 million, inventories of $31.7 million, deferred revenue of $1.3 million and net non-cash activity of $15.4 million. Accounts receivable and inventory decreased primarily as a result of cash received and inventory delivered under the contract to deliver a 20 MW project to KOSPO in South Korea. These amounts were offset by the net loss of $47.3 million for fiscal year 2018, decreases in accounts payable of $19.8 million and accrued liabilities of $11.3 million, and an increase in other assets of $2.3 million.

Investing Activities – Net cash used in investing activities was $32.5 million during fiscal year 2020 compared to $69.3 million in fiscal year 2019 and $31.4 million in fiscal year 2018.

Net cash used in investing activities during fiscal year 2020 included $31.5 million of project asset expenditures and a $0.6 million payment for a working capital adjustment for the May 2019 acquisition of the Bridgeport Fuel Cell Project.

Net cash used in investing activities during fiscal year 2019 included the purchase by the Company of all of the outstanding membership interests in Bridgeport Fuel Cell, LLC (“BFC”), the owner of the 14.9 MW Bridgeport Fuel Cell Project, for $35.5 million, $31.7 million invested in project assets to expand our operating portfolio and $2.2 million for capital expenditures.

Net cash used in investing activities during fiscal year 2018 included a $41.2 million investment in project assets to expand our operating portfolio and $10.0 million for capital expenditures.

Financing Activities – Net cash provided by financing activities was $221.7 million during fiscal year 2020 compared to $59.7 million in fiscal year 2019 and $27.7 million in fiscal year 2018.

Net cash provided by financing activities during fiscal year 2020 resulted from the receipt of $63.9 million of debt proceeds under the Orion Facility, which was net of a loan discount of $1.6 million, $14.4 million of proceeds from the sale-leaseback transaction with Crestmark Equipment Finance, $6.5 million of debt proceeds from Liberty Bank under the PPP Note, $3.0 million of debt proceeds from Connecticut Green Bank, $98.3 million of net proceeds from an underwritten equity offering that closed in October 2020, $73.6 million of net proceeds from at-the-market sales of common stock (after deducting commissions), and $1.3 million of net proceeds from warrant conversions, offset by debt repayments of $30.1 million, the payment of preferred dividends and return of capital of $6.5 million, and the payment of deferred financing costs of $2.7 million.

Net cash provided by financing activities during fiscal year 2019 resulted from the receipt of $69.6 million of debt proceeds, which included $26.7 million to acquire all of the membership interest in BFC, $14.5 million under the Orion Facility and the remainder related to project level financings, offset by debt repayments of $48.4 million, the payment of deferred financing costs of $3.3 million and the payment of preferred dividends and return of capital of $1.8 million. The sale of common stock during fiscal year 2019 resulted in proceeds, net of expenses, of $43.6 million.

Net cash provided by financing activities during fiscal year 2018 resulted from net proceeds of $25.3 million received in connection with the offering and issuance of the Series D Preferred Stock, the receipt of $13.1 million under the amended loan and security agreement with Hercules and net proceeds received of $10.5 million from warrant exercises and at the market sales of our common stock, offset by cash payments of $16.6 million primarily relating to repayments under the loan and security agreement with Hercules and the payment of preferred dividends and return of capital of $4.2 million.

Commitments and Significant Contractual Obligations

A summary of our significant future commitments and contractual obligations as of October 31, 2020 and the related payments by fiscal year is summarized as follows:

		Payments Due by Period			
(dollars in thousands) **Contractual Obligations**	**Total**	**Less than 1 year**	**1 - 3 years**	**3 - 5 years**	**More Than 5 years**
Purchase commitments [(1)]	$ 34,660	$ 29,136	$ 5,524	$ —	$ —
Series 1 Preferred obligation [(2)]	23,447	23,447	—	—	—
Term and Construction loans (principal and interest) [(8)]	169,609	30,341	56,029	46,886	36,353
Finance and operating lease commitments [(3)]	19,983	1,432	2,460	1,458	14,632
Sale-leaseback financing obligations [(4)]	20,362	3,902	5,544	5,415	5,501
Natural gas supply contract [(5)]	13,781	1,969	3,938	3,938	3,938
Option fee [(6)]	150	150	—	—	—
Series B Preferred dividends payable [(7)]	—	—	—	—	—
Total	$ 281,992	$ 90,377	$ 73,495	$ 57,696	$ 60,423

(1) Purchase commitments with suppliers for materials, supplies and services incurred in the normal course of business.

(2) On January 20, 2020, the Company, FCE Ltd. and Enbridge entered into a letter agreement, which is referred to herein as the "January 2020 Letter Agreement," pursuant to which they agreed to amend the articles of FCE Ltd. relating to and setting forth the terms of the Class A Preferred Stock of FCE Ltd., which is referred to herein as the "Series 1 Preferred Shares", to modify certain terms of the Series 1 Preferred Shares. Under the terms of the January 2020 Letter Agreement (as described in additional detail below), the Company was still required to make (i) annual dividend payments of Cdn. $500,000 and (ii) annual return of capital payments of Cdn. $750,000. Dividend and return of capital payments were to be made on a quarterly basis and were scheduled to end on December 31, 2021, unless these obligations were satisfied in advance of such date. After taking into account the amendments to the terms of the Series 1 Preferred Shares described in the January 2020 Letter Agreement, the aggregate amount of all accrued and unpaid dividends to be paid on the Series 1 Preferred Shares on December 31, 2021 was expected to be Cdn. $26.5 million and the balance of the principal redemption price to be paid on December 31, 2021 with respect to all of the Series 1 Preferred Shares was expected to be Cdn. $3.5 million. Refer to Note 16. "Redeemable Preferred Stock" for additional information regarding such letter agreement and such modified terms. On December 16, 2020, the Company and FCE Ltd. delivered a payoff letter to Enbridge, referred to herein as the Enbridge Payoff Letter, which was executed by Enbridge on December 17, 2020 and pursuant to which the Company confirmed its intent to pay the amounts owed to Enbridge under the terms of the Series 1 Preferred Shares (the "Obligation") on or before December 31, 2020 in accordance with its obligations under the Guarantee, dated May 27, 2004, made by the Company in favor of Enbridge, as amended by the Guarantee Amending Agreement dated April 1, 2011 and effective as of January 1, 2011 between the Company and Enbridge (the "Guarantee") because FCE Ltd. did not have sufficient cash to pay the Obligation. On December 18, 2020, the Company remitted payment totaling Cdn. $27.4 million, or approximately $21.5 million in U.S. dollars, to Enbridge. Concurrent with receipt of the payment from the Company, Enbridge surrendered its shares in FCE Ltd., and the Guarantee and the January 2020 Letter Agreement were terminated. Pursuant to the Enbridge Payoff Letter, the transaction is deemed to have occurred on December 31, 2020.

(3) Future minimum lease payments on finance and operating leases.

(4) Represents payments due under sale-leaseback transactions and related financing agreements between certain of our wholly-owned subsidiaries and PNC Energy Capital, LLC and/or Crestmark Equipment Finance (as applicable). Lease payments for each lease under these financing agreements are generally payable in fixed quarterly installments over a 10-year period.

(5) During fiscal year 2020, the Company entered into a 7-year natural gas contract with an estimated annual cost per year of $2.0 million beginning on November 1, 2021. This gas contract is for the Company's Yaphank project and the costs will be expected to be offset by generation revenues on the project.

(6) The Company entered into an agreement with a customer on June 29, 2016 that includes a fee for the purchase of the plants at the end of the term of the agreement. The fee is payable in installments over the term of the agreement.

(7) We pay $3.2 million in annual dividends on our Series B Preferred Stock, if and when declared. The $3.2 million annual dividend payment, if dividends are declared, has not been included in this table as we cannot reasonably determine when or if we will be able to convert the Series B Preferred Stock into shares of our common stock. We may, at our option, convert these shares into the number of shares of our common stock that are issuable at the then prevailing conversion rate if the closing price of our common stock exceeds 150% of the then prevailing conversion price ($1,692 per share at October 31, 2020) for 20 trading days during any consecutive 30 trading day period.

(8) Subsequent to October 31, 2020, the Company paid off all obligations under the Orion Credit Agreement. Refer to Note 25. "Subsequent Events" of the financial statements.

Term and Construction Loans

A discussion of the key terms and conditions of the loans outstanding as of October 31, 2020 is included in Note 14. "Debt" to the consolidated financial statements. The information included under the headings "Orion Energy Partners Investment Agent, LLC Credit Agreement," "Connecticut Green Bank Loans," "Bridgeport Fuel Cell Project Loans," "State of Connecticut Loan" and "Liberty Bank Promissory Note" in Note 14. "Debt" to the consolidated financial statements is incorporated herein by reference.

Subsequent to October 31, 2020, the Company paid off all outstanding principal, accrued but unpaid interest, prepayment premium, fees, costs and other expenses due and owing to the Orion Agent and the lenders under the Orion Facility and the Orion Credit Agreement and the related loan documents. Refer to Note 25. "Subsequent Events" of the financial statements. As a result of such repayment, the following amounts would be removed from the above table:

(dollars in thousands)	Total	Less than 1 year	1 - 3 years	3 - 5 years	More Than 5 years
Orion term loan (principal and interest) [(1)]	$ 117,995	$ 18,109	$ 37,908	$ 32,323	$ 29,655

(1) As included in the "Term and Construction loans (principal and interest)" in the above contractual obligations table.

Restricted Cash

We have pledged approximately $42.2 million of our cash and cash equivalents as performance security and for letters of credit for certain banking requirements and contracts. As of October 31, 2020, outstanding letters of credit totaled $6.5 million. These letters of credit expire on various dates through August 2028. Under the terms of certain contracts, we will provide performance security for future contractual obligations. The restricted cash balance as of October 31, 2020 also included $15.1 million primarily to support obligations under the power purchase and service agreements related to our sale-leaseback transactions with PNC Energy Capital, LLC ("PNC"), $0.4 million related to our sale-leaseback transaction with Crestmark Equipment Finance ("Crestmark"), $7.5 million relating to future obligations associated with the Bridgeport Fuel Cell Project, and $11.2 million relating to the reserves established under the Orion Facility. Refer to Note 21. "Restricted Cash" for a detailed discussion of the Company's restricted cash balance and refer to Note 25. "Subsequent Events" for the impact to restricted cash from the repayment of all amounts owed under the Orion Credit Agreement.

Power purchase agreements

Under the terms of our PPAs, customers agree to purchase power from our fuel cell power platforms at negotiated rates. Electricity rates are generally a function of the customers' current and estimated future electricity pricing available from the grid. We are responsible for all operating costs necessary to maintain, monitor and repair our fuel cell power platforms. Under certain agreements, we are also responsible for procuring fuel, generally natural gas or Biogas, to run our fuel cell power platforms. In addition, under certain agreements, we are required to produce minimum amounts of power under our PPAs and we have the right to terminate PPAs by giving written notice to the customer, subject to certain exit costs. As of October 31, 2020, our operating portfolio was 32.6 MW.

Service and warranty agreements

We warrant our products for a specific period of time against manufacturing or performance defects. Our standard U.S. warranty period is generally 15 months after shipment or 12 months after acceptance of the product. In addition to the standard product warranty, we have contracted with certain customers to provide services to ensure the power plants meet minimum operating levels for terms of up to 20 years. Pricing for service contracts is based upon estimates of future costs, which could be materially different from actual expenses. Refer to "Critical Accounting Policies and Estimates" for additional details.

Advanced Technologies contracts

We have contracted with various government agencies and certain companies from private industry to conduct research and development as either a prime contractor or sub-contractor under multi-year, cost-reimbursement and/or cost-share type contracts or cooperative agreements. Cost-share terms require that participating contractors share the total cost of the project based on an agreed upon ratio. In many cases, we are reimbursed only a portion of the costs incurred or to be incurred on the contract. While government research and development contracts may extend for many years, funding is often provided incrementally on a year-by-year basis if contract terms are met and Congress authorizes the funds. As of October 31, 2020, Advanced Technologies contract backlog totaled $49.2 million, of which $37.7 million is non-U.S. Government-funded, $11.3 million is U.S. Government-funded and $0.2 million is U.S. Government-unfunded. The amount that is non-U.S. Government-funded includes $10.0 million of milestone payments under the EMRE Joint Development Agreement that are contingent upon achieving technical milestones. If funding is terminated or delayed or if business initiatives change, we may choose to devote resources to other activities, including internally funded research and development.

Off-Balance Sheet Arrangements

We have no off-balance sheet debt or similar obligations which are not classified as debt. We do not guarantee any third-party debt. See Note 22. "Commitments and Contingencies" to our consolidated financial statements for the year ended October 31, 2020 included in this Annual Report on Form 10-K for further information.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of financial statements and related disclosures requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. Actual results could differ from those estimates. Estimates are used in accounting for, among other things, revenue recognition, lease right of use assets and liabilities, contract loss accruals, excess, slow-moving and obsolete inventories, product warranty accruals, loss accruals on service agreements, share-based compensation expense, allowance for doubtful accounts, depreciation and amortization, impairment of goodwill and in-process research and development intangible assets, impairment of long-lived assets (including project assets), and contingencies. Estimates and assumptions are reviewed periodically, and the effects of revisions are reflected in the consolidated financial statements in the period they are determined to be necessary.

Our critical accounting policies are those that are both most important to our financial condition and results of operations and may require the most difficult, subjective or complex judgments on the part of management in their application, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. Our accounting policies are set forth below.

Goodwill and Indefinite-Lived Intangibles

Goodwill represents the excess of the aggregate purchase price over the fair value of the net assets acquired in a purchase business combination and is reviewed for impairment at least annually. The intangible asset represents indefinite-lived in-process research and development for cumulative research and development efforts associated with the development of Solid Oxide Fuel Cell stationary power generation and is also reviewed at least annually for impairment.

Accounting Standards Codification Topic 350, "Intangibles - Goodwill and Other" ("ASC 350") permits the assessment of qualitative factors to determine whether events and circumstances lead to the conclusion that it is necessary to perform the goodwill impairment test required under ASC 350.

The Company completed its annual impairment analysis of goodwill and in-process research and development assets as of July 31, 2020 and 2019. The Company performed a qualitative assessment for fiscal year 2020 and determined that it was more likely than not that there was no impairment of goodwill or the indefinite-lived intangible asset.

Impairment of Long Lived Assets (including Project Assets)

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. If events or changes in circumstances indicate that the carrying amount of the asset group may not be recoverable, we compare the carrying amount of an asset group to future undiscounted net cash flows, excluding interest costs, expected to be generated by the asset group and their ultimate disposition. If the sum of the undiscounted cash flows is less than the carrying value, the impairment to be recognized is measured by the amount by which the carrying amount of the asset group exceeds the fair value of the asset group. During the years ended October 31, 2019 and 2020, the Company recorded certain project asset impairment charges. Refer to Note 7. "Project Assets" for details on these charges.

Revenue Recognition

The Company adopted Accounting Standards Codification ("ASC") Topic 606: *Revenue from Contracts with Customers* ("Topic 606") effective as of November 1, 2018. Under Topic 606: *Revenue from Contracts with Customers,* the amount of revenue recognized for any goods or services reflects the consideration that the Company expects to be entitled to receive in exchange for those goods and services. To achieve this core principle, the Company applies the following five-step approach: (1) identify the contract with the customer; (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to performance obligations in the contract; and (5) recognize revenue when or as a performance obligation is satisfied.

A contract is accounted for when there has been approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable. Performance obligations under a contract are identified based on the goods or services that will be transferred to the customer that are both capable of being distinct and are distinct in the context of the contract. In certain instances, the Company has concluded distinct goods or services should be accounted for as a single performance obligation that is a series of distinct goods or services that have the same pattern of transfer to the customer. To the extent a contract includes multiple promised goods or services, the Company must apply judgment to determine whether the customer can benefit from the goods or services either on their own or together with other resources that are readily available to the customer (the goods or services are distinct) and if the promise to transfer the goods or services to the customer is separately identifiable from other promises in the contract (the goods or services are distinct in the context of the contract). If these criteria are not met, the promised services are accounted for as a single performance obligation. The transaction price is determined based on the consideration that the Company will be entitled to in exchange for transferring goods or services to the customer. To the extent the transaction price includes variable consideration, the Company estimates the amount of variable consideration that should be included in the transaction price, generally utilizing the expected value method. Determining the transaction price requires judgment. If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each performance obligation based on a relative standalone selling price basis. Standalone selling price is determined by the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, the Company estimates the standalone selling price by taking into account available information such as market conditions and internally approved pricing guidelines related to the performance obligations. Performance obligations are satisfied either over time or at a point in time as discussed in further detail below. In addition, the Company's contracts with customers generally do not include significant financing components or non-cash consideration. The Company has elected practical expedients in the accounting guidance that allow for revenue to be recorded in the amount that the Company has a right to invoice, if that amount corresponds directly with the value to the customer of the Company's performance to date, and that allow the Company not to disclose related unsatisfied performance obligations. The Company records any amounts that are billed to customers in excess of revenue recognized as deferred revenue and revenue recognized in excess of amounts billed to customers as unbilled receivables.

Revenue streams are classified as follows:

Product. Includes the sale of completed project assets, sale and installation of fuel cell power platforms including site engineering and construction services, and the sale of modules, BOP components and spare parts to customers.

Service. Includes performance under long-term service agreements for power platforms owned by third parties.

License and royalty. Includes license fees and royalty income from the licensure of intellectual property.

Generation. Includes the sale of electricity under PPAs and utility tariffs from project assets retained by the Company. This also includes revenue received from the sale of other value streams from these assets including the sale of heat, steam, capacity and renewable energy credits.

Advanced Technologies. Includes revenue from customer-sponsored and government-sponsored Advanced Technologies projects.

See below for discussion of revenue recognition under Topic 606 by disaggregated revenue stream.

Completed project assets

Contracts for the sale of completed project assets include the sale of the project asset, the assignment of the service agreement, and the assignment of the PPA. The relative stand-alone selling price is estimated and is used as the basis for allocation of the contract consideration. Revenue is recognized upon the satisfaction of the performance obligations, which includes the transfer of control of the project asset to the customer, which is when the contract is signed and the PPA is assigned to the customer. See below for further discussion regarding revenue recognition for service agreements. The revenue recognition for completed project assets under Topic 606 is consistent with treatment under ASC 605, *Revenue Recognition*.

Contractual payments related to the sale of the project asset and assignment of the PPA are generally received up-front. Payment terms for service agreements are generally ratable over the term of the agreement.

Service agreements

Service agreements represent a single performance obligation whereby the Company performs all required maintenance and monitoring functions, including replacement of modules, to ensure the power platform(s) under the service agreement generate a minimum power output. To the extent the power platform(s) under service agreements do not achieve the minimum power output, certain service agreements include a performance guarantee penalty. Performance guarantee penalties represent variable consideration, which is estimated for each service agreement based on past experience, using the expected value method. The net consideration for each service agreement is recognized using costs incurred to date relative to total estimated costs at completion to measure progress.

The Company reviews its cost estimates on service agreements on a quarterly basis and records any changes in estimates on a cumulative catch-up basis.

Loss accruals for service agreements are recognized to the extent that the estimated remaining costs to satisfy the performance obligation exceed the estimated remaining unrecognized net consideration. Estimated losses are recognized in the period in which losses are identified.

Payment terms for service agreements are generally ratable over the term of the agreement.

Advanced Technologies contracts

Advanced Technologies contracts include the promise to perform research and development services and, as such, this represents one performance obligation. Revenue from most government sponsored Advanced Technologies projects is recognized as direct costs are incurred plus allowable overhead less cost share requirements, if any. Revenue is only recognized to the extent the contracts are funded. Revenue from previous fixed price Advanced Technologies projects

is recognized using the cost to cost input method. Revenue recognition for research performed under the EMRE Joint Development Agreement (as defined elsewhere herein) also falls into the practical expedient category where revenue is recorded consistent with the amounts invoiced.

Payments are based on costs incurred for government sponsored Advanced Technologies projects and upon completion of milestones for previous fixed-price Advanced Technologies projects. Payments under the EMRE Joint Development Agreement are based on time spent and material costs incurred.

License agreements

The Company entered into the License Agreements (as defined elsewhere herein) with POSCO Energy in 2007, 2009 and 2012. These agreements were terminated by the Company in June 2020, which is subject to dispute by POSCO Energy (for more information, refer to Note 22. "Commitments and Contingencies").

Prior to the date of termination, in connection with the adoption of Topic 606, several performance obligations were identified under the License Agreements, including previously satisfied performance obligations for the transfer of licensed intellectual property, two performance obligations for specified upgrades of the previously licensed intellectual property, a performance obligation to deliver unspecified upgrades to the previously licensed intellectual property on a when-and-if-available basis, and a performance obligation to provide technical support for previously delivered intellectual property.

- The performance obligations related to the specified upgrades would have been satisfied and the related consideration recognized as revenue upon the delivery of the specified upgrades. The Company did not recognize any revenue in fiscal years 2019 and 2020 related to specified upgrades.
- The performance obligations for unspecified upgrades and technical support were being recognized on a straight-line basis over the license term on the basis that this represented the method that best depicted the progress towards completion of the related performance obligations. The Company recognized revenue totaling $0.8 million and $1.1 million for the years ended October 31, 2020 and 2019, respectively, related to unspecified upgrades.

All fixed consideration for the License Agreements was previously collected. The Company has discontinued revenue recognition of the deferred license revenue related to the terminated POSCO Energy License Agreements given the pending arbitration and will continue to evaluate this deferred revenue in future periods.

The Company entered into the EMRE Joint Development Agreement on November 5, 2019. The Company recorded license revenue of $4.0 million in association with this agreement for the fiscal year ended October 31, 2020 which revenue was considered at a point-in-time upon the signing of the contract as the license is considered functional intellectual property because it has standalone functionality, the customer can use this intellectual property as it exists at a point in time and no further services are required from the Company.

Effective as of June 11, 2019, the Company entered into the EMRE License Agreement, pursuant to which the Company agreed, subject to the terms of the EMRE License Agreement, to grant EMRE and its affiliates a non-exclusive, worldwide, fully paid, perpetual, irrevocable, non-transferrable license and right to use the Company's patents, data, know-how, improvements, equipment designs, methods, processes and the like to the extent it is useful to research, develop, and commercially exploit Carbonate Fuel Cells in applications in which the fuel cells concentrate carbon dioxide from industrial and power sources and for any other purpose attendant thereto or associated therewith. Such right and license is sublicensable to third parties performing work for or with EMRE or its affiliates, but shall not otherwise be sublicensable. Upon the payment by EMRE to the Company of $10.0 million, which was received by the Company on June 14, 2019, EMRE and its affiliates were fully vested in the rights and licenses granted in the EMRE License Agreement, and any further obligations under the EMRE License Agreement are considered by the Company to be minimal. As a result, the total contract value of $10.0 million was recorded as revenue for the year ended October 31, 2019.

Generation revenue

For certain project assets where customers purchase electricity from the Company under PPAs, the Company has determined that these agreements should be accounted for as operating leases pursuant to ASC 842, *Leases*. Revenue is recognized when electricity has been delivered based on the amount of electricity delivered at rates specified under the contracts, assuming all other revenue recognition criteria are met. Generation sales, to the extent the related PPAs

are within the scope of Topic 606, are recognized as revenue in the period in which the Company provides the electricity and completes the performance obligation, which is the same as the monthly amount billed to customers.

Revenue Recognition Policy Prior to the Implementation of Topic 606

Prior to the implementation of Topic 606, the revenue recognition policy for the fiscal year ended October 31, 2018 was as follows:

The Company earned revenue from (i) the sale and installation of fuel cell power platforms including site engineering and construction services, (ii) the sale of completed project assets, (iii) equipment only sales (modules, BOP, component part kits and spare parts to customers), (iv) performance under long-term service agreements, (v) the sale of electricity and other value streams under PPAs and utility tariffs from project assets retained by the Company, (vi) license fees and royalty income from manufacturing and technology transfer agreements, and (vii) government and customer-sponsored Advanced Technologies projects.

For customer contracts where the Company was responsible for the supply of equipment and site construction (full turn-key construction project) and had adequate cost history and estimating experience, and with respect to which management believed it could reasonably estimate total contract costs, revenue was recognized under the percentage of completion method of accounting. The use of percentage of completion accounting requires significant judgment relative to estimating total contract costs, including assumptions relative to the length of time to complete the contract, the nature and complexity of the work to be performed and total project costs. Our estimates were based upon the professional knowledge and experience of our engineers, project managers and other personnel, who reviewed each long-term contract on a quarterly basis to assess the contract's schedule, performance, technical matters and estimated cost at completion. When changes in estimated contract costs were identified, such revisions could result in current period adjustments to operations applicable to performance in prior periods. Revenues were recognized based on the percentage of the contract value that had incurred costs to date as compared to estimated total contract costs, after giving effect to estimates of costs to complete based on the most recent information. For customer contracts for new or significantly customized products, where management did not believe it had the ability to reasonably estimate total contract costs, revenue was recognized using the completed contract method and therefore all revenue and costs for the contract were deferred and not recognized until installation and acceptance of the power plant was complete. We recognized anticipated contract losses as soon as they became known and estimable. Actual results varied from initial estimates and estimates were updated as conditions changed.

Revenue from equipment only sales where the Company did not have the obligations associated with overall construction of the project (modules, BOPs, fuel cell kits and spare parts sales) was recognized upon shipment or title transfer under the terms of the customer contract. Terms for certain contracts provided for a transfer of title and risk of loss to our customers at our factory locations and certain key suppliers upon completion of our contractual requirement to produce products and prepare the products for shipment.

Revenue from service agreements was generally recorded ratably over the term of the service agreement, as the Company's performance of routine monitoring and maintenance under these service agreements was generally expected to be incurred on a straight-line basis. For service agreements where the Company expected to have module exchanges at some point during the term (generally service agreements in excess of five years), the costs of performance were not expected to be incurred on a straight-line basis, and therefore, a portion of the initial contract value related to the module exchange(s) was deferred and was recognized upon such module replacement event(s).

The Company recognized license fees and other revenue over the term of the associated agreement. The Company recorded license fees and royalty income from POSCO Energy as a result of the License Agreements entered into in 2007, 2009 and 2012.

Under PPAs and project assets retained by the Company, revenue from the sale of electricity and other value streams were recognized as electricity was provided to customers. These revenues were classified as generation revenues.

Advanced Technologies contracts were entered into with both private industry and government entities. Revenue from most government sponsored Advanced Technologies projects was recognized as direct costs were incurred plus allowable overhead less cost share requirements, if any. Revenue from fixed price Advanced Technologies projects was recognized using percentage of completion accounting. Advanced Technologies programs were often multi-year projects or structured in phases with subsequent phases dependent on reaching certain milestones prior to additional funding being authorized. Government contracts were typically structured with cost-reimbursement and/or cost-shared type contracts or cooperative agreements. We were reimbursed for reasonable and allocable costs up to the

reimbursement limits set by the contract or cooperative agreement, and on certain contracts we were reimbursed only a portion of the costs incurred.

Sale-Leaseback Accounting

The Company, through certain wholly-owned subsidiaries, has entered into sale-leaseback transactions for commissioned project assets where we have entered into a PPA with a customer who is both the site host and end user of the power. Due to the Company not meeting criteria to account for the transfer of the project assets as a sale, sale accounting is precluded. Accordingly, the Company uses the financing method to account for these transactions.

Under the financing method of accounting for a sale-leaseback, the Company does not derecognize the project assets and does not recognize as revenue any of the sale proceeds received from the lessor that contractually constitutes payment to acquire the assets subject to these arrangements. Instead, the sale proceeds received are accounted for as financing obligations and leaseback payments made by the Company are allocated between interest expense and a reduction to the financing obligation. Interest on the financing obligation is calculated using the Company's incremental borrowing rate at the inception of the arrangement on the outstanding financing obligation. While we receive financing for the related power plant asset, we have not recognized revenue on the sale-leaseback transactions. Instead, revenue is recognized with respect to the related PPAs in accordance with the Company's policies for recognizing generation revenues.

Inventories

Inventories consist principally of raw materials and work-in-process. Inventories are reviewed to determine if valuation adjustments are required for obsolescence (excess, obsolete, and slow-moving inventory). This review includes analyzing inventory levels of individual parts considering the current design of our products and production requirements as well as the expected inventory needs for maintenance on installed power platforms.

Service Expense Recognition

We have entered into service agreements with certain customers to provide monitoring, maintenance and repair services for fuel cell power platforms. Under the terms of these service agreements, the power platform must meet a minimum operating output during the term. If the minimum output falls below the contract requirement, we may be subject to performance penalties or may be required to repair and/or replace the customer's fuel cell module.

The Company records loss accruals for service agreements when the estimated cost of future module exchanges and maintenance and monitoring activities exceeds the remaining unrecognized contract value. Estimates for future costs on service agreements are determined by a number of factors including the estimated remaining life of the module, used replacement modules available, and future operating plans for the power platform. Our estimates are performed on a contract by contract basis and include cost assumptions based on what we anticipate the service requirements will be to fulfill obligations for each contract. As of October 31, 2020 and 2019, our loss accruals on service agreements totaled $5.5 million and $3.3 million, respectively.

ACCOUNTING GUIDANCE UPDATE

Recently Adopted Accounting Guidance

The Company adopted Accounting Standards Update Codification ("ASC"), "Leases" ("Topic 842" or "ASC 842") on November 1, 2019. ASC 842, including all the related amendments subsequent to its issuance, supersedes the prior guidance for lease accounting and requires lessees to recognize a right-of-use ("ROU") asset representing the right to use an underlying asset and a lease liability representing the obligation to make lease payments over the lease term for substantially all leases, as well as disclose key quantitative and qualitative information about leasing arrangements. Upon adoption, the Company recognized an operating lease liability of approximately $10.3 million and corresponding operating lease ROU assets of approximately $10.1 million. There was no cumulative effect of the adoption recorded to accumulated deficit. There was no significant net effect on the Consolidated Statements of Operations and Comprehensive Loss. Refer to Note 13. "Leases" for additional information on the Company's adoption of ASC 842.

Recent Accounting Guidance Not Yet Effective

There is no recent accounting guidance not yet effective that is expected to have a material impact on the Company's financial statements when adopted.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate Exposure Risk

Cash is invested overnight with high credit quality financial institutions and therefore we are not exposed to market risk on our cash holdings from changing interest rates. Based on our overall interest rate exposure as of October 31, 2020, including all interest rate sensitive instruments, a change in interest rates of 1% would not have a material impact on our results of operations.

Foreign Currency Exchange Risk

As of October 31, 2020, approximately 0.4% of our total cash and cash equivalents were in currencies other than U.S. dollars (primarily the Euro, Canadian dollars and South Korean Won) and we have no plans of repatriation. We make purchases from certain vendors in currencies other than U.S. dollars. Although we have not experienced significant foreign exchange rate losses to date, we may in the future, especially to the extent that we do not engage in currency hedging activities. The economic impact of currency exchange rate movements on our operating results is complex because such changes are often linked to variability in real growth, inflation, interest rates, governmental actions and other factors. These changes, if material, may cause us to adjust our financing and operating strategies.

Derivative Fair Value Exposure Risk

Interest Rate Swap

On May 16, 2019, an interest rate swap agreement was entered into with Fifth Third Bank in connection with the BFC Credit Agreement for the term of the loan. The net interest rate across the BFC Credit Agreement and the swap transaction results in a fixed rate of 5.09%. The interest rate swap is adjusted to fair value on a quarterly basis. The estimated fair value is based on Level 2 inputs including primarily the forward LIBOR curve available to swap dealers. The valuation methodology involves comparison of (i) the sum of the present value of all monthly variable rate payments based on a reset rate using the forward LIBOR curve and (ii) the sum of the present value of all monthly fixed rate payments on the notional amount, which is equivalent to the outstanding principal amount of the loan. The fair value adjustment for the year ended October 31, 2020 and October 31, 2019 resulted in a $0.3 million and $0.6 million charge, respectively.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
FuelCell Energy, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of FuelCell Energy, Inc. and subsidiaries (the Company) as of October 31, 2020 and 2019, the related consolidated statements of operations and comprehensive loss, changes in equity, and cash flows for each of the years in the three-year period ended October 31, 2020, and the related notes (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 October 31, 2020 and 2019, and the results of its operations and its cash flows for each of the years in the three-year period ended October 31, 2020, in conformity with U.S. generally accepted accounting principles.

Changes in Accounting Principles

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for leases as of November 1, 2019 due to the adoption of Financial Accounting Standards Board Accounting Standards Codification Topic 842, *Leases*, and its method of accounting for revenue as of November 1, 2018 due to the adoption of Financial Accounting Standards Board Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers*.

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 Public Company Accounting Oversight Board (United States) (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. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

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.

/s/ KPMG LLP

We have served as the Company's auditor since 1995.

Hartford, Connecticut
January 21, 2021

FUELCELL ENERGY, INC.
Consolidated Balance Sheets
October 31, 2020 and 2019
(Amounts in thousands, except share and per share amounts)

	2020	2019
ASSETS		
Current assets:		
Cash and cash equivalents, unrestricted	$ 149,867	$ 9,434
Restricted cash and cash equivalents - short-term	9,233	3,473
Accounts receivable, net	9,563	3,292
Unbilled receivables	8,041	7,684
Inventories	50,971	54,515
Other current assets	6,306	5,921
Total current assets	233,981	84,319
Restricted cash and cash equivalents - long-term	32,952	26,871
Inventories - long-term	8,986	2,179
Project assets	161,809	144,115
Property, plant and equipment, net	36,331	41,134
Operating lease right-of-use assets, net	10,098	—
Goodwill	4,075	4,075
Intangible assets, net	19,967	21,264
Other assets	15,339	9,489
Total assets	$ 523,538	$ 333,446
LIABILITIES AND EQUITY		
Current liabilities:		
Current portion of long-term debt	$ 21,366	$ 21,916
Current portion of operating lease liabilities	939	—
Accounts payable	9,576	16,943
Accrued liabilities	15,681	11,452
Deferred revenue	10,399	11,471
Preferred stock obligation of subsidiary	938	950
Total current liabilities	58,899	62,732
Long-term deferred revenue	31,501	28,705
Long-term preferred stock obligation of subsidiary	18,265	16,275
Long-term operating lease liabilities	9,817	—
Long-term debt and other liabilities	150,651	90,140
Total liabilities	269,133	197,852
Redeemable Series B preferred stock (liquidation preference of $64,020 as of October 31, 2020 and 2019)	59,857	59,857
Total equity:		
Stockholders' equity		
Common stock ($0.0001 par value); 337,500,000 shares and 225,000,000 shares authorized as of October 31, 2020 and 2019, respectively; 294,706,758 and 193,608,684 shares issued and outstanding as of October 31, 2020 and 2019, respectively)	29	19
Additional paid-in capital	1,359,454	1,151,454
Accumulated deficit	(1,164,196)	(1,075,089)
Accumulated other comprehensive loss	(739)	(647)
Treasury stock, Common, at cost (56,411 and 42,496 shares as of October 31, 2020 and 2019, respectively)	(432)	(466)
Deferred compensation	432	466
Total stockholders' equity	194,548	75,737
Total liabilities and stockholders' equity	$ 523,538	$ 333,446

See accompanying notes to consolidated financial statements.

FUELCELL ENERGY, INC.
Consolidated Statements of Operations and Comprehensive Loss
For the Years Ended October 31, 2020, 2019, and 2018
(Amounts in thousands, except share and per share amounts)

	2020	2019	2018
Revenues:			
Product sales	$ —	$ 481	$ 52,490
Service agreements and license revenues	25,133	26,618	15,757
Generation revenues	19,943	14,034	7,171
Advanced Technologies contract revenues	25,795	19,619	14,019
Total revenues	70,871	60,752	89,437
Costs of revenues:			
Cost of product sales	9,924	18,552	54,504
Cost of service agreements and license revenues	24,545	18,943	15,059
Cost of generation revenues	27,873	31,642	6,421
Cost of Advanced Technologies contract revenues	16,254	12,884	10,360
Total cost of revenues	78,596	82,021	86,344
Gross (loss) profit	(7,725)	(21,269)	3,093
Operating expenses:			
Administrative and selling expenses	26,644	31,874	24,908
Research and development expenses	4,797	13,786	22,817
Total operating expenses	31,441	45,660	47,725
Loss from operations	(39,166)	(66,929)	(44,632)
Interest expense	(15,294)	(10,623)	(9,055)
Change in fair value of common stock warrant liability	(37,086)	—	—
Gain on extinguishment of financing obligation	1,801	—	—
Other income, net	684	93	3,338
Loss before (provision) benefit for income taxes	(89,061)	(77,459)	(50,349)
(Provision) benefit for income taxes	(46)	(109)	3,015
Net loss	(89,107)	(77,568)	(47,334)
Series A warrant exchange	—	(3,169)	—
Series B Preferred stock dividends	(3,331)	(3,231)	(3,200)
Series C Preferred stock deemed dividends and redemption value adjustment, net	—	(6,522)	(9,559)
Series D Preferred stock deemed dividends and redemption accretion	—	(9,755)	(2,075)
Net loss attributable to common stockholders	$ (92,438)	$ (100,245)	$ (62,168)
Net loss to common stockholders per share			
Basic	$ (0.42)	$ (1.82)	$ (9.01)
Diluted	$ (0.42)	$ (1.82)	$ (9.01)
Weighted average shares outstanding			
Basic	221,960,288	55,081,266	6,896,189
Diluted	221,960,288	55,081,266	6,896,189

	2020	2019	2018
Net loss	$ (89,107)	$ (77,568)	$ (47,334)
Other comprehensive loss:			
Foreign currency translation adjustments	(92)	(244)	12
Comprehensive loss	$ (89,199)	$ (77,812)	$ (47,322)

See accompanying notes to consolidated financial statements.

FUELCELL ENERGY, INC.
Consolidated Statements of Changes in Equity
For the Years Ended October 31, 2020, 2019, and 2018
(Amounts in thousands, except share amounts)

	Common Stock							
	Shares	Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Deferred Compensation	Total Equity
Balance, October 31, 2017	5,791,068	$ 1	$ 1,045,203	$ (943,533)	$ (415)	$ (280)	$ 280	$ 101,256
Sale of common stock, net of fees	476,265	—	7,129	—	—	—	—	7,129
Exercise of warrants	216,309	—	3,326	—	—	—	—	3,326
Common stock issued, non-employee compensation	13,226	—	282	—	—	—	—	282
Share based compensation	—	—	3,238	—	—	—	—	3,238
Taxes paid upon vesting of restricted stock awards, net of stock issued under benefit plans	(14,913)	—	(660)	—	—	—	—	(660)
Series C convertible preferred stock conversions	1,496,368	—	20,220	—	—	—	—	20,220
Preferred dividends — Series B	—	—	(3,200)	—	—	—	—	(3,200)
Series D Preferred stock redemption accretion	—	—	(2,075)	—	—	—	—	(2,075)
Effect of foreign currency translation	—	—	—	—	12	—	—	12
Adjustment for deferred compensation	(5,637)	—	—	—	—	(83)	83	—
Net loss	—	—	—	(47,334)	—	—	—	(47,334)
Balance, October 31, 2018	7,972,686	$ 1	$ 1,073,463	$ (990,867)	$ (403)	$ (363)	$ 363	$ 82,194
Sale of common stock, net of fees	119,128,677	12	43,654	—	—	—	—	43,666
Common stock issued, non-employee compensation	29,454	—	102	—	—	—	—	102
Share based compensation	—	—	2,804	—	—	—	—	2,804
Taxes paid upon vesting of restricted stock awards, net of stock issued under benefit plans	52,607	—	(200)	—	—	—	—	(200)
Series A Warrant Exchange	500,000	—	—	—	—	—	—	-
Series C convertible preferred stock conversions	3,914,218	—	15,489	—	—	—	—	15,489
Series C convertible preferred stock adjustment for beneficial conversion feature	—	—	6,586	—	—	—	—	6,586
Series C convertible stock redemption value adjustments	—	—	(14,597)					(14,597)
Preferred dividends — Series B	—	—	(3,231)	—	—	—	—	(3,231)
Series D convertible preferred stock conversions	62,040,496	6	31,177	—	—	—	—	31,183
Series D Preferred stock redemption accretion	—	—	(3,793)	—	—	—	—	(3,793)
Impact of the adoption of Topic 606	—	—	—	(6,654)	—	—	—	(6,654)
Effect of foreign currency translation	—	—	—	—	(244)	—	—	(244)
Adjustment for deferred compensation	(29,454)	—	—	—	—	(103)	103	-
Net loss	—	—	—	(77,568)	—	—	—	(77,568)
Balance, October 31, 2019	193,608,684	$ 19	$ 1,151,454	$ (1,075,089)	$ (647)	$ (466)	$ 466	$ 75,737
Sale of common stock, net of fees	86,307,932	9	171,902	—	—	—	—	171,911
Orion warrant exercises	14,696,320	1	37,059	—	—	—	—	37,060
Common stock issued, non-employee compensation	58,303	—	104	—	—	—	—	104
Taxes paid upon vesting of restricted stock awards, net of stock issued under benefit plans	49,434	—	(3)	—	—	—	—	(3)
Reclassification of value of share based compensation upon approval of authorized shares for grant	—	—	401	—	—	—	—	401
Share based compensation	—	—	1,868	—	—	—	—	1,868
Preferred dividends — Series B	—	—	(3,331)	—	—	—	—	(3,331)
Effect of foreign currency translation	—	—	—	—	(92)	—	—	(92)
Adjustment for deferred compensation	(13,915)	—	—	—	—	34	(34)	-
Net loss	—	—	—	(89,107)	—	—	—	(89,107)
Balance, October 31, 2020	294,706,758	$ 29	$ 1,359,454	$ (1,164,196)	$ (739)	$ (432)	$ 432	$ 194,548

See accompanying notes to consolidated financial statement

FUELCELL ENERGY, INC.
Consolidated Statements of Cash Flows
For the Years Ended October 31, 2020, 2019 and 2018
(Amounts in thousands)

	2020	2019	2018
Cash flows from operating activities:			
Net loss	$ (89,107)	$ (77,568)	$ (47,334)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities:			
Share-based compensation	1,868	2,804	3,238
Depreciation and amortization	19,377	12,353	8,648
Change in fair value of common stock warrant liability	37,086	—	—
Gain on extinguishment of financing obligation	(1,801)	—	—
Gain on Series 1 preferred stock extinguishment	(475)	—	—
Non-cash interest expense on preferred stock and debt obligations	7,570	6,097	5,957
Deferred income taxes	—	—	(3,035)
Operating lease costs	1,451	—	—
Operating lease payments	(1,016)	—	—
Impairment of property, plant and equipment and project assets	2,417	20,360	—
Unrealized loss on derivative contract	314	624	—
Other non-cash transactions	674	511	597
Decrease (increase) in operating assets:			
Accounts receivable	(6,271)	4,842	24,169
Unbilled receivables	(5,590)	(4,488)	24,562
Inventories	(2,111)	(6,427)	31,714
Other assets	(1,297)	2,120	(2,264)
Increase (decrease) in operating liabilities:			
Accounts payable	(7,059)	(173)	(19,846)
Accrued liabilities	5,465	2,377	(11,345)
Deferred revenue	1,724	5,996	1,261
Net cash (used in) provided by operating activities	**(36,781)**	**(30,572)**	**16,322**
Cash flows from investing activities:			
Capital expenditures	(382)	(2,151)	(10,028)
Project asset expenditures	(31,527)	(31,675)	(41,232)
Asset acquisition	(611)	(35,474)	—
Net cash used in investing activities	**(32,520)**	**(69,300)**	**(51,260)**
Cash flows from financing activities:			
Repayment of debt	(30,117)	(48,395)	(16,616)
Proceeds from debt, net of debt discount	87,757	69,596	13,091
Common stock issued for stock plans and related expenses	5	23	—
Payment of deferred financing costs	(2,697)	(3,302)	(352)
Net proceeds from issuance of Series D preferred shares	—	—	25,317
Proceeds from sale of common stock and warrant exercises, net	173,194	43,573	10,455
Payment of preferred dividends and return of capital	(6,475)	(1,840)	(4,178)
Net cash provided by financing activities	**221,667**	**59,655**	**27,717**
Effects on cash from changes in foreign currency rates	(92)	(244)	12
Net increase (decrease) in cash, cash equivalents, and restricted cash	**152,274**	**(40,461)**	**(7,209)**
Cash, cash equivalents, and restricted cash-beginning of year	39,778	80,239	87,448
Cash, cash equivalents, and restricted cash-end of year	**$ 192,052**	**$ 39,778**	**$ 80,239**

See accompanying notes to the consolidated financial statements.

Note 1. Nature of Business, Basis of Presentation and Significant Accounting Policies

Nature of Business and Basis of Presentation

FuelCell Energy, Inc., together with its subsidiaries (the "Company", "FuelCell Energy", "we", "us", or "our"), is a leading integrated fuel cell company. Founded in 1969, FuelCell Energy is a manufacturer of fuel cell clean power platforms delivering power and thermal energy and capable of delivering hydrogen, long-duration hydrogen energy storage, and carbon capture applications. We develop turn-key distributed power generation solutions and operate and provide comprehensive service for the life of the power plant. FuelCell Energy is focused on growing its global presence in delivering environmentally responsible distributed baseload power solutions through its proprietary, molten-carbonate and solid oxide fuel cell technologies. We are working to expand the proprietary technologies that we have developed over the past five decades into new product platforms, applications, markets and geographies. Our mission and purpose is to utilize our proprietary, state-of-the-art fuel cell platforms to enable a world empowered by clean energy and contribute to climate change mitigation. FuelCell Energy's platforms are capable of reducing the global environmental footprint of baseload power generation by providing environmentally responsible solutions for reliable electrical power, distributed hydrogen, electrolysis, long-duration hydrogen-based energy storage, Carbon Capture, Microgrid applications, hot water, steam, and chilling. Our customer base includes utility companies, municipalities, universities, hospitals, government entities/military bases and a variety of industrial and commercial enterprises. Our leading geographic markets are currently the United States and South Korea, and we are pursuing opportunities in other countries around the world.

The consolidated financial statements include our accounts and those of our wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated.

On May 8, 2019, the Company effected a 1-for-12 reverse stock split, reducing the number of the Company's common shares outstanding on that date from 183,411,230 shares to 15,284,269 shares. The number of authorized shares of common stock remained unchanged at 225,000,000 shares and the number of authorized shares of preferred stock remained unchanged at 250,000 shares. Additionally, the conversion rate of our Series B Preferred Stock (as defined elsewhere herein), the conversion price of our Series C Preferred Stock and Series D Preferred Stock (each as defined elsewhere herein), the exchange price of the Series 1 Preferred Shares (as defined elsewhere herein), the exercise price of all then outstanding options and warrants, and the number of shares then-reserved for future issuance pursuant to our equity compensation plans were all adjusted proportionately in connection with the reverse stock split. All share and per share amounts, conversion prices, and exercise prices presented herein with respect to periods or dates prior to, or instruments in existence prior to, May 8, 2019 have been adjusted retroactively to reflect these changes.

Liquidity

Our principal sources of cash have been sales of our common stock through public equity offerings, proceeds from third party debt such as borrowings under our credit facilities, project financing and tax monetization transactions, proceeds from the sale of our projects as well as research and development and service and license agreements with third parties. We have utilized this cash to develop and construct power plants, develop Advanced Technologies, pay down existing outstanding indebtedness, and meet our other cash and liquidity needs.

As of October 31, 2020, unrestricted cash and cash equivalents totaled $149.9 million compared to $9.4 million as of October 31, 2019.

Subsequent to the end of fiscal year 2020, in December 2020, the Company closed an underwritten offering of 25.0 million shares of the Company's common stock. Net proceeds to the Company were approximately $156.3 million after deducting underwriting discounts and commissions and other offering expenses. Proceeds from this offering have been utilized as follows:

- *Extinguishment of Senior Secured Debt*: On December 7, 2020, the Company paid $87.3 million to settle the outstanding principal, accrued but unpaid interest, prepayment premium, fees, costs and other expenses due and owing to the Orion Agent and the lenders under the Orion Facility and the Orion Credit Agreement (in each case as defined elsewhere herein) and related loan documents. Concurrently, the Orion Agent released all of the collateral from the liens granted under the security documents associated with the Orion Facility, which included the release of $11.2 million of restricted cash to the Company.

- *Payment Under the Series 1 Preferred Shares*: On December 17, 2020, the Company paid all amounts owed to Enbridge Inc. ("Enbridge") under the Series 1 Preferred Shares (as defined elsewhere herein), totaling Cdn. $27.4 million, or approximately $21.5 million in U.S. dollars. Following such payment, Enbridge surrendered its shares in FCE Ltd. (as defined elsewhere herein) and the related Guarantee and January 2020 Letter Agreement (in each case, as defined elsewhere herein) were terminated.
- *Working Capital:* The remaining $47.5 million of proceeds from the offering is unrestricted cash and may be used to accelerate the development and commercialization of our solid oxide platform and for project development, project financing, working capital support and other general corporate purposes.

We believe that our unrestricted cash and cash equivalents, expected receipts from our contracted backlog, and release of short-term restricted cash less expected disbursements over the next twelve months will be sufficient to allow the Company to meet its obligations for at least one year from the date of issuance of these financial statements.

To date, we have not achieved profitable operations or sustained positive cash flow from operations. The Company's future liquidity will depend on its ability to (i) timely complete current projects in process within budget, (ii) increase cash flows from its generation portfolio, including by meeting conditions required to timely commence operation of new projects, operating its generation portfolio in compliance with minimum performance guarantees and operating its generation portfolio in accordance with revenue expectations, (iii) obtain financing for project construction, (iv) obtain permanent financing for its projects once constructed, (v) increase order and contract volumes, which would lead to additional product sales, services agreements and generation revenues, (vi) obtain funding for and receive payment for research and development under current and future Advanced Technologies contracts, (vii) implement the cost reductions necessary to achieve profitable operations, (viii) manage working capital and the Company's unrestricted cash balance and (ix) access the capital markets to raise funds through the sale of equity securities, convertible notes, and other equity-linked instruments, all of which will require an increase in authorized shares, and/or other debt instruments.

Our business model requires substantial outside financing arrangements and satisfaction of the conditions of such financing arrangements to construct and deploy our projects and facilitate the growth of our business. We have obtained financing through the debt and equity markets during and subsequent to the fiscal year ended October 31, 2020. In future periods, the Company expects to seek lower-cost long-term debt and tax equity (e.g., sale-leaseback and partnership transactions) for its project asset portfolio as these projects commence commercial operations. The proceeds of any such financing, if obtained, may allow the Company to fund other projects. We may also seek to obtain additional financing in both the debt and equity markets in the future. If financing is not available to us on acceptable terms if and when needed, or on terms acceptable to us or our lenders, if we do not satisfy the conditions of our financing arrangements, if we spend more than the financing approved for projects, if project costs exceed an amount that the Company can finance, or if we do not generate sufficient revenues or obtain capital sufficient for our corporate needs, we may be required to reduce or slow planned spending, reduce staffing, sell assets, seek alternative financing and take other measures, any of which could have a material adverse effect on our financial condition and operations.

As of December 31, 2020, we had 15,093,242 shares of common stock available for issuance, excluding treasury stock, of which 5,185,674 shares were reserved for issuance under various warrants and equity awards, upon conversion of preferred stock, and under our employee stock purchase and equity incentive plans. The limited number of shares of our common stock available for issuance will limit our ability to raise capital in the equity markets and satisfy obligations with shares instead of cash, which could adversely affect our business and operations. We plan to seek stockholder approval to increase the number of shares of common stock we are authorized to issue, but such approval may not be obtained.

Significant Accounting Policies

Cash and Cash Equivalents and Restricted Cash

All cash equivalents consist of investments in money market funds with original maturities of three months or less at the date of acquisition. We place our temporary cash investments with high credit quality financial institutions.

Inventories and Advance Payments to Vendors

Inventories consist principally of raw materials and work-in-process. Cost is determined using the first-in, first-out cost method. In certain circumstances, we will make advance payments to vendors for future inventory deliveries. These advance payments are recorded as Other current assets on the Consolidated Balance Sheets.

Inventories are reviewed to determine if valuation allowances are required for obsolescence (excess, obsolete, and slow-moving inventory). This review includes analyzing inventory levels of individual parts considering the current design of our products and production requirements as well as the expected inventory requirements for maintenance on installed power platforms.

Project Assets

Project assets consist of capitalized costs for fuel cell projects in various stages of development, including those projects with respect to which we have entered into power purchase agreements ("PPAs"), those projects with respect to which we expect to secure long-term contracts and those projects retained by the Company under a merchant model. Such development costs are generally incurred prior to entering into a definitive sales or long-term financing agreement for the project. Project assets also includes capitalized costs for fuel cell projects which are the subject of a sale-leaseback transaction with PNC Energy Capital, LLC ("PNC") or Crestmark Equipment Finance, a division of MetaBank ("Crestmark"). Project asset costs include costs for developing and constructing a complete turn-key fuel cell project. Development costs can include legal, consulting, permitting, interconnect, and other similar costs. To the extent we enter into a definitive sales agreement, we expense project assets to cost of sales after the respective project asset is sold to a customer and all revenue recognition criteria have been met.

Property, Plant and Equipment

Property, plant and equipment are stated at cost, less accumulated depreciation which is recorded based on the straight-line method over the estimated useful lives of the respective assets. Leasehold improvements are amortized on the straight-line method over the shorter of the estimated useful lives of the assets or the term of the lease. When property is sold or otherwise disposed of, the cost and related accumulated depreciation are removed from the accounts and any resulting gain or loss is reflected in operations for the period.

Goodwill and Indefinite-Lived Intangibles

Goodwill represents the excess of the aggregate purchase price over the fair value of the net assets acquired in a business combination and is reviewed for impairment at least annually. The intangible asset represents indefinite-lived in-process research and development for cumulative research and development efforts associated with the development of Solid Oxide Fuel Cell stationary power generation and is also reviewed at least annually for impairment.

Accounting Standards Codification Topic 350, "Intangibles - Goodwill and Other" ("ASC 350") permits the assessment of qualitative factors to determine whether events and circumstances lead to the conclusion that it is necessary to perform the goodwill impairment test required under ASC 350.

The Company completed its annual impairment analysis of goodwill and the in-process research & development assets ("IPR&D") as of July 31, 2020 and 2019. The goodwill and IPR&D asset are both held by the Company's Versa Power Systems, Inc. ("Versa") reporting unit. Goodwill and the IPR&D asset are also reviewed for possible impairment whenever changes in conditions indicate that the fair value of a reporting unit or IPR&D asset is more likely than not below its carrying value. No impairment charges were recorded during the fiscal years ended October 31, 2020, 2019 and 2018.

Impairment of Long-Lived Assets (including Project Assets)

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. If events or changes in circumstances indicate that the carrying amount of the asset group may not be recoverable, we compare the carrying amount of an asset group to future undiscounted net cash flows, excluding interest costs, expected to be generated by the asset group and their ultimate disposition. If the sum of the undiscounted cash flows is less than the carrying value, the impairment to be recognized is measured by the amount by which the carrying amount of the asset group exceeds the fair value of the asset group.

Revenue Recognition

The Company adopted Accounting Standards Codification ("ASC") Topic 606: *Revenue from Contracts with Customers* ("Topic 606") effective as of November 1, 2018. Under Topic 606: *Revenue from Contracts with Customers,* the amount of revenue recognized for any goods or services reflects the consideration that the Company expects to be entitled to receive in exchange for those goods and services. To achieve this core principle, the Company applies the following five-step approach: (1) identify the contract with the customer; (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to performance obligations in the contract; and (5) recognize revenue when or as a performance obligation is satisfied.

A contract is accounted for when there has been approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable. Performance obligations under a contract are identified based on the goods or services that will be transferred to the customer that are both capable of being distinct and are distinct in the context of the contract. In certain instances, the Company has concluded distinct goods or services should be accounted for as a single performance obligation that is a series of distinct goods or services that have the same pattern of transfer to the customer. To the extent a contract includes multiple promised goods or services, the Company must apply judgment to determine whether the customer can benefit from the goods or services either on their own or together with other resources that are readily available to the customer (the goods or services are distinct) and if the promise to transfer the goods or services to the customer is separately identifiable from other promises in the contract (the goods or services are distinct in the context of the contract). If these criteria are not met, the promised services are accounted for as a single performance obligation. The transaction price is determined based on the consideration that the Company will be entitled to in exchange for transferring goods or services to the customer. To the extent the transaction price includes variable consideration, the Company estimates the amount of variable consideration that should be included in the transaction price, generally utilizing the expected value method. Determining the transaction price requires judgment. If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each performance obligation based on a relative standalone selling price basis. Standalone selling price is determined by the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, the Company estimates the standalone selling price by taking into account available information such as market conditions and internally approved pricing guidelines related to the performance obligations. Performance obligations are satisfied either over time or at a point in time as discussed in further detail below. In addition, the Company's contracts with customers generally do not include significant financing components or non-cash consideration. The Company has elected practical expedients in the accounting guidance that allow for revenue to be recorded in the amount that the Company has a right to invoice, if that amount corresponds directly with the value to the customer of the Company's performance to date, and that allow the Company not to disclose related unsatisfied performance obligations. The Company records any amounts that are billed to customers in excess of revenue recognized as deferred revenue and revenue recognized in excess of amounts billed to customers as unbilled receivables.

Revenue streams are classified as follows:

Product. Includes the sale of completed project assets, sale and installation of fuel cell power platforms including site engineering and construction services, and the sale of modules, balance of plant ("BOP") components and spare parts to customers.

Service. Includes performance under long-term service agreements for power platforms owned by third parties.

License and royalty. Includes license fees and royalty income from the licensure of intellectual property.

Generation. Includes the sale of electricity under PPAs and utility tariffs from project assets retained by the Company. This also includes revenue received from the sale of other value streams from these assets including the sale of heat, steam, capacity and renewable energy credits.

Advanced Technologies. Includes revenue from customer-sponsored and government-sponsored Advanced Technologies projects.

See below for discussion of revenue recognition under Topic 606 by disaggregated revenue stream.

Completed project assets

Contracts for the sale of completed project assets include the sale of the project asset, the assignment of the service agreement, and the assignment of the PPA. The relative stand-alone selling price is estimated and is used as the basis for allocation of the contract consideration. Revenue is recognized upon the satisfaction of the performance obligations, which includes the transfer of control of the project asset to the customer, which is when the contract is signed and the PPA is assigned to the customer. See below for further discussion regarding revenue recognition for service agreements. The revenue recognition for completed project assets under Topic 606 is consistent with treatment under ASC 605, *Revenue Recognition*.

Contractual payments related to the sale of the project asset and assignment of the PPA are generally received up-front. Payment terms for service agreements are generally ratable over the term of the agreement.

Service agreements

Service agreements represent a single performance obligation whereby the Company performs all required maintenance and monitoring functions, including replacement of modules, to ensure the power platform(s) under the service agreement generate a minimum power output. To the extent the power platform(s) under service agreements do not achieve the minimum power output, certain service agreements include a performance guarantee penalty. Performance guarantee penalties represent variable consideration, which is estimated for each service agreement based on past experience, using the expected value method. The net consideration for each service agreement is recognized using costs incurred to date relative to total estimated costs at completion to measure progress.

The Company reviews its cost estimates on service agreements on a quarterly basis and records any changes in estimates on a cumulative catch-up basis.

Loss accruals for service agreements are recognized to the extent that the estimated remaining costs to satisfy the performance obligation exceed the estimated remaining unrecognized net consideration. Estimated losses are recognized in the period in which losses are identified.

Payment terms for service agreements are generally ratable over the term of the agreement.

Advanced Technologies contracts

Advanced Technologies contracts include the promise to perform research and development services and, as such, this represents one performance obligation. Revenue from most government sponsored Advanced Technologies projects is recognized as direct costs are incurred plus allowable overhead less cost share requirements, if any. Revenue is only recognized to the extent the contracts are funded. Revenue from previous fixed price Advanced Technologies projects is recognized using the cost to cost input method. Revenue recognition for research performed under the EMRE Joint Development Agreement (as defined elsewhere herein) also falls into the practical expedient category where revenue is recorded consistent with the amounts invoiced.

Payments are based on costs incurred for government sponsored Advanced Technologies projects and upon completion of milestones for previous fixed-price Advanced Technologies projects. Payments under the EMRE Joint Development Agreement are based on time spent and material costs incurred.

License agreements

The Company entered into the License Agreements (as defined elsewhere herein) with POSCO Energy Co., Ltd. (“POSCO Energy”) in 2007, 2009 and 2012. These agreements were terminated by the Company in June 2020, which is subject to dispute by POSCO Energy (for more information, refer to Note 22. “Commitments and Contingencies”).

Prior to the date of termination, in connection with the adoption of Topic 606, several performance obligations were identified under the License Agreements, including previously satisfied performance obligations for the transfer of licensed intellectual property, two performance obligations for specified upgrades of the previously licensed

intellectual property, a performance obligation to deliver unspecified upgrades to the previously licensed intellectual property on a when-and-if-available basis, and a performance obligation to provide technical support for previously delivered intellectual property.

- The performance obligations related to the specified upgrades would have been satisfied and the related consideration recognized as revenue upon the delivery of the specified upgrades. The Company did not recognize any revenue in fiscal years 2019 and 2020 related to specified upgrades.
- The performance obligations for unspecified upgrades and technical support were being recognized on a straight-line basis over the license term on the basis that this represented the method that best depicted the progress towards completion of the related performance obligations. The Company recognized revenue totaling $0.8 million and $1.1 million for the years ended October 31, 2020 and 2019, respectively, related to unspecified upgrades.

All fixed consideration for the License Agreements was previously collected. The Company has discontinued revenue recognition of the deferred license revenue related to the terminated POSCO Energy License Agreements given the pending arbitration and will continue to evaluate this deferred revenue in future periods.

The Company entered into the EMRE Joint Development Agreement on November 5, 2019. The Company recorded license revenue of $4.0 million in association with this agreement for the fiscal year ended October 31, 2020 which revenue was considered at a point-in-time upon the signing of the contract as the license is considered functional intellectual property because it has standalone functionality, the customer can use this intellectual property as it exists at a point in time and no further services are required from the Company.

Effective as of June 11, 2019, the Company entered into a License Agreement with EMRE (the "EMRE License Agreement"), pursuant to which the Company agreed, subject to the terms of the EMRE License Agreement, to grant EMRE and its affiliates a non-exclusive, worldwide, fully paid, perpetual, irrevocable, non-transferrable license and right to use the Company's patents, data, know-how, improvements, equipment designs, methods, processes and the like to the extent it is useful to research, develop, and commercially exploit Carbonate Fuel Cells in applications in which the fuel cells concentrate carbon dioxide from industrial and power sources and for any other purpose attendant thereto or associated therewith. Such right and license is sublicensable to third parties performing work for or with EMRE or its affiliates, but shall not otherwise be sublicensable. Upon the payment by EMRE to the Company of $10.0 million, which was received by the Company on June 14, 2019, EMRE and its affiliates were fully vested in the rights and licenses granted in the EMRE License Agreement, and any further obligations under the EMRE License Agreement are considered by the Company to be minimal. As a result, the total contract value of $10.0 million was recorded as revenue for the year ended October 31, 2019.

Generation revenue

For certain project assets where customers purchase electricity from the Company under PPAs, the Company has determined that these agreements should be accounted for as operating leases pursuant to ASC 842, *Leases*. Revenue is recognized when electricity has been delivered based on the amount of electricity delivered at rates specified under the contracts, assuming all other revenue recognition criteria are met. Generation sales, to the extent the related PPAs are within the scope of Topic 606, are recognized as revenue in the period in which the Company provides the electricity and completes the performance obligation, which is the same as the monthly amount billed to customers.

Revenue Recognition Policy Prior to the Implementation of Topic 606

Prior to the implementation of Topic 606, the revenue recognition policy for the fiscal year ended October 31, 2018 was as follows:

The Company earned revenue from (i) the sale and installation of fuel cell power platforms including site engineering and construction services, (ii) the sale of completed project assets, (iii) equipment only sales (modules, BOP, component part kits and spare parts to customers), (iv) performance under long-term service agreements, (v) the sale of electricity and other value streams under PPAs and utility tariffs from project assets retained by the Company, (vi) license fees and royalty income from manufacturing and technology transfer agreements, and (vii) government and customer-sponsored Advanced Technologies projects.

For customer contracts where the Company was responsible for the supply of equipment and site construction (full turn-key construction project) and had adequate cost history and estimating experience, and with respect to which management believed it could reasonably estimate total contract costs, revenue was recognized under the percentage

of completion method of accounting. The use of percentage of completion accounting requires significant judgment relative to estimating total contract costs, including assumptions relative to the length of time to complete the contract, the nature and complexity of the work to be performed and total project costs. Our estimates were based upon the professional knowledge and experience of our engineers, project managers and other personnel, who reviewed each long-term contract on a quarterly basis to assess the contract's schedule, performance, technical matters and estimated cost at completion. When changes in estimated contract costs were identified, such revisions could result in current period adjustments to operations applicable to performance in prior periods. Revenues were recognized based on the percentage of the contract value that had incurred costs to date as compared to estimated total contract costs, after giving effect to estimates of costs to complete based on the most recent information. For customer contracts for new or significantly customized products, where management did not believe it had the ability to reasonably estimate total contract costs, revenue was recognized using the completed contract method and therefore all revenue and costs for the contract were deferred and not recognized until installation and acceptance of the power plant was complete. We recognized anticipated contract losses as soon as they became known and estimable. Actual results varied from initial estimates and estimates were updated as conditions changed.

Revenue from equipment only sales where the Company did not have the obligations associated with overall construction of the project (modules, BOPs, fuel cell kits and spare parts sales) was recognized upon shipment or title transfer under the terms of the customer contract. Terms for certain contracts provided for a transfer of title and risk of loss to our customers at our factory locations and certain key suppliers upon completion of our contractual requirement to produce products and prepare the products for shipment.

Revenue from service agreements was generally recorded ratably over the term of the service agreement, as the Company's performance of routine monitoring and maintenance under these service agreements was generally expected to be incurred on a straight-line basis. For service agreements where the Company expected to have module exchanges at some point during the term (generally service agreements in excess of five years), the costs of performance were not expected to be incurred on a straight-line basis, and therefore, a portion of the initial contract value related to the module exchange(s) was deferred and was recognized upon such module replacement event(s).

The Company recognized license fees and other revenue over the term of the associated agreement. The Company recorded license fees and royalty income from POSCO Energy as a result of the License Agreements entered into in 2007, 2009 and 2012.

Under PPAs and project assets retained by the Company, revenue from the sale of electricity and other value streams were recognized as electricity was provided to customers. These revenues were classified as generation revenues.

Advanced Technologies contracts were entered into with both private industry and government entities. Revenue from most government sponsored Advanced Technologies projects was recognized as direct costs were incurred plus allowable overhead less cost share requirements, if any. Revenue from fixed price Advanced Technologies projects was recognized using percentage of completion accounting. Advanced Technologies programs were often multi-year projects or structured in phases with subsequent phases dependent on reaching certain milestones prior to additional funding being authorized. Government contracts were typically structured with cost-reimbursement and/or cost-shared type contracts or cooperative agreements. We were reimbursed for reasonable and allocable costs up to the reimbursement limits set by the contract or cooperative agreement, and on certain contracts we were reimbursed only a portion of the costs incurred.

Sale-Leaseback Accounting

The Company, through certain wholly-owned subsidiaries, has entered into sale-leaseback transactions for commissioned project assets where we have entered into a PPA with a customer who is both the site host and end user of the power. Due to the Company not meeting criteria to account for the transfer of the project assets as a sale, sale accounting is precluded. Accordingly, the Company uses the financing method to account for these transactions.

Under the financing method of accounting for a sale-leaseback, the Company does not derecognize the project assets and does not recognize as revenue any of the sale proceeds received from the lessor that contractually constitutes payment to acquire the assets subject to these arrangements. Instead, the sale proceeds received are accounted for as financing obligations and leaseback payments made by the Company are allocated between interest expense and a reduction to the financing obligation. Interest on the financing obligation is calculated using the Company's incremental borrowing rate at the inception of the arrangement on the outstanding financing obligation. While we receive financing for the related power plant asset, we have not recognized revenue on the sale-leaseback transactions.

Instead, revenue is recognized with respect to the related PPAs in accordance with the Company's policies for recognizing generation revenues.

Service Expense Recognition

We warranty our products for a specific period of time against manufacturing or performance defects. Our U.S. warranty is generally limited to a term of 15 months after shipment or 12 months after acceptance of our products. We accrue for estimated future warranty costs based on historical experience. We also provide for a specific accrual if there is a known issue requiring repair during the warranty period. Estimates used to record warranty accruals are updated as we gain further operating experience.

In addition to the standard product warranty, we have entered into service agreements with certain customers to provide monitoring, maintenance and repair services for fuel cell power platforms. Under the terms of these service agreements, the power platform must meet a minimum operating output during the term. If the minimum output falls below the contract requirement, we may be subject to performance penalties or may be required to repair and/or replace the customer's fuel cell module.

The Company records loss accruals for service agreements when the estimated cost of future module exchanges and maintenance and monitoring activities exceeds the remaining unrecognized contract value. Estimates for future costs on service agreements are determined by a number of factors including the estimated remaining life of the module, used replacement modules available and future operating plans for the power platform. Our estimates are performed on a contract by contract basis and include cost assumptions based on what we anticipate the service requirements will be to fulfill obligations for each contract.

At the end of our service agreements, customers are expected to either renew the service agreement or, based on the Company's rights to title of the module, the module will be returned to the Company as the platform is no longer being maintained.

Research and Development Costs

We perform both customer-sponsored research and development projects based on contractual agreements with customers and company-sponsored research and development projects.

Costs incurred for customer-sponsored projects include manufacturing and engineering labor, applicable overhead expenses, materials to build and test prototype units and other costs associated with customer-sponsored research and development contracts. Costs incurred for customer-sponsored projects are recorded as cost of Advanced Technologies contract revenues in the Consolidated Statements of Operations and Comprehensive Loss.

Costs incurred for company-sponsored research and development projects consist primarily of labor, overhead, materials to build and test prototype units and consulting fees. These costs are recorded as research and development expenses in the Consolidated Statements of Operations and Comprehensive Loss.

Concentrations

We contract with a concentrated number of customers for the sale of our products, for service agreement contracts and for Advanced Technologies contracts. For the years ended October 31, 2020, 2019 and 2018, our top customers accounted for 86%, 81% and 88%, respectively, of our total annual consolidated revenue.

The percent of consolidated revenues from each customer for the years ended October 31, 2020, 2019 and 2018, respectively, are presented below.

	2020	2019	2018
ExxonMobil Research and Engineering Company (EMRE)	32%	40%	6%
UIL Holdings Corporation	18%	1%	2%
Connecticut Light and Power	17%	11%	—%
U.S. Department of Energy (DOE)	9%	6%	8%
Clearway Energy (formerly NRG Yield, Inc.)	6%	1%	15%
Pfizer, Inc.	4%	6%	4%
Dominion Bridgeport Fuel Cell, LLC (a)	—%	13%	3%
POSCO Energy	—%	3%	5%
Hanyang Industrial Development Co., Ltd. (HYD)	—%	—%	35%
AEP Onsite Partners, LLC	—%	—%	10%
Total	86%	81%	88%

(a) All of the outstanding membership interests in Dominion Bridgeport Fuel Cell, LLC were acquired by the Company on May 9, 2019. As a result of this acquisition, revenue is now (subsequent to the acquisition) recognized under the related PPA for electricity sales to Connecticut Light and Power.

Derivatives

We do not use derivatives for speculative or trading purposes. The Company has an interest rate swap that is adjusted to fair value on a quarterly basis. The fair value adjustment is based on Level 2 inputs including primarily the forward LIBOR curve available to swap dealers. The fair value methodology involves comparison of (i) the sum of the present value of all monthly variable rate payments based on a reset rate using the forward LIBOR curve and (ii) the sum of the present value of all monthly fixed rate payments on the notional amount which is equivalent to the outstanding principal amount of the loan. Refer to Note 14. “Debt” for further details.

Use of Estimates

The preparation of financial statements and related disclosures in conformity with accounting principles generally accepted in the U.S. (“GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses and the disclosure of contingent assets and liabilities. Estimates are used in accounting for, among other things, revenue recognition, lease right-of-use assets and liabilities, contract loss accruals, excess, slow-moving and obsolete inventories, product warranty accruals, loss accruals on service agreements, share-based compensation expense, allowance for doubtful accounts, depreciation and amortization, impairment of goodwill and in-process research and development intangible assets, impairment of long-lived assets (including project assets), and contingencies. Estimates and assumptions are reviewed periodically, and the effects of revisions are reflected in the consolidated financial statements in the period they are determined to be necessary. Due to the inherent uncertainty involved in making estimates, actual results in future periods may differ from those estimates.

Foreign Currency Translation

The translation of the financial statements of FCE Korea Ltd., FCES GmbH and Versa Power Systems Ltd. results in translation gains or losses, which are recorded in accumulated other comprehensive loss within stockholders’ equity.

Our Canadian subsidiary, FCE FuelCell Energy Ltd., is financially and operationally integrated and the functional currency is the U.S. dollar. We are also subject to foreign currency transaction gains and losses as certain transactions are denominated in foreign currencies. We recognized net foreign currency transaction gains (losses) of $0.2 million, $(0.1) million and $0.3 million for the years ended October 31, 2020, 2019 and 2018, respectively. These amounts have been included in Other income, net in the Consolidated Statements of Operations and Comprehensive Loss.

Recently Adopted Accounting Guidance

The Company adopted ASC 842, "Leases" ("Topic 842" or "ASC 842") on November 1, 2019. ASC 842, including all the related amendments subsequent to its issuance, supersedes the prior guidance for lease accounting and requires lessees to recognize a right-of-use ("ROU") asset representing the right to use an underlying asset and a lease liability representing the obligation to make lease payments over the lease term for substantially all leases, as well as disclose key quantitative and qualitative information about leasing arrangements. Upon adoption, the Company recognized an operating lease liability of approximately $10.3 million and corresponding operating lease ROU assets of approximately $10.1 million. There was no cumulative effect of the adoption recorded to accumulated deficit. There was no significant net effect on the Consolidated Statements of Operations and Comprehensive Loss. Refer to Note 13. "Leases" for additional information on the Company's adoption of ASC 842.

Recent Accounting Guidance Not Yet Effective

There is no recent accounting guidance not yet effective that is expected to have a material impact on the Company's financial statements when adopted.

Reclassifications

Certain amounts from the prior years have been reclassified to conform to the current year presentation.

Note 2. Revenue Recognition

Contract Balances

Contract assets as of October 31, 2020 and 2019 were $16.9 million and $11.3 million, respectively. The contract assets relate to the Company's rights to consideration for work completed but not billed. These amounts are included on a separate line item as Unbilled receivables, and balances expected to be billed later than one year from the balance sheet date are included within Other assets on the accompanying Consolidated Balance Sheets. The net change in contract assets represents amounts recognized as revenue offset by customer billings. For the years ended October 31, 2020 and 2019, a total of $5.9 million and $6.6 million, respectively, was transferred to accounts receivable from contract assets recognized at the beginning of the period and an additional adjustment was made to reduce contract assets as a result of the acquisition of the Bridgeport Fuel Cell Project (refer to Note 3. "Acquisition" for additional information).

Contract liabilities as of October 31, 2020 and 2019 were $41.9 million and $40.2 million, respectively. The contract liabilities relate to the advance billings to customers for services that will be recognized over time and in some instances for deferred revenue relating to license performance obligations that will be recognized at a future point in time. The Company has discontinued revenue recognition of the deferred license revenue related to the terminated POSCO Energy License Agreements given the pending arbitration and will continue to evaluate this deferred revenue in future periods. As of October 31, 2020, $22.2 million related to the terminated POSCO Energy License Agreements is included within Long-term deferred revenue on the accompanying Consolidated Balance Sheets. The net change in contract liabilities represents customer billings offset by revenue recognized.

Remaining Performance Obligations

Remaining performance obligations are the aggregate amount of total contract transaction price that is unsatisfied or partially unsatisfied. As of October 31, 2020, the Company's total remaining performance obligations for service agreements was $146.8 million, for license agreements was $22.2 million and for Advanced Technologies contracts was $49.2 million. Service revenue in periods in which there are no module replacements is expected to be relatively consistent from period to period, whereas module replacements will result in an increase in revenue when replacements occur.

Impacts of Adoption of Topic 606

The following table summarizes the impacts of Topic 606 on the Company's consolidated financial statements for the year ended October 31, 2019:

	For the Year Ended October 31, 2019		
	As reported	Adjustments	Balances without adoption of Topic 606
Total revenues	$ 60,752	$ 4,085	$ 64,837
Total cost of revenues	82,021	1,478	83,499
Gross loss	(21,269)	2,607	(18,662)
Administrative and selling expenses	31,874	-	31,874
Research and development expenses	13,786	-	13,786
Loss from operations	(66,929)	2,607	(64,322)
Interest expense	(10,623)	-	(10,623)
Other income, net	93	-	93
Loss before provision for income taxes	(77,459)	2,607	(74,852)
Provision for income taxes	(109)	-	(109)
Net loss	$ (77,568)	$ 2,607	$ (74,961)

The impact of Topic 606 on Accumulated Deficit were a $9.3 million decrease and a $6.6 million decrease on the Accumulated Deficit as of October 31, 2019 and November 1, 2018, respectively, and were primarily related to changes in Deferred revenue.

Note 3. Acquisition

On October 31, 2018, FuelCell Energy Finance, LLC ("FuelCell Finance") entered into a membership interest purchase agreement (the "Bridgeport Power Purchase Agreement") with Dominion Generation, Inc., amended on January 15, 2019 and May 9, 2019, pursuant to which FuelCell Finance purchased (on May 9, 2019) all of the outstanding membership interests in Dominion Bridgeport Fuel Cell, LLC (which is now known as Bridgeport Fuel Cell, LLC) ("BFC"). BFC owns a 14.9 MW fuel cell park in Bridgeport, Connecticut (the "Bridgeport Fuel Cell Project"), which the Company originally developed and constructed and has been operating for Dominion Generation, Inc. under a service agreement since December 2013.

On May 9, 2019, FuelCell Finance closed on the purchase of BFC for a total cash purchase price of $35.5 million, subject to a dollar-for-dollar post-closing adjustment to the extent that the closing working capital was greater or less than $1.0 million (the "BFC Purchase Price"). The Company recorded a working capital adjustment of $0.6 million, which has been included in the BFC Purchase Price. Certain balance sheet accounts as of the transaction date, May 9, 2019, relating to the Bridgeport Fuel Cell Project service agreement (accounts receivable of $2.7 million, unbilled receivables of $15.3 million and accrued performance guarantees of $1.3 million) were settled in connection with the acquisition and accordingly were included in the consideration for the acquisition.

The acquisition was funded by loans from Fifth Third Bank, Liberty Bank and Connecticut Green Bank (refer to Note 14. "Debt" for more information). The balance of the financing for the acquisition was funded by the $15 million of restricted cash on hand that was tied to the Bridgeport Fuel Cell Project and released at closing.

ASC Topic 805, "Business Combinations" states that a business is an integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing a return in the form of dividends, lower costs, or other economic benefits directly to investors or other owners, members, or participants. As the acquisition did not meet the definition of a business combination under ASC 805, the Company accounted for the transaction as an asset acquisition. In an asset acquisition, goodwill is not recognized, but rather any excess consideration transferred over the fair value of the net assets acquired is allocated on a relative fair value basis to the identifiable net assets. The Company determined the estimated fair values of net assets acquired using Level 3 inputs after review and consideration of relevant information, including discounted cash flows, quoted market prices and estimates made by management. The acquisition of BFC also included a PPA with Connecticut Light and Power that has favorable terms

relative to market, a land lease with the City of Bridgeport, and working capital. A pre-existing service agreement was determined to be priced similar to current market rates and no gain or loss was recorded. A total of $38.8 million of consideration was allocated to the fuel cell power platform installation which is recorded in Project Assets, a total of $12.3 million of consideration was allocated to the PPA which is recorded as an intangible asset, and the remaining consideration was allocated to the acquired working capital. The project asset and PPA intangible asset will be depreciated and amortized over their respective useful lives. Additionally, the land lease with the City of Bridgeport was not assigned any consideration due to its insignificant value.

The major depreciable assets of the Bridgeport Fuel Cell Project are the fuel cell modules, which are being depreciated over their estimated remaining useful lives of approximately one to seven years, and BOP assets, which are being depreciated over their estimated remaining useful lives of approximately 15 years. The intangible asset is being amortized over its remaining useful life of approximately 10 years.

Note 4. Restructuring

Fiscal Year 2020

There were no restructuring activities during the fiscal year ended October 31, 2020.

Fiscal Year 2019

On April 12, 2019, the Company undertook a reorganization, which included a reduction in force of 135 employees, which represented 30% of the Company's global workforce. The workforce was reduced at the North American production facility in Torrington, Connecticut, as well as at the corporate offices in Danbury, Connecticut and at remote locations. There was no restructuring expense recorded because no severance was provided in connection with the reduction in force.

Fiscal Year 2018

There were no restructuring activities during the fiscal year ended October 31, 2018.

Note 5. Accounts Receivable, Net and Unbilled Receivables

Accounts receivable, net and unbilled receivables as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Commercial customers:		
Amount billed	$ 7,329	$ 2,227
Unbilled receivables [1]	7,063	6,139
	14,392	8,366
Advanced Technologies (including U.S. Government[2]):		
Amount billed	2,234	1,065
Unbilled receivables	978	1,545
	3,212	2,610
Accounts receivable, net and unbilled receivables	$ 17,604	$ 10,976

(1) Additional long-term unbilled receivables of $8.9 million and $3.6 million are included within "Other Assets" as of October 31, 2020 and 2019, respectively.

(2) Total U.S. government accounts receivable, including unbilled receivables, outstanding as of October 31, 2020 and 2019 were $1.1 million and $1.2 million, respectively.

We bill customers for power platform and power platform component sales based on certain contractual milestones being reached. We bill service agreements based on the contract price and billing terms of the contracts. Generally, our Advanced Technologies contracts are billed based on actual revenues recorded, typically in the subsequent month. Some Advanced Technologies contracts are billed based on contractual milestones or costs incurred. Unbilled receivables relate to revenue recognized on customer contracts that have not been billed.

The Company had no allowance for doubtful accounts as of October 31, 2020 and 2019. Uncollectible accounts receivable are charged against the allowance for doubtful accounts when all collection efforts have failed and it is deemed unlikely that the amount will be recovered.

Note 6. Inventories

Inventories (short and long-term) as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Raw materials	$ 21,726	$ 25,466
Work-in-process [1]	38,231	31,228
Inventories	59,957	56,694
Inventories - short-term	(50,971)	(54,515)
Inventories - long-term [2]	$ 8,986	$ 2,179

(1) Work-in-process includes the standard components of inventory used to build the typical modules or module components that are intended to be used in future project asset construction or power platform orders or for use under the Company's service agreements. Included in work-in-process as of October 31, 2020 and 2019 was $19.6 million and $23.5 million, respectively, of completed standard components and modules.

(2) Long-term inventory includes modules that are contractually required to be segregated for use as replacement modules for specific project assets.

Raw materials consist mainly of various nickel powders and steels, various other components used in producing cell stacks and purchased components for BOP. Work-in-process inventory is comprised of material, labor, and overhead costs incurred to build fuel cell stacks and modules, which are subcomponents of a power platform.

The Company incurred costs associated with excess plant capacity and manufacturing variances of $8.4 million and $14.5 million for the years ended October 31, 2020 and 2019, respectively, which were included within product cost of revenues on the Consolidated Statements of Operations and Comprehensive Loss.

Note 7. Project Assets

Project assets as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019	Estimated Useful Life
Project Assets - Operating	$ 99,351	$ 75,075	5-20 years
Project Assets - Construction in progress	91,276	84,933	7-20 years
	190,627	160,008	
Accumulated depreciation	(28,818)	(15,893)	
Project Assets, net	$ 161,809	$ 144,115	

The estimated useful lives of these project assets are 20 years for BOP and site construction, and 4 to 7 years for modules. The Bridgeport Fuel Cell Project is being depreciated based on similar useful lives adjusted for time elapsed prior to the acquisition. Project assets as of October 31, 2020 and 2019 included eight and six, respectively, completed, commissioned installations generating power with respect to which the Company has a PPA with the end-user of power and site host with an aggregate value of $70.5 million and $59.2 million as of October 31, 2020 and 2019, respectively. Certain of these assets are the subject of sale-leaseback arrangements with PNC and Crestmark.

Project assets as of October 31, 2020 and 2019 also include installations with carrying values of $91.3 million and $84.9 million, respectively, which are being developed and constructed by the Company in connection with projects for which we have entered into PPAs or projects for which we expect to secure PPAs or otherwise recover the asset value and which have not yet been placed in service. Of this total, as of October 31, 2020 and 2019, approximately $4.8 million and $6.8 million, respectively, relates to projects for which we expect to secure long-term contracts and/or otherwise recover the asset value and which have not yet been placed in service.

In July 2020, the Company repurchased the equipment leased by the Company's subsidiary, UCI Fuel Cell, LLC, from PNC and terminated the lease agreement. Refer to Note 14. "Debt" for more information.

In the fourth quarter of fiscal year 2020, the Company reviewed the Triangle Street Project and as a result of output and revenue projections given then-current development plans, recorded an additional impairment charge of $2.4 million. The Triangle Street Project is used by the Company as a development platform for the Company's advanced applications. As a result, revenue generation is impacted by these activities.

During the year ended October 31, 2019, the Company recorded project asset impairment charges for (i) the Triangle Street Project and (ii) the Bolthouse Farms Project, which are further described as follows:

i. *Impairment charge for the Triangle Street Project:* In the fourth quarter of fiscal year 2019, management determined that it would not be able to secure a PPA with terms acceptable to the Company for the Triangle Street Project. Therefore, it was management's intention in fiscal year 2019 to operate the project under a merchant model for 5 years and use the project as a development platform for the Company's advanced applications. The project sells power through the Connecticut grid under wholesale tariff rates and Renewable Energy Credits (RECs) to market participants. As a result of management's decision to operate the project in this manner, an impairment charge of $14.4 million was recorded in the fourth quarter of fiscal year 2019. The amount of the impairment charge was determined by comparing the estimated discounted cash flows of the project and the expected residual value of the project to its carrying value.

ii. *Impairment charge for the Bolthouse Farms Project*: In the fourth quarter of fiscal year 2019, an impairment charge for the Bolthouse Farms Project was recorded as management decided to pursue termination of the PPA given regulatory changes impacting the future cost profile for the Company and Bolthouse Farms. Since it was considered probable that the PPA would be terminated, a $3.1 million impairment charge was recorded, which reflects the difference between the carrying value of the asset and the value of the components that were expected to be redeployed to other projects. This project was removed from the Company's backlog as of October 31, 2019 and the PPA was terminated.

The Company recorded a $0.5 million impairment of a project asset during the year ended October 31, 2018 due to the termination of a project. The impairments for fiscal year 2020 and fiscal year 2019 were recorded as "Cost of generation revenues" in the Consolidation Statements of Operations.

Depreciation expense for project assets was $12.9 million, $6.8 million and $4.1 million for the years ended October 31, 2020, 2019 and 2018, respectively.

Project construction costs incurred for long-term project assets are reported as investing activities in the Consolidated Statements of Cash Flows. The proceeds received from the sale and subsequent leaseback of project assets are classified as "Cash flows from financing activities" within the Consolidated Statements of Cash Flows and are classified as a financing obligation within "Current portion of long-term debt" and "Long-term debt and other liabilities" on the Consolidated Balance Sheets (refer to Note 14. "Debt" for more information).

Note 8. Property, Plant and Equipment

Property, plant and equipment as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019	Estimated Useful Life
Land	$ 524	$ 524	—
Building and improvements	20,395	20,395	10-26 years
Machinery, equipment and software	107,732	106,726	3-8 years
Furniture and fixtures	4,319	4,255	10 years
Construction in progress	402	1,144	—
	133,372	133,044	
Accumulated depreciation	(97,041)	(91,910)	
Property, plant and equipment, net	$ 36,331	$ 41,134	

During the year ended October 31, 2019, the Company recorded a $2.8 million impairment of construction in process assets related to automation equipment for use in manufacturing which was recorded in Cost of product sales in the Consolidated Statements of Operations and Comprehensive Loss. There were no impairments of property, plant and equipment for the years ended October 31, 2020 and October 31, 2018.

Depreciation expense for property, plant and equipment was $5.1 million, $4.9 million and $4.6 million for the years ended October 31, 2020, 2019 and 2018, respectively.

Note 9. Goodwill and Intangible Assets

As of October 31, 2020 and 2019, the Company had goodwill of $4.1 million and intangible assets of $20.0 million and $21.3 million, respectively, that were recorded in connection with the Company's 2012 acquisition of Versa Power Systems Inc. ("Versa") and the 2019 Bridgeport Fuel Cell Project acquisition.

The Versa acquisition intangible asset represents indefinite-lived IPR&D for cumulative research and development efforts associated with the development of Solid Oxide Fuel Cell stationary power generation. The Company completed its annual impairment analysis of goodwill and IPR&D assets as of July 31, 2020. The Company performed a qualitative analysis for fiscal years 2020, 2019 and 2018 and determined that there was no impairment of goodwill or the indefinite-lived intangible asset.

Amortization expense for the Bridgeport Fuel Cell Project-related intangible asset for the years ended October 31, 2020 and 2019 was $1.3 million and $0.6 million, respectively.

The following tables summarize the Company's intangible assets as of October 31, 2020 and 2019 (in thousands):

As of October 31, 2020	Gross Amount	Accumulated Amortization	Net Amount
In-Process Research and Development	$ 9,592	—	$ 9,592
Bridgeport Power Purchase Agreement (PPA)	12,320	(1,945)	10,375
Total	21,912	(1,945)	19,967

As of October 31, 2019	Gross Amount	Accumulated Amortization	Net Amount
In-Process Research and Development	$ 9,592	—	$ 9,592
Bridgeport Power Purchase Agreement (PPA)	12,320	(648)	11,672
Total	21,912	(648)	21,264

Amortization expense is recorded on a straight-line basis and future amortization expense will be $1.3 million per year until the Bridgeport PPA is fully amortized.

Note 10. Other Current Assets

Other current assets as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Advance payments to vendors [1]	$ 1,954	$ 1,899
Prepaid expenses and other [2]	4,352	4,022
Other current assets	$ 6,306	$ 5,921

(1) Advance payments to vendors relate to payments for inventory purchases ahead of receipt.
(2) Primarily relates to other prepaid vendor expenses including insurance, rent, and as of October 31, 2019 only, lease payments.

Note 11. Other Assets

Other assets as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Long-term stack residual value [1]	$ 890	$ 987
Long-term unbilled receivables [2]	8,856	3,588
Other [3]	5,593	4,914
Other assets	$ 15,339	$ 9,489

(1) Relates to estimated residual value for module exchanges performed under the Company's service agreements where the useful life extends beyond the contractual term of the service agreement and the Company obtains title for the module from the customer upon expiration or non-renewal of the service agreement. If the Company does not obtain rights to title from the customer, the full cost of the module is expensed at the time of the module exchange.
(2) Represents unbilled receivables that relate to revenue recognized on customer contracts that will be billed in future periods in excess of 12 months from the balance sheet date.
(3) The Company entered into an agreement with one of its customers on June 29, 2016 which includes payments for the purchase of the customer's power platforms at the end of the term of the agreement. The fee is payable in installments over the term of the agreement and the total paid as of October 31, 2020 and 2019 was $2.4 million and $2.3 million, respectively. Also included within "Other" are long-term security deposits and prepaid withholding taxes on deferred revenue as of October 31, 2020 and 2019.

Note 12. Accrued Liabilities

Accrued liabilities as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Accrued payroll and employee benefits	$ 4,461	$ 2,282
Accrued product warranty cost [1]	97	144
Accrued service agreement and PPA costs [2]	7,037	4,047
Accrued legal, taxes, professional and other	4,086	4,979
Accrued liabilities	$ 15,681	$ 11,452

(1) Activity in the accrued product warranty cost represents reduction related to actual warranty activity as contracts progress through the warranty period. Product warranty expense for each of the years ended October 31, 2020 and 2019 was $0.1 million.
(2) Accrued service agreement costs represent loss accruals on service contracts of $5.5 million as of October 31, 2020, which increased from $3.3 million as of October 31, 2019. The increase is the result of a change in the timing of future module replacements. The accruals for performance guarantees on service agreements and PPAs increased from $0.8 million as of October 31, 2019 to $1.4 million as of October 31, 2020.

Note 13. Leases

The Company adopted ASC 842 and its related amendments (collectively, the "New Lease Accounting Standard") effective November 1, 2019 and elected the modified retrospective approach in which results and disclosures for periods before November 1, 2019 were not adjusted for the new standard and the cumulative effect of the change in accounting, if applicable, is recognized through accumulated deficit at the date of adoption.

The New Lease Accounting Standard establishes a right-of-use (ROU) model that requires a lessee to record a ROU asset and a lease liability on the Consolidated Balance Sheets for all leases. Leases are classified as either finance or operating, with classification affecting the pattern of expense recognition in the consolidated statement of operations.

The New Lease Accounting Standard provides entities with several practical expedient elections. Among them, the Company elected the package of practical expedients that permits the Company to not reassess prior conclusions related to its leasing arrangements, lease classifications and initial direct costs. In addition, the Company has elected the practical expedients to not separate lease and non-lease components, to use hindsight in determining the lease terms and impairment of ROU assets, and to not apply the New Lease Accounting Standard's recognition requirements to short-term leases with a term of 12 months or less.

The adoption of the New Lease Accounting Standard did not have a material effect on the Company's Consolidated Statements of Operations and Comprehensive Loss or Consolidated Statement of Cash Flows. Upon adoption, the Company recorded a $10.3 million operating lease ROU asset and a $10.1 million operating lease liability. The adoption of the New Lease Accounting Standard had no impact on accumulated deficit.

The Company enters into operating and finance lease agreements for the use of real estate, vehicles, information technology equipment, and certain other equipment. We determine if an arrangement contains a lease at inception, which is the date on which the terms of the contract are agreed to and the agreement creates enforceable rights and obligations. The impacts of accounting for operating leases are included in Operating lease right-of-use assets, Operating lease liabilities, and Long-term operating lease liabilities in the Company's Consolidated Balance Sheets. Finance leases are not considered significant to the Company's Consolidated Balance Sheets or Consolidated Statements of Operations and Comprehensive Loss. Finance lease ROU assets at October 31, 2020 of $0.04 million are included in Property, plant and equipment, net in the Company's Consolidated Balance Sheets. Finance lease liabilities at October 31, 2020 of $0.04 million are included in Current portion of long-term debt and Long-term debt and other liabilities in the Company's Consolidated Balance Sheets.

ROU assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the present value of the Company's obligation to make lease payments arising from the lease over the lease term at the commencement date of the lease (or November 1, 2019 for leases existing upon the adoption of ASC 842). As most of the Company's leases do not provide an implicit rate, the Company estimated the incremental borrowing rate based on the information available at the date of adoption in determining the present value of lease payments and used the implicit rate when readily determinable. The Company determined incremental borrowing rates through market sources for secured borrowings including relevant industry rates. The Company's operating lease ROU assets also include any lease pre-payments and exclude lease incentives. Certain of the Company's leases include variable payments, which may vary based upon changes in facts or circumstances after the start of the lease. The Company excludes variable payments from lease ROU assets and lease liabilities, to the extent not considered in-substance fixed, and instead, expenses variable payments as incurred. Variable lease expense and lease expense for short term contracts are not material components of lease expense. The Company's leases generally have remaining lease terms of 1 to 26 years, some of which include options to extend leases. The exercise of lease renewal options is at the Company's sole discretion and the Company's lease ROU assets and liabilities reflect only the options the Company is reasonably certain that it will exercise. We do not have leases with residual value guarantees or similar covenants.

Operating lease costs for the year ended October 31, 2020 was $1.5 million. As of October 31, 2020, the weighted average remaining lease term (in years) was approximately 20 years and the weighted average discount rate was 6.27%. Lease payments made during the year ended October 31, 2020 totaled $1.0 million.

Rent expense for operating leases of computer and office equipment and the manufacturing facilities in Torrington and Danbury, Connecticut under previous accounting guidance for leases was $1.0 million and $1.2 million for the years ended October 31, 2019 and 2018, respectively.

As of October 31, 2020, undiscounted maturities of operating lease and finance lease liabilities are as follows (in thousands):

	Operating Leases	Finance Leases
2020	$ 1,397	$ 35
2021	1,397	5
2022	1,059	-
2023	752	—
2024	705	—
Thereafter	14,632	—
Total undiscounted lease payments	19,942	40
Less imputed interest	(9,186)	(2)
Total discounted lease payments	$ 10,756	$ 38

Crestmark Sale-Leaseback Transaction

On February 11, 2020, an indirect wholly-owned subsidiary of the Company, Central CA Fuel Cell 2, LLC ("CCFC2"), entered into a Purchase and Sale Agreement (the "Purchase Agreement") and an Equipment Lease Agreement (the "Lease") with Crestmark. Under these agreements, CCFC2 sold the 2.8 MW Biogas fueled fuel cell power plant (the "Plant") located at the Tulare wastewater treatment plant in Tulare, California to Crestmark for a purchase price of $14.4 million and then leased the Plant back from Crestmark. CCFC2 sells the power produced by the Plant to a third party under a twenty-year PPA (the "Tulare PPA"). The Lease includes an end of term option for CCFC2 to repurchase the transferred assets. The repurchase clause precluded sale accounting since there are no alternative assets substantially the same as the transferred assets readily available in the marketplace. As such, the transaction is a failed sale-leaseback transaction that is accounted for as a financing transaction.

The Lease has an initial term of ten years but may be extended at the option of CCFC2. An initial rental down payment and one month's rent totaling $2.9 million was paid using the proceeds from the sale of the Plant. Lease payments are due on a monthly basis in the amount of $0.1 million. Lease payments are expected to be funded with proceeds from the sale of power under the Tulare PPA. As a result of the sale-leaseback transaction, the remaining lease payments due over the term of the Lease were approximately $9.3 million immediately following the transaction and $8.6 million as of October 31, 2020.

CCFC2 and Crestmark entered into an Assignment Agreement on February 11, 2020 (the "Assignment Agreement") and FuelCell Energy Finance, LLC ("FuelCell Finance", a wholly-owned subsidiary of the Company and the direct parent of CCFC2) and Crestmark entered into a Pledge Agreement on February 11, 2020 (the "Pledge Agreement") pursuant to which agreements collateral was provided to Crestmark to secure CCFC2's obligations under the Lease which includes a security interest in (i) certain agreements relating to the sale-leaseback transaction, (ii) the revenues with respect to the Plant, (iii) two fuel cell replacement modules for the Plant, and (iv) FuelCell Finance's equity interest in CCFC2. CCFC2 and the Company also entered into a Technology License and Access Agreement with Crestmark on February 11, 2020, which provides Crestmark with certain intellectual property license rights to have access to the Company's proprietary fuel cell technology, but only for the purpose of maintaining and servicing the Plant in certain circumstances where the Company is not satisfying its obligations under its service agreement with regard to the maintenance and servicing of the Plant.

Pursuant to the Lease, CCFC2 has an obligation to indemnify Crestmark for the amount of any actual reduction in the U.S. Investment Tax Credit anticipated to be realized by Crestmark in connection with the foregoing sale-leaseback transaction. Such obligations would arise as a result of reductions to the value of the underlying fuel cell project as assessed by the U.S. Internal Revenue Service ("IRS"). The Company does not believe that any such obligation is probable based on the facts known as of October 31, 2020. The maximum potential future payments that CCFC2 could have to make under these obligations would depend on the difference between the fair values of the fuel cell project sold or financed and the values the IRS would determine as the fair value for the system for purposes of claiming the Investment Tax Credit. The value of the Investment Tax Credit in the sale-leaseback agreements is based on guidelines

provided by regulations from the IRS. The Company and Crestmark used fair values determined with the assistance of an independent third-party appraisal.

The Purchase Agreement and the Lease contain representations and warranties, affirmative and negative covenants, and events of default that entitle Crestmark to cause CCFC2's indebtedness under the Lease to become immediately due and payable.

Pursuant to a Guaranty Agreement executed on February 11, 2020 by the Company for the benefit of Crestmark (the "Guaranty"), the Company has guaranteed the payment and performance of CCFC2's obligations under the Lease.

Note 14. Debt

Debt as of October 31, 2020 and 2019 consisted of the following (in thousands):

	2020	2019
Orion Energy Partners Credit Facility	$ 80,000	14,500
Connecticut Green Bank Loans	4,800	1,800
Connecticut Green Bank Loan (BFC Loan)	5,065	5,755
Liberty Bank Term Loan Agreement (BFC Loan)	9,549	11,632
Fifth Third Bank Term Loan Agreement (BFC Loan)	9,549	11,632
Finance obligations for sale-leaseback transactions	49,274	45,219
State of Connecticut Loan	9,454	10,000
New Britain Renewable Energy Term Loan	-	497
Enhanced Capital Loan and Security Agreement	-	1,500
Fifth Third Bank Construction Loan Agreement	-	11,072
Liberty Bank Promissory Note (PPP Note)	6,515	-
Finance lease obligations	38	141
Deferred finance costs	(3,737)	(3,180)
Unamortized debt discount	(5,152)	(4,251)
Total debt	$ 165,355	$ 106,317
Current portion of long-term debt	(21,366)	(21,916)
Long-term debt	$ 143,989	$ 84,401

Aggregate annual principal payments under our loan agreements and finance lease obligations for the years subsequent to October 31, 2020 are as follows (in thousands):

Year 1	$ 22,708
Year 2	22,594
Year 3	20,832
Year 4	21,160
Year 5	19,753
Thereafter [1]	38,227
	$ 145,274

(1) The annual principal payments included above only include sale-leaseback payments whereas the difference between debt outstanding as of October 31, 2020 and the annual principal payments represent accreted interest and amounts included in the finance obligation that exceed required principal payments.

Orion Energy Partners Investment Agent, LLC Credit Agreement

On October 31, 2019, the Company and certain of its affiliates as guarantors entered into a Credit Agreement (as amended from time to time, the "Orion Credit Agreement") with Orion Energy Partners Investment Agent, LLC, as Administrative Agent and Collateral Agent (the "Orion Agent"), and certain lenders affiliated with the Orion Agent for a $200.0 million senior secured credit facility (the "Orion Facility"), structured as a delayed draw term loan to be provided by the lenders primarily to fund certain of the Company's construction and related costs for fuel cell projects meeting the requirements of the Orion Facility. Under the Orion Credit Agreement, each lender funded its commitments less 2.50% of the aggregate principal amount of the loans funded by such lender (the "Loan Discount).

On October 31, 2019, the Company drew down $14.5 million (the "Initial Funding") and received $14.1 million, after taking into account a Loan Discount of $0.4 million. On October 31, 2019, in connection with the Initial Funding, the Company issued warrants to the lenders under the Orion Credit Agreement to purchase up to a total of 6,000,000 shares of the Company's common stock, at an exercise price of $0.310 per share (the "Initial Funding Warrants").

On November 22, 2019, a second draw (the "Second Funding") of $65.5 million, funded by Orion Energy Credit Opportunities Fund II, L.P., Orion Energy Credit Opportunities Fund II GPFA, L.P., Orion Energy Credit Opportunities Fund II PV, L.P., and Orion Energy Credit Opportunities FuelCell Co-Invest, L.P. (as the lenders under the Orion Credit Agreement), was made to fully repay certain outstanding third party debt of the Company, including the outstanding construction loan from Fifth Third Bank with respect to the Groton Project and the outstanding loan from Webster Bank with respect to the CCSU Project, as well as to fund remaining going forward construction costs and anticipated capital expenditures relating to the Groton Project (a 7.4 megawatt (MW) project), the LIPA Yaphank Solid Waste Management Project (a 7.4 MW project), and the Tulare BioMAT Project (a 2.8 MW project). The Company received $63.9 million in the Second Funding after taking into account a Loan Discount of $1.6 million as described above. Also in conjunction with the Second Funding, the Company issued to the lenders warrants to purchase up to a total of 14.0 million shares of the Company's common stock, with an initial exercise price with respect to 8.0 million of such shares of $0.242 per share and with an initial exercise price with respect to 6.0 million of such shares of $0.620 per share (the "Second Funding Warrants").

Under the Orion Credit Agreement, cash interest of 9.9% per annum was paid quarterly. In addition to the cash interest, payment-in-kind interest of 2.05% per annum accrued which was added to the outstanding principal balance of the Orion Facility but was paid quarterly in cash to the extent of available cash after payment of the Company's operating expenses and the funding of certain reserves for the payment of outstanding indebtedness to the State of Connecticut and Connecticut Green Bank.

Outstanding principal under the Orion Facility was to be amortized on a straight-line basis over a seven-year term with the initial payment due 21 business days after the end of the first quarter of fiscal year 2021. The maturity date of the Orion Facility was October 31, 2027. The Orion Facility contained an administrative fee of $0.1 million per year paid on a quarterly basis and also included a prepayment premium of up to 35%. Such prepayment fee was to be reduced over time based on the aggregate amount of principal and interest paid.

The issuance of the Initial Funding Warrants and recognition of the Second Funding Warrants resulted in $3.9 million being recorded as a liability as of October 31, 2019 with the offset recorded as a debt discount. Refer to Note 15. "Stockholders' Equity and Warrant Liabilities" for additional information regarding the Initial Funding Warrants and Second Funding Warrants, including the accounting, terms and conversions during the year ended October 31, 2020.

During the year ended October 31, 2020, the Orion Credit Agreement was amended on five occasions including (a) to establish a debt reserve of $5.0 million to be released upon the occurrence of certain events and require the Company to enter into or modify certain commercial agreements in conjunction with the Second Funding, (b) to require the Company to make certain payment and funding commitments related to the Series 1 Preferred Shares in order to obtain consent from the lenders under the Orion Credit Agreement for modification of the terms of the Series 1 Preferred Shares, (c) to require the Company to pledge additional assets and to restrict the use of, or require the use in a specified manner of, the cash received from the Crestmark sale-leaseback transaction in order obtain consent from the lenders under the Orion Credit Agreement for the Crestmark sale-leaseback transaction, (d) to permit the release of a portion of restricted cash in exchange for additional collateral and performance commitments, and (e) to add additional covenants and security in conjunction with the establishment of a short-term secondary facility loan commitment of $35 million that expired unused. Upon entering into the secondary facility loan commitment, the Company owed the lenders under the Orion Credit Agreement an option premium of $1.0 million. The Company paid the $1.0 million option premium during the year ended October 31, 2020 and recorded the amount as interest expense.

Subsequent to October 31, 2020, the Company paid off and extinguished the Orion Credit Agreement. Refer to Note 25 "Subsequent Events" for additional information.

Connecticut Green Bank Loans

As of October 31, 2019, the Company had a long-term loan agreement with the Connecticut Green Bank, providing the Company with a loan of $1.8 million (the "Green Bank Loan Agreement"). On and effective as of December 19, 2019, the Company and Connecticut Green Bank entered into an amendment to the Green Bank Loan Agreement (the "Green Bank Amendment"). Upon the execution of the Green Bank Amendment on December 19, 2019, Connecticut Green Bank made an additional loan to the Company in the aggregate principal amount of $3.0 million (the "December 2019 Loan"), which was to be used (i) first, to pay closing fees related to the May 9, 2019 acquisition of the Bridgeport Fuel Cell Project and the Subordinated Credit Agreement (as defined below), other fees and interest, and (ii) thereafter, for general corporate purposes.

The Green Bank Amendment provides that, until such time as the loan (which includes both the outstanding principal balance of the original loan under the Green Bank Loan Agreement and the outstanding principal amount of the December 2019 Loan) has been repaid in its entirety, interest on the outstanding balance of the loan shall accrue at a rate of 8% per annum, payable by the Company on a monthly basis in arrears. Interest payments made by the Company after the date of the Green Bank Amendment are to be applied first to interest that has accrued on the outstanding principal balance of the original loan under the Green Bank Loan Agreement and then to interest that has accrued on the December 2019 Loan.

The Green Bank Amendment also modifies the repayment and mandatory prepayment terms and extends the maturity date set forth in the original Green Bank Loan Agreement. Under the Green Bank Amendment, to the extent that excess cash flow reserve funds under the BFC Credit Agreement (as defined below) are eligible for disbursement to Bridgeport Fuel Cell, LLC pursuant to Section 6.23(c) of the BFC Credit Agreement, such funds are to be paid to Connecticut Green Bank until the loans are repaid in full. The Green Bank Amendment further provides that any unpaid balance of the loan and all other obligations due under the Green Bank Loan Agreement will be due and payable on May 9, 2026. Finally, with respect to mandatory prepayments, the Green Bank Amendment provides that, when the Company has closed on the subordinated project term loan pursuant to the Commitment Letter, dated February 6, 2019, issued by Connecticut Green Bank to Groton Fuel Cell to provide a subordinated project term loan to Groton Fuel Cell in the amount of $5.0 million, the Company will be required to prepay to Connecticut Green Bank the lesser of any then outstanding amount of the December 2019 Loan and the amount of the subordinated project term loan actually advanced by Connecticut Green Bank. The balance under the original Green Bank Loan Agreement and the December 2019 Loan as of October 31, 2020 was $4.8 million.

Bridgeport Fuel Cell Project Loans

On May 9, 2019, in connection with the closing of the purchase of the membership interests of Bridgeport Fuel Cell, LLC ("BFC") (and the 14.9 MW Bridgeport Fuel Cell Project), BFC entered into a subordinated credit agreement with the Connecticut Green Bank whereby Connecticut Green Bank provided financing in the amount of $6.0 million (the "Subordinated Credit Agreement"). This $6.0 million consisted of $1.8 million in incremental funding that was received by BFC and $4.2 million of funding previously received by FuelCell Energy, Inc. with respect to which BFC became the primary obligor. As security for the Subordinated Credit Agreement, Connecticut Green Bank received a perfected lien, subordinated and second in priority to the liens securing the $25.0 million loaned under the BFC Credit Agreement (as defined below), in all of the same collateral securing the BFC Credit Agreement. The interest rate under the Subordinated Credit Agreement is 8% per annum. Principal and interest are due monthly in amounts sufficient to fully amortize the loan over an 84-month period ending in May 2026. The Subordinated Credit Agreement contains a debt coverage ratio which is required to be maintained and may not be less than 1.10 as of the end of each fiscal quarter, beginning with the quarter ended July 31, 2020. The balance under the Subordinated Credit Agreement as of October 31, 2020 was $5.1 million.

On May 9, 2019, in connection with the closing of the purchase of the Bridgeport Fuel Cell Project, BFC entered into a Credit Agreement with Liberty Bank, as administrative agent and co-lead arranger, and Fifth Third Bank as co-lead arranger and swap hedger (the "BFC Credit Agreement"), whereby (i) Fifth Third Bank provided financing in the amount of $12.5 million towards the purchase price for the BFC acquisition; and (ii) Liberty Bank provided financing in the amount of $12.5 million towards the purchase price for the BFC acquisition. As security for the BFC Credit Agreement, Liberty Bank and Fifth Third Bank were granted a first priority lien in (i) all assets of BFC, including BFC's cash accounts, fuel cells, and all other personal property, as well as third party contracts including the Energy Purchase Agreement between BFC and Connecticut Light and Power Company dated July 10, 2009, as amended; (ii) certain fuel cell modules that are intended to be used to replace the Bridgeport Fuel Cell Project's fuel cell modules as part of routine operation and maintenance; and (iii) FuelCell Finance's (a wholly-owned subsidiary of the Company and the direct parent of BFC) ownership interest in BFC. The maturity date under the BFC Credit Agreement is May 9, 2025. Monthly principal and interest are to be paid in arrears in an amount sufficient to fully amortize the term loan over a 72-month period. BFC has the right to make additional principal payments or pay the balance due under the BFC Credit Agreement in full, provided that it pays any associated breakage fees with regard to the interest rate swap agreements fixing the interest rate. The interest rate under the BFC Credit Agreement fluctuates monthly at the 30-day LIBOR rate plus 275 basis points.

An interest rate swap agreement was required to be entered into with Fifth Third Bank in connection with the BFC Credit Agreement to protect against movements in the floating LIBOR index. Accordingly, on May 16, 2019, an interest rate swap agreement (the "Swap Agreement") was entered into with Fifth Third Bank in connection with the BFC Credit Agreement for the term of the loan. The net interest rate across the BFC Credit Agreement and the swap transaction results in a fixed rate of 5.09%. The interest rate swap is adjusted to fair value on a quarterly basis. The estimated fair value is based on Level 2 inputs including primarily the forward LIBOR curve available to swap dealers. The valuation methodology involves comparison of (i) the sum of the present value of all monthly variable rate payments based on a reset rate using the forward LIBOR curve and (ii) the sum of the present value of all monthly fixed rate payments on the notional amount, which is equivalent to the outstanding principal amount of the loans. The fair value adjustments for the years ended October 31, 2020 and 2019 resulted in a $0.3 million and a $0.6 million charge, respectively. The fair value of the interest rate swap liability as of October 31, 2020 and 2019 was $0.9 million and $0.6 million, respectively.

The BFC Credit Agreement requires BFC to maintain a debt service reserve. Each of Liberty Bank and Fifth Third Bank also has an operation and module replacement reserve ("O&M Reserve") under the BFC Credit Agreement. BFC is required to deposit $100,000 per month into each O&M Reserve for the first five years of the BFC Credit Agreement, with such funds to be released at the sole discretion of Liberty Bank and Fifth Third Bank, as applicable. BFC is also required to maintain excess cash flow reserve accounts at each of Liberty Bank and Fifth Third Bank. Excess cash flow consists of cash generated by BFC from the Bridgeport Fuel Cell Project after payment of all expenses (including after payment of intercompany service fees to the Company), debt service to Liberty Bank and Fifth Third Bank, the funding of all required reserves, and payments to Connecticut Green Bank for the subordinated facility. BFC is also required to maintain a debt service coverage ratio of not less than 1.20, measured for the trailing year based on fiscal quarters beginning with the quarter ended July 31, 2020. The Company has certain quarterly and annual financial reporting requirements under the BFC Credit Agreement. The annual financial statements to be provided pursuant to such requirements are to be audited and accompanied by a report of an independent certified public accountant, which report shall not include a "going concern" matter of emphasis or any qualification as to the scope of such audit.

Finance obligations for sale leaseback agreements

Several of the Company's project subsidiaries previously entered into sale-leaseback agreements with PNC for commissioned projects where the Company had entered into a PPA with the site host/end-user of produced power, and CCFC2 entered into a sale-leaseback with Crestmark on February 11, 2020 (refer to Note. 13. "Leases" for additional information). The Company did not recognize as revenue any of the proceeds received from the lessor that contractually constitute payments to acquire the assets subject to these arrangements. Instead, the sale proceeds received were accounted for as financing obligations. The outstanding financing obligation balance as of October 31, 2020 was $49.3 million as compared to $45.2 million as of October 31, 2019. This change reflects the recording of the finance obligation with Crestmark and the recognition of interest expense, offset by lease payments and the payoff of the UCI Fuel Cell, LLC lease with PNC. As noted in Note 7. "Project Assets", the Company repurchased the equipment leased by UCI Fuel Cell, LLC from PNC. The difference between the financing obligation and the payoff was reflected as a Gain on extinguishment of financing obligation on the Consolidated Statement of Operations. The outstanding financing obligation for the remaining leases includes an embedded gain of $29.0 million which will be recognized at the end of each 10-year lease term or upon early termination if applicable. The sale-leaseback arrangements with PNC allow the Company to repurchase the project assets at fair market value and the sale-leaseback

arrangement with Crestmark includes a purchase right for the greater of fair market value or 31% of the purchase price.

State of Connecticut Loan

In October 2015, the Company closed on a definitive Assistance Agreement with the State of Connecticut (the "Assistance Agreement") and received a disbursement of $10.0 million, which was used for the first phase of the expansion of the Company's Torrington, Connecticut manufacturing facility. In conjunction with this financing, the Company entered into a $10.0 million promissory note and related security agreements securing the loan with equipment liens and a mortgage on its Danbury, Connecticut location. Interest accrues at a fixed interest rate of 2.0%, and the loan is repayable over 15 years from the date of the first advance, which occurred in October of 2015. Principal payments were deferred for four years from disbursement and began on December 1, 2019. Under the Assistance Agreement, the Company was eligible for up to $5.0 million in loan forgiveness if the Company created 165 full-time positions and retained 538 full-time positions for two consecutive years (the "Employment Obligation") as measured on October 28, 2017 (the "Target Date"). The Assistance Agreement was subsequently amended in April 2017 to extend the Target Date by two years to October 28, 2019.

In January 2019, the Company and the State of Connecticut entered into a Second Amendment to the Assistance Agreement (the "Second Amendment"). The Second Amendment extended the Target Date to October 31, 2022 and amended the Employment Obligation to require the Company to continuously maintain a minimum of 538 full-time positions for 24 consecutive months. If the Company meets the Employment Obligation, as modified by the Second Amendment, and creates an additional 91 full-time positions, the Company may receive a credit in the amount of $2.0 million to be applied against the outstanding balance of the loan. However, based on the Company's current headcount and plans for fiscal year 2021 and beyond, it will not meet this requirement or receive this credit. A job audit will be performed within 90 days of the Target Date. If the Company does not meet the Employment Obligation, then an accelerated payment penalty will be assessed at a rate of $18,587.36 multiplied by the number of employees below the number of employees required by the Employment Obligation. Such penalty is immediately payable and will be applied first to accelerate the payment of any outstanding fees or interest due and then to accelerate the payment of outstanding principal.

In April of 2020, as a result of the COVID-19 pandemic, the State of Connecticut agreed to defer three months of principal and interest payments under the Assistance Agreement, beginning with the May 2020 payment. These deferred payments will be added at the end of the loan, thus extending out the maturity date by three months.

Liberty Bank Promissory Note

On April 20, 2020, the Company entered into the PPP Note, dated April 16, 2020, evidencing a loan to the Company from Liberty Bank, under the CARES Act, administered by the Small Business Administration ("SBA"). Pursuant to the PPP Note, the Company received total proceeds of approximately $6.5 million on April 24, 2020.

The PPP Note is scheduled to mature on April 16, 2022, has a 1.00% per annum interest rate, and is subject to the terms and conditions applicable to loans administered by the SBA under the CARES Act, as amended by the PPP Flexibility Act. Monthly principal and interest payments, less the amount of any potential forgiveness (as discussed below), commenced on November 16, 2020. The Company did not provide any collateral or guarantees for the PPP Note, nor did the Company pay any facility charge to obtain the PPP Note. The PPP Note may be prepaid at any time with no prepayment penalties.

Under the requirements of the CARES Act, as amended by the PPP Flexibility Act, proceeds may only be used for the Company's eligible payroll costs (with salary capped at $100,000 on an annualized basis for each employee), rent, mortgage interest and utilities, in each case paid during the 24-week period following disbursement. The loan may be fully forgiven if (i) proceeds are used to pay eligible payroll costs, rent, mortgage interest and utilities and (ii) full-time employee headcount and salaries are either maintained during the 24-week period following disbursement or restored by December 31, 2020. If not so maintained or restored, any forgiveness of the loan would be reduced in accordance with the regulations that were issued by the SBA. All of the proceeds of the PPP Note were used by the Company to pay eligible payroll costs and the Company maintained its headcount and otherwise complied with the terms of the PPP Note.

In October 2020, the Company applied for forgiveness of the PPP Note. The forgiveness application is subject to approval by the SBA and Liberty Bank, and no assurance can be given that any portion of the PPP Note will be

forgiven. Based on guidance from the United States Department of the Treasury, since the total PPP Note proceeds exceeded $2.0 million, the forgiveness application will be subject to audit by the SBA.

New Britain Renewable Energy Term Loan

In November 2016, the Company assumed debt with Webster Bank, National Association as a part of a project asset acquisition transaction. The term loan interest rate was 5.0% per annum. The balance outstanding as of October 31, 2019 was $0.5 million. The loan was paid off and extinguished during the three months ended January 31, 2020.

Enhanced Capital Loan

On January 9, 2019, the Company, through its indirect wholly-owned subsidiary TRS Fuel Cell, LLC, entered into a loan with Enhanced Capital Connecticut Fund V, LLC ("Enhanced") in the amount of $1.5 million. Interest accrued at a rate of 6.0% per annum. Under the terms of the loan, the Company was required to close on tax equity financing by January 14, 2020. Given that the Company did not secure tax equity financing on this project, on January 13, 2020, TRS Fuel Cell, LLC and Enhanced entered into a payoff letter pursuant to which the loan was paid off and extinguished on January 14, 2020.

Fifth Third Bank Groton Loan

On February 28, 2019, the Company, through its indirect wholly-owned subsidiary, Groton Fuel Cell, entered into a Construction Loan Agreement (as amended from time to time, the "Groton Agreement") with Fifth Third Bank pursuant to which Fifth Third Bank agreed to make available to Groton Fuel Cell a construction loan facility in an aggregate principal amount of up to $23.0 million (the "Groton Facility") to fund the manufacture, construction, installation, commissioning and start-up of the 7.4 MW fuel cell power plant located on the U.S. Navy submarine base in Groton, Connecticut (the "Groton Project"). The Company made an initial draw under the Groton Facility on the date of closing of $9.7 million and made an additional draw of $1.4 million in April 2019. The loan was amended during the year ended October 31, 2019 to, among other things, reduce the principal amount of the facility to $18.0 million, change the maturity date, require the Company to obtain financing for the Groton Project, and increase the interest rate if such financing was not obtained by specified dates.

The total outstanding balance under the Groton Facility as of October 31, 2019 was $11.1 million. This balance was paid off, the loan was extinguished and the Groton Facility was terminated during the three months ended January 31, 2020.

Prior Period Loans

The Company paid off several loans during the fiscal year ended October 31, 2019, which included the loans provided under the following agreements or facilities: the loan and security agreement, as amended, with Hercules Capital, Inc., the loan facilities with Webster Bank, National Association, the construction loan facility, as amended, with Fifth Third Bank with respect to the project at the U.S. Navy submarine base in Groton, Connecticut, the construction loan agreement, as amended, with Generate Lending, LLC, and the loan agreement, as amended, with NRG Energy, Inc.

Deferred Finance Costs

As of October 31, 2020, deferred finance costs relate primarily to (i) sale-leaseback transactions entered into with PNC and Crestmark, which are being amortized over the 10-year terms of the lease agreements, (ii) payments under the loans obtained to purchase the membership interests in BFC, which are being amortized over the 8-year term of the loans and (iii) payments to enter into the Orion Facility, which were being amortized over the 8-year term of the facility, prior to extinguishment of the Orion Facility subsequent to year end.

Note 15. Stockholders' Equity and Warrant Liabilities

Increase in Authorized Shares

The Company obtained stockholder approval on May 8, 2020 at the reconvened 2020 Annual Meeting of Stockholders to increase the number of shares of common stock we are authorized to issue under our Certificate of Incorporation, as amended. Our stockholders approved a 112.5 million increase in the number of authorized shares of common stock. Accordingly, on May 11, 2020, the Company filed a Certificate of Amendment of the Certificate of Incorporation of

the Company with the Delaware Secretary of State increasing the total number of authorized shares of common stock from 225.0 million shares to 337.5 million shares.

At Market-Issuance Sales Agreements

2020 Open Market Sale Agreement

On June 16, 2020, the Company entered into an Open Market Sale Agreement with Jefferies LLC ("Jefferies"), with respect to an at the market offering program under which the Company could offer and sell up to $75 million of shares of its common stock from time to time. Pursuant to the Open Market Sale Agreement, the Company paid Jefferies a commission equal to 3.0% of the aggregate gross proceeds it received from each sale of shares under the Open Market Sale Agreement. From the date of the Open Market Sale Agreement through October 31, 2020, 28.3 million shares were sold under the Open Market Sale Agreement at an average sales price of $2.55 per share, resulting in gross proceeds of $72.3 million, before deducting expenses and sales commissions. Commissions of $2.2 million were paid to Jefferies in connection with these sales, resulting in net proceeds to the Company of approximately $70.1 million.

2019 At Market Issuance Sales Agreement

On October 4, 2019, the Company entered into an At Market Issuance Sales Agreement (the "Sales Agreement") with B. Riley FBR, Inc. ("B. Riley FBR") to create an at-the-market equity program under which the Company could offer and sell up to 38.0 million shares of its common stock through B. Riley FBR. However, to ensure that the Company had sufficient shares available for reservation and issuance upon exercise of all of the warrants to be issued to the lenders under the Orion Facility (as discussed in further detail below), the Company, effective as of October 31, 2019, reduced the number of shares reserved for future issuance and sale under the Sales Agreement from 27.9 million shares to 7.9 million shares (thus allowing for total aggregate issuances (past and future) of up to 18.0 million shares under the Sales Agreement) and reserved 20.0 million shares for issuance upon exercise of the warrants by the lenders under the Orion Facility. Under the Sales Agreement, B. Riley FBR was entitled to a commission in an amount equal to 3.0% of the gross proceeds from each sale of shares under the Sales Agreement.

During the year ended October 31, 2020, the Company issued and sold a total of 7.9 million shares of its common stock under the Sales Agreement at prevailing market prices, with an average sale price of $0.46 per share, and raised aggregate gross proceeds of approximately $3.6 million, before deducting expenses and commissions. Commissions of $0.1 million were paid to B. Riley FBR in connection with these sales, resulting in net proceeds to the Company of approximately $3.5 million.

During the year ended October 31, 2019, the Company sold a total of 10.1 million shares of its common stock at prevailing market prices under the Sales Agreement and received aggregate gross proceeds of $3.0 million and paid $0.1 million of fees and commissions, for net proceeds to the Company of $2.9 million.

The Company terminated the Sales Agreement in June 2020. As a result of the termination of the Sales Agreement, there have been and will be no further sales of the Company's common stock thereunder.

2018 At Market Issuance Sales Agreement

On June 13, 2018, the Company entered into an At Market Issuance Sales Agreement (the "Previous Sales Agreement") with B. Riley FBR, Inc. and Oppenheimer & Co. Inc. (together, the "Previous Agents") to create an at-the-market equity program under which the Company could from time to time offer and sell shares of its common stock having an aggregate offering price of up to $50.0 million through the Previous Agents. Under the Previous Sales Agreement, the Previous Agent making the sales was entitled to a commission in an amount equal to 3.0% of the gross proceeds from such sales.

During the year ended October 31, 2019, the Company sold 109.1 million shares of the Company's common stock under the Previous Sales Agreement at prevailing market prices, at an average sale price of $0.39 per share and received aggregate gross proceeds of $42.0 million and paid $1.3 million of fees and commissions.

During the year ended October 31, 2018, the Company sold 0.5 million shares of the Company's common stock under the Previous Sales Agreement, at prevailing market prices, at an average sale price of $16.72 per share and received aggregate gross proceeds of $8.0 million and paid $0.2 million of fees and commissions.

Public Offerings and Outstanding Warrants

September 2020 Public Offering

In September 2020, the Company entered into an underwriting agreement with respect to an offering of its common stock. The offering closed in October 2020, with the Company's sale of approximately 50.0 million shares of its common stock for gross and net proceeds of $105.1 million and $98.3 million, respectively.

The offering resulted in a Section 382 ownership change. Refer to Note 19. "Income Taxes" for more information regarding the impact of the Section 382 ownership change on net operating losses and carryforwards.

May 2017 Public Offering and Related Warrants

On May 3, 2017, the Company completed an underwritten public offering that included the offering and sale of Series C warrants to purchase 1,000,000 shares of its common stock and Series D warrants to purchase 1,000,000 shares of its common stock.

- The Series C warrants have an exercise price of $19.20 per share and a term of five years. A total of 962 shares of common stock were issued during fiscal year 2018 upon the exercise of Series C warrants and the Company received total proceeds from such exercises of $0.02 million. No Series C warrants were exercised during the fiscal years ended October 31, 2020 or 2019. The Series C warrants contain provisions regarding adjustments to their exercise price and the number of shares of common stock issuable upon exercise.
- The Series D warrants had an exercise price of $15.36 per share and a term of one year. A total of 215,347 shares of common stock were issued during fiscal year 2018 upon the exercise of Series D warrants and the Company received total proceeds from such exercises of $3.3 million. The Series D warrants were all exercised prior to October 31, 2018.

July 2016 Public Offering and Related Warrants

On July 12, 2016, the Company closed on a registered public offering. In conjunction with the offering, the Company issued 640,000 Series A Warrants with an exercise price of $69.96 per share.

On February 21, 2019, the Company entered into an Exchange Agreement (the "Exchange Agreement") with the holder of the Series A Warrants. Pursuant to the Exchange Agreement, the Company issued to the holder of the Series A Warrants 500,000 shares of the Company's common stock in exchange for the transfer of the Series A Warrants back to the Company. Following the transfer of the Series A Warrants back to the Company, the Series A Warrants were cancelled and no further shares were issuable pursuant to the Series A Warrants. During fiscal year 2019, the Company recorded a charge to common stockholders for the difference between the fair value of the Series A Warrants prior to the modification of $0.3 million and the fair value of the common shares issuable at the date of the Exchange Agreement of $3.5 million.

Orion Warrants

In connection with the closing of the Orion Credit Agreement and the Initial Funding, on October 31, 2019, the Company issued warrants to the lenders under the Orion Credit Agreement to purchase up to a total of 6,000,000 shares of the Company's common stock, at an exercise price of $0.310 per share (the "Initial Funding Warrants"). In addition, under the Orion Credit Agreement, on the date of the Second Funding (November 22, 2019), the Company issued warrants to the lenders under the Orion Credit Agreement to purchase up to a total of 14,000,000 shares of the Company's common stock, with an exercise price with respect to 8,000,000 of such shares of $0.242 per share and with an exercise price with respect to 6,000,000 of such shares of $0.620 per share (the "Second Funding Warrants", and together with the Initial Funding Warrants, the "Orion Warrants"). All of the Orion Warrants were exercised during or subsequent to the year ended October 31, 2020 (refer to Note 25. "Subsequent Events" for more information on the exercise of the remaining Orion Warrants subsequent to October 31, 2020).

The Company accounted for the Initial Funding Warrants as a liability since there was a change of control provision in the Initial Funding Warrants regarding the composition of the board of directors and, as such, the Company could have been required to repurchase the Initial Funding Warrants upon such change in control and therefore equity classification was precluded. The Company accounted for the Second Funding Warrants under ASC 815, *Derivatives and Hedging* ("ASC 815") since the Second Funding Warrants were considered contingent vesting warrants and therefore were considered to be an outstanding liability. Since the probability of vesting for the Second Funding Warrants was deemed to be 100% as there was no vesting period in the warrants, there was no impact on the valuation. The Second Funding Warrants were accounted for as a liability since the Company might have been required to pay the holder under the same change of control provision as the Initial Funding Warrants and such event was outside the Company's control and therefore equity classification was precluded.

As of October 31, 2019, the estimated fair value of the Orion Warrants was based on a Black-Scholes model using Level 2 inputs, including volatility of 96%, a risk free rate of 1.63%, the Company's common stock price as of October 31, 2019 of $0.24 per share and the term of 8 years which resulted in a total value of $3.9 million.

On January 9, 2020, the lenders exercised, on a cashless basis, Orion Warrants (with cash exercise prices of $0.31 per share and $0.62 per share) representing the right to purchase, in the aggregate, 12,000,000 shares of the Company's common stock. Because these warrants were exercised on a cashless basis pursuant to the formula set forth in the warrants, the lenders received 9,396,320 shares of the Company's common stock in the aggregate upon the cashless exercise of Initial Funding Warrants representing the right to purchase 6,000,000 shares of the Company's common stock and Second Funding Warrants representing the right to purchase 6,000,000 shares of the Company's common stock. The cashless exercise resulted in 2,603,680 shares no longer being required to be reserved for issuance upon exercise of the Orion Warrants.

The Orion Warrants that were converted on January 9, 2020 were remeasured to fair value immediately preceding the conversion based upon volatility of 103.7%, a risk free rate of 1.81% and the Company's common stock price of $2.29, which resulted in a $23.7 million charge for the three months ended January 31, 2020. The estimated fair value of the converted warrants as of the date of conversion of $26.0 million was reclassified from Long-term debt and other liabilities to Common stock and Additional paid-in capital.

On October 6, 2020, the lenders exercised Orion Warrants (with an exercise price of $0.242 per share) to purchase a total of 5,300,000 shares of the Company's common stock for an aggregate purchase price of $1.3 million upon exercise, which was recorded to Common stock and Additional paid-in capital. The Orion Warrants were revalued immediately preceding the exercise based upon a volatility of 113.84%, a risk free rate of 0.55% and the Company's common stock price of $1.92 per share which resulted in a gain of $2.4 million. The value of the converted warrants of $9.8 million was reclassified from Long-term debt and other liabilities to Common stock and Additional paid-in capital. Following this exercise and as of October 31, 2020, Orion Warrants to purchase 2,700,000 shares of the Company's common stock, with an exercise price of $0.242 per share, were outstanding.

The Company remeasured the remaining Orion Warrants at October 31, 2020 based upon a volatility of 114.15%, a risk free rate of 0.64% and the Company's common stock price of $2.00 per share, which resulted in a charge of $0.2 million. The estimated fair value of the remaining Orion Warrants outstanding was $5.2 million as of October 31, 2020 and is classified as Long-term debt and other liabilities on the Company's Consolidated Balance Sheets.

Outstanding Warrants

The following table outlines the warrant activity during the fiscal years ended October 31, 2020 and October 31, 2019:

	Series A Warrants	Series C Warrants	Orion Warrants
Balance as of October 31, 2018	640,000	964,114	—
Warrants issued	—	—	6,000,000
Warrants exchanged	640,000	—	—
Balance as of October 31, 2019	—	964,114	6,000,000
Warrants issued	—	—	14,000,000
Warrants exercised	—	—	(17,300,000)
Balance as of October 31, 2020	—	964,114	2,700,000

Note 16. Redeemable Preferred Stock

The Company is authorized to issue up to 250,000 shares of preferred stock, par value $0.01 per share, in one or more series, of which 105,875 shares were designated as 5% Series B Cumulative Convertible Perpetual Preferred Stock (referred to herein as Series B Preferred Stock) in March 2005. Pursuant to our Certificate of Incorporation, as amended, our undesignated shares of preferred stock now include all of our shares of preferred stock that were previously designated as Series C Preferred Stock and Series D Preferred Stock, as all such shares have been retired and therefore have the status of authorized and unissued shares of preferred stock undesignated as to series. In addition to the above, a subsidiary of the Company had authorized and issued preferred stock as of October 31, 2020, as described below.

Series D Preferred Stock

In August 2018, the Company issued 30,680 shares of Series D Preferred Stock, which were initially convertible into 1,852,657 shares of the Company's common stock at an initial conversion price of $16.56 per share ("Series D Conversion Price"), subject to certain adjustments.

The net proceeds to the Company from the sale of the Series D Preferred Stock, after deducting the underwriting discounts and commissions and the offering expenses payable by the Company, were $25.3 million.

During the fiscal year ended October 31, 2019, holders of the Series D Preferred Stock converted all 30,680 shares of Series D Preferred Stock (the "Series D Preferred Shares") into 62,040,496 shares of common stock, resulting in a reduction of $31.2 million to the carrying value being recorded to equity. Conversions in which the conversion price was below the fixed conversion price (the initial conversion price of the Series D Preferred Stock) resulted in a variable number of shares being issued to settle the conversion amounts and were treated as a partial redemption of the Series D Preferred Shares. Conversions during the year ended October 31, 2019 that were settled in a variable number of shares and treated as redemptions resulted in deemed dividends of $6.0 million. The deemed dividends represent the difference between the fair value of the shares of common stock issued to settle the conversion amounts and the carrying value of the Series D Preferred Shares.

The Series D Preferred Stock redemption accretion of $3.8 million for the fiscal year ended October 31, 2019 reflects the accretion of the difference between the carrying value and the amount that would have been redeemed if stockholder approval had not been obtained for the issuance of common stock equal to 20.0% or more of the Company's outstanding voting stock prior to the issuance of the Series D Preferred Stock. Prior to receiving stockholder approval of the issuance of 20.0% or more of the Company's outstanding voting stock prior to the issuance of the Series D Preferred Stock, the holders were prohibited from converting Series D Preferred Shares into shares of common stock if such conversion would have caused the Company to issue pursuant to the terms of the Series D Preferred Stock a number of shares in excess of the maximum number of shares permitted to be issued thereunder without breaching the Company's obligations under the rules or regulations of the Nasdaq Global Market. The Company received stockholder approval of such issuance at the annual meeting of the Company's stockholders on April 4, 2019.

During the week of June 10, 2019, the holders of the Series D Preferred Stock asserted that certain triggering events had occurred under the Certificate of Designations, Preferences and Rights of the Series D Preferred Stock of the Company (the "Series D Certificate of Designation") and indicated their intent to exercise their rights to convert certain of their shares at a reduced conversion price. While the Company did not agree with the basis for their assertions or their characterization of such events, there were provisions under the Series D Certificate of Designation which could be interpreted as giving the holders the right to demand such conversion at a reduced conversion price. Accordingly, during the period beginning on June 11, 2019 and ending on July 3, 2019, the Company effected conversions at reduced conversion prices ranging from $0.14 to $0.61.

Series C Preferred Stock

During the fiscal year ended October 31, 2017, the Company issued 33,500 shares of Series C Preferred Stock for net proceeds of $27.9 million.

As of October 31, 2018, there were 8,992 shares of Series C Preferred Stock issued and outstanding, with a carrying value of $7.5 million.

On February 21, 2019, the Company entered into a Waiver Agreement (the "Waiver Agreement") with the holder of the Series C Preferred Stock (such holder, the "Series C Holder"). Under the Waiver Agreement, the Series C Holder waived any equity conditions failures that may have occurred under the Certificate of Designations, Preferences and Rights of the Series C Preferred Stock of the Company (the "Series C Certificate of Designations"). The Series C Holder further waived any triggering event occurring after the date of the Waiver Agreement, as well as its right to demand, require or otherwise receive cash payments under the Series C Certificate of Designations, which waiver would have terminated upon the occurrence of certain key triggering events (failure to provide freely tradable shares, suspension from trading on the Nasdaq Global Market or another eligible market, or failure to convert or deliver shares under certain circumstances), the occurrence of a fundamental transaction, a breach of the Waiver Agreement, or the occurrence of a bankruptcy triggering event. In addition, the Company agreed in the Waiver Agreement, pursuant to Section 8(d) of the Series C Certificate of Designations, to adjust the conversion price of the Series C Preferred Stock in connection with future conversions, such that, when the Series C Holder converted its Series C Preferred Stock into common stock, it would receive approximately 25% more shares than it would have received upon conversion prior to the execution of the Waiver Agreement. Under the Waiver Agreement, the conversion price of the Series C Preferred Stock was stated to be the lowest of (i) $4.45, (ii) 85% of the lowest closing bid price of the Company's common stock during the period beginning on and including the fifth trading day prior to the date on which the applicable conversion notice was delivered to the Company and ending on and including the date on which the applicable conversion notice was delivered to the Company, and (iii) 85% of the quotient of (A) the sum of the five lowest volume weighted average prices of the Company's common stock during the 20 consecutive trading day period ending on and including the trading day immediately preceding the applicable conversion date divided by (B) five. To determine the number of shares of common stock to be issued upon conversion, 125% of the value of the Series C Preferred Shares being converted was divided by the applicable conversion price. The parties further agreed to waive the installment payment/conversion provisions in Section 9 of the Series C Certificate of Designations, which required installment conversions or payments to be made on the 1st and 16th of each month. Under the Waiver Agreement, conversions of Series C Preferred Stock were permitted to occur and did occur after the original March 1, 2019 maturity date, and the Company further agreed to reserve specific numbers of shares for issuance to the Series C Holder and the holders of the Series D Preferred Stock until the Company effected a reverse stock split, which occurred on May 8, 2019, or increased its authorized shares of common stock.

The Waiver Agreement was treated for accounting purposes to be an extinguishment of the Series C Preferred Stock instrument as of February 21, 2019. The Series C Preferred Stock remained classified in mezzanine equity, however, the carrying value was adjusted to reflect the estimated fair value of the post-modification Series C Preferred Shares which incorporated the new terms outlined in the Waiver Agreement. The valuation utilized a Binomial Lattice Model ("Lattice Model") which is a commonly used methodology to value path-dependent options or stock units in order to capture their potential early conversion. The Lattice Model produces an estimated fair value based on changes in the underlying stock price over successive periods of time. The assumptions used in the model such as stock price, conversion price and conversion ratio were consistent with date of execution and terms in the Waiver Agreement. Other assumptions included the volatility of the Company's stock which was assumed to be 75% and a discount rate of 20% which was estimated based on various indices consistent with the Company's profile, venture capital rates of return and the Company's borrowing rate. The Lattice Model resulted in an estimated fair value as of February 21, 2019 of $13.5 million whereby the Series C Preferred Stock carrying value was adjusted to this amount. As discussed below, a beneficial conversion feature was recorded during the three months ended January 31, 2019 due to reductions in the conversion price. Upon extinguishment during the three months ended April 30, 2019, the Company first allocated $6.6 million to the reacquisition of the embedded conversion option equal to the intrinsic value that was previously recognized during the three months ended January 31, 2019 for the embedded conversion option. Because the remaining estimated fair value of the instrument on February 21, 2019 was less than the carrying amount of the Series C Preferred Stock, the amount of the shortfall resulted in a decrease in loss available to common stockholders for purposes of computing loss per share of $0.6 million.

In order to resolve different interpretations of the provisions of the Series C Certificate of Designations that governed adjustments to the conversion price in connection with sales of common stock under the Company's at-the-market stock sales plan below the initial conversion price of $22.08 and whether such sales constituted sales of variable priced securities under the Series C Certificate of Designations, the Company's Board of Directors agreed to reduce the conversion price of the Series C Preferred Shares from $22.08 to $18.00 effective August 27, 2018 in exchange for a waiver of certain anti-dilution and price adjustment rights under the Series C Certificate of Designations for future at-the-market sales of common stock. The conversion price of the Series C Preferred Shares was adjusted again on December 3, 2018 to $6.96, on December 17, 2018 to $6.00 and on January 2, 2019 to $5.16. During the period from February 1, 2019 to May 23, 2019, the conversion price was further adjusted to prices ranging from $4.45 to $1.27, the conversion price as of the last conversion, which occurred on May 23, 2019. Conversions occurring fiscal year ended October 31, 2019 resulted in a variable number of shares being issued to settle the conversion amounts and

were treated as a partial redemption of the Series C Preferred Shares. Conversions during the year ended October 31, 2019 that were settled in a variable number of shares and treated as partial redemptions resulted in deemed contributions $1.5 million. The deemed contributions represent the difference between the fair value of the common shares issued to settle the conversion amounts and the carrying value of the Series C Preferred Shares. Additionally, as discussed in more detail above, the net loss attributable to common stockholders for the fiscal year ended October 31, 2019 was impacted by a $0.5 million decrease in the loss resulting from accounting for the Waiver Agreement in February 2019, which was recorded during the three months ended April 30, 2019. The net loss attributable to common stockholders for the year ended October 31, 2019 also includes the $8.6 million redemption value adjustment recorded during the three months ended January 31, 2019.

The Series C Preferred Shares were classified outside of permanent equity. The decline in the Company's stock price during the three months ended January 31, 2019 and between January 31, 2019 and the execution of the Waiver Agreement in February 2019 resulted in equity conditions failures under the Series C Certificate of Designations, which were waived by the Series C Holder in the Waiver Agreement, as described above. Prior to the execution of such Waiver Agreement, the conversion price was adjusted in December 2018 and January 2019 as described above. This contingent beneficial conversion feature resulted in a $6.6 million reduction in the Series C Preferred Shares carrying value. Because the equity conditions failures were continuing as of January 31, 2019 (prior to the execution of the Waiver Agreement), the Series C Preferred Shares were adjusted to 108% of stated redemption value as of January 31, 2019 with a corresponding charge to common stockholders of $8.6 million.

During the fiscal year ended October 31, 2019, holders of the Series C Preferred Stock converted 8,992 Series C Preferred Shares into 3,914,218 shares of common stock, resulting in a reduction in carrying value of $15.5 million. Upon the conversion of the last outstanding Series C Preferred Shares on May 23, 2019, there were no further Series C Preferred Shares outstanding.

During the fiscal year ended October 31, 2018, holders of the Series C Preferred Stock converted 24,308 Series C Preferred Shares into common shares through installment conversions resulting in a reduction of $20.2 million to the carrying value being recorded to equity. Installment conversions occurring prior to August 27, 2018 in which the conversion price was below the initial conversion price of $22.08 per share resulted in a variable number of shares being issued to settle the installment amount and were treated as a partial redemption of the Series C Preferred Shares. As discussed above, the Company's Board of Directors agreed to reduce the conversion price of the Series C Preferred Shares from $22.08 to $18.00 effective August 27, 2018 in exchange for a waiver of certain anti-dilution and price adjustment rights under the Series C Certificate of Designations for future at-the-market sales. Installment conversions occurring between August 27, 2018 and October 31, 2018 in which the installment conversion price was below the adjusted conversion price of $18.00 per share resulted in a variable number of shares being issued to settle the installment amount and were treated as a partial redemption of the Series C Preferred Shares. Installment conversions during the year ended October 31, 2018 that were settled in a variable number of shares and treated as partial redemptions resulted in deemed dividends of $9.6 million.

Redeemable Series B Preferred Stock

The Company has designated 105,875 shares of its authorized preferred stock as Series B Preferred Stock (liquidation preference $1,000.00 per share). As of October 31, 2020 and 2019, there were 64,020 shares of Series B Preferred Stock issued and outstanding, with a carrying value of $59.9 million. The shares of Series B Preferred Stock and the shares of common stock issuable upon conversion of the shares of Series B Preferred Stock are covered by a registration rights agreement. The following is a summary of certain provisions of the Series B Preferred Stock.

Ranking. Shares of the Company's Series B Preferred Stock rank with respect to dividend rights and rights upon the Company's liquidation, winding up or dissolution:

- senior to shares of the Company's common stock;
- junior to the Company's debt obligations; and
- effectively junior to the Company's subsidiaries' (i) existing and future liabilities and (ii) capital stock held by others.

Dividends. The Series B Preferred Stock pays cumulative annual dividends of $50.00 per share, which are payable quarterly in arrears on February 15, May 15, August 15 and November 15. Dividends accumulate and are cumulative from the date of original issuance. Unpaid accumulated dividends do not bear interest.

The dividend rate is subject to upward adjustment as set forth in the Amended Certificate of Designation for the Series B Preferred Stock (the "Series B Certificate of Designation") if the Company fails to pay, or to set apart funds to pay, any quarterly dividend on the Series B Preferred Stock. The dividend rate is also subject to upward adjustment as set forth in the Registration Rights Agreement entered into with the initial purchasers of the Series B Preferred Stock (the "Registration Rights Agreement") if the Company fails to satisfy its registration obligations with respect to the Series B Preferred Stock (or the underlying shares of common stock) under the Registration Rights Agreement.

No dividends or other distributions may be paid or set apart for payment on the Company's common stock (other than a dividend payable solely in shares of a like or junior ranking), nor may any stock junior to or on parity with the Series B Preferred Stock be redeemed, purchased or otherwise acquired for any consideration (or any money paid to or made available for a sinking fund for such stock) by the Company or on its behalf (except by conversion into or exchange for shares of a like or junior ranking), unless all accumulated and unpaid dividends on the Series B Preferred Stock have been paid or funds or shares of common stock have been set aside for payment of such accumulated and unpaid dividends.

The dividend on the Series B Preferred Stock may be paid in cash or, at the option of the holder, in shares of the Company's common stock. Dividends of $4.8 million and $3.2 million were paid in cash during the fiscal years ended October 31, 2020 and 2018, respectively, and dividends of $1.6 million were paid in cash during the fiscal year ended October 31, 2019. Cumulative declared and unpaid dividends as of October 31, 2020 and 2019 were $0.8 million and $2.4 million.

No dividends were declared or paid by the Company on the Series B Preferred Stock in connection with the May 15, 2019 and August 15, 2019 dividend payment dates. Based on the dividend rate in effect on May 15, 2019 and August 15, 2019, the aggregate amount of such dividend payments would have been $1.6 million. Because such dividends were not paid on May 15 or August 15, under the terms of the Series B Certificate of Designation, the holders of shares of Series B Preferred Stock were entitled to receive, when, as and if, declared by the Board of Directors, dividends at a dividend rate per annum equal to the normal dividend rate of 5% plus an amount equal to the number of dividend periods for which the Company failed to pay or set apart funds to pay dividends multiplied by 0.0625%, for each subsequent dividend period until the Company has paid or provided for the payment of all dividends on the shares of Series B Preferred Stock for all prior dividend periods. On October 30, 2019, dividends were declared by the Board of Directors with respect to the May 15, 2019 and August 15, 2019 dividend payment dates as well as the November 15, 2019 dividend payment date. A payment of $2.4 million made in the fiscal quarter ended January 31, 2020 represented the dividends payable with respect to the May 15, 2019 and August 15, 2019 dividend dates and the dividends payable with respect to the November 15, 2019 dividend date that were declared on October 30, 2019.

Liquidation. The holders of Series B Preferred Stock are entitled to receive, in the event that the Company is liquidated, dissolved or wound up, whether voluntarily or involuntarily, $1,000.00 per share plus all accumulated and unpaid dividends up to but excluding the date of such liquidation, dissolution, or winding up (the "Liquidation Preference"). Until the holders of Series B Preferred Stock receive the Liquidation Preference with respect to their shares of Series B Preferred Stock in full, no payment will be made on any junior shares, including shares of the Company's common stock. After the Liquidation Preference is paid in full, holders of the Series B Preferred Stock will not be entitled to receive any further distribution of the Company's assets. As of October 31, 2020 and 2019, the issued and outstanding shares of Series B Preferred Stock had an aggregate Liquidation Preference of $64.0 million.

Conversion Rights. Each share of Series B Preferred Stock may be converted at any time, at the option of the holder, into 0.591 shares of the Company's common stock (which is equivalent to an initial conversion price of $1,692.00 per share) plus cash in lieu of fractional shares. The conversion rate is subject to adjustment upon the occurrence of certain events, as described in the Series B Certificate of Designation. The conversion rate is not adjusted for accumulated and unpaid dividends. If converted, holders of Series B Preferred Stock do not receive a cash payment for all accumulated and unpaid dividends; rather, all accumulated and unpaid dividends are canceled.

The Company may, at its option, cause shares of Series B Preferred Stock to be automatically converted into that number of shares of its common stock that are issuable at the then-prevailing conversion rate. The Company may exercise its conversion right only if the closing price of its common stock exceeds 150% of the then-prevailing conversion price ($1,692.00 per share as of October 31, 2020) for 20 trading days during any consecutive 30 trading day period, as described in the Series B Certificate of Designation.

If the holders of Series B Preferred Stock elect to convert their shares in connection with certain "fundamental changes" (as defined in the Series B Certificate of Designation and described below), the Company will in certain circumstances increase the conversion rate by a number of additional shares of common stock upon conversion or, in lieu thereof, the Company may in certain circumstances elect to adjust the conversion rate and related conversion obligation so that shares of Series B Preferred Stock are converted into shares of the acquiring or surviving company, in each case as described in the Series B Certificate of Designation.

The adjustment of the conversion price is to prevent dilution of the interests of the holders of the Series B Preferred Stock from certain dilutive transactions with holders of the Company's common stock.

Redemption. The Company does not have the option to redeem the Series B Preferred Stock. However, holders of the Series B Preferred Stock can require the Company to redeem all or a portion of their shares of Series B Preferred Stock at a redemption price equal to the Liquidation Preference of the shares to be redeemed in the case of a "fundamental change" (as further described in the Series B Certificate of Designation). A fundamental change will be deemed to have occurred if any of the following occurs:

- any "person" or "group" is or becomes the beneficial owner, directly or indirectly, of 50% or more of the total voting power of all classes of the Company's capital stock then outstanding and normally entitled to vote in the election of directors;
- during any period of two consecutive years, individuals who at the beginning of such period constituted the board of directors of the Company (together with any new directors whose election to the Company's board of directors or whose nomination for election by the stockholders was approved by a vote of 66 2/3% of the Company's directors then still in office who were either directors at the beginning of such period or whose election or nomination for election was previously so approved) cease for any reason to constitute a majority of the directors of the Company then in office;
- the termination of trading of the Company's common stock on The Nasdaq Stock Market and the common stock is not approved for trading or quoted on any other U.S. securities exchange or established over-the-counter trading market in the U.S.; or
- the Company (i) consolidates with or merges with or into another person or another person merges with or into the Company or (ii) sells, assigns, transfers, leases, conveys or otherwise disposes of all or substantially all of the assets of the Company and certain of its subsidiaries, taken as a whole, to another person and, in the case of any such merger or consolidation described in clause (i), the securities that are outstanding immediately prior to such transaction (and which represent 100% of the aggregate voting power of the Company's voting stock) are changed into or exchanged for cash, securities or property, unless pursuant to the transaction such securities are changed into or exchanged for securities of the surviving person that represent, immediately after such transaction, at least a majority of the aggregate voting power of the voting stock of the surviving person.

Notwithstanding the foregoing, holders of shares of the Series B Preferred Stock will not have the right to require the Company to redeem their shares if:

- the last reported sale price of shares of the Company's common stock for any five trading days within the 10 consecutive trading days ending immediately before the later of the fundamental change or its announcement equaled or exceeded 105% of the conversion price of the Series B Preferred Stock immediately before the fundamental change or announcement;
- at least 90% of the consideration (excluding cash payments for fractional shares and in respect of dissenters' appraisal rights) in the transaction or transactions constituting the fundamental change consists of shares of capital stock traded on a U.S. national securities exchange or quoted on The Nasdaq Stock Market, or which will be so traded or quoted when issued or exchanged in connection with a fundamental change, and as a result of the transaction or transactions, shares of Series B Preferred Stock become convertible into such publicly traded securities; or
- in the case of a merger or consolidation constituting a fundamental change (as described in the fourth bullet above), the transaction is affected solely to change the Company's jurisdiction of incorporation.

Moreover, the Company will not be required to redeem any Series B Preferred Stock upon the occurrence of a fundamental change if a third party makes an offer to purchase the Series B Preferred Stock in the manner, at the price, at the times and otherwise in compliance with the requirements set forth above and such third party purchases all shares of Series B Preferred Stock validly tendered and not withdrawn.

The Company may, at its option, elect to pay the redemption price in cash, in shares of the Company's common stock valued at a discount of 5% from the market price of shares of the Company's common stock, or in any combination thereof. Notwithstanding the foregoing, the Company may only pay such redemption price in shares of the Company's common stock that are registered under the Securities Act and eligible for immediate sale in the public market by non-affiliates of the Company.

Voting Rights. Holders of Series B Preferred Stock currently have no voting rights; however, holders may receive certain voting rights, as described in the Series B Certificate of Designation, if (a) dividends on any shares of Series B Preferred Stock, or any other class or series of stock ranking on parity with the Series B Preferred Stock with respect to the payment of dividends, shall be in arrears for dividend periods, whether or not consecutive, containing in the aggregate a number of days equivalent to six calendar quarters or (b) the Company fails to pay the redemption price, plus accrued and unpaid dividends, if any, on the redemption date for shares of Series B Preferred Stock following a fundamental change. In each such event, the holders of Series B Preferred Stock (voting separately as a class with all other classes or series of stock ranking on parity with the Series B Preferred Stock with respect to the payment of dividends and upon which like voting rights have been conferred and are exercisable) will be entitled to elect two directors to the Company's board of directors in addition to those directors already serving on the Company's board of directors at such time (the "Series B Directors"), at the next annual meeting of the Company's stockholders (or at a special meeting of the Company's stockholders called for such purpose, whichever is earlier). The right to elect the Series B Directors will continue for each subsequent annual meeting of the Company's stockholders until all dividends accumulated on the shares of Series B Preferred Stock have been fully paid or set aside for payment or the Company pays in full or sets aside for payment such redemption price, plus accrued but unpaid dividends, if any, on the redemption date for the shares of Series B Preferred Stock following a fundamental change. The term of office of any Series B Directors will terminate immediately upon the termination of the right of holders of Series B Preferred Stock to elect such Series B Directors, as described in this paragraph. Each holder of Series B Preferred Stock will have one vote for each share of Series B Preferred Stock held in the election of Series B Directors. The Company previously failed to make timely payment of the accrued dividends on the Series B Preferred Stock with respect to the May 15, 2019 and August 15, 2019 dividend payment dates. Such amounts were fully paid on or about November 15, 2019.

So long as any shares of Series B Preferred Stock remain outstanding, the Company will not, without the consent of the holders of at least two-thirds of the shares of Series B Preferred Stock outstanding at the time (voting separately as a class with all other series of preferred stock, if any, on parity with the Series B Preferred Stock upon which like voting rights have been conferred and are exercisable) issue or increase the authorized amount of any class or series of shares ranking senior to the outstanding shares of the Series B Preferred Stock as to dividends or upon liquidation. In addition, the Company will not, subject to certain conditions, amend, alter or repeal provisions of the Company's certificate of incorporation, including the Series B Certificate of Designation, whether by merger, consolidation or otherwise, so as to adversely amend, alter or affect any power, preference or special right of the outstanding shares of Series B Preferred Stock or the holders thereof without the affirmative vote of not less than two-thirds of the issued and outstanding shares of Series B Preferred Stock.

Class A Preferred Shares (the "Series 1 Preferred Shares") of FCE FuelCell Energy Ltd.

As of October 31, 2020, FCE FuelCell Energy Ltd. ("FCE Ltd."), one of the Company's indirect subsidiaries, had 1,000,000 Series 1 Preferred Shares issued and outstanding, which were held solely by Enbridge. The Company guaranteed the return of principal and dividend obligations of FCE Ltd. to Enbridge, as the holder of the Series 1 Preferred Shares, pursuant to the Guarantee, dated May 27, 2004, made by the Company in favor of Enbridge, as amended by the Guarantee Amending Agreement dated April 1, 2011 and effective as of January 1, 2011 between the Company and Enbridge (the "Guarantee"). Subsequent to the end of fiscal year 2020, the Company paid off these obligations to Enbridge. Refer to Note 25. "Subsequent Events" for additional information.

On January 20, 2020, the Company, FCE Ltd. and Enbridge entered into a letter agreement (the "January 2020 Letter Agreement"), pursuant to which they agreed to amend the articles of FCE Ltd. relating to and setting forth the terms of the Series 1 Preferred Shares to: (i) remove the provisions of the articles permitting or requiring the issuance of shares of the Company's common stock in exchange for the Series 1 Preferred Shares or as payment of amounts due to the holders of the Series 1 Preferred Shares, (ii) remove certain provisions of the articles relating to the redemption of the Series 1 Preferred Shares, (iii) increase the annual dividend rate, commencing on January 1, 2020, to 15%, (iv) extend the final payment date for all accrued and unpaid dividends and all return of capital payments (i.e., payments of the principal redemption price) from December 31, 2020 to December 31, 2021, (v) clarify when dividend and return of capital payments were to be made in the future and extend the quarterly dividend and return of capital payments through December 31, 2021 (which were previously to be paid each quarter through December 31, 2020), (vi) remove certain terms and provisions of the articles that are no longer applicable, and (vii) make other conforming changes to the articles. The articles of FCE Ltd. were amended and filed in accordance with the provisions of the January 2020 Letter Agreement on March 26, 2020. Under the amended articles, FCE Ltd. continued to be required to make (a) annual dividend payments of Cdn. $500,000 and (b) annual return of capital payments of Cdn. $750,000.

The amendment to the Series 1 Preferred Shares resulted in an extinguishment of the prior Series 1 Preferred Shares for accounting purposes. A revised fair value was estimated using a discounted cash flow model resulting in a revised carrying value being recorded for the amended Series 1 Preferred Shares of Cdn. $23.4 million (U.S. $17.7 million) as of January 20, 2020, which resulted in a loss of Cdn. $0.2 million (U.S. $0.2 million) recorded in Other income, net on the Consolidated Statements of Operations and Comprehensive Loss during the year ended October 31, 2020. On an undiscounted basis, the Company's actual aggregate amount of all accrued and unpaid dividends to be paid on the Series 1 Preferred Shares as of October 31, 2020 totaled approximately Cdn. $23.2 million (U.S. $17.4 million) and the balance of the principal redemption price as of October 31, 2020 with respect to all of the Series 1 Preferred Shares totaled approximately Cdn. $4.3 million (U.S. $3.2 million).

Prior to the amendment, the Company bifurcated embedded derivatives related to the conversion feature and a variable dividend feature. As a result of the January 2020 Letter Agreement, both features were removed from the Series 1 Preferred Shares which resulted in the Company recognizing a gain of $0.6 million related to the extinguishment of the embedded derivatives.

The following summary of the terms of the Series 1 Preferred Shares describes such terms as they existed on October 31, 2019 (prior to any modification covered by the January 2020 Letter Agreement and the resulting amendment of the articles of FCE Ltd.). The terms of the Series 1 Preferred Shares required (i) annual dividend payments of Cdn. $500,000 and (ii) annual return of capital payments of Cdn. $750,000. Dividends accrued at a 1.25% quarterly rate on the unpaid principal balance, and additional dividends accrued on the cumulative unpaid dividends (inclusive of the Cdn. $12.5 million unpaid dividend balance as of the modification date) at a rate of 1.25% compounded quarterly. FCE Ltd. had the option, subject to the Company having sufficient authorized and unissued shares, of making dividend payments in the form of cash or shares of the Company's common stock under the terms of the Series 1 Preferred Shares.

Because the Series 1 Preferred Shares represented a mandatorily redeemable financial instrument, they are presented as a liability on the Consolidated Balance Sheets.

The Company made payments of Cdn. $1.9 million (or USD $1.6 million), Cdn. $0.3 million (or USD $0.2 million) and Cdn. $1.3 million (or USD $1.0 million) during fiscal years 2020, 2019 and 2018, respectively. The Company's return of capital and dividend payments were not made for the calendar quarters ended on March 31, 2019, June 30, 2019 and September 30, 2019. During fiscal year 2020, the Company made the return of capital and dividend payments for the obligations due as of March 31, 2019, June 30, 2019 and September 30, 2019. The Company recorded interest expense, which reflects the amortization of the fair value discount of approximately Cdn. $4.0 million (or USD $2.9 million), Cdn. $3.0 million (or USD $2.3 million) and Cdn. $2.8 million (or USD $2.2 million) in the fiscal years ended October 31, 2020, 2019 and 2018, respectively. As of October 31, 2020 and 2019, the carrying value of the Series 1 Preferred Shares was Cdn. $25.6 million ($19.2 million) and Cdn. $22.7 million ($17.2 million), respectively, and was classified as preferred stock obligation of subsidiary on the Consolidated Balance Sheets.

Derivative liability related to Series 1 Preferred Shares

Prior to the amendment, the conversion feature and variable dividend contained in the terms of the Series 1 Preferred Shares were not clearly and closely related to the characteristics of the Series 1 Preferred Shares. Accordingly, these features qualified as embedded derivative instruments and were required to be bifurcated and recorded as derivative financial instruments at fair value.

The fair value was based on valuation models using various assumptions, including historical stock price volatility, risk-free interest rate and a credit spread based on the yield indexes of technology high yield bonds, foreign exchange volatility as the Series 1 Preferred Shares are denominated in Canadian dollars, and the closing price of our common stock. The aggregate fair value of these derivatives included within long-term debt and other liabilities on the Consolidated Balance Sheets as of October 31, 2019 was $0.6 million.

Note 17. Segment Information

We are engaged in the development, design, production, construction and servicing of high temperature fuel cells for clean electric power generation. Critical to the success of our business is, among other things, our research and development efforts, both through customer-sponsored projects and Company-sponsored projects. The research and development activities are viewed as another product line that contributes to the development, design, production and sale of fuel cell products, however, it is not considered a separate operating segment. The chief operating decision maker does not review and assess financial information at a discrete enough level to be able to assess performance of research and development activities as if they operated as a standalone business segment, therefore, the Company has identified one business segment: fuel cell power plant production and research.

Revenues, by geographic location (based on the customer's ordering location) for the years ended October 31, 2020, 2019 and 2018 were as follows (in thousands):

	2020	2019	2018
United States	$ 67,750	$ 56,211	$ 50,953
South Korea	2,059	2,686	36,279
England	25	1,496	387
Germany	414	359	1,795
Canada	—	—	23
Switzerland	623	—	—
Total	$ 70,871	$ 60,752	$ 89,437

Service agreement revenue which is included within Service agreements and license revenues on the Consolidated Statement of Operations was $20.4 million, $15.1 million and $13.5 million for the years ended October 31, 2020, 2019 and 2018, respectively.

Long-lived assets located outside of the United States as of October 31, 2020 and 2019 are not significant individually or in the aggregate.

Note 18. Benefit Plans

We have stockholder approved equity incentive plans, a stockholder approved Employee Stock Purchase Plan and an employee tax-deferred savings plan, which are described in more detail below.

2018 Omnibus Incentive Plan

The Company's 2018 Omnibus Incentive Plan (as amended and restated from time to time, the "2018 Incentive Plan") authorizes grants of stock options, stock appreciation rights ("SARs"), restricted stock awards ("RSAs"), restricted stock units ("RSUs"), performance shares, performance units and incentive awards to key employees, directors, consultants and advisors. Stock options, RSAs and SARs have restrictions as to transferability. Stock option exercise prices are fixed by the Company's Board of Directors but shall not be less than the fair market value of our common stock on the date of the grant. SARs may be granted in conjunction with stock options.

At the May 8, 2020 reconvened 2020 Annual Meeting of Stockholders, the Company's stockholders approved the amendment and restatement of the original 2018 Incentive Plan, which authorizes the Company to issue up to 4,000,000 additional shares of the Company's common stock pursuant to awards granted under the 2018 Incentive Plan and provides for an increase in the annual limit on the grant-date fair value of awards to any non-employee director of the Company from $200,000 to $250,000.

Following the approval of the amended and restated 2018 Incentive Plan by the Company's stockholders, the 2018 Incentive Plan provides the Company with the authority to issue a total of 4,333,333 shares of the Company's common stock, 1,000,000 shares of which have been reserved for settlement of RSUs granted pursuant to an employment agreement, effective as of August 26, 2019, between the Company and Jason Few, our President and Chief Executive Officer (the "Sign-On Award"). The Sign-On Award was contingent upon obtaining stockholder approval of a sufficient number of additional shares under the 2018 Incentive Plan. The Company previously recorded the grants as a liability and, after obtaining such stockholder approval, reclassified the liability to additional paid-in capital. Of the 4,333,333 shares of the Company's common stock authorized to be issued under the 2018 Incentive Plan, 2,013,563 remain available for grant as of October 31, 2020.

On August 24, 2020, the Company's Board of Directors approved a Long Term Incentive Plan (the "LTI Plan") as a sub-plan consisting of awards made under the 2018 Incentive Plan. The participants in the LTI Plan are members of senior management and include the Company's named executive officers. The LTI Plan consists of three award components: (1) relative total shareholder return ("TSR") performance shares, (2) absolute TSR performance shares, and (3) time-vesting restricted stock units. The performance shares granted in fiscal year 2020 will be earned over the performance period ending on October 31, 2022, but will remain subject to a continued service-based vesting requirement until the third anniversary of the date of grant. The performance goal for the relative TSR performance shares is the TSR of the Company relative to the TSR of the Russell 2000 from May 8, 2020 through October 31, 2022. The performance goal for the absolute TSR performance shares is an increase in the Company's stock price from May 8, 2020 through October 31, 2022. The time-vesting RSUs granted in fiscal year 2020 will vest at a rate of one-third of the total number of RSUs on each of the first three anniversaries of the date of grant. None of the awards granted as part of the LTI Plan include any dividend equivalent or other stockholder rights. To the extent the awards are earned, they may be settled in shares or cash of an equivalent value at the Company's option.

Other Equity Incentive Plans

The Company's 2006 and 2010 Equity Incentive Plans remain in effect only to the extent of awards outstanding under the plans as of October 31, 2020.

Share-based compensation was reflected in the Consolidated Statements of Operations and Comprehensive Loss as follows (in thousands):

	2020	2019	2018
Cost of revenues	$ 344	$ 593	$ 543
General and administrative expense	1,424	1,865	2,256
Research and development expense	54	272	355
	$ 1,822	$ 2,730	$ 3,154

Stock Options

We account for stock options awarded to non-employee directors under the fair value method. The fair value of stock options is estimated on the grant date using the Black-Scholes option valuation model as follows:

	2018
Expected life (in years)	7.0
Risk free interest rate	2.8%
Volatility	72.7%
Dividend yield	—%

There were no options granted in fiscal year 2020 or fiscal year 2019.

The following table summarizes our stock option activity for the year ended October 31, 2020:

Options	Shares	Weighted-Average Option Price
Outstanding as of October 31, 2019	24,927	$ 104.73
Cancelled and forfeited	(1,036)	$ 416.16
Outstanding as of October 31, 2020	23,891	$ 91.23

The weighted average grant-date fair value per share for options granted during the year ended October 31, 2018 was $21.36. There were no options exercised in fiscal years 2020, 2019 or 2018.

The following table summarizes information about stock options outstanding and exercisable as of October 31, 2020:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number outstanding	Weighted Average Remaining Contractual Life	Weighted Average Exercise Price	Number exercisable	Weighted Average Exercise Price
$0.00 — $38.76	13,192	6.9	$ 19.16	13,192	$ 19.16
$38.77 — $416.16	10,699	3.1	$ 180.09	10,699	$ 180.09
	23,891	5.2	$ 91.23	23,891	$ 91.23

There was no intrinsic value for options outstanding and exercisable at October 31, 2020.

Restricted Stock Awards and Units Including Performance Based Awards

The following table summarizes our RSA and RSU activity for the year ended October 31, 2020:

Restricted Stock Awards and Units	Shares	Weighted-Average Fair Value
Outstanding as of October 31, 2019	191,115	16.11
Granted	1,978,108	2.84
Vested	(95,127)	17.15
Forfeited	(6,956)	17.79
Outstanding as of October 31, 2020	2,067,140	5.06

The RSUs granted (as noted above) include 1,000,000 RSUs granted as the Sign-On Award to Jason Few, the Company's President and Chief Executive Officer (the "CEO"), pursuant to the August 26, 2019 employment

agreement between the Company and the CEO. Pursuant to the terms of such Sign-On Award, 500,000 RSUs vest on August 26, 2022 and the remaining 500,000 RSUs, if earned, will vest on August 26, 2022 and the number earned, if any, will be based on the weighted average price of the Company's common stock during the thirty day calendar period ending on the vesting date compared to pre-established price goals. The vesting of all RSUs is subject to the individual's continuous employment with the Company through the vesting date. The RSUs granted also include awards made on August 24, 2020, under the LTI Plan, totaling 835,038 RSUs which include 668,030 performance awards and 167,008 time-based awards. Performance awards were issued assuming participants achieve 100% target performance. Should participants achieve the 200% performance level, they will receive up to 668,030 additional RSUs. The performance awards were valued based upon a Monte Carlo Simulation, and the 334,015 relative TSR performance shares are valued at $4.62 per share and the 334,015 absolute performance shares are valued at $5.17 per share. The performance shares and time-based awards will be expensed over a three-year period.

RSA and RSU expense is based on the fair value of the award at the date of grant and is amortized over the vesting period, which is generally over 3 or 4 years.

As of October 31, 2020, total unrecognized compensation cost related to RSAs and RSUs was $5.3 million which is expected to be recognized over approximately the next two years on a weighted-average basis.

Stock Awards

During the years ended October 31, 2020, 2019 and 2018, we awarded 58,303, 29,454 and 13,226 shares, respectively, of fully vested, unrestricted common stock to the independent members of our Board of Directors as a component of Board of Director compensation which resulted in recognizing $0.1 million, $0.1 million and $0.3 million of expense, respectively.

Employee Stock Purchase Plan

The 2018 Employee Stock Purchase Plan (the "ESPP") was approved by the Company's stockholders at the 2018 Annual Meeting of Stockholders. The adoption of the ESPP allows the Company to provide eligible employees of FuelCell Energy, Inc. and of certain of its designated subsidiaries with the opportunity to voluntarily participate in the ESPP, enabling such participants to purchase shares of the Company's common stock at a discount to market price at the time of such purchase. The maximum number of the Company's shares of common stock that may be issued under the ESPP is 30,248 shares.

Under the ESPP, eligible employees have the right to purchase shares of common stock at the lesser of (i) 85% of the last reported sale price of our common stock on the first business day of the offering period, or (ii) 85% of the last reported sale price of the common stock on the last business day of the offering period, in either case rounded up to avoid impermissible trading fractions. Shares issued pursuant to the ESPP contain a legend restricting the transfer or sale of such common stock for a period of 0.5 years after the date of purchase.

The ESPP activity for the year ended October 31, 2020, 2019 and 2018 was de minimis.

Employee Tax-Deferred Savings Plans

We offer a 401(k) plan (the "401(k) Plan") to all full time employees that provides for tax-deferred salary deductions for eligible employees (beginning the first month following an employee's hire date). Employees may choose to make voluntary contributions of their annual compensation to the 401(k) Plan, limited to an annual maximum amount as set periodically by the IRS. Employee contributions are fully vested when made. Under the 401(k) Plan, there is no option available to the employee to receive or purchase our common stock. Matching contributions of 2% under the 401(k) Plan aggregated $0.3 million, $0.5 million and $0.5 million for the years ended October 31, 2020, 2019, and 2018, respectively.

Note 19. Income Taxes

The components of loss before income taxes for the years ended October 31, 2020, 2019, and 2018 were as follows (in thousands):

	2020	2019	2018
U.S.	$ (85,865)	$ (74,133)	$ (47,314)
Foreign	(3,196)	(3,326)	(3,035)
Loss before income taxes	$ (89,061)	$ (77,459)	$ (50,349)

The Company recorded an income tax provision totaling $0.0 million and $0.1 million for the years ended October 31, 2020 and 2019, respectively, compared to income tax benefit of $3.0 million for the year ended October 31, 2018. The income tax expense for the years ended October 31, 2020 and 2019 primarily related to foreign taxes in South Korea and Canada. The income tax benefit for the year ended October 31, 2018 primarily related to the Tax Cuts and Jobs Act (the "TCJA") that was enacted on December 22, 2017. The TCJA reduced the U.S. federal corporate tax rate from 34% to 21% effective January 1, 2018 which resulted in a deferred tax benefit of $1.0 million primarily related to a reduction of the Company's deferred tax liability for IPR&D. The TCJA also established an unlimited carryforward period for the net operating loss ("NOL") the Company generated after 2017. This provision of the TCJA resulted in a reduction of the valuation allowance attributable to deferred tax assets at the enactment date by $2.0 million based on the indefinite life of the resulting NOL as well as the deferred tax liability for IPR&D.

Franchise tax expense, which is included in administrative and selling expenses, was $0.3 million, $0.2 million and $0.5 million for the years ended October 31, 2020, 2019 and 2018, respectively.

The reconciliation of the federal statutory income tax rate to our effective income tax rate for the years ended October 31, 2020, 2019 and 2018 was as follows:

	2020	2019	2018
Statutory federal income tax rate	(21.0)%	(21.0)%	(23.2)%
Increase (decrease) in income taxes resulting from:			
State taxes, net of Federal benefits	(1.1)%	(2.9)%	0.7%
Foreign withholding tax	0.0%	0.1%	0.0%
Net operating loss expiration, impairment and true-ups	129.2%	(1.3)%	4.6%
Nondeductible expenditures	1.4%	0.2%	1.5%
Change in tax rates	(0.6)%	(0.1)%	201.6%
Fair value adjustment on warrants	8.7%	—	—
Other, net	1.1%	(0.3)%	0.0%
Deferred only adjustment	4.4%	—	0.0%
Valuation allowance	(122.1)%	25.4%	(191.2)%
Effective income tax rate	—	0.1%	(6.0)%

Our deferred tax assets and liabilities consisted of the following as of October 31, 2020 and 2019 (in thousands):

	2020	2019
Deferred tax assets:		
Compensation and benefit accruals	$ 8,157	$ 7,446
Bad debt and other allowances	1,458	905
Capital loss and tax credit carry-forwards	15,456	12,645
Net operating losses (domestic and foreign)	100,791	217,430
Deferred license revenue	2,093	4,264
Inventory valuation allowances	116	312
Accumulated depreciation	9,759	9,200
Grant revenue	700	798
Excess business interest	5,544	-
Operating lease liabilities	2,387	-
Gross deferred tax assets:	146,461	253,000
Valuation allowance	(142,217)	(250,985)
Deferred tax assets after valuation allowance	4,244	2,015
Deferred tax liability:		
In process research and development	(2,391)	(2,321)
Right of use assets	(2,229)	
Net deferred tax liability	$ (376)	$ (306)

We continually evaluate our deferred tax assets as to whether it is “more likely than not” that the deferred tax assets will be realized. In assessing the realizability of our deferred tax assets, management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies. Based on the projections for future taxable income over the periods in which the deferred tax assets are realizable, management believes that significant uncertainty exists surrounding the recoverability of the deferred tax assets. As a result, we recorded a valuation allowance against our net deferred tax assets. As of October 31, 2020, we had $905.4 million of federal NOL carryforwards that expire in the years 2021 to 2038 and $457.1 million of state NOL carryforwards that expire in the years 2021 through 2038. Additionally, we had $12.5 million of state tax credits available that will expire from tax years 2021 to 2040. During the year, the Company experienced an “ownership change” as defined by Internal Revenue Code Section 382. As a result, the utilization of federal NOLs generated prior to October of 2020 is subject to limitation. The Company has recorded an adjustment to its deferred tax asset to account for NOLs it will not be able to utilize due to the Section 382 limitation, reducing the amount of federal NOLs for which deferred taxes have been recognized to $325.6 million, or a deferred tax asset of $68.4 million as of October 31, 2020 before being offset by a valuation allowance. The Company recorded a similar adjustment to its state NOL carryforward, reducing the amount of losses for which deferred taxes have been recognized in the financial statements to $431.8 million, or a deferred tax asset of $26.4 million before being offset by a valuation allowance.

In addition, the acquisition of Versa in fiscal year 2013 triggered a Section 382 ownership change at the level of Versa Power System which will limit the future usage of some of the federal and state NOLs that we acquired in that transaction. Accordingly, a valuation allowance has been recorded against the deferred tax asset associated with these attributes.

The Company’s financial statements reflect expected future tax consequences of uncertain tax positions that the Company has taken or expects to take on a tax return (including a decision whether to file or not file a return in a particular jurisdiction) presuming the taxing authorities’ full knowledge of the position and all relevant facts.

The liability for unrecognized tax benefits as of October 31, 2020 and 2019 was $0.0 and $15.7 million, respectively. This amount was directly associated with a tax position taken in a year in which federal and state NOL carryforwards were generated. Historically, the amount of unrecognized tax benefit has been presented as a reduction in the reported amounts of our federal and state NOL carryforwards. Due to the Section 382 ownership change discussed above, the underlying NOLs are no longer available for utilization, a deferred tax asset is not recorded on the Consolidated Balance Sheets and the uncertain tax position has been released. It is our policy to record interest and penalties on unrecognized tax benefits as income taxes; however, because of our significant NOLs, no provision for interest or penalties has been recorded.

We file income tax returns in the U.S. and certain states, primarily Connecticut and California, as well as income tax returns required internationally for South Korea and Germany. We are open to examination by the IRS and various states in which we file for fiscal year 2003 to the present. During the fiscal year ended October 31, 2018, the Company underwent an IRS examination for its fiscal year 2016 tax year which was closed without material adjustment.

Note 20. Loss Per Share

Basic earnings (loss) per common share ("EPS") are generally calculated as income (loss) available to common stockholders divided by the weighted average number of common shares outstanding. Diluted EPS is generally calculated as income (loss) available to common stockholders divided by the weighted average number of common shares outstanding plus the dilutive effect of common share equivalents.

The calculation of basic and diluted EPS for the years ended October 31, 2020, 2019 and 2018 was as follows (amounts in thousands, except share and per share amounts):

	2020	2019	2018
Numerator			
Net loss	$ (89,107)	$ (77,568)	$ (47,334)
Series A warrant exchange	—	(3,169)	—
Series B Preferred stock dividends	(3,331)	(3,231)	(3,200)
Series C Preferred stock deemed dividends and redemption value adjustments, net	—	(6,522)	(9,559)
Series D Preferred stock deemed dividends and redemption accretion	—	(9,755)	(2,075)
Net loss attributable to common stockholders	$ (92,438)	$ (100,245)	$ (62,168)
Denominator			
Weighted average common shares outstanding - basic	221,960,288	55,081,266	6,896,189
Effect of dilutive securities [(1)]	—	—	—
Weighted average common shares outstanding - diluted	221,960,288	55,081,266	6,896,189
Net loss to common stockholders per share - basic	$ (0.42)	$ (1.82)	$ (9.01)
Net loss to common stockholders per share - diluted [(1)]	$ (0.42)	$ (1.82)	$ (9.01)

(1) Due to the net loss to common stockholders in each of the years presented above, diluted earnings per share was computed without consideration to potentially dilutive instruments as their inclusion would have been antidilutive. As of October 31, 2020, 2019 and 2018, potentially dilutive securities excluded from the diluted loss per share calculation are as follows:

	October 31, 2020	October 31, 2019	October 31, 2018
Orion Warrants	2,700,000	6,000,000	—
May 2017 Offering – Series C Warrants	964,114	964,114	964,114
July 2016 Offering – Series A Warrants	—	—	640,000
Outstanding options to purchase common stock	23,891	24,927	26,958
Unvested Restricted Stock Awards	538	24,574	93,286
Unvested Restricted Stock Units	2,066,602	166,541	270,929
Series C Preferred Shares to satisfy conversion requirements	—	—	499,556
Series D Preferred Shares to satisfy conversion requirements	—	—	1,852,657
5% Series B Cumulative Convertible Preferred Stock	37,837	37,837	37,837
Series 1 Preferred Shares to satisfy conversion requirements	—	1,264	1,264
Total potentially dilutive securities	5,792,982	7,219,257	4,386,601

Note 21. Restricted Cash

As of October 31, 2020 and 2019, there was $42.2 million and $30.3 million, respectively, of restricted cash and cash equivalents pledged as performance security, reserved for future debt service requirements, reserved for letters of credit for certain banking requirements and contracts, and reserved to pay down the Orion Facility or be redeployed into other project financing at the option of the Orion Agent and the lenders under the Orion Facility. Refer to Note 25. "Subsequent Events" for additional information on the release of the restricted cash under the Orion Facility. The allocation of restricted cash is as follows (in thousands):

	October 31, 2020	October 31, 2019
Cash Restricted for Outstanding Letters of Credit [1]	$ 6,543	$ 5,733
Cash Restricted for PNC Sale-Leaseback Transactions	15,125	17,934
Cash Restricted for Crestmark Sale-Leaseback Transaction	431	—
Bridgeport Fuel Cell Park Project Debt Service and Performance Reserves	7,549	4,946
Orion Facility - Performance Reserve [2]	5,000	—
Orion Facility - Module and Debt Service Reserves [3]	1,950	—
Orion Facility - Project Proceeds Account [4]	4,243	—
Other	1,344	1,731
Total Restricted Cash	42,185	30,344
Restricted Cash and Cash Equivalents - Short-Term (5)	(9,233)	(3,473)
Restricted Cash and Cash Equivalents - Long-Term	$ 32,952	$ 26,871

(1) Letters of credit outstanding as of October 31, 2020 expire on various dates through August 2028.

(2) Short-term reserve related to certain project construction and financing milestones.

(3) Long-term reserve primarily to fund future module replacements for operating projects which fall under the collateral pool (CCSU and Triangle Street) under the Orion Facility.

(4) Reserve related to proceeds received from project refinancing to be used to pay-down the Orion Facility unless redeployed into other project financing (at the option of the Orion Agent and the lenders under the Orion Facility).

(5) Short-term restricted cash and cash equivalents are amounts expected to be released and categorized as unrestricted cash within twelve months of the balance sheet date.

Note 22. Commitments and Contingencies

Service Agreements

Under the provisions of its service agreements, the Company provides services to maintain, monitor, and repair customer power plants to meet minimum operating levels. Under the terms of such service agreements, the particular power plant must meet a minimum operating output during defined periods of the term. If minimum output falls below the contract requirement, the Company may be subject to performance penalties and/or may be required to repair or replace the customer's fuel cell module(s).

Power Purchase Agreements

Under the terms of the Company's PPAs, customers agree to purchase power from the Company's fuel cell power plants at negotiated rates. Electricity rates are generally a function of the customers' current and estimated future electricity pricing available from the grid. As owner or lessee of the power plants, the Company is responsible for all operating costs necessary to maintain, monitor and repair the power plants. Under certain agreements, the Company is also responsible for procuring fuel, generally natural gas or Biogas, to run the power plants. In addition, under the terms of some of the PPAs, the Company may be subject to a performance penalty if the Company does not meet certain performance requirements.

Other

As of October 31, 2020, the Company had unconditional purchase commitments aggregating $34.7 million, for materials, supplies and services in the normal course of business.

Legal Proceedings

SEC Proceedings

Between August 2005 and April 2017, we sold shares of our common stock pursuant to a series of "at-the-market" sales plans. The shares sold pursuant to these sales plans represented a portion of the shares registered by us pursuant to shelf registration statements we filed with the SEC during this time period. While we reported the number of shares we had sold, along with the net proceeds earned by us from those sales made during each fiscal quarter pursuant to the sales plans in our annual and quarterly reports on Forms 10-K and 10-Q, we omitted from the shelf registration statements certain information about the offerings, including the specific plan of distribution and the nature and terms of compensation or other agreements with any underwriters, dealers, or agents, and for some offerings, also omitted the specific type and quantity of securities offered; and we did not file or deliver prospectus supplements at the time of or prior to making these sales or otherwise timely disclose the information that had been omitted from the shelf registration statements, as is required by SEC regulations.

In 2018, we reported to the SEC Staff these sales and our failure to file or deliver prospectus supplements, and in response to our report, the SEC Staff opened an informal investigation of these sales. Following our self-report and the investigation by the SEC Staff and pursuant to our Offer of Settlement, on September 3, 2020, the SEC entered an order instituting cease-and-desist proceedings pursuant to Section 8A of the Securities Act, finding that we had violated Section 5(b)(2) of the Securities Act with respect to these sales and requiring us to cease and desist from committing or causing any violations and any future violations of Section 5(b)(2) but not imposing any civil penalties or disgorgement. Under the terms of the settlement, we consented to the entry of the order and neither admitted nor denied any of the SEC's findings. Such a settlement, without a waiver by the SEC, would disqualify us from relying on the safe harbors from registration under the Securities Act set forth in Regulation A, Regulation D and Regulation Crowdfunding, following the effective date of the settlement. Accordingly, we submitted an application to the SEC for a waiver of disqualification under Regulation A and Regulation D. We did not seek a waiver under Regulation Crowdfunding as we do not expect to rely on crowdfunding in raising capital. On September 3, 2020, the SEC Staff granted the requested waivers with respect to Regulation A and Regulation D pursuant to delegated authority.

POSCO Energy Matters

From approximately 2007 through 2015, we relied on POSCO Energy to develop and grow the South Korean and Asian markets for our products and services. We received upfront license payments and were entitled to receive royalty income from POSCO Energy pursuant to certain manufacturing and technology transfer agreements, including the Alliance Agreement dated February 7, 2007 (and the amendments thereto), the Technology Transfer, License and Distribution Agreement dated February 7, 2007 (and the amendments thereto), the Stack Technology Transfer and License Agreement dated October 27, 2009 (and the amendments thereto), and the Cell Technology Transfer and License Agreement dated October 31, 2012 (and the amendments thereto), which are collectively referred to herein as the "License Agreements". The License Agreements provided POSCO Energy with the exclusive technology rights to manufacture, sell, distribute and service our SureSource 300, SureSource 1500 and SureSource 3000 fuel cell technology in the South Korean and broader Asian markets. Due to certain actions and inactions of POSCO Energy, the Company has not realized any new material revenues, royalties or new projects developed by POSCO Energy since late 2015.

In November 2019, POSCO Energy spun-off its fuel cell business into a new entity, Korea Fuel Cell Co., Ltd. ("KFC"), without the Company's consent. As part of the spin-off, POSCO Energy transferred manufacturing and service rights under the License Agreements to KFC, but retained distribution rights and severed its own liability under the License Agreements. The Company formally objected to POSCO Energy's spin-off, and POSCO Energy posted a bond to secure any liabilities to the Company arising out of the spin-off. In September 2020, the Korean Electricity Regulatory Committee found that POSCO Energy's spin-off of the fuel cell business to KFC may have been done in violation of South Korean law.

On February 19, 2020, the Company notified POSCO Energy in writing that it was in material breach of the License Agreements by (i) its actions in connection with the spin-off of the fuel cell business to KFC, (ii) its suspension of performance through its cessation of all sales activities since late 2015 and its abandonment of its fuel cell business in Asia, and (iii) its disclosure of material nonpublic information to third parties and its public pronouncements about the fuel cell business on television and in print media that have caused reputational damage to the fuel cell business, the Company and its products. The Company also notified POSCO Energy that, under the terms of the License Agreements, it had 60 days to fully cure its breaches to the Company's satisfaction and that failure to so cure would lead to termination of the License Agreements. Further, on March 27, 2020, the Company notified POSCO Energy of additional instances of its material breach of the License Agreements based on POSCO Energy's failure to pay royalties required to be paid in connection with certain module replacements.

On April 27, 2020, POSCO Energy initiated a series of three arbitration demands against the Company at the International Court of Arbitration of the International Chamber of Commerce seated in Singapore alleging certain warranty defects in a sub-megawatt conditioning facility at its facility in Pohang, South Korea and seeking combined damages of approximately $3.3 million. Prior to filing the arbitrations, POSCO Energy obtained provisional attachments from the Seoul Central District Court attaching certain revenues owed to the Company by Korea Southern Power Company ("KOSPO") as part of such warranty claims, which has delayed receipt of certain payments owed to the Company. POSCO Energy subsequently sought additional provisional attachments on KOSPO revenues from the Seoul Central District Court based on unspecified warranty claims not yet filed in an additional amount of approximately $7 million, and additional provisional attachments on KOSPO revenues from the Seoul Central District Court based on its alleged counterclaims in the license termination arbitration described below in an additional amount of approximately $110 million. As of October 31, 2020, outstanding accounts receivable due from KOSPO were $4.8 million.

On June 28, 2020, the Company terminated the License Agreements with POSCO Energy and filed a demand for arbitration against POSCO Energy and KFC in the International Court of Arbitration of the International Chamber of Commerce based on POSCO Energy's (i) failure to exercise commercially reasonable efforts to sell the Company's technology in the South Korean and Asian markets, (ii) disclosure of the Company's proprietary information to third parties, (iii) attack on the Company's stock price and (iv) spin-off of POSCO Energy's fuel cell business into KFC without the Company's consent. The Company has requested that the arbitral tribunal (a) confirm through declaration that POSCO Energy's exclusive license to market the Company's technology and products in South Korea and Asia is null and void as a result of the breaches of the License Agreements and that the Company has the right to pursue direct sales in these markets, (b) order POSCO Energy and KFC to compensate the Company for losses and damages suffered in the amount of more than $200 million, and (c) order POSCO Energy and KFC to pay the Company's arbitration costs, including counsel fees and expenses. The Company has retained outside counsel on a contingency basis to pursue its claims, and outside counsel has entered into an agreement with a litigation finance provider to fund the legal fees and expenses of the arbitration. In October 2020, POSCO Energy filed a counterclaim in the arbitration (x) seeking approximately $880 million in damages based on allegations that the Company misrepresented the capabilities of its fuel cell technology to induce POSCO Energy to enter into the License Agreements and failed to turn over know-how sufficient for POSCO Energy to successfully operate its business; (y) seeking a declaration that the License Agreements remain in full force and effect and requesting the arbitral tribunal enjoin the Company from interfering in POSCO Energy's exclusive rights under the License Agreements and (z) seeking an order that the Company pay POSCO Energy's arbitration costs, including counsel fees and expenses.

The Company has discontinued revenue recognition of the deferred license revenue related to the terminated POSCO Energy License Agreements given the pending arbitration and will continue to evaluate this deferred revenue in future periods.

On August 28, 2020, POSCO Energy filed a complaint in the Court of Chancery of the State of Delaware (the "Court") purportedly seeking to enforce its rights as a stockholder of the Company to inspect and make copies and extracts of certain books and records of the Company and/or the Company's subsidiaries pursuant to Section 220 of the Delaware General Corporation Law and/or Delaware common law. POSCO Energy alleges that it is seeking to inspect these documents for a proper purpose reasonably related to its interests as a stockholder of the Company, including investigating whether the Company's Board of Directors and its management breached their fiduciary duties of loyalty, due care, and good faith. POSCO Energy seeks an order of the Court permitting POSCO Energy to inspect and copy the demanded books and records, awarding POSCO Energy reasonable costs and expenses, including reasonable attorney's fees incurred in connection with the matter, and granting such other and further relief as the Court deems just and proper.

On September 14, 2020, POSCO Energy filed a complaint in the United States District Court for the Southern District of New York alleging that the Company delayed the removal of restrictive legends on certain share certificates held by POSCO Energy in 2018, thus precluding POSCO Energy from selling the shares and resulting in claimed losses in excess of $1,000,000.

The Company does not believe that any of the arbitrations or legal proceedings brought against the Company by POSCO Energy are for a proper purpose. Further, the Company believes that all such arbitrations and legal proceedings are in fact simply fulfillment of POSCO Energy's prior threats to file a series of actions against the Company and are attempts to obtain leverage over the Company and, in certain proceedings, gain advantage in the pending arbitration filed by the Company against POSCO Energy. The Company will vigorously defend itself against POSCO Energy's claims in all forums and believes it will be apparent at the conclusion of each matter that each action was filed for an improper purpose.

Other Legal Proceedings

From time to time, the Company is involved in other legal proceedings, including, but not limited to, regulatory proceedings, claims, mediations, arbitrations and litigation, arising out of the ordinary course of its business ("Other Legal Proceedings"). Although the Company cannot assure the outcome of such Other Legal Proceedings, management presently believes that the result of such Other Legal Proceedings, either individually, or in the aggregate, will not have a material adverse effect on the Company's consolidated financial statements, and no material amounts have been accrued in the Company's consolidated financial statements with respect to these matters.

Impact of the COVID-19 Pandemic

On March 18, 2020, in response to the COVID-19 pandemic, we temporarily suspended operations at our Torrington, Connecticut manufacturing facility and also ordered those employees that could work from home to do so. The Company resumed operations in the manufacturing facility on June 22, 2020. All employees that were not able to work from home due to their job function during the manufacturing facility shutdown received full wages and benefits during such time. We did not implement any furlough, layoff or shared work program during such time. The Company continues to encourage a remote work protocol for portions of the workforce due to the continuing pandemic.

We continue to evaluate our ability to operate in light of recent resurgences of COVID-19 and the advisability of continuing operations based on federal, state and local guidance, evolving data concerning the pandemic and the best interests of our employees, customers and stockholders.

While we have attempted to continue business development activities during the pandemic, state and local shut downs, shelter in place orders and travel restrictions have impeded our ability to meet with customers and solicit new business, and certain bids and solicitations in which we typically participate have been postponed. We expect these impacts to continue until such shut downs, shelter in place orders and travel restrictions are fully lifted and bids and solicitations are allowed to proceed. We have not experienced any material impacts to our supply chain, construction or service activities to date.

Note 23. Supplemental Cash Flow Information

The following represents supplemental cash flow information, including amounts effectively settled as described in Note 3. “Acquisitions” (dollars in thousands):

	Year Ended October 31,		
	2020	2019	2018
Cash interest paid	$ 8,376	$ 4,091	$ 4,486
Income taxes paid	2	48	2
Noncash financing and investing activity:			
Noncash reclassification between inventory and project assets	1,152	—	10,793
Acquisition of project assets	—	16,704	—
Series C Preferred stock conversions	—	15,491	20,220
Series C preferred share modification	—	(6,047)	—
Series D preferred share conversions	—	31,183	—
Director stock compensation	104	102	282
Reclassification of value of executive share-based compensation	434	—	—
Addition of operating lease liabilities	899	—	—
Addition of operating lease right-of-use assets	899	—	—
Cashless warrant exercises	25,994	—	—
Reclassification to equity of warrant liability for warrant exercises	9,783	—	—
Accrued purchase of fixed assets, cash paid to be paid in subsequent period	39	71	1,579
Accrued purchase of project assets, cash to be paid in subsequent period	502	222	3,115

Note 24. Quarterly Information (Unaudited)

Selected unaudited financial data for each quarter of fiscal year 2020 and 2019 is presented below. We believe that the information reflects all normal recurring adjustments necessary for a fair presentation of the information for the periods presented.

(in thousands)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
Year ended October 31, 2020					
Revenues	$ 16,264	$ 18,880	$ 18,728	$ 16,999	$ 70,871
Gross profit (loss)	3,281	167	(3,128)	(8,045)	(7,725)
Loss from operations	(3,140)	(8,142)	(10,762)	(17,122)	(39,166)
Net loss	(40,151)	(14,769)	(15,331)	(18,856)	(89,107)
Series B preferred stock dividends	(931)	(800)	(800)	(800)	(3,331)
Net loss to common stockholders	(41,082)	(15,569)	(16,131)	(19,656)	(92,438)
Net loss to common stockholders per basic and diluted common share [1]	$ (0.20)	$ (0.07)	$ (0.07)	$ (0.08)	(0.42)
Year ended October 31, 2019					
Revenues	$ 17,783	$ 9,216	$ 22,712	$ 11,041	$ 60,752
Gross (loss) profit	(2,205)	(3,640)	7,965	(23,389)	(21,269)
Loss from operations	(15,244)	(17,623)	(1,070)	(32,992)	(66,929)
Net loss	(17,548)	(19,530)	(5,311)	(35,179)	(77,568)
Series A warrant exchange	-	(3,169)	-	-	(3,169)
Series B preferred stock dividends	(800)	(800)	(810)	(821)	(3,231)
Series C preferred stock deemed (dividends) contributions and redemption value adjustment	(9,005)	1,599	884	-	(6,522)
Series D preferred stock deemed dividends and redemption accretion	(5,685)	(976)	(3,091)	(3)	(9,755)
Net loss to common stockholders	(33,038)	(22,876)	(8,328)	(36,003)	(100,245)
Net loss to common stockholders per basic and diluted common share [1]	$ (3.97)	$ (2.06)	$ (0.18)	$ (0.23)	$ (1.82)

(1) The full year net loss to common stockholders per basic and diluted common share may not equal the sum of the quarters due to weighting of outstanding shares.

Note 25. Subsequent Events

December Common Stock Offering

In December of 2020, the Company and the lenders under the Orion Credit Agreement (the "Selling Stockholders") (see Note 14. "Debt" for the names of the lenders/Selling Stockholders) completed a public offering of the Company's common stock. In connection with this public offering, the Company and the Selling Stockholders entered into an underwriting agreement pursuant to which (i) the Company agreed to issue and sell to the underwriters 19,822,219 shares of the Company's common stock, plus up to 5,177,781 shares of common stock pursuant to an option to purchase additional shares, and (ii) the Selling Stockholders agreed to sell to the underwriters 14,696,320 shares of common stock, in each case at a price to the public of $6.50 per share. The underwriters exercised their option to purchase additional shares, resulting in the issuance and sale by the Company at the closing of the offering of a total of 25,000,000 shares of common stock. The offering closed on December 4, 2020.

Gross proceeds from the sale of common stock by the Company in the offering were $162.5 million. The Company did not receive any proceeds from the sale of common stock in the offering by the Selling Stockholders. Upon closing of the offering, the number of shares of the Company's common stock outstanding was 319,706,758.

The Company and the Selling Stockholders paid underwriting discounts and commissions of $0.2275 per share, and net proceeds to the Company were approximately $156.3 million after deducting such underwriting discounts and commissions and other estimated offering expenses.

In addition, in connection with the offering, the Company and its directors and officers entered into a customary 90-day lock-up agreement with the underwriters party to the underwriting agreement. As part of the offering, J.P. Morgan Securities LLC waived lock-up restrictions entered into in connection with the common stock offering consummated on October 2, 2020 with respect to all of the shares sold in this offering by the Company and the Selling Stockholders. J.P. Morgan Securities LLC also waived all remaining lock-up restrictions applicable to the Selling Stockholders, including with respect to the then-outstanding warrants held by the Selling Stockholders to purchase up to 2,700,000 shares of common stock (which warrants were issued pursuant to the Orion Credit Agreement), and the Selling Stockholders did not enter into new lock-up agreements in connection with the offering.

Orion Credit Agreement -- Payoff of All Obligations

On November 30, 2020, the Company, its subsidiary guarantors, and the Orion Agent entered into a payoff letter with respect to the Orion Credit Agreement (the "Orion Payoff Letter"). Pursuant to the Orion Payoff Letter, on December 7, 2020, the Company paid a total of $87.3 million to the Orion Agent, representing the outstanding principal, accrued but unpaid interest, prepayment premium, fees, costs and other expenses due and owing under the Orion Facility and the Orion Credit Agreement and related loan documents, in full repayment of the Company's outstanding indebtedness under the Orion Facility and the Orion Credit Agreement and related loan documents. In accordance with the Orion Payoff Letter, the aggregate prepayment premium set forth in the Orion Credit Agreement was reduced from approximately $14.9 million to $4 million and the Orion Agent, on behalf of itself and the lenders, agreed that any portion of the prepayment premium that would otherwise be required to be paid pursuant to the Orion Credit Agreement in excess of $4 million was waived by the Orion Agent and the lenders.

Concurrently with the Orion Agent's receipt of full payment pursuant to the Orion Payoff Letter, the Orion Agent released all of the collateral from the liens granted under the security documents associated with the Orion Facility (which included the release of $11.2 million of restricted cash to the Company, which became unrestricted cash), and the Company and its subsidiaries were unconditionally released from their respective obligations under the Orion Credit Agreement (and related loan documents) and the Orion Facility without further action. With the termination of the Orion Facility and the Orion Credit Agreement and related loan documents, the lenders no longer have the right to appoint representatives to attend the Company's Board of Director meetings as observers.

Warrant Exercise

On December 7, 2020, all remaining Orion Warrants were exercised to purchase a total of 2,700,000 shares of the Company's common stock for an aggregate exercise price of $653,400 (or $0.242 per share).

Enbridge/Series 1 Preferred Shares – Payoff of All Obligations

In December 2020, the Company, FCE Ltd., and Enbridge entered into a payoff letter (the "Enbridge Payoff Letter") pursuant to which the Company paid all amounts owed to Enbridge under the terms of the Series 1 Preferred Shares. As of December 31, 2020, the amount owed to Enbridge under the Series 1 Preferred Shares totaled Cdn. $27.4 million, which included Cdn. $4.3 million of principal and Cdn. $23.1 million of accrued dividends.

On December 18, 2020, the Company remitted payment totaling Cdn. $27.4 million, or approximately $21.5 million U.S. dollars, to Enbridge. Concurrent with receipt of the payment from the Company, Enbridge surrendered its Series 1 Preferred Shares in FCE Ltd., and the Guarantee and the January 2020 Letter Agreement (in each case as defined above) were terminated. All obligations related to the Series 1 Preferred Shares were extinguished upon payment.

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

Not applicable.

Item 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures.

The Company maintains disclosure controls and procedures, which are designed to provide reasonable assurance that information required to be disclosed in the Company's periodic SEC reports is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to its principal executive officer and principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

We carried out an evaluation, under the supervision and with the participation of our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this report. Based on that evaluation, the Company's principal executive officer and principal financial officer have concluded that the Company's disclosure controls and procedures were effective as of the end of the period covered by this report.

Management's Annual Report on Internal Control Over Financial Reporting.

Management of FuelCell Energy, Inc., and its subsidiaries (the "Company"), are responsible for establishing and maintaining adequate internal control over financial reporting. The 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 in the United States of America. Internal control over financial reporting includes those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles in the United States of America, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and
- 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.

Under the supervision and with the participation of management, including our principal executive and principal financial officers, we evaluated the Company's internal control over financial reporting as of October 31, 2020, based on criteria for effective internal control over financial reporting established in the *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on this assessment, we have concluded that the Company maintained effective internal control over financial reporting as of October 31, 2020 based on the specified criteria.

Discussion of prior material weakness

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis.

We initially disclosed in our Form 10-Q for the quarter ended April 30, 2019 that the Company did not have resources to sufficiently address asset impairments on a timely basis or the accounting considerations and disclosures related to the Company's amended credit facilities. As a result, we concluded that there was a material weakness in internal control over financial reporting, as we did not maintain effective controls over the accounting for and disclosures in

the consolidated financial statements related to asset impairments and credit facilities. As disclosed in our Annual Report on Form 10-K for the fiscal year ended October 31, 2019, this control deficiency was not remediated as of October 31, 2019 and the Company further identified that it did not have resources to sufficiently address certain other non-routine transactions and disclosures. This material weakness resulted in material misstatements that were corrected in the 2019 consolidated financial statements prior to issuance.

Remediation of the material weakness

During the fourth quarter of 2020, we completed the process of remediating the material weakness. We have reorganized the accounting department and hired additional resources to assist with the review of certain non-routine transactions and disclosures, we have held monthly meetings which include the entire Accounting staff to discuss non-routine accounting transactions and the steps required to account for them correctly, including whether third-party resources may be necessary to assist with reviewing of the accounting and disclosure of a transaction and we have engaged third-party resources to help evaluate the accounting and disclosure for significant matters.

Changes in Internal Control Over Financial Reporting.

Other than the changes discussed above related to non-routine transactions, there have been no changes in our internal control over financial reporting that occurred during the fourth quarter of fiscal year 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. OTHER INFORMATION

None.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item 10, with respect to our executive officers, is included in Part I of this Annual Report on Form 10-K. The other information required by this Item 10 is incorporated by reference to the Company's 2021 Proxy Statement to be filed with the SEC within 120 days after fiscal year end.

Our board of directors has adopted a Code of Ethics (the "Code"), which applies to the board of directors, named executive officers, and all employees. The Code provides a statement of certain fundamental principles and key policies and procedures that govern the conduct of our business. The Code covers all major areas of professional conduct, including employment policies, conflicts of interest, intellectual property and the protection of confidential information, as well as strict adherence to all laws and regulations applicable to the conduct of our business. As required by the Sarbanes-Oxley Act of 2002, our Audit and Finance Committee has procedures to receive, retain, investigate and resolve complaints received regarding our accounting, internal accounting controls or auditing matters and to allow for the confidential and anonymous submission by employees of concerns regarding questionable accounting or auditing matters. The Code can be found in the Corporate Governance sub-section of the section entitled "Investors" on our website at *www.fuelcellenergy.com*. We intend to disclose any changes in, or waivers from, the Code by posting such information on the same website or by filing a Current Report on Form 8-K, in each case to the extent such disclosure is required by rules of the SEC or Nasdaq.

Item 11. EXECUTIVE COMPENSATION

Information required under this Item is incorporated by reference to the Company's 2021 Proxy Statement to be filed with the SEC within 120 days after fiscal year end.

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

Information required under this Item is incorporated by reference to the Company's 2021 Proxy Statement to be filed with the SEC within 120 days after fiscal year end.

Equity Compensation Plan Information

The following table sets forth information with respect to the Company's equity compensation plans as of the end of the fiscal year ended October 31, 2020.

Plan Category	Number of Common Shares to be issued upon exercise of outstanding options and rights	Weighted-average exercise price of outstanding options and rights	Number of securities remaining available for future issuance under equity compensation plans
Equity compensation plans approved by security holders:			
Equity incentive plans [1]	23,891	$ 91.23	2,013,563
Employee stock purchase plan	—	—	30,248
Total	23,891	$ 91.23	2,043,811

(1) Includes the Company's 2018 Omnibus Incentive Plan, as amended and restated.

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

Information required under this Item is incorporated by reference to the Company's 2021 Proxy Statement to be filed with the SEC within 120 days after fiscal year end.

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information required under this Item is incorporated by reference to the Company's 2021 Proxy Statement to be filed with the SEC within 120 days after fiscal year end.

PART IV

Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

The following documents are filed as part of this report:

1 Financial Statements — See Index to Consolidated Financial Statements in Item 8 of this Annual Report on Form 10-K.

2 Financial Statement Schedules — Supplemental schedules are not provided because of the absence of conditions under which they are required or because the required information is given in the financial statements or notes thereto.

3 Exhibits — The following exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K.

EXHIBIT INDEX

Exhibit No.	Description
3.1	Certificate of Incorporation of the Company, as amended, July 12, 1999 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K dated September 21, 1999).
3.2	Certificate of Amendment of the Certificate of Incorporation of the Company, dated November 21, 2000 (incorporated by reference to Exhibit 3.3 to the Company's Annual Report on Form 10-K dated January 12, 2017).
3.3	Certificate of Amendment of the Certificate of Incorporation of the Company, dated October 31, 2003 (incorporated by reference to Exhibit 3.11 to the Company's Current Report on Form 8-K dated November 3, 2003).
3.4	Amended Certificate of Designation of Series B Cumulative Convertible Perpetual Preferred Stock, dated March 14, 2005 (incorporated by reference to Exhibit 3.4 to the Company's Annual Report on Form 10-K dated January 12, 2017).
3.5	Certificate of Amendment of the Certificate of Incorporation of the Company, dated April 8, 2011 (incorporated by reference to Exhibit 3.5 to the Company's Annual Report on Form 10-K dated January 12, 2017).
3.6	Certificate of Amendment of the Certificate of Incorporation of the Company, dated April 5, 2012 (incorporated by reference to Exhibit 3.6 to the Company's Annual Report on Form 10-K dated January 12, 2017).
3.7	Certificate of Amendment of the Certificate of Incorporation of the Company, dated December 3, 2015 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K dated December 3, 2015).
3.8	Certificate of Amendment of the Certificate of Incorporation of the Company, dated April 18, 2016 (incorporated by reference to Exhibit 3.9 to the Company's Quarterly Report on Form 10-Q for the period ending April 30, 2016).
3.9	Certificate of Amendment of the Certificate of Incorporation of the Company, dated April 7, 2017 (incorporated by reference to Exhibit 3.10 to the Company's Quarterly Report on Form 10-Q for the period ending April 30, 2017).
3.10	Certificate of Amendment of the Certificate of Incorporation of the Company, dated December 14, 2017 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K dated December 14, 2017).
3.11	Certificate of Amendment of the Certificate of Incorporation of FuelCell Energy, Inc., dated May 8, 2019 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on May 8, 2019).
3.12	Amended and Restated By-Laws of the Company, dated December 15, 2016 (incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K dated December 15, 2016).
3.13	Certificate of Amendment of the Certificate of Incorporation of FuelCell Energy, Inc., dated May 11, 2020 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on May 12, 2020).
4.1	Specimen of Common Share Certificate (incorporated by reference to Exhibit 4 to the Company's Annual Report on Form 10-K for fiscal year ended October 31, 1999).
4.2	Schedule A to Articles of Amendment of FuelCell Energy, Ltd., setting forth the rights, privileges, restrictions and conditions of Class A Cumulative Redeemable Exchangeable Preferred Stock (incorporated by reference to exhibit of the same number contained in the Company's Quarterly Report on Form 10-Q for the period ended January 31, 2009).

Exhibit No.	Description
4.3	Letter Agreement, dated March 31, 2011, and Guarantee, dated April 1, 2011, by and between the Company and Enbridge, Inc., and Revised Special Rights and Restrictions attributable to the Class A Preferred Stock of FuelCell Energy, Ltd. (incorporated by reference to Exhibits 4.1, 4.2 and 4.3 to the Company's Current Report on Form 8-K dated March 31, 2011).
4.4	Certificate of Designation for the Company's 5% Series B Cumulative Convertible Perpetual Preferred Stock (incorporated by reference to Exhibit 3.1 to the Company's Current Report Form 8-K, dated November 22, 2004).
4.5	Certificate of Designations for the Company's Series C Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, dated September 5, 2017).
4.6	Certificate of Designations, Preferences and Rights for the Company's Series D Convertible Preferred Stock (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K dated August 27, 2018).
4.7	Specimen Series D Convertible Preferred Stock Certificate. (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K dated August 27, 2018).
4.8	Form of Series A Warrants to purchase common stock (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated July 6, 2016).
4.9	Form of Series B Warrants to purchase common stock (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K dated July 6, 2016).
4.10	Form of Series C Warrants to purchase common stock (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K dated April 27, 2017).
4.11	Form of Series D Warrants to purchase common stock (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K dated April 27, 2017).
4.12	Form of Warrant to purchase common stock (incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K filed on November 6, 2019).
4.13	Letter Agreement, dated January 20, 2020, among FuelCell Energy, Inc., FCE FuelCell Energy Ltd., and Enbridge Inc. relating to the amendment of the terms of the Class A Cumulative Preferred Stock of FCE FuelCell Energy Ltd. (incorporated by reference to Exhibit 4.13 to the Company's Annual Report on Form 10-K for the year ended October 31, 2019, filed on January 22, 2020).
4.14	Schedule A setting forth the amended rights, privileges, restrictions and conditions of the Class A Cumulative Preferred Stock of FCE FuelCell Energy Ltd. (incorporated by reference to Exhibit 4.14 to the Company's Annual Report on Form 10-K for the year ended October 31, 2019, filed on January 22, 2020).
4.15	Description of Securities Registered Under Section 12 of the Securities Exchange Act of 1934, as amended.
4.16	Articles of FCE FuelCell Energy Ltd., effective as of January 20, 2020, including in Article 27.2 the Special Rights and Restrictions of the Class A Preferred Shares of FCE FuelCell Energy Ltd. (incorporated by reference to Exhibit 4.15 to the Company's Quarterly Report on Form 10-Q for the period ending April 30, 2020 filed on June 12, 2020).
10.1	Purchase and Sale Agreement between Groton Fuel Cell 1, LLC and PNC Energy Capital LLC, dated October 31, 2016 (incorporated by reference to Exhibit 10.1 to the Company's Annual Report on Form 10-K for the period ended October 31, 2016).
10.2	Lease Agreement between Groton Fuel Cell 1, LLC and PNC Energy Capital LLC, dated October 31, 2016 (incorporated by reference to Exhibit 10.2 to the Company's Annual Report on Form 10-K for the period ended October 31, 2016).

Exhibit No.	Description
10.3	Pledge Agreement between FuelCell Energy Finance, LLC and PNC Energy Capital LLC, dated October 31, 2016 (incorporated by reference to Exhibit 10.3 to the Company's Annual Report on Form 10-K for the period ended October 31, 2016).
10.4	**Alliance Agreement between FuelCell Energy, Inc. and POSCO Energy, dated as of February 7, 2007 (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q/A for the period ended January 31, 2009).
10.5	**Technology Transfer, License and Distribution Agreement between FuelCell Energy, Inc. and POSCO Energy, dated as of February 7, 2007 (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q/A for the period ended January 31, 2009).
10.6	**Stack Technology Transfer and License Agreement dated as of October 27, 2009, by and between FuelCell Energy, Inc. and POSCO Energy (incorporated by reference to Exhibit 10.1 of the Company's Current Report Form 8-K, dated October 27, 2009).
10.7	Lease agreement, dated March 8, 2000, between the Company and Technology Park Associates, L.L.C. (incorporated by reference to Exhibit 10.55 to the Company's Quarterly Report on Form 10-Q for the period ended April 30, 2000).
10.8	*FuelCell Energy, Inc. Amended and Restated 1998 Equity Incentive Plan (incorporated by reference to Exhibit 10.54 to the Company's Annual Report on Form 10-K for the period ended October 31, 2015).
10.9	*FuelCell Energy, Inc. 2006 Equity Incentive Plan (incorporated by reference to Exhibit 10.58 to the Company's Annual Report on Form 10-K for the period ended October 31, 2015).
10.10	*FuelCell Energy, Inc. Amended and Restated 2010 Equity Incentive Plan (incorporated by reference to Exhibit 10.59 to the Company's Annual Report on Form 10-K for the period ended October 31, 2015).
10.11	Letter agreement, dated September 28, 2015, between the Company and Technology Park Associates, L.L.C. exercising the extension option per the terms of the Lease Agreement, dated March 8, 2000, between the Company and Technology Park Associates, L.L.C. (incorporated by reference to Exhibit 10.60 to the Company's Annual Report on Form 10-K for the period ended October 31, 2015).
10.12	*Employment Agreement, dated March 21, 2012 and effective as of January 1, 2012 between the Company and Michael Bishop, Chief Financial Officer (incorporated by reference to the Exhibit 10.68 to the Company's Current Report Form 8-K, dated March 21, 2012).
10.13	Cell Technology Transfer and License Agreement dated October 31, 2012 by and between the Company and POSCO Energy, Co., Ltd. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K/A dated as of October 31, 2012 and filed on January 7, 2013).
10.14	Amendment to Technology Transfer Distribution and Licensing Agreement dated as of February 7, 2007 and the Stack Technology Transfer License Agreement dated as of October 27, 2009, each by and between the Company and POSCO Energy, Co., Ltd. (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated as of October 31, 2012).
10.15	Loan Agreement, dated as of March 5, 2013, between Clean Energy Finance and Investment Authority, as Lender, and the Company, as Borrower (incorporated by reference to Exhibit 10.69 to the Company's Quarterly Report on Form 10-Q for the period ended January 31, 2013).
10.16	Security Agreement, dated March 5, 2013, by the Company in favor of the Clean Energy Finance and Investment Authority (incorporated by reference to Exhibit 10.70 to the Company's Quarterly Report on Form 10-Q for the quarter ended January 31, 2013).
10.17	Assistance Agreement, dated November 19, 2015, by and between the State of Connecticut Acting by the Department of Economic Community and Development and the Company (incorporated by reference to Exhibit 10.84 to the Company's Annual Report on Form 10-K for the period ended October 31, 2015).

Exhibit No.	Description
10.18	Phase 1 Promissory Note, dated November 19, 2015, between the Company and the State of Connecticut Acting by and through the Department of Economic Community and Development (incorporated by reference to Exhibit 10.85 to the Company's Annual Report on Form 10-K for the period ended October 31, 2015).
10.19	Securities Purchase Agreement, dated July 6, 2016, between the Company and investors as listed on a Schedule of Buyers contained within the Security Purchase Agreement (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated July 6, 2016).
10.20	Amendment No. 1 to Securities Purchase Agreement, dated July 8, 2016, between the Company and investors as listed on a Schedule of Buyers contained within the Securities Purchase Agreement (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K dated July 12, 2016).
10.21	Amendment to Alliance Agreement, dated as of October 10, 2016, by and between the Company and POSCO Energy Co., Ltd. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated October 10, 2016).
10.22	Amendment to Technology Transfer, Distribution and Licensing Agreement, dated as of October 10, 2016, by and between the Company and POSCO Energy Co., Ltd. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated October 10, 2016).
10.23	Amendment to Stack Technology Transfer and License Agreement, dated as of October 10, 2016, by and between the Company and POSCO Energy Co., Ltd. (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated October 10, 2016).
10.24	Memorandum of Understanding for Market Transition dated as of March 17, 2017, by and between the Company and POSCO Energy Co., Ltd. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated March 17, 2017).
10.25	First Amendment to Assistance Agreement, dated as of April 3, 2017, and approved by the State of Connecticut, Office of the Attorney General on April 17, 2017 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated April 17, 2017).
10.26	*Employment Agreement, dated April 7, 2017, between the Company and Jennifer D. Arasimowicz, Senior Vice President, General Counsel and Corporate Secretary (incorporated by reference to Exhibit 10.90 to the Company's Quarterly Report on Form 10-Q for the period ending April 30, 2017).
10.27	*FuelCell Energy, Inc. 2018 Omnibus Incentive Plan (incorporated by reference to Annex A to the FuelCell Energy, Inc. Definitive Proxy Statement filed with the Securities and Exchange Commission on Schedule 14A on February 16, 2018).
10.28	*Form of Restricted Stock Award Agreement (U.S. Employees) (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated April 5, 2018).
10.29	*Form of Restricted Stock Unit Award Agreement (U.S. Employees) (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated April 5, 2018).
10.30	*Form of Restricted Stock Unit Award Agreement (Non-Employee Directors).(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated November 8, 2018).
10.31	*Form of Option Award Agreement (Non-Employee Directors) (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K dated April 5, 2018).
10.32	*FuelCell Energy, Inc. 2018 Employee Stock Purchase Plan (incorporated by reference to Annex B to the FuelCell Energy, Inc. Definitive Proxy Statement filed with the Securities and Exchange Commission on Schedule 14A on February 16, 2018).

Exhibit No.	Description
10.33	Second Amendment to Assistance Agreement, dated as of January 24, 2019, and approved by the State of Connecticut, Office of the Attorney General on January 28, 2019 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 5, 2019).
10.34	Waiver Agreement, dated February 21, 2019, by and between FuelCell Energy, Inc. and the Sole Holder of Series C Convertible Preferred Stock (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 21, 2019).
10.35	Credit Agreement, dated as of May 9, 2019 among Dominion Bridgeport Fuel Cell, LLC, as Borrower, Liberty Bank, as Administrative Agent and Co-Lead Arranger and Fifth Third Bank, as Co-Lead Arranger, the Lenders (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.36	$12,500,000 Promissory Note from Dominion Bridgeport Fuel Cell, LLC for the benefit of Liberty Bank (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.37	$12,500,000 Promissory Note from Dominion Bridgeport Fuel Cell, LLC for the benefit of Fifth Third Bank (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.38	Security Agreement dated as of May 9, 2019 by Dominion Bridgeport Fuel Cell, LLC in favor of Liberty Bank, as Administrative Agent (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.39	Pledge and Security Agreement dated as of May 9, 2019 by FuelCell Energy Finance, LLC for the benefit of Liberty Bank, as Administrative Agent (incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.40	Credit Agreement, dated as of May 9, 2019 among Dominion Bridgeport Fuel Cell, LLC, as Borrower, and Connecticut Green Bank, as Administrative Agent and Collateral Agent, the Lenders (incorporated by reference to Exhibit 10.7 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.41	$6,026,165.34 Promissory Note from Dominion Bridgeport Fuel Cell, LLC for the benefit of Connecticut Green Bank (incorporated by reference to Exhibit 10.8 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.42	Security Agreement dated as of May 9, 2019 by Dominion Bridgeport Fuel Cell, LLC in favor of Connecticut Green Bank, as Administrative Agent. (incorporated by reference to Exhibit 10.9 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.43	Pledge and Security Agreement dated as of May 9, 2019 by FuelCell Energy Finance, LLC for the benefit of Connecticut Green Bank, as Administrative Agent (incorporated by reference to Exhibit 10.10 to the Company's Current Report on Form 8-K filed on May 14, 2019).
10.44	International Swap Dealers Association, Inc. Master Agreement dated as of May 16, 2019 between Fifth Third Financial Risk Solutions, a division of Fifth Third Bank, and Bridgeport Fuel Cell, LLC (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 22, 2019).
10.45	Schedule to the 1992 Master Agreement dated as of May 16, 2019 between Fifth Third Risk Solutions, a division of Fifth Third Bank, and Bridgeport Fuel Cell, LLC (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 22, 2019).
10.46	License Agreement, effective as of June 11, 2019, between ExxonMobil Research and Engineering Company and FuelCell Energy, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 12, 2019).

Exhibit No.	Description
10.47	*Employment Agreement, dated as of July 30, 2019, by and between FuelCell Energy, Inc. and Michael Lisowski (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 30, 2019).
10.48	*Employment Agreement, dated as of July 30, 2019, by and between FuelCell Energy, Inc. and Anthony Leo (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on July 30, 2019).
10.49	*Employment Agreement, effective as of August 26, 2019, by and between FuelCell Energy, Inc. and Jason B. Few. (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on August 20, 2019).
10.50	Joint Development Agreement, effective October 31, 2019, by and between FuelCell Energy, Inc. and ExxonMobil Research and Engineering Company. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 6, 2019).
10.51	Credit Agreement, dated as of October 31, 2019, by and between FuelCell Energy, Inc., the Guarantors from time to time party thereto, the Lenders and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on November 6, 2019).
10.52	Pledge and Security Agreement, dated as of October 31, 2019, by and between FuelCell Energy, Inc., the Guarantors from time to time party thereto, the Lenders and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on November 6, 2019).
10.53	Loan Discount Letter, dated as of October 31, 2019, by and between FuelCell Energy, Inc. and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on November 6, 2019).
10.54	Agent Reimbursement Letter, dated as of October 31, 2019, by and between FuelCell Energy, Inc. and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on November 6, 2019).
10.55	Observer Right Agreement, dated as of October 31, 2019, by and between FuelCell Energy, Inc., the Guarantors from time to time party thereto, Orion Energy Credit Opportunities Fund II, L.P., Orion Energy Credit Opportunities Fund II PV, L.P. and Orion Energy Credit Opportunities Fund II GPFA, L.P. (incorporated by reference to Exhibit 10.7 to the Company's Current Report on Form 8-K filed on November 6, 2019).
10.56	First Amendment to Credit Agreement, dated as of November 22, 2019, by and among FuelCell Energy, Inc., each of the Guarantors party to the Credit Agreement, each of the lenders party to the Credit Agreement and Orion Energy Partners Investment Agent, LLC. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 25, 2019).
10.57	Amendment to Loan Agreement, dated as of December 19, 2019, by and among FuelCell Energy, Inc. and Connecticut Green Bank (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 20, 2019).
10.58	Second Amendment to Credit Agreement, dated as of January 20, 2020, by and among FuelCell Energy, Inc., each of the Guarantors party to the Credit Agreement, each of the lenders party to the Credit Agreement and Orion Energy Partners Investment Agent, LLC.(incorporated by reference to Exhibit 10.117 to the Company's Annual Report on Form 10-K for the year ended October 31, 2019, filed on January 22, 2020).
10.59	Purchase and Sale Agreement, dated February 11, 2020, by and between Central CA Fuel Cell 2, LLC and Crestmark Equipment Finance (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 13, 2020).

Exhibit No.	Description
10.60	Equipment Lease Agreement, dated February 11, 2020, by and between Central CA Fuel Cell 2, LLC and Crestmark Equipment Finance (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on February 13, 2020).
10.61	Assignment Agreement, dated February 11, 2020, by a Central CA Fuel Cell 2, LLC in favor of Crestmark Equipment Finance (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on February 13, 2020).
10.62	Pledge Agreement, dated February 11, 2020, by and between FuelCell Energy Finance, LLC and Crestmark Equipment Finance (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on February 13, 2020).
10.63	Guaranty Agreement, dated February 11, 2020, by FuelCell Energy, Inc. in favor of Crestmark Equipment Finance (incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on February 13, 2020).
10.64	Technology License and Access Agreement for Tulare BioMAT Fuel Cell Power Plant, dated February 11, 2020, by and among Crestmark Equipment Finance, Central CA Fuel Cell 2, LLC and FuelCell Energy, Inc. (incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K filed on February 13, 2020).
10.65	Third Amendment to Credit Agreement, dated as of February 11, 2020, by and among FuelCell Energy, Inc., each of the Guarantors party to the Credit Agreement, each of the lenders party to the Credit Agreement and Orion Energy Partners Investment Agent, LLC. (incorporated by reference to Exhibit 10.7 to the Company's Current report on Form 8-K filed on February 13, 2020)
10.67	Consent and Waiver, dated as of February 11, 2020, by and among FuelCell Energy, Inc., each of the Guarantors party to the Credit Agreement, each of the lenders party to the Credit Agreement and Orion Energy Partners Investment Agent, LLC. (incorporated by reference to Exhibit 10.8 to the Company's Current Report on Form 8-K filed on February 13, 2020).
10.68	Paycheck Protection Program Promissory Note, entered into on April 20, 2020 and dated April 16, 2020, between Liberty Bank and FuelCell Energy, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 24, 2020).
10.69	*First Amendment, dated as of April 23, 2020, to the Employment Agreement, effective as of August 26, 2019, between FuelCell Energy, Inc. and Jason B. Few (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on April 24, 2020).
10.70	Fourth Amendment to Credit Agreement, dated as of April 30, 2020, by and among FuelCell Energy, Inc., each of the Guarantors party to the Credit Agreement, each of the lenders party to the Credit Agreement and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 4, 2020).
10.71	*FuelCell Energy, Inc. 2018 Omnibus Incentive Plan, as amended and restated, effective as of May 8, 2020 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 12, 2020).
10.72	Fifth Amendment to Credit Agreement, dated as of June 8, 2020, by and among FuelCell Energy, Inc., each of the Guarantors party to the Credit Agreement, each of the lenders party to the Credit Agreement and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.13 to the Company's Quarterly Report on Form 10-Q for the period ending April 30, 2020).
10.73	Open Market Sale Agreements between FuelCell Energy, Inc. and Jefferies LLC dated June 16, 2020 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 16, 2020).
10.74	*FuelCell Energy, Inc. Long Term Incentive Plan as approved August 24, 2020 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on August 24, 2020).

Exhibit No.	Description
10.75	*Form of FuelCell Energy, Inc. 2018 Omnibus Incentive Plan Performance Share Award (Relative TSR) (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on August 24, 2020).
10.76	*Form of FuelCell Energy, Inc. 2018 Omnibus Incentive Plan Performance Share Award (Absolute TSR) (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on August 24, 2020).
10.77	Underwriting Agreement, dated as of September 29, 2020, by and among FuelCell Energy, Inc., and J.P. Morgan Securities LLC, Barclays Capital Inc. and Canaccord Genuity LLC, as representatives of several Underwriters named therein. (incorporated by reference to Exhibit 1.1 to the Company's Current Report on Form 8-K filed on October 2, 2020).
10.78	*FuelCell Energy, Inc. Fiscal Year 2021 Long Term Incentive Plan, as approved November 24, 2020 (incorporated by reference to Exhibit 10.1 to the Company's Report on Form 8-K filed on November 27, 2020).
10.79	*Form of FuelCell Energy, Inc. 2018 Omnibus Incentive Plan Relative TSR Performance Share Award Agreement (incorporated by reference to Exhibit 10.2 to the Company's Report on Form 8-K filed on November 27, 2020).
10.80	*Form of FuelCell Energy, Inc. 2018 Omnibus Incentive Plan Absolute TSR Performance Share Award Agreement (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on November 27, 2020).
10.81	Payoff Letter, dated November 30, 2020, among FuelCell Energy, Inc., each of the Guarantors party thereto, and Orion Energy Partners Investment Agent, LLC (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 1, 2020).
10.82	Underwriting Agreement, dated as of December 1, 2020, by and among FuelCell Energy, Inc., the Selling Stockholders named therein, and J.P. Morgan Securities LLC, as representative of the several Underwriters named therein (incorporated by reference to Exhibit 1.1 to the Company's Current Report on Form 8-K filed on December 4, 2020).
10.83	Payoff Letter, dated December 16, 2020, between FuelCell Energy, Inc., FCE FuelCell Energy Ltd., and Enbridge Ltd. With respect to the Class A Preferred Shares of FCE FuelCell Energy Ltd. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 21, 2020).
21	Subsidiaries of the Registrant
23.1	Consent of Independent Registered Public Accounting Firm
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes Oxley Act of 2002
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes Oxley Act of 2002
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes Oxley Act of 2002
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes Oxley Act of 2002

Exhibit No.	Description
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 Schema Document
101.CAL#	Inline XBRL Calculation Linkbase Document
101.LAB#	Inline XBRL Labels Linkbase Document
101.PRE#	Inline XBRL Presentation Linkbase Document
101.DEF#	Inline XBRL Definition Linkbase Document
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101)

The exhibits marked with the section symbol (#) are interactive data files.

* Management Contract or Compensatory Plan or Arrangement

** Confidential Treatment has been granted for portions of this document

\# Filed with this Annual Report on Form 10-K are the following documents formatted in iXBRL (Inline Extensible Business Reporting Language): (i) the Consolidated Balance Sheets as of October 31, 2020 and 2019, (ii) the Consolidated Statements of Operations and Comprehensive Loss for the fiscal years ended October 31, 2020, 2019 and 2018, (iii) the Consolidated Statements of Changes in Equity for the fiscal years ended October 31, 2020, 2019 and 2018, (iv) the Consolidated Statements of Cash Flows for the fiscal years ended October 31, 2020, 2019 and 2018, and (v) Notes to the Consolidated Financial Statements.

Item 16. FORM 10-K SUMMARY

Not applicable.

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.

FUELCELL ENERGY, INC.

/s/ Jason B. Few
Jason B. Few
President, Chief Executive Officer
and Chief Commercial Officer

Dated: January 21, 2021

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

Signature	Capacity	Date
/s/ Jason B. Few Jason B. Few	President, Chief Executive Officer, Chief Commercial Officer and Director (Principal Executive Officer)	January 21, 2021
/s/ Michael S. Bishop Michael S. Bishop	Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial Officer and Principal Accounting Officer)	January 21, 2021
/s/ James H. England James H. England	Director – Chairman of the Board	January 21, 2021
/s/ Chris Groobey Chris Groobey	Director	January 21, 2021
/s/ Matthew Hilzinger Matthew Hilzinger	Director	January 21, 2021
/s/ Natica von Althann Natica von Althann	Director	January 21, 2021

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STOCKHOLDER INFORMATION

Corporate Offices
FuelCell Energy, Inc.
3 Great Pasture Road
Danbury, CT 06810

Form 10-K
A copy of the Annual Report on Form 10-K for the year ended October 31, 2020, which is filed with the U.S. Securities and Exchange Commission, can be accessed from our website at www.fuelcellenergy.com. We will provide, without charge, a copy of the Annual Report on Form 10-K for the year ended October 31, 2020. You may request a copy by writing to Investor Relations at the address below.

Company Contacts
For additional information about FuelCell Energy, Inc. please contact:

FuelCell Energy, Inc.
Investor Relations
3 Great Pasture Road
Danbury, CT 06810
IR@fce.com

Corporate Website
www.fuelcellenergy.com

Registrar and Transfer Agent
Stockholders with questions regarding lost certificates, address changes or changes of ownership should contact:

American Stock Transfer & Trust Company, LLC
Operations Center
6201 15th Avenue
Brooklyn, NY 11219
(800) 937.5449
(718) 921.8124
info@amstock.com
www.amstock.com

Independent Registered Public Accounting Firm
KPMG LLP

Legal Counsel
Foley & Lardner LLP

Annual Meeting
The Annual Meeting of Stockholders will be held Thursday, April 8, 2021 at 10:00 a.m. Eastern Daylight Time

The Annual Meeting will be a completely "virtual meeting", conducted via live audio webcast on the Internet. You will be able to attend the Annual Meeting as well as vote and submit your questions during the live audio webcast of the meeting by visiting **www.virtualshareholdermeeting.com/FCEL2021** and entering the 16-digit control number included in our notice of internet availability of the proxy materials, on your proxy card or in the instructions that accompanied your proxy materials.

DIRECTORS AND OFFICERS

BOARD OF DIRECTORS

James H. England [1, 2, 3, 5]
Chief Executive Officer of
Stahlman—England Irrigation, Inc.

Jason Few [2]
President, Chief Executive Officer and
Chief Commercial Officer of
FuelCell Energy, Inc.

Matthew F. Hilzinger [2, 3, 4, 5]
Former Executive Vice President and
Chief Financial Officer of
USG Corporation

Natica von Althann [2, 3, 4, 5]
Former Financial Executive at Bank of America
and Citigroup

Chris Groobey [2, 3, 4, 5]
Former Partner at Wilson
Sonsini Goodrich & Rosati

[1] Chairman of the Board of Directors
[2] Executive Committee
[3] Audit and Finance Committee
[4] Compensation Committee
[5] Nominating and Corporate Governance Committee

OFFICERS

Jason Few
President, Chief Executive Officer and Chief Commercial Officer

Michael S. Bishop
Executive Vice President, Chief Financial Officer and Treasurer

Jennifer D. Arasimowicz
Executive Vice President, General Counsel, Chief Administrative Officer and Corporate Secretary

Anthony J. Leo
Executive Vice President, Chief Technology Officer

Michael J. Lisowski
Executive Vice President, Chief Operating Officer

Statements in this Report relating to matters not historical are forward-looking statements that involve important factors that could cause actual results to differ materially from those anticipated. Cautionary statements identifying such important factors are described in reports, including the Form 10-K for the fiscal year ended October 31, 2020, filed by FuelCell Energy, Inc. with the Securities and Exchange Commission and available at www.fuelcellenergy.com.

3 Great Pasture Road
Danbury, CT 06810
203.825.6000

www.FuelCellEnergy.com