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Genie Energy Ltd.
Form 10-K
March 19, 2019

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2018,

or

Transition report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934.

Commission File Number: 1-35327

Genie Energy Ltd.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or organization)

45-2069276
(I.R.S. Employer Identification No.)

520 Broad Street, Newark, New Jersey 07102

(Address of principal executive offices, zip code)

(973) 438-3500

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(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Class B common stock, par value \$.01 per share	New York Stock Exchange
Series 2012-A Preferred stock, par value \$.01 per share	New York Stock Exchange

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically, if any, 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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

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Large accelerated filer
Non-accelerated filer

Accelerated filer
Smaller reporting company
Emerging growth company

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

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

The aggregate market value of the voting and non-voting stock held by non-affiliates of the registrant, based on the closing price on June 30, 2018 (the last business day of the registrant's most recently completed second fiscal quarter) of the Class B common stock of \$4.96 per share, as reported on the New York Stock Exchange, was approximately \$82.4 million.

As of March 15, 2019, the registrant had outstanding 25,517,003 shares of Class B common stock and 1,574,326 shares of Class A common stock. Excluded from these numbers are 249,558 shares of Class B common stock held in treasury by Genie Energy Ltd.

DOCUMENTS INCORPORATED BY REFERENCE

The definitive proxy statement relating to the registrant's Annual Meeting of Stockholders, to be held May 8, 2019, is incorporated by reference into Part III of this Form 10-K to the extent described therein.

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Genie Energy Ltd.

Annual Report on Form 10-K

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Part I

As used in this Annual Report, unless the context otherwise requires, the terms “the Company,” “Genie,” “we,” “us,” and “our” refer to Genie Energy Ltd., a Delaware corporation, and its subsidiaries, collectively.

Item 1. Business.

BUSINESS OVERVIEW

The Company owns 99.3% of its subsidiary, Genie Energy International Corporation ("GEIC"), which owns 100% of Genie Retail Energy ("GRE"), 100% of Genie Energy Services ("GES"), 60% of Prism Solar Technology, Inc. ("Prism") and 97% of Genie Oil and Gas, Inc. ("GOGAS").

GRE, owns and operates retail energy providers, ("REPs"), including IDT Energy, Inc. ("IDT Energy"), Residents Energy, LLC ("Residents Energy"), Town Square Energy ("TSE"), Southern Federal Power ("SFP") and Mirabito Natural Gas, ("Mirabito"). Its REP businesses resell electricity and natural gas to residential and business customers primarily in the Eastern United States. Internationally, GRE manages our interest in a joint venture that serves retail customers in the United Kingdom ("U. K.") and our business in Japan recently launched commercial operations. In January 2019, we acquired an 80% controlling interest in Lumo Energia Ojy ("Lumo"), a REP with approximately 32,000 residential customers in Finland.

GES oversees Diversegy LLC ("Diversegy"), a retail energy advisory and brokerage company that serves commercial and industrial customers throughout the U.S. and manages our 60% controlling interest in Prism, a solar solutions company that is engaged in U.S. based manufacturing of solar panels, solar installation design and project management.

GOGAS is an oil and gas exploration company that owns an interest in a contracted drilling services operation and an 86.1% interest in Afek Oil and Gas, Ltd. ("Afek"), an oil and gas exploration project in the Golan Heights in Northern Israel. GOGAS also holds controlling interests in inactive oil and gas projects. Until September 2018, GOGAS owned Atid Drilling Ltd., a drilling services company operating in Israel. In September 2018, the Company divested a majority interest in Atid in exchange for a 37.5% interest in a newly formed contracted drilling services company in Israel.

As of December 31, 2018, Genie Retail Energy International, LLC ("GREI"), a subsidiary of GRE which holds the Company's ventures in the U. K., Japan and Finland, and GRES have outstanding deferred stock units granted to officers, employees and a contractor that represent an aggregate interest of 4.0% and 4.5% of the equity of GREI and

GRES, respectively. The deferred stock units are subject to vesting until 2020.

REPORTABLE SEGMENTS

In the fourth quarter of 2018, we revised our reportable segments in connection with the acquisition of Prism and reduced exploration activities. Specifically, we separated Genie Energy Services (“GES”) from GRE into a separate reportable segment which includes Prism. We also integrated GOGAS and Afek into one reportable segment.

We have three reportable business segments: GRE, GES, and GOGAS. Our reportable segments are distinguished by types of service, customers and methods used to provide their services. Financial information by segment and geographic areas is presented in “Note 18 — Business Segment Information” in the Notes to our Consolidated Financial Statements in this Annual Report.

GENERAL BUSINESS INFORMATION

Our main offices are located at 520 Broad Street, Newark, New Jersey 07102. Our telephone number is (973) 438-3500 and our web site is www.genie.com.

We make available free of charge through the investor relations page of our web site (<http://genie.com/investors/sec-filings/>) our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to these reports, and all beneficial ownership reports on Forms 3, 4 and 5 filed by directors, officers and beneficial owners of more than 10% of our equity as soon as reasonably practicable after such material is electronically filed with the Securities and Exchange Commission. We have adopted a Code of Business Conduct and Ethics for all of our employees, including our principal executive officer and principal financial officer. Copies of our Code of Business Conduct and Ethics are available on our web site.

Our web site (www.genie.com) and the information contained therein or incorporated therein are not incorporated into this Annual Report on Form 10-K or our other filings with the Securities and Exchange Commission.

KEY EVENTS IN OUR HISTORY

In November 2004, IDT Corporation, or IDT, our former corporate parent, launched a retail energy provider business in New York State under the brand name IDT Energy.

In October 2011, we were spun-off by IDT and became an independent public company listed on the New York Stock Exchange.

In December 2013, GRE acquired Dallas-based Diversegy, LLC, a retail energy advisory and brokerage company that serves commercial and industrial customers throughout the United States.

In November 2016, Genie Retail Energy purchased Retail Energy Holdings, LLC, which operates REPs under the brand name Town Square Energy. The acquisition added 48,000 residential customer equivalents, or RCEs, and expanded GRE's serviceable markets into Connecticut, Massachusetts, New Hampshire, Rhode Island and new territories in Ohio.

In July 2017, GRE entered into a definitive agreement with Energy Global Investments Pty Ltd. to launch Shoreditch Energy Limited ("Shoreditch"), a joint venture to open electricity and natural gas service to residential and small business customers in the U.K.

In August 2017, GRE acquired Mirabito Natural Gas, a commercial supplier located in Florida. The acquisition added 11,000 RCEs and expanded GRE's serviceable markets into Florida.

In November 2017, Afek suspended its exploratory program in Northern Israel after complimentary analysis of the results from its completed wells did not identify commercially producible quantities of oil or natural gas.

In May 2018, GRE acquired Smile Energy G.K., a Japanese company licensed to provide electricity to end-use costumers in Japan.

In October 2018, Genie acquired a 60% interest in Prism, a solar solutions company that is engaged in U.S.-based manufacturing of solar panels, solar installation design and project management.

RECENT DEVELOPMENTS

In September 2018, GOGAS divested its interest in Atid in exchange for a 37.5% interest in a newly formed drilling services company in Israel.

In January 2019, GRE acquired an 80% interest in Lumo Energia Oyj (“Lumo”), a provider of electricity to residential customers in Finland. Lumo has approximately 32,000 residential customers in Finland.

DIVIDENDS

We pay a quarterly dividend on both of our common and preferred stock. The aggregate dividends paid in the year ended December 31, 2018 on our Class A and Class B common stock (the “Common Stock”) was \$7.7 million, as follows:

On March 23, 2018, we paid a quarterly Base Dividend of \$0.075 per share on our Common Stock for the fourth quarter of 2017 to stockholders of record at the close of business on March 19, 2018.

On May 23, 2018, we paid a quarterly Base Dividend of \$0.075 per share on our Common Stock for the first quarter of 2018 to stockholders of record at the close of business on May 15, 2018.

On August 24, 2018, we paid a quarterly Base Dividend of \$0.075 per share on our Common Stock for the second quarter of 2018 to stockholders of record at the close of business on August 15, 2018.

On November 30, 2018, we paid a quarterly Base Dividend of \$0.075 per share on our Common Stock for the third quarter of 2018 to stockholders of record at the close of business on November 19, 2018.

On March 6, 2019, our Board of Directors declared a quarterly dividend of \$0.075 per share on our Class A common stock and Class B common stock for the fourth quarter of 2018 to stockholders of record as of the close of business on March 25, 2019. The dividend will be paid on March 29, 2019.

The aggregate dividends paid in the year ended December 31, 2018 on our Preferred Stock was \$1.5 million, as follows:

On February 15, 2018, we paid a quarterly Base Dividend of \$0.1594 per share on our Preferred Stock for the fourth quarter of 2017 to stockholders of record at the close of business on February 6, 2018 of our Preferred Stock.

On May 15, 2018, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the first a quarter of 2018 to stockholders of record at the close of business on May 7, 2018 of our Preferred Stock.

On August 15, 2018, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the second quarter of 2018 to stockholders of record at the close of business on August 8, 2018 of our Preferred Stock.

On November 15, 2018, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the third quarter of 2018 to stockholders of record as of the close of business on November 6, 2018.

On February 15, 2019, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the fourth quarter of 2018 to stockholders of record at the close of business on February 6, 2019 in the aggregate amount of \$0.4 million.

BUSINESS

Genie Retail Energy

Genie Retail Energy is comprised of REPs and related businesses. GRE's REP businesses purchase electricity and natural gas on the wholesale markets and resell these commodities to their residential and business customers. The positive difference between the net sales price of electricity and natural gas sold to its customers and the cost of their electricity and natural gas supplies and related costs are the REP businesses' gross profits.

GRE's U.S. REP businesses operate in certain utility territories within the deregulated retail energy markets of thirteen states in the Eastern and Midwestern U.S.: Connecticut, Delaware, Illinois, Maryland, Maine, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Florida and Rhode Island, as well as in Washington, D.C. A GRE subsidiary has recently become licensed in Texas. Internationally, GRE is serving customers in the United Kingdom through a joint venture and in Japan. In January 2019, GRE begun serving customers in Finland through acquisition of majority interest in Lumo.

GRE's U.S. REP businesses operate under several brand names including IDT Energy, Residents Energy, Town Square Energy, Southern Federal Power and Mirabito. Internationally, GRE REPs operate under Orbit Energy in the U. K., Genie Japan in Japan and Lumo in Finland. Their diverse offerings, in both the electricity and natural gas markets include, variable rate offerings, fixed rate offerings, and green renewable offerings.

As part of our ongoing business development efforts, we seek out new opportunities in domestic and international jurisdictions, however, there are no assurances we will be successful in launching any such operations.

Historically, GRE's REP businesses have expanded organically – adding new customers through customer acquisition programs at a rate faster than customers lost through attrition or churn – as well as through acquisitions of other REPs and books of business. New customers are generally acquired through a combination of marketing and sales channels including door-to-door solicitation, telemarketing, online and digital marketing, direct mail, and by competitive bidding for exclusive contracts awarded by certain municipalities that, when authorized by state laws, award participating residents' electricity supply to a single supplier.

Customer churn is a significant factor in the REP business, with monthly churn rates for GRE's REPs averaging between four and eight percent per month. Customer churn tends to decrease when commodity prices fall, when weather-driven consumption decreases, when the price to REP customers decreases relative to competitors including the incumbent utility provider, or when the REPs incentivize customer tenure. Customer churn tends to increase when commodity prices rise, when weather driven consumption increases or spikes, or when the price to REP customers increases relative to the prices charged by competitors including incumbent utility providers. Newly acquired customers have higher rates of churn than longer-term customers.

On July 17, 2017, we entered into a definitive agreement with Energy Global Investments Pty Ltd (“EGC”) to launch a joint venture to offer electricity and natural gas service to residential and small business customers in the United Kingdom under the Orbit Energy brand. In September and December 2018, the Company contributed a total of \$1.3 million to the venture, which increased GEUK's total contribution to \$5.3 million. In connection with the revised contributions and obligations, GEUK's ownership of the venture increased from 65% to 67%.

On August 10, 2017, GRE acquired Mirabito Natural Gas, a Ft. Lauderdale, Florida-based natural gas supplier, from Angus Partners, LLC (“Angus”). Mirabito serves commercial and government customers throughout Florida.

On June 7, 2018, Company subsidiary Genie Japan, LLC (“Genie Japan”), acquired Smile Energy G.K., (“Smile Energy”). Smile Energy is a Japanese company licensed to provide electricity to customers in Japan. The aggregate purchase price was \$0.7 million. In addition, Capital Sixty received an option to purchase a 5% membership interest in Genie Japan at an exercise price of \$1. The option is exercisable on the earlier of 18 months from the start of enrolling retail energy customers in Japan or June 7, 2020. At any time before exercise, Genie Japan may cancel the option in exchange for a payment of \$0.3 million to Capital Sixty. In February 2019, the Company enrolled its first meters in the retail market under the brand name Genie Energy.

In January 2019, the Company acquired a controlling interest in Lumo, a Helsinki based provider of electricity to residential customers in Finland. At the time of the acquisition, Lumo was serving 32,000 customers.

For the past two years, GRE's REP businesses expanded to new markets both to accelerate growth of our customer base and to reduce operational and regulatory risk associated with heavy geographical concentration.

GRE's revenue comprises 98% and 99% of our total consolidated revenue in 2018 and 2017, respectively. In 2018, GRE generated revenue of \$274.4 million comprised of \$227.9 million from sales of electricity, \$46.6 million from sales of natural gas, and a minimal amount of other revenue, as compared with revenue of \$262.3 million in 2017, comprised of \$222.2 million from the sales of electricity, \$40.1 million from the sales of natural gas and a minimal amount of other revenue. Electricity sales have been a more significant portion of GRE's business in recent years.

GRE's REP operations are seasonal. Approximately 50% and 45% of our natural gas revenues in 2018 and 2017, respectively, were generated during the first quarter, when the demand for heating peaks. Although the demand for electricity is not as seasonal as natural gas, approximately 30% of total revenues from electricity sales in 2018 and 2017 were generated in the third quarter when the demand for cooling peaks.

Variations in weather can significantly impact GRE's operations. For example, a polar vortex resulted in unusually sustained cold weather in the first quarter of 2014. This increased demand that was characterized by extraordinarily

large spikes in the prices of wholesale electricity and natural gas in markets where GRE's REPs and other retail providers purchase their supply.

As of December 31, 2018, GRE serviced 315,000 meters (245,000 electric and 70,000 natural gas), as compared to 412,000 meters (307,000 electric and 105,000 natural gas) as of December 31, 2017. The decrease in meters served was driven primarily by a strategic decision to reduce marketing efforts in certain territories.

REP Industry Overview

REPs operate in deregulated retail energy markets in the US and overseas. REPs purchase electricity and natural gas on the wholesale markets and resell the commodities to their customers, who may include homeowners, renters and small to mid-sized commercial and governmental operations and institutions. Generally, incumbent local utilities continue to handle electricity and natural gas distribution, billing, and collections. The utilities remit the proceeds collected for the commodity supply portion of their bills less certain fees to the REPs.

REPs generally have no significant fixed assets and low levels of capital expenditure. Their cost of revenues is incurred to purchase electricity and natural gas in their respective wholesale markets and other factors. Selling, general and administrative expenses are primarily related to customer acquisition, customer retention, billing and purchase of receivables, or POR, fees paid to the utilities, and program management.

As of December 31, 2018, there were thirty U.S. states in which there is some level of energy deregulation. We currently market in all the states where there is residential deregulation covering both electricity and natural gas. We are in the process of applying for licenses or setting up operations in additional states and are constantly evaluating entrance into new markets. Internationally, many of the most heavily populated countries in Western Europe, are deregulated. In addition, Japan and other Asian countries have recently deregulated residential energy markets as well.

Competitors in the highly competitive REP market have engaged in unfair business practices to sign up new customers which creates an unfavorable impression about our industry on consumers, regulators or political bodies. Further, such practices can lead to regulatory action, such as the recent New York PSC Order and other regulatory proceedings and investigations the Company is subject to in several states, that can negatively impact us and the industry.

Customers; Marketing

United States

The services of GRE's U.S. REPs - IDT Energy, Residents Energy, Town Square Energy, Southern Federal Power and Mirabito - are made available to customers under several offerings with distinct terms and conditions. The majority of our customer base is enrolled in variable rate programs via automatically renewing or month-to-month agreements, which enable us to recover our wholesale costs for electricity and natural gas through adjustments to the rates charged to our customers. The frequency and degree of these rate adjustments is determined by GRE, and is not restricted by regulation.

As of December 31, 2018, customers on variable rate products constituted 61% of our electric load, with the balance from customers on fixed rate agreements. For our variable rate product, the amount we charge to our customers reflects the underlying commodity cost plus a markup.

Variable rate products are available to all customers in all states served by GRE's REPs except for Connecticut. Likewise, Renewable (Green) energy supply options exist in all markets served by GRE's REPs. Renewable (Green) Electricity supply is 100% matched with renewable energy certificates, or RECs, that reflect the generation of electricity from sources such as hydro-electric wind, solar and biomass.

The electricity and natural gas we sell through all of our offerings are metered and delivered to customers by the local utilities. The utilities also provide billing and collection services for the majority of our customers. For a small number of direct bill customers, we perform our own billing and collection. Additionally, GRE's REPs' receivables are, in many states, purchased by the utilities in whose areas we operate for a percentage of their face value (over the course of 2018, the associated cost was approximately 1.3% of GRE's revenue) in exchange for the utility receiving a first priority lien in the customer receivable without recourse against the REP. As a result, in these states, credit risk is mitigated. These are referred to as purchase of receivables, or POR, programs.

GRE's REPs market their energy services primarily through direct marketing methods, including door-to-door sales, outbound telemarketing direct mail digital channel. As of December 31, 2018, GRE serviced 315,000 meters (245,000 electric and 70,000 natural gas), as compared to 412,000 meters (307,000 electric and 105,000 natural gas) as of December 31, 2017. The decrease in meters served was driven primarily by a strategic decision to reduce marketing efforts in certain territories.

GRE seeks to acquire profitable customers with a focus on low-risk markets, specifically where the utilities have adopted a portfolio of REP-friendly, regulatory-driven programs. Among these programs is POR programs. Under POR programs, utilities are contractually obligated to purchase customer receivables at pre-determined and fixed discounts. Utilities also offer consolidated billing as part of the POR program. Through consolidated billing, the utilities retain the responsibility for billing the individual customer and the subsequent collection of the remittances. There are markets in which we operate that the utilities engage in consolidated billing on behalf of REP's but are not obligated to guarantee the receivables.

Certain utilities in Connecticut, Ohio, New York, Pennsylvania, Illinois, Washington, D.C., Massachusetts and Maryland offer POR programs, without recourse, that permit customers with past-due balances to remain in the POR and consolidated bill programs. However, utilities in New Jersey generally do not permit customers with past-due balances beyond 120 days to enroll or remain in their POR programs, which means that after a certain amount of time (determined based on the specific commodity), the REP becomes responsible for the billing and collection of the commodity portion of the future invoices for its delinquent customers. Certain utilities in Delaware, Illinois, New Hampshire, Ohio and Rhode Island do not offer POR but they do offer consolidated billing. In Florida, there is no POR and we bill customers directly.

Additionally, GRE targets markets in which we can procure energy in an efficient and transparent manner. We seek to purchase wholesale energy where there is a real-time market that reflects a fair price for the commodity for all participants. This allows GRE to reflect a true market cost base and adjust its rates to its variable rate customers taking into account prevailing market rates.

We regularly monitor other deregulated or deregulating markets to determine if they are appropriate for entry, and may initiate the licensing process in a selected region to facilitate entry into the region contingent upon favorable deregulatory developments.

International

The services of GRE's international REPs – Orbit Energy, Genie Energy Japan and Lumo Energia, - are made available to customers under several offerings with distinct terms and conditions. In each country, there are varying rules and regulations regarding customer contracts and rate setting. Many of our international customers are on variable rate programs via automatically renewing or month-to-month agreements, which enable us to recover our wholesale costs for electricity and natural gas through adjustments to the rates charged to our customers. The frequency and degree of these rate adjustments is determined by GRE, and is not restricted by regulation. Additionally, many of our customers are on fixed rate contracts, which guarantees a rate per unit of energy to the customer for the duration of the agreed contract period.

The electricity and natural gas we sell through all of our offerings internationally are delivered to customers by the local utilities. In these jurisdictions we bill customers directly and are responsible for collection.

In 2018, GRE's international REPs did not contribute materially to GRE's revenues or gross profit.

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Acquisition and Management of Gas and Electric Supply

Since 2009, certain of GRE's U.S. REPs have been party to a Preferred Supplier Agreement with BP Energy Company, or BP. The agreement allows for purchases of electricity and natural gas for customers focused in areas where the utilities have POR programs. Under the arrangement, those REPs purchase electricity and natural gas from BP at market rate plus a fee. The obligations to BP are secured by a first security interest in deposits or receivables from utilities in connection with their purchase of the REPs' customer's receivables under the applicable POR program, and in any cash deposits or letters of credit posted in connection with any collateral accounts with BP. The agreement with BP has been amended to cover the territories in which we operate. The agreement was modified and extended on June 7, 2018 to cover all domestic GRE REPs, and is scheduled to terminate on November 30, 2021. Our ability to purchase electricity and natural gas under this agreement is subject to satisfaction of certain conditions including the maintenance of certain covenants.

GRE is required to meet certain minimum green energy supply criteria in some of the markets in which it operates. We meet those thresholds by acquiring renewable energy certificates, or REC's. In addition, GRE offers green or other renewable energy products to its customers in all of the territories in which we operate. GRE acquires green renewable energy conversion rights or attributes and REC's to satisfy the load requirements for these customers.

GRE does not own electrical power generation, transmission, or distribution facilities, or natural gas production, pipeline or distribution facilities. GRE's REPs currently contract with Dominion Transmission, Inc., National Fuel Supply, Williams Gas Pipeline and Texas Eastern Transmission and others for natural gas pipeline, storage and transportation services, and utilizes the New York Independent System Operator, Inc., or NYISO, and PJM Interconnection, LLC, or PJM, for electric transmission and distribution. NYISO operates the high-voltage electric transmission network in New York State, and administers and monitors New York's wholesale electricity markets. PJM is a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of thirteen states (including New Jersey, Pennsylvania, Maryland and Illinois) and the District of Columbia.

For risk management purposes, GRE's REPs utilize forward physical delivery contracts for a portion of their purchases of electricity and natural gas, which are defined as commodity derivative contracts. In addition, GRE's REPs enter into put and call options as hedges against unfavorable fluctuations in market prices of electricity and natural gas.

The ISOs perform real-time load balancing for each of the electrical power grids in which GRE REPs operate. Similarly, load balancing is performed by the utilities or local distribution company, or LDC, for each of the natural gas markets in which GRE operates. Load balancing ensures that the amount of electricity and natural gas that GRE's REPs purchase is equal to the amount necessary to service its customers' demands at any specific point in time. GRE's REPs are charged or credited for balancing the electricity and natural gas purchased and sold for their account by their suppliers and the LDCs. GRE's REPs manage the differences between the actual electricity and natural gas demands of their customers and their bulk or block purchases by buying and selling in the spot market, and through monthly cash

settlements and/or adjustments to future deliveries in accordance with the load balancing performed by utilities, LDCs, and/or ISOs.

Internationally, GRE's REPs partner with local providers of energy supply services. Hedging strategies are currently being developed as customer acquisition efforts ramp up.

Competition

United States

As an operator of REPs, GRE competes with the local utility companies in each of the markets in which it provides services and with many other licensed REPs. In some markets, competitor REPs are affiliated with local utilities. GRE also competes with several large vertically integrated energy companies as well as smaller independent operators. Competition with the utilities and REPs impacts GRE's gross margins, customer acquisition rates and exposes GRE to customer churn.

REPs and utilities offering fixed rate products or guaranteed pricing often are unable to change their sell rates offered to customers in response to underlying commodity price volatility. In a downward moving commodity cost environment, variable rate REPs typically become more competitive as they benefit from the lag that utilities experience in reducing their sell rate to reflect the lower commodity costs, and they may benefit from decreases in margin pressure, improvements in the customer acquisition environment, and lower rates of churn. In a rising commodity cost environment, REPs that offer variable rate products, and reflect real-time commodity costs, will typically become less competitive with fixed rate providers, experience increased margin pressure, a more challenging customer acquisition environment and higher rates of customer churn.

Increasing our market share depends in part on our ability to persuade more customers to switch from other providers to one of our REPs at a higher rate than our customers churn to other providers. Moreover, local utilities and some REPs may have certain advantages such as name recognition, financial strength and long-standing relationships with customers. Persuading potential customers to switch to GRE requires significant marketing and sales operations.

International

GREI's REPs, compete with the local utility companies in each of the markets in which they provide services and with many other licensed REPs. In some markets, competitor REPs are affiliated with local utilities. GREI also competes with several large vertically integrated energy companies. Competition with the utilities and REPs impacts GREI's

gross margins, customer acquisition rates and exposes GREI to customer churn.

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Increasing our market share depends in part on our ability to persuade more customers to switch from other providers to one of our REPs at a higher rate than our customers churn to other providers. Moreover, local utilities and some REPs may have certain advantages such as name recognition, financial strength and long-standing relationships with customers. Persuading potential customers to switch to GREI requires significant marketing and sales operations.

Regulation

United States

REPs such as ours must be licensed in each state and utility service territory in which they operate. Each is subject to the rules and regulations governing the operations of REPs in each jurisdiction.

Although the rates charged by GRE's REPs are not regulated in the same way as the rates of utility companies, the manner in which the REPs market to potential customers, and the relationships between the REPs and their customers, are heavily regulated. GRE's REPs must also comply with various quarterly and/or annual reporting requirements in order to maintain their eligibility to provide service. In certain jurisdictions the REPs are required to publish product offers with the applicable regulatory commissions, or in the public domain, generally on a website established for such purpose. In addition to the regulations that govern the relationships between GRE's REPs and their customers, GRE's REPs also maintain specific Terms & Conditions or Terms of Service for each product in each jurisdiction that customers must agree to be bound by.

Due to dramatic increases in wholesale electricity costs that occurred during the "polar vortex" of the winter of 2014, the retail electricity prices that GRE's REPs and many other variable rate electricity suppliers charged to their customers increased sharply. These retail electricity price increases resulted in large numbers of complaints, regulatory actions, and calls for legislation, regulation and litigation. GRE's subsidiary, IDT Energy, paid approximately \$5 million in rebates to affected customers in the year ended December 31, 2014. These events adversely affected GRE's REPs customer churn, gross margins and results of operations.

As discussed more fully below in Item Note 15 of the Consolidated Financial Statements included in this Annual Report on Form 10-K, the Company is party to legal proceedings that arise in the ordinary course of business including those with utility commissions or other government regulatory or law enforcement agencies.

As of December 31, 2018, GRE's REPs operate in eight utility territories in New York, six utility territories in New Jersey, nine utility territories in Pennsylvania, four utility territories in Maryland, six utility territories in Ohio, five utility territories in Massachusetts, two utility territories in New Hampshire, two in Connecticut, one in Rhode Island, one in Washington, D.C. two in Illinois. The State of New York, the Commonwealth of Pennsylvania, the State of

New Jersey, the State of Maryland, the State of Illinois, the District of Columbia, the State of Ohio, the State of New Hampshire, the State of Rhode Island, the State of Connecticut, the State of Florida, the Commonwealth of Massachusetts, the State of Delaware, the State of Maine, the federal government, and related public service/utility commissions, among others, establish the rules and regulations for our REP operations

Like all operators of REPs, GRE is affected by the actions of governmental agencies, mostly on the state level, by the respective state Public Service/Utility Commissions, and other organizations (such as NYISO and PJM) and indirectly by the Federal Energy Regulatory Commission, or FERC. Regulations applicable to electricity and natural gas have undergone substantial change over the past several years as a result of restructuring initiatives at both the state and federal levels. We may be subject to new laws, orders or regulations or the revision or interpretation of existing laws, orders or regulations.

New York Public Service Commission Orders

In December 2017, the New York Public Service Commission (“PSC”) held an evidentiary hearing to assess the retail energy market in New York. The parties recently completed post-hearing briefing in the proceedings. The Company is evaluating the potential impact of any new order from the PSC that may follow from the evidentiary process, while preparing various contingencies for operation in compliance with any new requirements that may be imposed. Depending on the final language of any new order, as well as the Company’s ability to modify its relationships with its New York customers, an order could have a substantial impact upon the operations of GRE’s REPs in New York. As of December 31, 2018, New York represented 32.4% of GRE’s total meters served and 24.8% of the total residential customer equivalents (“RCEs”) of GRE’s customer base. For the years ended December 31, 2018 and 2017, New York gross revenues were \$74.2 million and \$91.0 million, respectively.

An RCE represents a natural gas customer with annual consumption of 100 mmbtu or an electricity customer with annual consumption of 10 MWh. Because different customers have different rates of energy consumption, RCEs are an industry standard metric for evaluating the consumption profile of a given retail customer base.

On December 16, 2016, the PSC issued an order (the “2016 Order”) prohibiting REPs to service to customers enrolled in New York’s utility low-income assistance programs. Temporary stays of the 2016 Order expired, and REPs were required to return service of their low-income customers to the relevant local incumbent utility on the modified schedule set forth in the PSC’s 2016 Order. The 2016 Order required GRE’s REPs to transfer customer accounts comprising approximately 18,700 meters, representing approximately 10,600 RCEs, to their respective incumbent utilities in the three months ended March 31, 2018.

On March 27, 2018, the New York Court of Appeals granted Motions for Leave to Appeal the question of whether the New York Legislature ever imparted to the PSC the authority to regulate the rates that private, non-monopoly REPs charge their customers. The Court of Appeals is now set to review a 2017 decision entered by the Appellate Division, Third Department, concerning the issue of the scope of the PSC's authority over REPs under the Public Service Law, and to pronounce New York law on that issue. The Court of Appeals has scheduled oral argument in the jurisdictional appeal for March 19, 2019.

International

REPs such as ours must be licensed in each country and utility service territory in which they operate. Each is subject to the rules and regulations governing the operations of REPs in each jurisdiction. These regulations dictate how we are allowed to market to customers and how we price our product. For instance, in the UK, there are restrictions on how much we price our product above wholesale costs. In some jurisdictions, we can price our service without restriction as long as we notify the customers in writing in advance.

Employees

As of March 1, 2019, GRE in the U.S. employed 149 full time employees, 69 of whom are located in the Jamestown, New York office, of which approximately 86% are affiliated with our customer care center, 36 of whom are located in our New Jersey office, 11 of whom are located in our Arizona office, 32 of whom are located in the Florida office performing customer acquisition and 1 is located in Texas with SFP.

Internationally, we employed 10 full time employees located at our office in Tokyo, Japan.

Genie Energy Services

GES is comprised of businesses that market and provide energy solutions. GES currently consists of Diversegy and our controlling interest in Prism.

Diversegy

Diversegy is a commercial energy advisory firm helping clients to reduce costs, mitigate risk, and improve their bottom lines through the development and implementation of energy utilization and sourcing strategies. Diversegy works with customers to lower their energy supply costs, reduce their consumption with LED upfitting and other means, as well as provide on- and off-site generation with solar. Diversegy accounts for less than 1.0% of the Company's revenue. Diversegy operates as an energy broker and advisor to industrial, commercial and municipal customers across deregulated energy markets in the United States. The Company markets its services through an in-house sales force as well as independent third-party brokers. The Company markets its services through an in-house sales force as well as independent third-party brokers. As of the end of 2018 the Company had 910 customers representing approximately 1,200,000,000 Kwh in power and 25,000,000 therms of total deal volume under contract.

Prism Solar Technologies

The Company acquired a 60% controlling interest in Prism in October 2018. Prism is a solar solutions company engaged in solar panel manufacturing, solar installation design and project management. In the U.S., Prism's solar panels are used in residential, office and commercial buildings. Residential applications include solar sun rooms (solariums), skylights, canopies and sun decks. Prism's solar panels are used in the construction of parking canopies, electric vehicle car ports, parking structures, vertically mounted on buildings and many other custom applications.

Certain of Prism's solar panels are designed with high efficiency N-type silicon solar cell technology designed into bifacial solar modules. This technology results in a reduction in the average cost per kilowatt hour. Elements of the technology Prism is protected under patent application. The glass-on-glass design of the solar panels increases the durability and lifetime value of the solar panels. Unlike traditional solar modules, where photo-voltaic ("PV") cells can only use the sunlight that strikes the front of the module, Prism's bifacial modules generate energy on both sides, capturing a substantial amount of light scattered from clouds and surrounding surfaces. In traditional modules this additional light is not converted into electricity. Prism's solutions are especially valuable when Prism's modules are mounted over highly reflective backgrounds, such as white roof, snow, sand, or other light-colored surfaces.

Solar Industry Overview

Products and services in this industry consist of silicon modules and cells, thin-film modules and cells and other modules cells. The demand for solar panel manufacturing is driven by government programs, commodity prices and international trade.

Solar energy is one of the fastest growing forms of renewable energy with numerous economic and environmental benefits that make it an attractive complement to and/or substitute for traditional forms of energy generation. In recent years, the price of PV solar power systems, and accordingly the cost of producing electricity from such systems, has dropped to levels that are competitive with or even below the wholesale price of electricity in many markets. The rapid price decline that PV solar energy has experienced in recent years has opened new possibilities to develop systems in some locations with limited or no financial incentives. The fact that a PV solar power system requires no fuel provides a unique and valuable hedging benefit to owners of such systems relative to traditional energy generation assets. Once installed, PV solar power systems can function for 25 or more years with relatively less maintenance or oversight compared to traditional forms of energy generation. In addition to these economic benefits, solar energy has substantial environmental benefits. For example, PV solar power systems generate no greenhouse gas and other emissions and use no or minimal amounts of water compared to traditional forms of electricity generation. Worldwide solar markets continue to develop, aided by the above factors as well as demand elasticity resulting from declining industry average selling prices, both at the module and system level, which make solar power more affordable.

The solar industry continues to be characterized by intense pricing competition, both at the module and system levels. In particular, module average selling prices in the United States and several other key markets have experienced an accelerated decline in recent years, and module average selling prices are expected to continue to decline globally to some degree in the future. In the aggregate, we believe manufacturers of solar cells and modules have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will put pressure on pricing. Additionally, intense competition at the system level may result in an environment in which pricing falls rapidly, thereby further increasing demand for solar energy solutions but constraining the ability for project developers, EPC companies, and vertically-integrated solar companies such as Prism to sustain meaningful and consistent profitability. In light of such market realities, we are focusing on our strategies and points of differentiation, which include our advanced module and system technologies, our manufacturing process, our vertically-integrated business model, our financial viability, and the sustainability of our modules and systems.

Multiple markets within the United States, exemplify favorable characteristics for a solar market, including (i) sizeable electricity demand, particularly around growing population centers and industrial areas; (ii) strong demand for renewable energy generation; and (iii) abundant solar resources. In those areas and applications in which these factors are more pronounced, our PV solar energy solutions compete favorably on an economic basis with traditional forms of energy generation. The market penetration of PV solar is also impacted by certain state and federal support programs, including the current 30% federal investment tax credit, as described under "Support Programs." We have significant experience and a market leadership position in developing, engineering, constructing, and maintaining utility-scale power plants in the United States, particularly in California and other southwestern states, and increasingly in southeastern states. Currently, our solar projects in the United States account for a majority of the advanced stage pipeline of projects that we are either currently constructing or expect to construct.

Customers; Marketing

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The services of GES – Diversegy and Prism – are made available to customers via multiple channels and under several offerings. The majority of our customer base consists of medium to large commercial customers who are looking to be more efficient with their energy consumption. Our sales channels and marketing activities include a direct sales force, commission-only referral agents, telemarketing, digital marketing and radio advertising.

Diversegy is licensed as a broker in all deregulated markets throughout the United States. Most of our customers enroll in multi-year contracts that have a fixed rate with our partner suppliers. The supplier is fully responsible for risk management, billing and collections. Diversegy receives commissions from the supplier for the referral either as an upfront payment or as a residual over the life of the customers' contract.

Sources of Material and Manufacturing

We have designed our manufacturing processes to produce high quality products that meet our customers' requirements at competitive costs. The Company employs a mix of outsourced manufacturing through high quality contract manufacturers and direct manufacturing capabilities in its Highland, New York facility.

We source our raw materials through a portfolio of component manufacturers and invest resources in continued cost-reduction effort. In all cases we seek a second and third source so as to limit dependence on any single suppliers.

At Genie Solar Energy and Prism, customers have the choice of buying their solar systems either by paying for the system themselves or by financing it with third parties. GES is responsible for sales, manufacturing, project management of the installation, and collection of payment from the customers.

As of December 31, 2018, customers on variable rate products constituted 61% of the electric load, with the balance from customers on fixed rate agreements. For our variable rate product, the amount we charge to our customers reflects the underlying commodity cost plus a markup.

Competition

The market for solar electric power technologies is competitive and continually evolving. In the last year, we faced increased competition, resulting in price reductions in the market and reduced margins, which may continue and could lead to loss of market share. Our solar power products and systems compete with many competitors in the solar power market, including, but not limited to Canadian Solar Inc., Hanwha QCELLS Corporation, JA Solar Holdings Co., Kyocera Corporation, LG Corporation, Jinko Solar, NRG Energy, Inc., Panasonic Corporation, Sharp Corporation, SunRun, Inc., Tesla, Inc., Trina Solar Ltd., Vivint, Inc., LONGi Solar, REC Group, Hyundai Heavy Industries Co. Ltd., and Yingli Green Energy Holding Co. Ltd. and First Solar, Inc.

We also face competition from resellers that have developed related offerings that compete with our product and service offerings, or have entered into strategic relationships with other existing solar power system providers. We compete for limited government funding for research and development contracts, customer tax rebates and other programs that promote the use of solar, and other renewable forms of energy with other renewable energy providers and customers.

In addition, universities, research institutions, and other companies have brought to market alternative technologies, such as thin-film solar technology, which compete with our PV technology in certain applications. Furthermore, the solar power market in general competes with other energy providers such as electricity produced from conventional fossil fuels supplied by utilities and other sources of renewable energy such as wind, hydro, biomass, solar thermal, and emerging distributed generation technologies such as micro-turbines, sterling engines and fuel cells.

Research and Development

Prism devotes substantial resources to research and development with the objective of developing new products and systems, adding new features to existing products and systems and reducing unit costs of our products and systems. Our development strategy is to identify features, products, and systems that reduce the cost and improve the effectiveness of our solutions for our customers. The Company measures the effectiveness of our research and development by metrics including product unit cost, efficiency, reliability, power output, and ease of use.

Regulation

Federal government support for renewable energy

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (the “Tax Act”). The Tax Act makes broad and complex changes to the U.S. tax code, including, but not limited to, (i) reducing the U.S. federal corporate rate from 35% to 21%; (ii) requiring companies to pay a one-time transition tax on certain unrepatriated earnings (where applicable) of foreign subsidiaries; (iii) generally eliminating the U.S. federal income tax on dividends received from foreign subsidiaries; (iv) requiring current inclusion in the U.S. federal taxable income of certain earnings of controlled foreign corporations; (v) eliminating the corporate alternative minimum tax (“AMT”) and changing how existing AMT credits may be realized; (vi) creating the base erosion anti-abuse tax (“BEAT”), a new minimum tax; (vii) creating a new limitation on the deductible interest expense; and (viii) changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017.

The U.S. federal government provides an uncapped investment tax credit, or “Federal ITC,” that allows a taxpayer to claim a credit of 30% of qualified expenditures for a residential or commercial solar generation facility. The Tax Act did not make any changes to the existing laws surrounding tax credits for renewable energy. The Federal ITC is currently scheduled to be reduced to 26% for solar generation facility construction that begins on or after January 1, 2020 and to 22% for solar generation facility construction that begins on or after January 1, 2021. A permanent 10% Federal ITC is available for non-residential solar generation facility construction that begins on or after January 1, 2022.

U.S. state government support for renewable energy

Many states offer a personal and/or corporate investment or production tax credit for renewable energy facilities, which is additive to the Federal ITC. Further, more than half of the states, and many local jurisdictions, have established property tax incentives for renewable energy facilities that include exemptions, exclusions, abatements and credits. Certain of our renewable energy facilities in the U.S. have been financed with a tax equity financing structure, whereby the tax equity investor is a member holding equity in the limited liability company that directly or indirectly owns the solar generation facility or wind power plant and receives the benefits of various tax credits.

Many state governments, utilities, municipal utilities and co-operative utilities offer a rebate or other cash incentive for the installation and operation of a renewable energy facility for energy efficiency measures. Capital costs or “up-front” rebates provide funds to solar customers based on the cost, size or expected production of a customer’s renewable energy facility. Performance-based incentives provide cash payments to a system owner based on the energy generated by their renewable energy facility during a pre-determined period, and they are paid over that time period. Some states also have established FIT programs that are a type of performance-based incentive where the system owner-producer is paid a set rate for the electricity their system generates over a set period of time.

There are 40 states that have a regulatory policy known as net metering. Net metering typically allows our customers to interconnect their on-site solar generation facilities to the utility grid and offset their utility electricity purchases by receiving a bill credit at the utility’s retail rate for energy generated by their solar generation facility in excess of electric load that is exported to the grid. At the end of the billing period, the customer simply pays for the net energy used or receives a credit at the retail rate if more energy is produced than consumed. Some states require utilities to provide net metering to their customers until the total generating capacity of net metered systems exceeds a set percentage of the utilities’ aggregate customer peak demand.

Many states also have adopted procurement requirements for renewable energy production. There are 29 states that have adopted a renewable portfolio standard (“RPS”) that requires regulated utilities to procure a specified percentage of total electricity delivered to customers in the state from eligible renewable energy sources, such as solar and wind power generation facilities, by a specified date. To prove compliance with such mandates, utilities must procure and retire RECs. System owners often are able to sell RECs to utilities directly or in REC markets.

RPS programs and targets have been one of the key drivers of the expansion of solar and wind power and are expected to continue to contribute to solar and wind power installations in many areas of the United States. In addition to the 29 states with RPS programs, eight other states have non-binding goals supporting renewable energy.

Employees

As of March 1, 2019, GES employed 21 full time employees, 9 of whom are located in our New Jersey office and, 12 of whom are located in our Highland, New York facility working for Prism.

Genie Oil and Gas, Inc.

GOGAS is an oil and gas exploration company and owns an interest in a contracted drilling services operation. GOGAS holds an 86.1% interest in Afek Oil and Gas, Ltd. (“Afek”), an oil and gas exploration project in the Golan Heights in Northern Israel. GOGAS also holds controlling interests in inactive oil and gas project. Until September 2018, GOGAS owned Atid Drilling Ltd., a drilling services company operating in Israel. In September 2018, the Company divested a majority interest in Atid in exchange for a 37.5% interest in a newly formed drilling services company in Israel.

Afek Oil and Gas Ltd.

In April 2013, the Government of Israel finalized the award to Afek of an exclusive three-year petroleum exploration license covering 396.5 square kilometers in the southern portion of the Golan Heights. The license was subsequently extended to April 2018.

In February 2015, Afek began drilling its first exploratory well in Northern Israel’s Golan Heights. Afek completed drilling five wells in the Southern portion of its license area. In addition, Afek has undertaken well flow tests in multiple target zones within two of the completed wells. The results of the exploration program in this portion of the license area confirmed the presence of significant hydrocarbons in the basin, but the Afek concluded that the resource was likely not commercially viable given current and forecasted market conditions and other constraints, and that the greatest potential for commercial development lies in an area further north within the license area than any of the five completed exploratory wells.

In 2017, Afek turned its operational focus to the Northern region of its license area. The data analyzed suggested that the Southern block resources may extend Northward at depths potentially sufficient to have induced a greater level of maturation of the resource. To validate this hypothesis, in 2017, Afek drilled an exploratory well a site in the Northern portion of its license area. The company announced in November 2017 that the preliminary analysis of results from its completed Ness 10 exploratory well in Northern Israel suggests that the well’s target zone does not contain commercially producible quantities of oil or natural gas and that it was suspending drilling operations pending further

analysis.

In light of the analysis received, Afek determined that, based on current information, it did not have a clear path to demonstrate probable or possible reserves in the license area over the next 12 to 18 months. Since there was substantial doubt regarding the economic viability of the well, in the three months ended December 31, 2017, Afek wrote off the \$6.5 million of capitalized exploration costs incurred. At this time, no further exploration activity is contemplated. Subsequent analysis indicates that a zone within the well contains evidence of hydrocarbons at levels sufficient to warrant additional testing. Accordingly, Afek requested and received a renewal of its exploratory license from the Ministry of Energy for the Northern portion of its former license area. Afek is in the process of securing the permits and other regulatory approvals needed to perform the testing.

Drilling Services

In January 2017, we established Atid Drilling Ltd., ("Atid"), an on-shore drilling services venture based in Israel to opportunistically pursue drilling opportunities for clients in a variety of fields including oil and gas exploration, water resource development and mineral exploration. Atid purchased a drilling rig and associated drilling equipment in 2017. The rig had successfully drilled five exploratory oil and gas wells in the Golan Heights for Afek over the past two years and completed a water well. In September 2018, the Company divested a majority interest in Atid in exchange for a 37.5% interest in a newly formed drilling services company in Israel.

Employees

As of March 1, 2019, GOGAS employed 3 employees. Afek also retains the services of a number of professional consultants, including geologists, hydrologists, drilling and completions engineers, process engineers, environmental experts, permitting consultants, energy experts, legal, and land designation and acquisition consultants.

Intellectual Property

We rely on a combination of patents, copyrights, trademarks, domain name registrations and trade secret laws in the United States and other jurisdictions and contractual restrictions to protect our intellectual property rights and our brand names. All of our employees sign confidentiality agreements. These agreements provide that the employee may not use or disclose our confidential information except as expressly permitted in connection with the performance of his or her duties for us, or in other limited circumstances. These agreements also state that, to the extent rights in any invention conceived of by the employee while employed by us do not vest in us automatically by operation of law, the employee is required to assign his or her rights to us.

Item 1A. Risk Factors.

RISK FACTORS

Our business, operating results or financial condition could be materially adversely affected by any of the following risks as well as the other risks highlighted elsewhere in this document, particularly the discussions about regulation, competition and intellectual property. The trading price of our Class B common stock and Series 2012-A Preferred Stock could decline due to any of these risks.

Risks Related to Genie Retail Energy

The REP business is highly competitive, and we may be forced to reduce prices or incur additional costs.

GRE's REP businesses face substantial competition both from the traditional incumbent utilities as well as from other REPs, including REP affiliates of the incumbent utilities in specific territories. As a result, we may be forced to reduce prices, incur increased costs or lose market share and cannot always pass along increases in commodity costs to customers. We compete on the basis of provision of services, customer service and price. Present or future competitors may have greater financial, technical or other resources which could put us at a disadvantage. Additionally, our experience has shown that utilities do not change their rates offered to customers immediately in response to increased prices for the underlying commodities.

Conversely, in a downward moving commodity cost environment, GRE's REPs variable rate plans may benefit from the lag that utilities experience in reducing their sell rate to reflect the lower cost base in the commodity markets, and may reflect commodity costs decreases in their offerings and rates.

Increasing our market share depends in part on our ability to persuade more customers to switch to GRE's services than those that churn from us to other providers or back to the local utility. Moreover, local utilities and some REPs may have certain advantages such as name recognition, financial strength and long-standing relationships with customers. Persuading potential customers to switch to GRE's REPs requires significant marketing and sales operations. As we enter new international markets, we will face additional competitive environment. If GRE is not successful in convincing customers to switch both domestically and internationally, our REP businesses, results of operations and financial condition will all be adversely affected.

Our current strategy is based on current regulatory conditions and assumptions, which could change or prove to be incorrect.

Regulation over the electricity and natural gas markets has been in flux at the state and federal levels. In particular, any changes adopted by the FERC, or changes in state or federal laws or regulations (including greenhouse gas laws) may affect the prices at which GRE purchases electricity or natural gas for its customers. While we endeavor to pass along increases in energy costs to our customers pursuant to our variable rate customer offerings, we may not always be able to do so due to competitive market forces and the risk of losing our customer base.

On February 23, 2016, the New York PSC issued an order that sought to impose significant new restrictions on REPs operating in New York, including those owned by GRE. The restrictions described in the PSC's order, which were to become effective March 4, 2016, would require that all REPs' electricity and natural gas offerings to residential and small business customers include an annual guarantee of savings compared to the price charged by the relevant incumbent utility or, for electricity offerings, provide at least 30% of the supply from renewable sources. Customers not enrolled in a compliant program would be relinquished back to the local utility at the end of their contract period or, for variable price customers operating on month to month agreements, at the end of the current monthly billing cycle.

On March 4, 2016, a group of parties from the REP industry sought and won a temporary restraining order to stay implementation of the most restrictive portions of the PSC's order pending a court hearing on those parties' motion for a preliminary injunction. On July 25, 2016, the New York State Supreme Court, County of Albany, entered a decision and order granting the Petitioners' petition, vacated provisions 1 through 3 of the Order, which outlined the proposed rule changes referenced above, and remitted the matter to the PSC for further proceedings consistent with the Court's order.

In December 2017, the PSC held an evidentiary hearing to assess the retail energy market in New York. That process is continuing and is expected to last for at least several more months. We are evaluating the potential impact of any new order from the PSC that would follow from the evidentiary process, while preparing to operate in compliance with any new requirements that may be imposed. Depending on the final language of any new order, as well as our ability to modify our relationships with our New York customers, an order could have a substantial impact upon the operations of GRE's REPs in New York. As of December 31, 2018, New York represented 32.4% of GRE's total meters served and 24.8% of the total RCEs of GRE's customer base. For the year ended December 31, 2018, gross revenues generated from New York were \$74.2 million.

We are the subject of investigations or actions by other Attorneys General, State Commissions and State Regulatory Authorities in the states of New Jersey, Ohio, Connecticut and Illinois as further described in Item 3 “Legal Proceedings” in this Annual Report on Form 10-K. We have entered into consent orders and may enter into other settlements or be subject to orders or actions of those bodies. These settlements and orders may require us to provide refunds to customers, pay fines and penalties, modify our business practices or restrict us from operating in certain jurisdictions, all of which could have a material adverse effect on our REP operations.

Legislators and regulators may enact or modify laws or regulation to prevent the repetition of price spikes experienced in prior periods or address customer complaints that have come to light in connection with those events. Potential regulatory and/or legislative changes may impact our ability to use our established sales and marketing channels. Any changes in these factors, or any significant changes in industry development, could have an adverse effect on our revenues, profitability and growth or threaten the viability of our current business model.

Fixed Rate Products or Guaranteed Pricing Programs could result in losses or decreased profits if GRE fails to estimate future commodity prices accurately.

REPs and utilities offering fixed rate products or guaranteed pricing often are unable to change their sell rates offered to customers in response to volatility in the prices of the underlying commodities or changes in the regulatory environment. In times of high commodity prices, these fixed rate programs expose us to the risk that we will incur significant unforeseen costs in performing the contracts. During the year ended December 31, 2018 GRE’s meters enrolled in offerings with fixed rate characteristics constituted approximately 34% and 2% of GRE’s electric and natural gas load, respectively. Fixed rate products are becoming a greater part of our offering, and such products may be mandated by regulators.

However, it is difficult to predict future commodity costs. Any shortfalls resulting from the risks associated with fixed rate programs will reduce our working capital and profitability. Our inability to accurately estimate the cost of providing services under these programs could have an adverse effect on our profitability and cash flows.

GRE’s growth depends in part on its ability to enter new markets.

We have recently entered the U.K. and Japanese markets, in addition to the Finnish market in the beginning of 2019. New markets, both domestic and international, are evaluated based on many factors, which include the regulatory environment, as well as GRE’s REP businesses ability to procure energy in an efficient and transparent manner. We seek to purchase wholesale energy where there is a real time market that reflects a fair price for the commodity for all participants. Once new markets are determined to be suitable for GRE’s REP businesses, we expend substantial efforts to obtain necessary licenses and will incur significant customer acquisition costs and there can be no assurance that we

will be successful in new markets. Furthermore, and as discussed in the Risk Factor entitled "*The Company's business is subject to the risks of international operations*" there are regulatory differences between the markets that we currently operate in and new markets, including, but not limited to, exposure to credit risk, additional churn caused by tariff requirements, rate-setting requirements and incremental billing costs. A failure to identify, become licensed in, and enter new territories may have a material negative impact on our growth, financial condition and results of operations.

The Company is subject to laws and regulations worldwide, changes to which could increase the Company's costs and individually or in the aggregate adversely affect the Company's business.

As the Company is expanding its operations geographically, including operations in international jurisdictions, the Company is subject to laws and regulations affecting its domestic and international operations in a number of areas. These U.S. and foreign laws and regulations affect the Company's activities including, but not limited to, our pricing structure and marketing activities.

Compliance with these laws, regulations and similar requirements may be onerous and expensive, and they may be inconsistent from jurisdiction to jurisdiction, further increasing the cost of compliance and doing business. Any such costs, which may rise in the future as a result of changes in these laws and regulations or in their interpretation, could individually or in the aggregate make the Company's products and services less attractive to the Company's customers, delay the introduction of new products in one or more regions, or cause the Company to change or limit its business practices. The Company has implemented policies and procedures designed to ensure compliance with applicable laws and regulations, but there can be no assurance that the Company's employees, contractors, or agents will not violate such laws and regulations or the Company's policies and procedures.

The Company's business is subject to the risks of international operations.

As the Company grows its international operations, it may derive a significant portion of its revenue and earnings from such operations. Compliance with applicable U.S. and foreign laws and regulations, such as import and export requirements, anti-corruption laws, tax laws, foreign exchange controls and cash repatriation restrictions, data privacy requirements, environmental laws, labor laws and anti-competition regulations, increases the costs of doing business in foreign jurisdictions. Although the Company has implemented policies and procedures to comply with these laws and regulations, a violation by the Company's employees, contractors, or agents could nevertheless occur. In some cases, compliance with the laws and regulations of one country could violate the laws and regulations of another country. Violations of these laws and regulations could materially adversely affect the Company's brand, international growth efforts and business.

The Company also could be significantly affected by other risks associated with international activities including, but not limited to, learning new markets, adopting to different cultural norms and practices, economic and labor conditions, increased duties, taxes and other costs and political instability. The Company is also exposed to credit and collectability risk on its trade receivables with customers in certain international markets. There can be no assurance the Company can effectively limit its credit risk and avoid losses.

Unfair business practices or other activities of REPs may adversely affect us.

Competitors in the highly competitive REP market have engaged in unfair business practices to sign up new customers. Competitors engaging in unfair business practices create an unfavorable impression about our industry on consumers, regulators or political bodies. Such unfair practices by other companies can adversely affect our ability to grow or maintain our customer base. The successes, failures or other activities of various REPs within the markets that we serve may impact how we are perceived in the market. Further, such practices can lead to regulatory action, such as the recent New York PSC Order and other regulatory proceedings and investigations the Company is subject to in several states, that can negatively impact us and the industry.

Demand for REP services and consumption by customers are significantly related to weather conditions.

Typically, colder winters and hotter summers create higher demand and consumption for natural gas and electricity, respectively. Milder than normal winters and/or summers may reduce the demand for our energy services, thus negatively impacting our financial results.

Unusual weather conditions may have significant direct and indirect impacts on GRE's business and results of operations.

A confluence of issues in January and February 2014 associated with the 2013-2014 winter season's polar vortex resulted in extraordinarily large spikes in the prices of wholesale electricity and natural gas in markets where GRE and other retail providers purchase their supply. Repeats of the circumstances or similar circumstances could similarly harm margins and profitability in the future, and we could find it necessary to take similar or other actions that would have a negative impact on our financial condition and results of operations.

Because our variable pricing plan resulted in increased prices charged to customers, we experienced an increase in customer churn as utilities and fixed price REPs appeared to have more attractive pricing, although those increased churn levels have peaked. A failure to mitigate an increase in churn could result in decreases in meters served and revenues.

The retail electricity price increases discussed above resulted in large numbers of customers filing informal and formal complaints to state utility commissions, state attorneys general and state legislators. IDT Energy was served with several thousand formal and informal customer complaints to state utility commission and state attorneys general related to the winter retail price increases. IDT Energy has responded to each customer complaint it has received and attempted to resolve each complaining customer's concerns. GRE's REPs also paid approximately \$5 million in rebates to affected customers in the year ended December 31, 2014. IDT Energy was not under any obligation to provide such rebates and did so in order to mitigate the impact of the price increases on its customers notwithstanding that the underlying cause of the price increase was beyond GRE's control.

If certain REPs, however, are determined to have acted in a manner that was harmful to customers, the entire industry can suffer due to the reputational harm.

GRE is subject to litigation that may limit its operations.

In connection with the events described in the Risk Factor above entitled “Unusual weather conditions may have significant direct and indirect impacts on GRE’s business and results of operations”, IDT Energy has also been sued in separate putative class action suits in New York, New Jersey and Pennsylvania, partially related to the price increases during the winter of 2014. These matters are more fully discussed in Note 15 of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K, including that IDT Energy reached settlements with multiple regulators terminating litigation with no admission of liability or finding of wrongdoing by IDT Energy.

IDT Energy does not believe that it was at fault or acted in any way improperly with respect to the events of winter 2014. However, we cannot predict the outcome of putative class action litigation or the impact on us of these or other actions, or whether there will be other impacts from the conditions that existed in winter 2014. Further, although we have taken action to insulate us and our customers from future similar events, we cannot assure that those actions will be effective and we will not be subject to class actions in the future.

Such class action lawsuits or other claims against us could have a material adverse impact on our financial condition, competitive position or results of operations.

Regulatory conditions can affect the amount of taxes and fees we need to pay and our pricing advantages.

We are subject to audits in various jurisdictions for various taxes, including income tax, utility excise tax and sales and use tax. Aggressive stances taken recently by regulators increase the likelihood of our having to pay additional taxes and fees in connection with these audits. In the future, we may seek to pass such charges along to our customers, which could have an adverse impact on our pricing advantages.

Commodity price volatility could have an adverse effect on our cost of revenues and our results of operations.

Volatility in the markets for certain commodities can have an adverse impact on our costs for the purchase of the electricity and natural gas that GRE sells to its customers. In our fixed or guaranteed price products, we cannot, and in our variable price products, due to customer or competitive factors, we may not always be able or choose to, pass along increases in costs to our customers. This would have an adverse impact on our margins and results of operations. Alternatively, volatility in pricing for GRE’s electricity and natural gas related to the cost of the underlying commodities can lead to increased customer churn. In times of high commodity costs, our variable pricing model and commodity purchasing approach can lead to competitive disadvantages as we must pass along all or some portion of our increased costs to our customers.

We face risks that are beyond our control due to our reliance on third parties and our general reliance on the electrical power and transmission infrastructure within the United States.

Our ability to provide energy delivery and commodity services depends on the operations and facilities of third parties, including, among others, BP, NYISO and PJM. Our reliance on the electrical power generation and transmission infrastructure within the United States makes us vulnerable to large-scale power blackouts. The loss of use or destruction of third party facilities that are used to generate or transmit electricity due to extreme weather conditions, breakdowns, war, acts of terrorism or other occurrences could greatly reduce our potential earnings and cash flows.

The REP business, including our relationship with our suppliers, is dependent on access to capital and liquidity.

Our business involves entering into contracts to purchase large quantities of electricity and natural gas. Because of seasonal fluctuations, we are generally required to purchase electricity or natural gas in advance and finance that purchase until we can recover such amounts from revenues. Certain of GRE's REPs have a Preferred Supplier Agreement with BP pursuant to which we purchase electricity and natural gas at market rate plus a fee. The agreement was modified and extended on November 19, 2015, and is scheduled to terminate on November 30, 2019. In addition to other advantages of this agreement, we are only required to post security with BP. There can be no assurance that we will be able to maintain the required covenants, that BP will be able to maintain their required credit rating, or that the agreement will be renewed upon its expiration. In addition, the security requirements outside of the BP agreement may increase as we enter other markets. Difficulty in obtaining adequate credit and liquidity on commercially reasonable terms may adversely affect our business, prospects and financial conditions.

A revision to certain utility best practices and programs in which we participate and with which we comply could disrupt our operations and adversely affect our results and operations.

Certain retail access "best practices" and programs proposed and/or required by state regulators have been implemented by utilities in most of the service territories in which we operate. One such practice is participation in purchase of receivables programs under which certain utilities purchase customer receivables for approximately 98% of their face value in exchange for a first priority lien in the customer receivables without recourse against a REP. This program is a key to our control of bad debt risk in our REP business.

The REP business depends on maintaining the licenses in the states we operate and any loss of those licenses would adversely affect our business, prospects and financial conditions.

GRE's REP businesses require licenses from public utility commissions and other regulatory organizations to operate its business. Those agencies may impose various requirements to obtain or maintain licenses. Further, certain non-governmental organizations have been focusing on the REP industry and the treatment of customers by certain REPs. Any negative publicity regarding the REP industry in general, including, but not limited to, legislatures potentially seeking to restrict the activities of REPs and GRE in particular or any increase in customer complaints regarding GRE's REP businesses could negatively affect our relationship with the various commissions and regulatory agencies and could negatively impact our ability to obtain new licenses to expand operations or maintain the licenses currently held. In the aftermath of the polar vortex, several regulatory bodies adopted more aggressive policies toward REPs, including the action against IDT Energy in Pennsylvania described elsewhere in this Annual Report on Form 10-K. Any loss of our REP licenses would cause a negative impact on our results of operations, financial condition and cash flow.

The REP business depends on the continuing efforts of our management team and our personnel with strong industry or operational knowledge and our efforts may be severely disrupted if we lose their services.

Our success depends on key members of our management team, the loss of whom could disrupt our business operation. Our business also requires a capable, well-trained workforce to operate effectively. There can be no assurance that we will be able to retain our qualified personnel, the loss of whom may adversely affect our business, prospects and financial conditions.

We could be harmed by network disruptions, security breaches, or other significant disruptions or failures of our IT infrastructure and related systems or of those we operate for certain of our customers

To be successful, we need to continue to have available, for our and our customers' used, a high capacity, reliable and secure network. We face the risk, as does any company, of a security breach, whether through cyber-attack, malware, computer viruses, sabotage, or other significant disruption of our IT infrastructure and related systems. As such, there is a risk of a security breach or disruption of the system we operated, including possible unauthorized access to our and our customers' proprietary or classified information. We are also subject to breaches of our network resulting in unauthorized utilization of our services or products, which subject us to the costs of providing those products or services, which are likely not recoverable. The secure maintenance and transmission of our and our customers' information is a critical element of our operations. Our information technology and other systems that maintain and transmit customer information, or those of service providers or business partners, may be compromised by a malicious third party penetration of our network security, or that of a third party service provider or business partner, or impacted by advertent or inadvertent actions or inactions by our employees, or those of a third party service provider or business partner. As a result, our or our customers' information may be lost, disclosed, accessed or taken without the customers' consent or our product and service may be used without payment.

Although we make significant efforts to maintain the security and integrity of these types of information and systems, there can be no assurance that our security efforts and measures will be effective or that attempted security breaches or disruptions would not be successful or damaging, especially in light of the growing sophistication of cyber-attacks and intrusions sponsored by state or other interests. We may be unable to anticipate all potential types of attacks or intrusions or to implement adequate security barriers or other preventative measures. Certain of our business units have been the subject of attempted and successful cyber-attacks in the past. We have researched the situations and do not believe any material internal or customer information has been compromised.

Network disruptions, security breaches and other significant failures of the above-described systems could (i) disrupt the proper functioning of our networks and systems and therefore our operations or those of certain of our customers; (ii) result in the unauthorized use of our services or products without payment, (iii) result in the unauthorized access to, and destruction, loss, theft, misappropriation or release of proprietary, confidential, sensitive or otherwise valuable information of ours or our customers, including trade secrets, which others could use to compete against us or for disruptive, destructive or otherwise harmful purposes and outcomes; (iv) require significant management attention or financial resources to remedy the damages that result or to change our systems and processes; (v) subject us to claims for contract breach, damages, credits, fines, penalties, termination or other remedies; or (vi) result in a loss of business, damage our reputation among our customers and the public generally, subject us to additional regulatory scrutiny or expose us to litigation. Any or all of which could have a negative impact on our results of operations, financial condition and cash flows.

Our growth strategy depends, in part, on our acquiring complementary businesses and assets and expanding our existing operations, which we may be unable to do.

Our growth strategy is based, in part, on our ability to acquire businesses and assets that are complementary to our existing operations. We may also seek to acquire other businesses. The success of this acquisition strategy will depend, in part, on our ability to accomplish the following:

identify suitable businesses or assets to buy;

complete the purchase of those businesses on terms acceptable to us;

complete the acquisition in the time frame we expect;

improve the results of operations of the businesses that we buy and successfully integrate their operations into our own; and

avoid or overcome any concerns expressed by regulators, including antitrust concerns.

There can be no assurance that we will be successful in pursuing any or all of these steps. Our failure to implement our acquisition strategy could have an adverse effect on other aspects of our business strategy and our business in general. We may not be able to find appropriate acquisition candidates, acquire those candidates that we find or integrate acquired businesses effectively or profitably.

Risks Related to Genie Energy Services

Competition in solar markets globally and across the solar value chain is intense, and could remain that way for an extended period of time. An increased global supply of PV modules has caused and may continue to cause structural imbalances in which global PV module supply exceeds demand, which could have a material adverse effect on our business, financial condition, and results of operations.

In the aggregate, we believe manufacturers of solar cells and modules have significant installed production capacity, relative to global demand, and the ability for additional capacity expansion. We believe the solar industry may from time to time experience periods of structural imbalance between supply and demand (i.e., where production capacity exceeds global demand), and that such periods will continue to put pressure on pricing. We believe the solar industry is currently in such a period, due in part to recent developments in China, which include feed-in-tariff reductions causing deferment of in-country project development. During the past several years, industry average selling prices per watt have declined, at times significantly, both at the module and system levels, as competitors have reduced prices to sell inventories worldwide. There may be additional pressure on global demand and average selling prices in the future resulting from fluctuating demand in certain major solar markets such as China. If our competitors reduce module pricing to levels near or below their manufacturing costs, or are able to operate at minimal or negative operating margins for sustained periods of time, or if demand for PV modules does not grow sufficiently to justify the current production supply, our business, financial condition, and results of operations could be adversely affected.

If PV solar and related technologies are not suitable for widespread adoption at economically attractive rates of return or if sufficient additional demand for solar modules, related technologies, and systems does not develop or takes longer to develop than we anticipate, our net sales and profit may flatten or decline and we may be unable to sustain profitability.

In comparison to traditional forms of energy generation, the solar energy market continues to be at a relatively early stage of development and depend on certain government subsidies to be attractive to customers. If utility-scale PV solar technology proves unsuitable for widespread adoption at economically attractive rates of return or if additional demand for solar modules and systems fails to develop sufficiently or takes longer to develop than we anticipate, we may be unable to grow our business or generate sufficient net sales to sustain profitability. In addition, demand for solar modules, related technologies, and systems in our targeted markets may develop to a lesser extent than we anticipate. Many factors may affect the viability of widespread adoption of utility-scale PV solar technology in our targeted markets, as well as the demand for solar modules and systems generally.

The reduction, modification or elimination of government incentives could cause our revenue to decline and harm our financial results.

The market for on-grid applications, where solar power is used to supplement a customer's electricity purchased from the utility network or sold to a utility under tariff, depends in large part on the availability and size of government mandates and economic incentives because, at present, the cost of solar power generally exceeds retail electric rates in many locations and wholesale peak power rates in some locations. Incentives and mandates vary by geographic market. Various government bodies in most of the countries where we do business have provided incentives in the form of feed-in tariffs, rebates, and tax credits and other incentives and mandates, such as renewable portfolio standards and net metering, to end-users, distributors, system integrators and manufacturers of solar power products to promote the use of solar energy in on-grid applications and to reduce dependency on other forms of energy. These various forms of support for solar power are subject to change (as, for example, occurred in 2015 with Nevada's decision to change net energy metering; and in 2017 with California's adoption of new time-of-use rates that reduced the price paid to solar system owners for mid-day electricity production), and are expected in the longer term to decline. Even changes that may be viewed as positive (such as the extension at the end of 2015 of U.S. tax credits related to solar power) can have negative effects if they result, for example, in delaying purchases that otherwise might have been made before expiration or scheduled reductions in such credits. Governmental decisions regarding the provision of economic incentives often depend on political and economic factors that we cannot predict and that are beyond our control. The reduction, modification or elimination of grid access, government mandates or economic incentives in one or more of our customer markets would materially and adversely affect the growth of such markets or result in increased price competition, either of which could cause our revenue to decline and materially adversely affect our financial results.

The loss of the Prism's major customer could significantly reduce the net sales for our solar solutions business and negatively impact its results of operations.

Prism currently generates most of its revenues from its major customer. The loss of this major customer, its decision not to issue or reduce orders, our or their inability to perform under the contract, or their default in payment could significantly reduce our net sales and/or adversely impact our operating results. While our contract with our major customer has certain expectations of volume commitments, such expectations are not binding or guaranteed such reduction in volume of modules to be sold under the contract, could decrease the expected revenue under these contracts. Although we believe that we can mitigate this risk, in part, by reallocating modules to other customers if the need arises, we may be unable, in whole or in part, to do so on similar terms or at all.

We may be unable to profitably provide new solar offerings or achieve sufficient market penetration with such offerings.

We may expand our portfolio of offerings to include solutions that build upon our core competencies but for which we have not had significant historical experience, including variations in our traditional product offerings or other offerings related to commercial and industrial customers and community solar. We cannot be certain that we will be able to ascertain and allocate the appropriate financial and human resources necessary to grow these business areas. We could invest capital into growing these businesses but fail to address market or customer needs or otherwise not experience a satisfactory level of financial return. Also, in expanding into these areas, we may be competing against companies that previously have not been significant competitors, such as companies that currently have substantially more experience than we do in the residential, commercial and industrial, or other targeted offerings. If we are unable to achieve growth in these areas, our overall growth and financial performance may be limited relative to our competitors and our operating results could be adversely impacted.

An increase in interest rates or tightening of the supply of capital in the global financial markets (including a reduction in total tax equity availability) could make it difficult for customers to finance the cost of a PV solar power system and could reduce the demand for our modules or systems and/or lead to a reduction in the average selling price for such offerings.

Customers may depend on debt and/or equity financing to fund the initial capital expenditure required to develop, build, and/or purchase a PV solar power system. As a result, an increase in interest rates, or a reduction in the supply of project debt financing or tax equity investments (including reductions due to a change in tax related incentives that benefit tax equity investors, such as the reduction of the U.S. corporate income tax rate to 21% under the Tax Act, which could reduce the value of these incentives), could reduce the number of solar projects that receive financing or otherwise make it difficult for our customers or our systems business to secure the financing necessary to develop, build, purchase, or install a PV solar power system on favorable terms, or at all, and thus lower demand for our solar modules, which could limit our growth or reduce our net sales. See the Risk Factor entitled "The reduction, elimination, or expiration of government subsidies, economic incentives, tax incentives, renewable energy targets, and other support for on-grid solar electricity applications, or other adverse public policies, such as tariffs or other trade

remedies imposed on solar cells and modules, could negatively impact demand and/or price levels for our solar modules and systems and limit our growth or lead to a reduction in our net sales, thereby adversely impacting our operating results” for additional information. In addition, we believe that a significant percentage of our customers install systems as an investment, funding the initial capital expenditure through a combination of equity and debt. An increase in interest rates and the reduction of the U.S. corporate income tax rate as described above could lower an investor’s return on investment in a system, increase equity return requirements, or make alternative investments more attractive relative to PV solar power systems and, in each case, could cause these customers to seek alternative investments.

We face intense competition from manufacturers of crystalline silicon solar modules, as well as other thin film solar modules; if global supply exceeds global demand, it could lead to a further reduction in the average selling price for PV solar modules, which could reduce our net sales and adversely affect our results of operations.

The solar and renewable energy industries are highly competitive and are continually evolving as participants strive to distinguish themselves within their markets and compete with the larger electric power industry. Within the global PV solar industry, we face intense competition from crystalline silicon solar module manufacturers and other thin film solar module manufacturers. Existing or future solar module manufacturers might be acquired by larger companies with significant capital resources, thereby further intensifying competition with us. In addition, the introduction of a low cost disruptive technology could adversely affect our ability to compete, which could reduce our net sales and adversely affect our results of operations.

Problems with product quality or performance may cause us to incur significant and/or unexpected contractual damages and/or warranty and related expenses, damage our market reputation, and prevent us from maintaining or increasing our market share.

We perform a variety of quality and life tests under different conditions upon which we base our assessments and warranty. However, if our products perform below expectations, we could experience significant warranty and related expenses, damage to our market reputation, and erosion of our market share.

If any of the assumptions used in estimating our warranties prove incorrect, we could be required to accrue additional expenses, which could adversely impact our financial position, operating results, and cash flows. Although we have taken significant precautions to avoid a manufacturing excursion from occurring, any manufacturing excursions, including any commitments made by us to take remediation actions in respect of affected modules beyond the stated remedies in our warranties, could adversely impact our reputation, financial position, operating results, and cash flows.

Any widespread product failures may damage our market reputation, cause our net sales to decline, require us to repair or replace the defective products or provide financial remuneration, and result in us taking voluntary remedial measures beyond those required by our standard warranty terms to enhance customer satisfaction, which could have a material adverse effect on our operating results.

Our failure to protect our intellectual property rights may undermine our competitive position, and litigation to protect our intellectual property rights or defend against third-party allegations of infringement may be costly.

Protection of our proprietary processes, methods, and other technology is critical to our business. Failure to protect and monitor the use of our existing intellectual property rights could result in the loss of valuable technologies. We rely primarily on patents, trademarks, trade secrets, copyrights, and contractual restrictions to protect our intellectual property. We regularly file patent applications to protect certain inventions arising from our R&D and are currently pursuing such patent applications in various countries in accordance with our strategy for intellectual property in that jurisdiction. Our existing patents and future patents could be challenged, invalidated, circumvented, or rendered unenforceable. Our pending patent applications may not result in issued patents, or if patents are issued to us, such patents may not be sufficient to provide meaningful protection against competitors or against competitive technologies.

We also rely on unpatented proprietary manufacturing expertise, continuing technological innovation, and other trade secrets to develop and maintain our competitive position. Although we generally enter into confidentiality agreements with our associates and third parties to protect our intellectual property, such confidentiality agreements are limited in duration and could be breached and may not provide meaningful protection for our trade secrets or proprietary manufacturing expertise. Adequate remedies may not be available in the event of unauthorized use or disclosure of our trade secrets and manufacturing expertise. In addition, others may obtain knowledge of our trade secrets through independent development or legal means. The failure of our patents or confidentiality agreements to protect our processes, equipment, technology, trade secrets, and proprietary manufacturing expertise, methods, and compounds could have a material adverse effect on our business. In addition, effective patent, trademark, copyright, and trade secret protection may be unavailable or limited in some foreign countries, especially any developing countries into which we may expand our operations. In some countries, we have not applied for patent, trademark, or copyright protection.

Several of our key raw materials and components are either single-sourced or sourced from a limited number of suppliers, and their failure to perform could cause manufacturing delays and impair our ability to deliver solar

modules to customers in the required quality and quantities and at a price that is profitable to us.

Our failure to obtain raw materials and components that meet our quality, quantity, and cost requirements in a timely manner could interrupt or impair our ability to manufacture our solar modules or increase our manufacturing costs. Several of our key raw materials and components are either single-sourced or sourced from a limited number of suppliers. As a result, the failure of any of our suppliers to perform could disrupt our supply chain and adversely impact our operations. In addition, some of our suppliers are smaller companies that may be unable to supply our increasing demand for raw materials and components as we expand our business. We may be unable to identify new suppliers or qualify their products for use on our production lines in a timely manner and on commercially reasonable terms. A constraint on our production may result in our inability to meet our capacity plans and/or our obligations under our customer contracts, which would have an adverse impact on our business. Additionally, reductions in our production volume may put pressure on suppliers, resulting in increased material and component costs.

Existing regulations and policies and changes to these regulations and policies may present technical, regulatory, and economic barriers to the purchase and use of solar power products, which may significantly reduce demand for our products and services.

The market for electric generation products is heavily influenced by federal, state and local government laws, regulations and policies concerning the electric utility industry in the United States and abroad, as well as policies promulgated by electric utilities. These regulations and policies often relate to electricity pricing and technical interconnection of customer-owned electricity generation, and changes that make solar power less competitive with other power sources could deter investment in the research and development of alternative energy sources as well as customer purchases of solar power technology, which could in turn result in a significant reduction in the demand for our solar power products.

We may not realize the anticipated benefits of past or future business combinations or acquisition transactions, and integration of business combinations may disrupt our business and management.

We have made several acquisitions in prior years, including the acquisition of Prism Solar Technologies, and in the future we may acquire additional companies, project pipelines, products, or technologies or enter into joint ventures or other strategic initiatives. We may not realize the anticipated benefits of such business combinations or acquisitions, and each transaction has numerous risks, which may include the following:

difficulty in assimilating the operations and personnel of the acquired or partner company;

difficulty in effectively integrating the acquired products or technologies with our current products or technologies;

difficulty in achieving profitable commercial scale from acquired technologies;

difficulty in maintaining controls, procedures, and policies during the transition and integration;

disruption of our ongoing business and distraction of our management and associates from other opportunities and challenges due to integration issues;

inability to retain key technical and managerial personnel of the acquired business;

inability to retain key customers, vendors, and other business partners of the acquired business;

inability to achieve the financial and strategic goals for the acquired and combined businesses, as a result of insufficient capital resources or otherwise;
potential impairment of our relationships with our associates, customers, partners, distributors, or third-party providers of products or technologies;

potential failure of the due diligence processes to identify significant issues with product quality, legal and financial liabilities, among other things;

potential inability to assert that internal controls over financial reporting are effective;

Mergers and acquisitions of companies are inherently risky, and ultimately, if we do not complete the integration of acquired businesses successfully and in a timely manner, we may not realize the anticipated benefits of the acquisitions to the extent anticipated, which could adversely affect our business, financial condition, or results of operations. In addition, we may seek to dispose of our interests in acquired companies, project pipelines, products, or technologies. We may not recover our initial investment in such interests, in part or at all, which could adversely affect our business, financial condition, or results of operations.

Risks Related to Genie Oil and Gas

We have no current production of oil and gas and we may never have any.

We do not have any current production of oil and gas. We cannot assure you that we will produce or market oil or gas at all or in commercially profitable quantities. Our ability to produce and market oil and gas may depend upon our ability to develop and operate our planned projects and facilities, which may be affected by events or conditions that impact the advancement, operation, cost or results of such projects or facilities, including:

Energy commodity prices relative to production costs;

The occurrence of unforeseen technical difficulties;

The outcome of negotiations with potential partners, governmental agencies, regulatory bodies, suppliers, customers or others;

Changes to existing legislation or regulation governing our current or planned operations;

Our ability to obtain all the necessary permits to operate our facilities;

Changes in operating conditions and costs, including costs of third-party equipment or services such as drilling and processing and access to power sources; and

Security concerns or acts of terrorism that threaten or disrupt the safe operation of our facilities.

Operating hazards and uninsured risks with respect to the contract drilling and oil and gas operations may have material adverse effects on our operations.

Our contract drilling and research, exploration and, if successful, development and production operations are subject to risks similar to those normally incident to the exploration for and the development and production of oil and gas, including blowouts, subsidence, uncontrollable flows of oil, gas or well fluids, fires, pollution and other environmental and operating risks. These hazards could result in substantial losses due to injury or loss of life, severe damage to or destruction of property and equipment, pollution and other environmental damage and suspension of operations. While as a matter of practice we have insurance against some or all of these risks, such insurance may not cover the particular hazard and may not be sufficient to cover all losses. The occurrence of a significant event adversely affecting any of our operations could have a material adverse effect on us, could materially affect our continued operations and could expose us to material liability.

Genie Oil and Gas' success depends on contractors, equipment, key employees and certain strategic partners and their limited availability could result in increased costs and possibly material delays and our efforts may be severely disrupted if we lose their services.

The costs for our operations may be more expensive than planned or there could be delays in our operating plans. Similarly, some of the professional personnel we need for our planned operations are not available in the locations in which we operate or are not available on short notice for work in such location, and, therefore, we may need to use non-local contractors for various projects. Any or all of the factors specified above may result in increased costs and delays. Further, our future success depends, to a significant extent, on our ability to attract and retain qualified technical personnel, particularly those with expertise in the oil and gas industry. There is substantial competition for qualified technical personnel, and there can be no assurance that we will be able to attract or retain our qualified technical personnel. The unexpected loss of the services of one or more of these people, and the ability to find suitable replacements within a reasonable period of time thereafter, could have a material adverse effect on our operations.

Genie Oil and Gas is subject to regulatory, legal and political risks that may limit its operations.

Our operations and potential earnings may be affected from time to time in varying degree by regulatory, legal and political factors, including laws and regulations related to environmental or energy security matters, including those addressing alternative and renewable energy sources and the risks of global climate change and legal challenges. Such laws and regulations continue to increase in both number and complexity and affect our operations.

The oil and gas industry is subject to the general inherent industry and economic risks.

The oil and gas business is fundamentally a commodity business. This means that potential future commercial operations and earnings may be significantly affected by changes in oil and gas prices and by changes in margins on gasoline, natural gas and other refined products.

Risk Related to Our Financial Condition and Reporting

We have a material weakness in our internal control over financial reporting and cannot assure you that additional material weaknesses will not be identified in the future.

Management identified deficiencies in our internal controls over financial reporting which aggregated to a material weakness, specifically related to and within an application, which the Company uses to process a wide variety of functions for GRE related to customer enrollment, customer programs and price plans, rebate programs, sales commissions, invoicing, and invoice payment information. Remediation of these weaknesses had not yet been completed, and therefore these deficiencies continued to exist as of December 31, 2018.

In addition, in evaluating the effectiveness of our internal control over financial reporting as of December 31, 2013, management identified material weaknesses in our internal control environment over financial reporting and those

material weaknesses were successfully remediated. In evaluating the effectiveness of our internal control over financial reporting as of September 30, 2016, management identified material weaknesses in our internal control over financial reporting and those material weaknesses were successfully remediated by December 31, 2016. Also, as of December 31, 2016, management review controls associated with the completeness and accuracy of computations relating to domestic and foreign income tax accounts and disclosures were not effective. In evaluating the effectiveness of our internal control over financial reporting as of March 31, 2017, June 30, 2017 and September 30, 2017, management identified material weaknesses in our internal control over financial reporting and those material weaknesses, along with the 2016 material weakness, were successfully remediated by December 31, 2017.

While we aim to work diligently to ensure a robust internal control that is devoid of significant deficiencies and material weaknesses, given the complexity of the accounting rules, we may, in the future, identify additional significant deficiencies or material weaknesses in our disclosure controls and procedures and internal control over financial reporting. Any failure to maintain or implement required new or improved controls, or any difficulties we encounter in their implementation, could result in additional significant deficiencies or material weaknesses, cause us to fail to meet our periodic reporting obligations or result in material misstatements in our financial statements. Any such failure could also adversely affect the results of periodic management evaluations and annual auditor attestation reports regarding the effectiveness of our internal control over financial reporting required under Section 404 of the Sarbanes-Oxley Act of 2002 and the rules promulgated under Section 404. The existence of a material weakness could result in errors in our financial statements that could result in a restatement of financial statements, cause us to fail to meet our reporting obligations and cause investors to lose confidence in our reported financial information, leading to a decline in our stock price. See Item 9A Controls and Procedures for a further discussion of our assessment of our internal controls over financial reporting.

Risks Related to Our Capital Structure

Holders of our Class B common stock and Series 2012-A Preferred Stock have significantly less voting power than holders of our Class A common stock.

Holders of our Class B common stock and Series 2012-A Preferred Stock are entitled to one-tenth of a vote per share on all matters on which our stockholders are entitled to vote, while holders of our Class A common stock are entitled to three votes per share. As a result, the ability of holders of our Class B common stock and Series 2012-A Preferred Stock to influence our management is limited.

Holders of our Series 2012-A Preferred Stock are entitled to an annual dividend and such payments may have a negative impact on our cash flow.

Holders of our Series 2012-A Preferred Stock are entitled to receive an annual dividend, payable quarterly in cash. The payment of such dividend could have a negative impact on our cash flow and cash balances. If dividends on any shares of the Series 2012-A Preferred Stock are in arrears for six or more quarters, whether or not consecutive, holders of the Series 2012-A Preferred Stock shall have the right to elect two (2) additional directors to serve on our Board, and this could have a negative impact on the market price of our equity securities.

We are controlled by our principal stockholder, which limits the ability of other stockholders to affect our management.

Howard S. Jonas, our Chairman of the Board, has voting power over 7,224,579 shares of our common stock (which includes 1,574,326 shares of our Class A common stock, which are convertible into shares of our Class B common stock on a 1-for-1 basis, and 5,650,253 shares of our Class B common stock), representing approximately 70% of the combined voting power of our outstanding capital stock, as of March 9, 2019. Mr. Jonas is able to control matters requiring approval by our stockholders, including the election of all of the directors and the approval of significant corporate matters, including any merger, consolidation or sale of all or substantially all of our assets. As a result, the ability of any of our other stockholders to influence our management is limited.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our headquarters are located at 520 Broad St., Newark, New Jersey. Our lease for our office space at 520 Broad Street expires in April 2025 and is for 8,631 square feet and includes two parking spots per thousand square feet of space leased. The annual base rent is \$198,513. We have the right to terminate the lease upon four months' notice and upon early termination Genie will pay a penalty equal to 25% of the portion of the rent due over the course of the remaining term. Upon expiration of the lease, we have the right to renew the lease for another 5 years on substantially the same terms, with a 2% increase in the rental payments.

GRE's Jamestown, New York offices are located at 3315 North Main Street where we lease approximately 12,000 square feet of space. GRE's Florida office is located in Holiday, Florida where we lease approximately 4,350 square feet. GRE's Arizona office is located in Chandler, Arizona where we lease approximately 3,300 square feet.

Prism's manufacturing plant and offices are located at 180 South Street, Highland, New York, where we own approximately 93,000 square feet, subject to mortgages by Catskill Hudson Bank and Strategic Funding Source, Inc. Prism currently rents our 18,050 square feet of space to various tenants. The book value of the properties were included in the GES segment.

Genie Energy's Tokyo, Japan offices are located at PMO Hamamatsucho 8F, 2-5-5 Hamamatsucho Minato-ku, Tokyo 105-0013 where we lease approximately 2,023 square feet of space. Lumo's Helsinki, Finland office are located at Teollisuuskatu 21 00510, Helsinki, Finland where we lease approximately 3,175 square feet of space. Shoreditch's U. K. offices are located at Suite 2.01 - The White Collar Factory, 1 Old Street Yard, London EC1Y 8AF where we lease approximately 830 square feet of space.

Item 3. Legal Proceedings.

Certain legal proceedings in which we are involved are discussed in the Notes to Consolidated Financial Statements — Notes 15, *Legal and Regulatory Proceedings*, in this Annual Report on Form 10-K, which is incorporated by reference.

Item 4. Mine Safety Disclosures.

Not applicable.

Part IIItem 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

PRICE RANGE OF COMMON STOCK

Our Class B common stock trades on the New York Stock Exchange under the symbol “GNE”.

The table below sets forth the high and low sales prices for our Class B Common Stock as reported by the NYSE for the fiscal periods indicated which represents the only fiscal periods our Class B Common Stock has been trading on the NYSE.

	High	Low
Fiscal year ended December 31, 2018		
First Quarter	\$ 5.29	\$ 4.09
Second Quarter	\$ 5.83	\$ 3.82
Third Quarter	\$ 6.36	\$ 4.95
Fourth Quarter	\$ 8.83	\$ 5.08
Fiscal year ended December 31, 2017		
First Quarter	\$ 7.35	\$ 5.25
Second Quarter	\$ 8.31	\$ 6.97
Third Quarter	\$ 7.61	\$ 5.65
Fourth Quarter	\$ 6.93	\$ 4.18

On March 8, 2019, there were 347 holders of record of our Class B common stock and one holder of record of our Class A common stock. All shares of Class A common stock are beneficially owned by Howard Jonas. These numbers do not include the number of persons whose shares are in nominee or in “street name” accounts through brokers. On March 15, 2019 the last sales price reported on the New York Stock Exchange for the Class B common stock was \$8.43 per share.

PRICE RANGE OF PREFERRED STOCK

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The Series 2012-A Preferred Stock is listed and traded on the NYSE under the symbol “GNEPRA”. Trading began on the NYSE on October 24, 2012.

The table below sets forth the high and low sales prices for our Series 2012-A Preferred Stock as reported by the NYSE for the fiscal periods indicated.

	High	Low
Fiscal year ended December 31, 2018		
First Quarter	\$ 7.72	\$ 7.02
Second Quarter	\$ 7.52	\$ 6.85
Third Quarter	\$ 7.86	\$ 7.32
Fourth Quarter	\$ 7.79	\$ 6.54
Fiscal year ended December 31, 2017		
First Quarter	\$ 8.40	\$ 7.35
Second Quarter	\$ 7.89	\$ 7.26
Third Quarter	\$ 7.94	\$ 7.32
Fourth Quarter	\$ 7.82	\$ 7.24

On March 8, 2019, there were 5 holders of record of our Series 2012-A Preferred Stock. These numbers do not include the number of persons whose shares are in nominee or in “street name” accounts through brokers. On March 15, 2019, the last sales price reported on the New York Stock Exchange for the Series 2012-A Preferred Stock was \$8.11 per share.

Additional information regarding dividends required by this item is incorporated by reference from the Management’s Discussion and Analysis section in Item 7 to Part II and Note 11 to the Consolidated Financial Statements in Item 8 to Part II of this Annual Report.

The information required by Item 201(d) of Regulation S-K will be contained in our Proxy Statement for our Annual Stockholders Meeting, which we will file with the Securities and Exchange Commission within 120 days after December 31, 2018, and which is incorporated by reference herein.

Performance Graph of Stock

We are a smaller reporting company as defined by Rule 12b-2 of the Securities and Exchange Act of 1934 and are not required to provide the information under this item.

Issuer Purchases of Equity Securities

The following table provides information with respect to purchases by us of our shares during the fourth quarter of the year ended December 31, 2018.

	Total Number of Shares Purchased	Average Price per Share	Total Number of Shares Purchased as part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs ⁽¹⁾
October 1 – 31, 2018	—	\$ —	—	6,896,669
November 1 - 30, 2018	20,193	\$ 5.255	—	6,896,669
December 1 – 31, 2018	—	\$ —	—	6,896,669
Total	20,193	\$ 5.255		

- (1) Under our existing stock repurchase program, approved by our Board of Directors on March 11, 2013, we were authorized to repurchase up to an aggregate of 7 million shares of our Class B common stock. Consists of shares of Class B common stock that were tendered by employees of ours to satisfy the tax withholding obligations in connection with the lapsing of restrictions on awards of restricted stock. Such shares were repurchased by us based on their fair market value on the trading day immediately prior to the vesting date.

Item 6. Selected Financial Data.

We are a smaller reporting company as defined by Rule 12b-2 of the Securities and Exchange Act of 1934 and are not required to provide the information under this item.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, including statements that contain the words “believes,” “anticipates,” “expects,” “plans,” “intends” and similar words and phrases. These forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from the results projected in any forward-looking statement. In addition to the factors specifically noted in the forward-looking statements, other important factors, risks and uncertainties that could result in those differences include, but are not limited to, those discussed under Item 1A to Part I “Risk Factors” in this Annual Report. The forward-looking statements are made as of the date of this Annual Report, and we assume no obligation to update the forward-looking statements, or to update the reasons why actual results could differ from those projected in the forward-looking statements. Investors should consult all of the information set forth in this report and the other information set forth from time to time in our reports filed with the Securities and Exchange Commission pursuant to the Securities Act of 1933 and the Securities Exchange Act of 1934, including our reports on Forms 10-Q and 8-K.

The following discussion should be read in conjunction with the Consolidated Financial Statements and Notes thereto included in Item 8 of this Annual Report.

OVERVIEW

We are comprised of GRE, which owns and operates REPs, including IDT Energy, Residents Energy, Town Square Energy, and Mirabito Natural Gas, or Mirabito. Its REP businesses resell electricity and natural gas to residential and small business customers primarily in the Eastern United States. Through a joint venture, GRE has begun serving customers in Great Britain and acquired a license to service customers in Japan through a wholly owned subsidiary. Subsequent to the close of the year, the Company acquired an 80% interest in Lumo, a REP with approximately 32,000 residential customers in Finland.

GES oversees Diversegy, a retail energy advisory and brokerage company that serves commercial and industrial customers throughout U.S. and manages our 60% controlling interest. Prism is a solar solutions company that is engaged in U.S. based manufacturing of solar panels, solar installation design and project management.

We are also comprised of GOGAS, an oil and gas exploration company and owns an interest in a contracted drilling services. GOGAS' four exploration projects are inactive. GOGAS holds 86.1% interest in Afek Oil and Gas ("Afek"), an oil and gas exploration project in Golan Heights in Northern Israel. Until September 2018, GOGAS also owned Atid, a drilling services company operating in Israel. In September 2018, we divested a majority interest in Atid, in exchange for a 37.5% interest in a newly formed drilling services company in Israel.

We own 99.3% of our subsidiary, GEIC, which owns 100% of GRE, and 97% of GOGAS.

As of December 31, 2018, GREI and GRES has outstanding deferred stock units granted to officers, employees and a contractor that represent an aggregate interest of 4.0% and 4.5% of the equity of GREI and GRES, respectively. The deferred stock units are subject to vesting up to 2020.

As part of our ongoing business development efforts, we seek out new opportunities, which may include complementary operations or businesses that reflect horizontal or vertical expansion from our current operations. Some of these potential opportunities are considered briefly and others are examined in further depth. In particular, we seek out acquisitions to expand the geographic scope and size of our REP businesses.

Genie Retail Energy

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GRE operates REPs that resell electricity and/or natural gas to residential and small business customers in Connecticut, Delaware, Illinois, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Florida, Rhode Island, and Washington, D.C. GRE's revenues represented approximately 100% of our consolidated revenues in the years ended December 31, 2018 and 2017.

On August 10, 2017, GRE acquired Mirabito Natural Gas, a Ft. Lauderdale, Florida-based natural gas supplier that serves commercial and government customers throughout Florida.

On July 17, 2017, our subsidiary, Genie Energy UK Ltd., or GEUK, entered into a definitive agreement with Energy Global Investments Pty Ltd, or EGC, to launch Shoreditch Energy Limited, or Shoreditch, a joint venture to offer electricity and natural gas service to residential and small business customers in the United Kingdom under the brand Orbit Energy. In December 2017, Orbit commenced initial customer acquisition in the United Kingdom under the mandated three-month Controlled Market Entry framework in which new entrants can acquire a limited number of customers in a test environment.

GRE's cost of revenues consists primarily of natural gas and electricity purchased for resale. As of November 19, 2015, certain of GRE's REPs entered into an Amended and Restated Preferred Supplier Agreement with BP pursuant to which those REPs purchase electricity and natural gas at a market rate plus a fee. The agreement's termination date is November 30, 2019, except either party may terminate the agreement on November 30, 2018 by giving the other party notice by May 31, 2018. IDT Energy's ability to purchase electricity and natural gas under this agreement is subject to satisfaction of certain conditions including the maintenance of certain covenants.

As an operator of REPs, GRE does not own electrical power generation, transmission, or distribution facilities, or natural gas production, pipeline or distribution facilities. Instead, GRE's REPs contract with various pipeline and distribution companies for natural gas pipeline, storage and transportation services, and utilizes NYISO, PJM, ISO New England and MISO for electric transmission and distribution. GRE's cost of revenues includes scheduling costs, ISO fees, pipeline costs and utility service charges for the purchase of these services.

For risk management purposes, GRE's REPs utilize put and call options and swaps as hedges against unfavorable fluctuations in market prices of electricity and natural gas and to reduce exposure from price fluctuations. The put and call options and swaps are recorded at fair value as a current asset or liability and any changes in fair value are recorded in cost of revenues. The impact of these options and swaps on cost of revenues is relatively small in comparison to the purchases of gas and electricity for resale.

The electricity transmission and distribution operators perform real-time load balancing for each of the electrical power grids in which GRE's REPs operate. Similarly, the utility or the LDC performs load balancing for each of the natural gas markets in which GRE's REPs operate. Load balancing ensures that the amount of electricity and natural gas that GRE's REPs purchase is equal to the amount necessary to service its REP customers' demands at any specific point in time. GRE's REPs manage the differences between the actual electricity and natural gas demands of its

customers and its bulk or block purchases by buying and selling in the spot market, and through monthly cash settlements and/or adjustments to futures deliveries in accordance with the load balancing performed by utilities, LDCs, and electricity transmission and distribution operators. Suppliers and the LDC's charge or credit GRE for balancing the electricity and natural gas purchased and sold for its account.

The local utilities generally meter and deliver electricity and natural gas to GRE's REP customers. The local utilities provide billing and collection services on GRE's REPs behalf for most of GRE's REPs' customers. GRE's REPs receive the proceeds less the utility's POR fees and in some cases less fees for billing and other ancillary services.

Volatility in the electricity and natural gas markets affects the wholesale cost of the electricity and natural gas that GRE's REPs sell to customers. GRE's REPs may not always choose to pass along increases in costs to its customers for various reasons including competitive pressures and for overall customer satisfaction. In addition, GRE's REPs offer fixed rate products or guaranteed pricing and may be unable to change their sell rates offered to fixed rate and guaranteed pricing customers in response to volatility in the prices of the underlying commodities. This can adversely affect GRE's gross margins and results of operations. Alternatively, increases in GRE's REPs rates charged to customers may lead to increased customer churn.

GRE's REPs' selling expense consists primarily of sales commissions paid to independent agents and marketing costs, which are the primary costs associated with the acquisition of customers. General and administrative expense includes compensation, benefits, utility fees for billing and collection, professional fees, rent and other administrative costs.

Seasonality and Weather

The weather and the seasons, among other things, affect GRE's REPs' revenues. Weather conditions have a significant impact on the demand for natural gas used for heating and electricity used for heating and cooling. Typically, colder winters increase demand for natural gas and electricity, and hotter summers increase demand for electricity. Milder winters and/or summers have the opposite effect. Natural gas revenues typically increase in the first quarter due to increased heating demands and electricity revenues typically increase in the third quarter due to increased air conditioning use. Approximately 50% and 45% of GRE's REPs' natural gas revenues for the relevant years were generated in the first quarter of 2018 and 2017, respectively, when demand for heating was highest. Although the demand for electricity is not as seasonal as natural gas (due, in part, to usage of electricity for both heating and cooling), approximately 29% and 30% of GRE's REPs' electricity revenues for the relevant years were generated in the third quarter of 2018 and 2017, respectively.

Concentration of Customers and Associated Credit Risk

GRE's REPs reduce their customer credit risk by participating in purchase of receivable programs for a majority of their receivables. In addition to providing billing and collection services, utility companies purchase those REPs' receivables and assume all credit risk without recourse to those REPs. GRE's REPs primary credit risk is therefore nonpayment by the utility companies. Certain of the utility companies represent significant portions of our consolidated revenues and consolidated gross trade accounts receivable balance and such concentrations increase our

risk associated with nonpayment by those utility companies.

The following table summarizes the percentage of consolidated revenues from customers by utility company that equal or exceed 10% of consolidated revenues in the period (no other single utility company accounted for more than 10% of consolidated revenues in these periods):

	Year ended December 31, 2018		2017	
Con Edison	11	%	15	%
ComEd	na	%	10	%

na – less than 10% of consolidated revenue in the period

The following table summarizes the percentage of consolidated gross trade accounts receivable by utility company that equal or exceed 10% of consolidated gross trade accounts receivable at December 31, 2018 and 2017 (no other single utility company accounted for 10% or greater of our consolidated gross trade accounts receivable at December 31, 2018 or 2017):

	2018		2017	
December 31 Con Edison	na	%	11	%

na – less than 10% of consolidated gross trade accounts receivable

New York Public Service Commission Orders

In December 2017, the New York Public Service Commission (“PSC”) held an evidentiary hearing to assess the retail energy market in New York. The parties recently completed post-hearing briefing in the proceedings. The Company is evaluating the potential impact of any new order from the PSC that may follow from the evidentiary process, while preparing various contingencies for operation in compliance with any new requirements that may be imposed. Depending on the final language of any new order, as well as the Company’s ability to modify its relationships with its New York customers, an order could have a substantial impact upon the operations of GRE’s REPs in New York. As of December 31, 2018, New York represented 32.4% of GRE’s total meters served and 24.8% of the total residential customer equivalents (“RCEs”) of GRE’s customer base. For the year ended December 31, 2018 and 2017, New York gross revenues were \$74.2 million and \$91.0 million, respectively.

An RCE represents a natural gas customer with annual consumption of 100 mmbtu or an electricity customer with annual consumption of 10 MWh. Because different customers have different rates of energy consumption, RCEs are an industry standard metric for evaluating the consumption profile of a given retail customer base.

On December 16, 2016, the PSC issued an order (the “2016 Order”) prohibiting REPs to service to customers enrolled in New York’s utility low-income assistance programs. Temporary stays of the 2016 Order expired, and REPs were required to return service of their low-income customers to the relevant local incumbent utility on the modified schedule set forth in the PSC’s 2016 Order. The 2016 Order required GRE’s REPs to transfer customer accounts comprising approximately 18,700 meters, representing approximately 10,600 RCEs, to their respective incumbent utilities in the three months ended March 31, 2018.

On March 27, 2018, the New York Court of Appeals granted Motions for Leave to Appeal the question of whether the New York Legislature ever imparted to the PSC the authority to regulate the rates that private, non-monopoly REPs charge their customers. The Court of Appeals is now set to review a 2017 decision entered by the Appellate Division, Third Department, concerning the issue of the scope of the PSC’s authority over REPs under the Public Service Law, and to pronounce New York law on that issue. The Court of Appeals has scheduled oral argument in the jurisdictional appeal for March 19, 2019.

Ohio Public Utilities Commission

In August and November of 2017, the Public Utilities Commission of Ohio (“PUCO”) commenced investigations into the marketing and enrollment practices of the Company’s subsidiary Town Square Energy. The PUCO’s investigations arose from customer complaints that representatives of Town Square allegedly engaged in misleading and deceptive sales practices in connection with Town Square’s table top marketing campaign. Town Square has and continues to

cooperate fully with the PUCO's investigation. Pending the outcome of the investigations, and in response to the PUCO's recommendation, Town Square temporarily ceased further marketing activity in Ohio. Town Square also undertook various remedial measures which included retraining its vendors. Subsequently, on January 16, 2018, the PUCO issued its findings that Town Square was in probable non-compliance with various sections of the Ohio Administrative Code and proposed various corrective actions which included agent retraining, development of an effective quality assurance program and advising customers that they have the option to enroll with Town Square or switch their service to the regular utilities. Following settlement discussions, Town Square and the PUCO entered into a settlement agreement which was approved by the PUCO on February 27, 2019. Under the terms of the agreement, Town Square will pay a forfeiture of \$0.2 million to the State of Ohio. In addition, Town Square will work with the PUCO and take steps to ensure full compliance with PUCO rules and orders, including updating customers, providing the PUCO with updated information, and submitting quarterly reports for a one-year period. In connection with the foregoing, the Company has accrued \$0.2 million in third quarter of 2018. As of December 31, 2018, Town Square in Ohio represented 0.3 of GRE's total meters served and 0.4 of the total residential customer equivalents of GRE's customer base. For the years ended December 31, 2018 and 2017, Town Square in Ohio gross revenues were \$1.4 million and \$2.1 million, respectively.

State of Connecticut Public Utilities Regulatory Authority

On September 19, 2018, the State of Connecticut Public Utilities Regulatory Authority ("PURA") commenced an investigation into Town Square following customer complaints of allegedly misleading and deceptive sales practices on the part of Town Square. The Office of Consumer Counsel has joined in the investigation. Although Town Square denies any basis for those complaints and any wrongdoing on its part, it is cooperating with the investigation and responding to subpoenas for discovery. As of December 31, 2018, Town Square's Connecticut customer base represented 8.2% of GRE's total meters served and 9.5% of the total residential customer equivalents of GRE's customer base. For the years ended December 31, 2018 and 2017, Town Square's gross revenues from sales in Connecticut were \$24.8 million and \$20.8 million, respectively. Based upon the Company's preliminary assessment of this matter, a loss is not considered probable, nor is the amount of loss, if any, estimable as of December 31, 2018.

State of Illinois Office of the Attorney General

In response to complaints that IDT Energy enrolled consumers without their express consent and misrepresented the amount of savings those consumers would receive, the Office of the Attorney General of the State of Illinois ("IL AG") has been investigating the marketing practices of IDT Energy and has alleged violations of the Consumer Fraud and Deceptive Business Practices Act, 815 ILCS 505/1 *et seq.* and the Illinois Telephone Solicitations Act, 815 ILCS 413/1 *et seq.* Although IDT Energy denies any wrongdoing in connection with those allegations, the parties had previously engaged in discussions aimed at settling the matter pursuant to a proposed consent decree that would have included restitution payments in the amount of \$3.0 million, temporary suspension of all marketing activities directed at new customers, and implementation of various compliance and reporting procedures. Following discussions, IDT Energy signed a proposed consent decree which it rescinded shortly thereafter when the IL AG unilaterally issued a press release which IDT Energy believes violated the spirit and substance of the consent order and discussions. At this juncture, however, the parties have been unable to resolve their dispute and on November 19, 2018, the IL AG filed a Complaint for Injunctive and Other Relief ("Complaint") against IDT Energy in the Chancery Division of the Circuit Court of Cook County. On March 13, 2019 the IL AG filed a motion to enforce the settlement rescinded by IDT Energy. A court conference is currently scheduled for March 19, 2019. Despite the filing of the Complaint, the parties could choose to resume settlement discussions.

In third quarter of 2018, the Company recorded a liability of \$3.0 million recorded as a reduction of electricity revenues in the consolidated statement of operations. As of December 31, 2018, Illinois represented 5.7 of GRE's total meters served and 4.5% of the total residential customer equivalents of GRE's customer base. For the years ended December 31, 2018 and 2017, IDT Energy's gross revenues from sales in Illinois were \$16.5 million and \$25.9 million, respectively.

GOGAS

Afek Oil and Gas, Ltd.

In April 2013, the Government of Israel finalized the award to Afek of an exclusive three-year petroleum exploration license covering 396.5 square kilometers in the southern portion of the Golan Heights in Northern Israel. The license has been extended to April 2018. Israel's Northern District Planning and Building Committee granted Afek a one-year permit that commenced in February 2015, which has been subsequently extended to April 18, 2018, to conduct an up to ten-well oil and gas exploration program.

In February 2015, Afek began drilling its first exploratory well. Afek completed drilling five wells in the Southern region of its license area. In light of the analysis received in the third quarter of 2016 and the information and market conditions at that time, Afek determined that it did not have a clear path to demonstrate probable or possible reserves in the Southern region of its license area over the next 12 to 18 months. Since there was substantial doubt regarding the economic viability of these wells, in the year ended December 31, 2016, Afek wrote off the \$41.0 million of capitalized exploration costs incurred in the Southern region.

Afek turned its operational focus to the Northern region of its license area. Afek viewed the Northern and Southern regions separately when evaluating its unproved properties. In 2017, Afek drilled an exploratory well at a site in the Northern portion of its license area. In November 2017, Afek announced that the preliminary analysis of results from the completed well at the Northern site suggested that the well's target zone does not contain commercially producible quantities of oil or natural gas, and that it was suspending drilling operations pending further analysis. In the fourth quarter of 2017, Afek determined that it did not have a clear path to demonstrate probable or possible reserves in the Northern region of its license area over the next 12 to 18 months. Since there was substantial doubt regarding the economic viability of the well, Afek wrote off the \$6.5 million of capitalized exploration costs incurred in the Northern region. Subsequent analysis indicates that a zone within the well contains evidence of hydrocarbons at levels sufficient to warrant additional testing. Accordingly, Afek requested and received a renewal of its exploratory license from the Ministry of Energy for the Northern portion of its former license area. Afek is in the process of securing the permits and other regulatory approvals needed to perform the testing.

GOGAS Inactive Projects

Genie Mongolia, American Shale, LLC, Israel Initiatives Ltd.

In April 2013, Genie Mongolia and the Petroleum Authority of Mongolia entered into an exclusive oil shale development agreement to explore and evaluate the commercial potential of oil shale resources in a 34,470 square kilometer area in Central Mongolia. Genie Mongolia maintains its rights to the acreage, however, it has suspended its operations in Mongolia.

AMSO, LLC holds a research, development and demonstration lease awarded by the U.S. Bureau of Land Management that covers an area of 160 acres in western Colorado. At December 31, 2016, the AMSO LLC project was substantially decommissioned.

Israel Initiatives Ltd. ("IEI") had an exclusive Shale Oil Exploration and Production License awarded in July 2018 by the Government of Israel. The Shale Oil Exploration and Production License expired in July 2015. Operations of IEI are currently suspended.

CRITICAL ACCOUNTING POLICIES

Our financial statements and accompanying notes are prepared in accordance with accounting principles generally accepted in the United States of America, or U.S. GAAP. The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses as well as the disclosure of contingent assets and liabilities. Critical accounting policies are those that require application of management's most subjective or complex judgments, often as a result of matters that are inherently uncertain and may change in subsequent periods. Our critical accounting policies include those related to the allowance for doubtful accounts, goodwill, oil and gas accounting and income taxes. Management bases its estimates and judgments on historical experience and other factors that are believed to be reasonable under the circumstances. Actual results may differ from these estimates under different assumptions or conditions. See Note 1 to the Consolidated Financial Statements in this Annual Report for a complete discussion of our significant accounting policies.

Revenue Recognition

Revenues from Sale of Electricity and Natural Gas

In January 1, 2018, we adopted Accounting Standard Update ("ASU") No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* (referred to as "ASC 606"). The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to our customers in an amount that reflects the consideration to which we expect to be entitled in exchange for those goods or services, and the guidance defines a five-step process to achieve this core principle.

We adopted ASC 606, using the modified retrospective method applied to those contracts that were not completed as of January 1, 2018. Results for the reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period results are not adjusted and continue to be reported in accordance with its historic accounting under ASC Topic 605. We determined that the new standard did not have a material impact on revenue recognition and measurement in our consolidated financial statements. Variable quantities in requirements contracts are considered to be options for additional goods and services because the customer has a current contractual right to choose the amount of additional distinct goods. Revenue from the single performance obligation to deliver a unit of electricity and/or natural gas is recognized as the customer simultaneously receives and consumes the benefit. Utility companies offer purchase of receivable, or POR, programs in most of the service territories in which we operate, and GRE's REPs participate in POR programs for a majority of their receivables. We estimate variable consideration related to its rebate programs using the expected value method and a portfolio approach. Our estimates related to rebate programs are based on the terms of the rebate program, the customer's historical electricity and natural gas consumption, the customer's rate plan, and a churn factor. Taxes that are imposed on our sales and collected from customers are excluded from the transaction price.

Our performance obligations are generally pursuant to contracts for which the estimated customer relationship periods are currently less than one year. Therefore, in accordance with ASC 606, we generally expense sales commissions to acquire customers when incurred because the amortization period would have been one year or less. These costs are recorded within sales and marketing expenses. We continuously monitor its customer relationship periods to ensure compliance with the application of the practical expedient.

Revenues from Sale of Solar Panels

Our revenue from sales of solar panels are recognized at a point in time following the transfer of control of the solar panels to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. For sales contracts that contain multiple performance obligations, such as the shipment or delivery of solar modules, we allocate the transaction price to each performance obligation identified in the contract based on relative standalone selling prices, or estimates of such prices, and recognize the related revenue as control of each individual product is transferred to the customer, in satisfaction of the corresponding performance obligations.

Allowance for Doubtful Accounts

We maintain an allowance for doubtful accounts for estimated losses that result from the inability or unwillingness of our customers to make required payments. The allowance for doubtful accounts was \$2.0 million at December 31, 2018 and \$1.1 million at December 31, 2017. Our allowance is determined based on known troubled accounts, historical experience and other currently available evidence. Our estimates of recoverability of customer accounts may change due to new developments, changes in assumptions or changes in our strategy, which may impact our allowance for doubtful accounts balance. We continually assess the likelihood of potential amounts or ranges of recoverability and adjust our allowance accordingly, however, actual collections and write-offs of trade accounts receivable may materially differ from our estimates.

Goodwill

Our goodwill balance was \$11.1 million and \$10.0 million at December 31, 2018 and 2017, respectively. Goodwill is not amortized since it is deemed to have an indefinite life. It is reviewed annually (or more frequently under various conditions) for impairment using a fair value approach.

In the fourth quarter of 2018 we revised our reportable segments in connection with the acquisition of Prism and reduced exploration activities. Specifically, we separated GES from GRE, into a separate reportable segment which includes Prism. We also integrated GOGAS and Afek into one reportable segment. The change in reportable segments

did not result in the reallocation of our existing goodwill since all existing goodwill before the revision of the reportable segments were allocated to GRE.

We performed our annual goodwill impairment test as of October 1, 2018. In reviewing goodwill for impairment, We have the option, for any or all of our reporting units that carry goodwill - to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not (i.e. greater than 50%) that the estimated fair value of a reporting unit is less than its carrying amount. If we elect to perform a qualitative assessment and determines that an impairment is more likely than not, we then required to perform the quantitative impairment test, otherwise no further analysis is required. We also may elect not to perform the qualitative assessment and, instead, proceed directly to quantitative impairment test. The ultimate outcome of the goodwill impairment review for a reporting unit should be the same whether we choose to perform the qualitative assessment or proceeds directly to the quantitative impairment test. In 2018, we elected to perform a qualitative analysis for our GRE reporting units as of October 1, 2018. There are no goodwill allocated to other reporting units as of October 1, 2018. We determined, after performing qualitative analysis, that there was no evidence that it is more likely than not that the fair value of any identified reporting unit was less than the carrying amounts, therefore, it was not necessary to perform a quantitative impairment test.

Income Taxes

Our current and deferred income taxes and associated valuation allowance are impacted by events and transactions arising in the normal course of business as well as in connection with special and non-routine items. Assessment of the appropriate amount and classification of income taxes is dependent on several factors, including estimates of the timing and realization of deferred income tax assets, the results of Internal Revenue Service audits of our federal income tax returns, and changes in tax laws or regulations.

The valuation allowance on our deferred income tax assets was \$41.2 million and \$48.3 million at December 31, 2018 and 2017, respectively. We employ a tax strategy that enables us to currently deduct losses from our foreign subsidiaries against our profitable U.S. operations. Because of our current projections, we concluded that we meet the criteria of more likely than not in order to utilize our deferred federal income tax assets in the foreseeable future and have released the valuation on the assets that we will utilize.

We use a two-step approach for recognizing and measuring tax benefits taken or expected to be taken in a tax return. We determine whether it is more-likely-than-not that, a tax position will be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, we presume that the appropriate taxing authority that has full knowledge of all relevant information will examine the position. Tax positions that meet the more-likely-than-not recognition threshold are measured to determine the amount of tax benefit to recognize in the financial statements. The tax position is measured at the largest amount of benefit that is greater than 50 percent likely of being realized upon ultimate settlement. Differences between tax positions taken in a tax return and amounts recognized in the financial statements will generally result in one or more of the following: an increase in a liability for income taxes payable, a reduction of an income tax refund receivable, a reduction in a deferred tax asset, or an increase in a deferred tax liability. We review and adjust our liability for unrecognized tax benefits based on our best estimate and judgment given the facts, circumstances and information available at each reporting date. To the extent

that the outcome of these tax positions is different from the amounts recorded, such differences may affect income tax expense and actual tax payments.

RECENTLY ISSUED ACCOUNTING STANDARDS NOT YET ADOPTED

Information regarding new accounting pronouncement are included in Note — *Description of Business and Summary of Significant Accounting Policies*, to the Consolidated Financial Statements included in this Annual Report on Form 10-K,

RESULTS OF OPERATIONS

We evaluate the performance of our operating business segments based primarily on income (loss) from operations. Accordingly, the income and expense line items below income (loss) from operations are only included in our discussion of the consolidated results of operations.

We adopted ASC 606 as of January 1, 2018, using the modified retrospective method applied to those contracts that were not completed as of January 1, 2018. Results for the reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period results are not adjusted and continue to be reported in accordance with its historic accounting under ASC Topic 605. We determined that the new standard did not have any material impact on revenue recognition and measurement in our consolidated financial statements.

Year Ended December 31, 2018 compared to Year Ended December 31, 2017

Genie Retail Energy Segment

(in thousands)			Change	
Year ended December 31,	2018	2017	\$	%
Revenues:				
Electricity	\$ 227,883	\$ 222,171	\$ 5,712	2.6 %
Natural gas	46,560	40,098	6,462	16.1
Other	—	49	(49)	(100.0)
Total revenues	274,443	262,318	12,125	4.6
Cost of revenues	199,165	177,895	21,270	12.0
Gross profit	75,278	84,423	(9,145)	(10.8)
Selling, general and administrative	47,491	66,487	(18,996)	(28.6)
Income from operations	\$ 27,787	\$ 17,936	\$ 9,851	54.9

nm — not meaningful

On August 10, 2017, GRE acquired Mirabito Natural Gas, a Ft. Lauderdale, Florida-based natural gas supplier that serves commercial and government customers throughout Florida. Mirabito's operating results from the date of acquisition, which were not significant, are included in our results of operations.

On July 17, 2017, our subsidiary, GEUK, entered into a definitive agreement with EGC to launch Shoreditch, a joint venture to offer electricity and natural gas service to residential and small business customers in the United Kingdom.

On March 13, 2014, July 2, 2014 and July 15, 2014, named plaintiffs in Pennsylvania, New York and New Jersey commenced three separate putative class-action lawsuits against IDT Energy, GRE, GEIC, and Genie (collectively, "IDTE") contending, among other things, that they and other former and current customers of IDTE were injured as a result of IDTE's allegedly unlawful sales and marketing practices. We denied any basis for those allegations and/or wrongdoing. On July 5, 2017, we entered into a settlement of all three actions to further our efforts to address our customers' concerns. On July 31, 2018, the Magistrate Court issued a report and recommendation recommending approval of the settlement and reduction of the attorneys' fees. On October 18, 2018, the Court entered a final order approving the Settlement Agreement.

Under the Settlement Agreement, we have agreed to pay certain amounts to resolve the lawsuits and obtain a release of claims that were, or could have been, asserted in the lawsuits or that are related to, or arise out of the conduct alleged in the lawsuits or similar conduct, wherever it may have occurred. The settlement payment includes payments to customers who timely made a claim, class counsel, and the named plaintiffs, as well as the cost of a claims administrator for administering the claims process. In 2017, we estimated, based in part on historical participation rates, that its total settlement payment would be approximately \$9.0 million, and in the second quarter of 2017, we recorded a liability in that amount for the settlement. The period for class members to make claims has since expired, and in first quarter of 2018, based on the claims received and related administrative costs, we estimated that the total settlement payment would be approximately \$7.6 million.

In the year ended December 31, 2018, we reduced the liability for the settlement payment by \$3.4 million, reversed \$1.7 million of the revenue reduction recorded in 2017 and reversed \$1.7 million of the related legal settlement fees that is included in selling, general and administrative expense in the statement of operations.

Revenues. GRE's electricity revenues increased in 2018 compared to 2017. The increase in electricity revenues in 2018 compared to 2017 was the result of increase in consumption per meter as well as increase in the average price charged to customers. Average electricity consumption per meter by GRE REP's customers increased by 7.3% 2018 compared to 2017. The average rate per kilowatt hour sold increased by 2.9% in 2018 compared to 2017. The increase in electricity revenues in 2018 compared to 2017 also includes the impact of the \$1.7 million reversal in 2018 of estimated payments to customers for the settlement of the class action lawsuits described above. The increase was partially offset by the \$3.0 million reduction to electricity revenues in the 2018 for estimated payments to customers for the investigation in Illinois. The average meters served decreased 7.4% in 2018 compared to 2017.

GRE's natural gas revenues increased in 2018 compared to 2017 Mirabito, which was acquired in August 2017, generated \$6.5 million in natural gas revenues in 2018 compared to \$2.3 million in 2017. The average rate per therm sold increased 10.1% in 2018 compared 2017 reflecting an increase in the underlying commodity cost as well as the revenue adjustments related to the settlement of the class action lawsuits. Natural gas consumption by GRE's REP's customers increased by 1.7% in 2018 compared to 2017. Average meters served increased 9.6% in 2018 compared 2017 and average consumption per meter increased by 26.4% in 2018 compared to 2017.

(in thousands)	December 31, 2018	September 30, 2018	June 30, 2018	March 31, 2018	December 31, 2017
Meters at end of quarter:					
Electricity customers	245	269	282	284	307
Natural gas customers	70	73	81	89	105
Total meters	315	342	363	373	412

Gross meter acquisitions in 2018 were 197,000 compared to 355,000 in 2017. The 2016 Order required GRE's REPs to transfer customer accounts comprising approximately 18,700 meters in New York (representing approximately 10,600 RCEs, to their respective incumbent utilities in the three months ended March 31, 2018). In response to the New York PSC developments, we focused our meter acquisition efforts outside of New York State while simultaneously taking steps to reduce the prospective and contingent impacts of the PSC's orders on our New York operations. Meters served decreased by 97,000 or 23.6% from December 2017 to December 2018. In 2018, average monthly churn decreased to 6.5% from 6.6% in 2017. The decrease reflects the reduction in gross meter acquisitions in recent periods, as new customers exhibit higher churn rates than longer tenured customers, and the impact of our customer retention programs.

The average rates of annualized energy consumption, as measured by residential customer equivalents, or RCEs, are presented in the chart below. An RCE represents a natural gas customer with annual consumption of 100 mmbtu or an electricity customer with annual consumption of 10 MWh. Because different customers have different rates of energy consumption, RCEs are an industry standard metric for evaluating the consumption profile of a given retail customer base.

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(in thousands)	December 31, 2018	September 30, 2018	June 30, 2018	March 31, 2018	December 31, 2017
RCEs at end of quarter:					
Electricity customers	195	216	219	218	228
Natural gas customers	58	59	64	67	73
Total RCEs	253	275	283	285	301

RCEs decreased 15.9% at December 31, 2018 compared to December 31, 2017 primarily due to the transfer of customer accounts to their respective incumbent utilities in the three months ended March 31, 2018 in accordance with the 2016 Order, and our decision to curtail customer acquisition efforts in certain territories.

Cost of Revenues and Gross Margin Percentage. GRE's cost of revenues and gross margin percentage were as follows:

(in thousands)			Change	
Year ended December 31,	2018	2017	\$	%
Cost of revenues:				
Electricity	\$ 166,861	\$ 149,696	\$ 17,165	11.5
Natural gas	32,303	28,199	4,104	14.6
Total cost of revenues	\$ 199,164	\$ 177,895	\$ 21,269	12.0

Year ended December 31,	2018	2017	Change
Gross margin percentage:			
Electricity	26.8%	32.6%	-5.8%
Natural gas	30.6%	29.7%	0.9%
Total gross margin percentage	27.4%	32.2%	-4.8%

nm — not meaningful

Cost of revenues for electricity increased in 2018 compared to 2017 primarily because of increase in average unit cost of electricity. The average unit cost of electricity increased by 11.9% in 2018 compared to 2017. The increase was offset by decrease in electricity consumption by GRE's REPs' customers by 0.5% in 2018 compared to 2017. Gross margin on electricity sales decreased in 2018 compared to 2017 because the average rate charged to customers increased less than the average unit cost of electricity.

Cost of revenues for natural gas increased in 2018 compared to 2017 because full-year cost of revenues of Mirabito, increase in GRE's REPs customers consumption and increase in the average unit cost of natural gas. Mirabito, which was acquired in August 2017, had \$5.2 million in cost of revenues for natural gas in 2018 compared to \$1.6 million in 2017. Natural gas consumption by GRE's REPs' customers increased 1.7% in 2018 compared to 2017. The average unit cost of natural gas increased 10.3% in 2018 compared to 2017. Gross margin on natural gas sales increased 0.9% in 2018 compared to 2017 because the increase in the average rate charged to customers increased more than the average unit cost of natural gas.

Selling, General and Administrative. The decrease in selling, general and administrative expense in 2018 compared to 2017 was primarily due to decrease in customer acquisition costs related to decrease in gross meter acquisitions and for the reduction in the accruals for the settlement of the class action lawsuits described above. Commission expense decreased \$11.0 million in 2018 compared to 2017. As a percentage of GRE's total revenues, selling, general and administrative expense decreased from 25.3% in 2017 to 17.3% in 2018.

GES Segment

The GES segment is composed of Prism, in which we acquired 60% controlling interest in October 2018 and Diversegy.

(in thousands)			Change	
Year ended December 31,	2018	2017	\$	%
Revenue	\$ 5,696	\$ 1,884	\$ 3,812	202.3 %
Cost of revenue	4,597	798	3,799	476.1
Gross profit	1,099	1,086	13	1.2
Selling, general and administrative expenses	2,081	1,871	210	11.2
Loss from operations	\$ (982)	\$ (785)	\$ (197)	25.1

Revenue. GES's revenues increased in 2018 compared to 2017. The increase in revenue from 2018 compared to 2017 was the result of GRE's acquisition of a controlling interest in Prism in October 2018. Revenue from Prism in 2018 was \$3.4 million. Revenue from Diversegy includes commissions, entry fees and other fees from our energy brokerage and marketing services businesses.

Cost of Revenue. Cost of revenues increased in 2018 compared to 2017 primarily because of GRE's acquisition of a controlling interest in Prism in October 2018. Cost of Revenue from Prism in 2018 was \$3.3 million. Cost of revenue related to Diversegy commission expense incurred by our energy brokerage and marketing services businesses.

General and Administrative. General and administrative expense decreased in 2018 compared to 2017 primarily because of acquisition of Prism offset by decrease in operating expenses of Diversegy.

GOGAS Segment

(in thousands)			Change	
Year ended December 31,	2018	2017	\$	%
Revenue	\$ 170	\$ —	170	nm
General and administrative expense	3,716	1,930	\$ 1,786	92.5
Exploration	244	4,878	(4,634)	(95.0)
Write-off of exploration cost	—	6,483	(6,483)	(100.0)
Impairment of equipment	2,742	—	2,742	nm
Loss from operations	\$ 6,532	\$ 13,291	\$ 6,759	50.9

nm — not meaningful

Revenue. Revenue includes fees related to drilling services performed by Atid in July and August 2018.

General and Administrative. General and administrative expense increased in 2018 compared to 2017 primarily because of increase in payroll and related expenses and depreciation expense, primarily due to the operations of Atid, prior to divestment of majority stake.

Exploration. GOGAS accounts for its oil and gas activities under the successful efforts method of accounting. Under this method, the costs of drilling exploratory wells and exploratory-type stratigraphic test wells are capitalized, pending determination of whether the well has found proved reserves. Other exploration costs are charged to expense as incurred. In 2017, Afek drilled an exploratory well at one of the Northern sites in its license area. In November 2017, Afek announced that the preliminary analysis of results from this completed well suggested that the well's target zone does not contain commercially producible quantities of oil or natural gas. Afek suspended its drilling operations pending further analysis. Exploration expense in the three and nine months ended September 30, 2018 was primarily incurred in the wrap-up of the suspended drilling operations. Subsequent analysis indicates that a zone within the well contains evidence of hydrocarbons at levels sufficient to warrant additional testing. Accordingly, Afek requested and received a renewal of its exploratory license from the Ministry of Energy for the Northern portion of its former license area. Afek is in the process of securing the permits and other regulatory approvals needed to perform the testing.

Corporate

Corporate does not generate any revenues, nor does it incur any cost of revenues. Corporate costs include unallocated compensation, consulting fees, legal fees, business development expense and other corporate-related general and administrative expense.

(in millions)			Change	
Year ended December 31,	2018	2017	\$	%
General and administrative expense and loss from operations	\$ 8,295	\$ 9,835	\$ (1,540)	(15.7)%

The decrease in Corporate general and administrative expense in 2018 compared to 2017 was primarily due to decrease in severance expense and payroll expenses including decrease in stock-based compensation. As a percentage of our consolidated revenues, Corporate general and administrative expense decreased from 3.7% in 2017 to 3.0% in 2018.

Consolidated

Selling, General and Administrative. Corporate general and administrative decreased in 2018 compared to 2017 primarily because of decreases in severance expense and payroll and related expense and by decrease in stock-based compensation expense.

Pursuant to an agreement between us and IDT, IDT charges us for services it provides to us, and we charge IDT for services that we provide to certain of IDT's subsidiaries. In 2018 and 2017, the amounts that IDT charged us, net of the amounts that we charged IDT, were \$1.0 million and \$1.3 million, respectively, which were included in consolidated selling, general and administrative expense.

Stock-based compensation expense included in consolidated selling, general and administrative expense was \$4.5 million and \$5.2 million in 2018 and 2017, respectively. At December 31, 2018, aggregate unrecognized compensation cost related to non-vested stock-based compensation was \$1.9 million. The unrecognized compensation cost is recognized over the expected service period.

As a percentage of our consolidated revenues, Corporate general and administrative expense decreased from 3.7% in 2017 to 3.0% in 2018.

The following is a discussion of our consolidated income and expense line items below loss from operations.

(in thousands)			Change	
Year ended December 31,	2018	2017	\$	%
Income (loss) from operations	\$ 11,978	\$ (5,975)	\$ 17,953	(300.5)%
Interest income	557	295	262	88.8
Interest expense	(401)	(310)	(91)	29.4
Equity in the net loss of equity method investees	(3,430)	(565)	(2,865)	507.1
Gain on extinguishment of liability	164	—	164	nm
Other income (expense), net	156	(367)	523	(142.5)
Benefit from (provision for) income taxes	12,376	(1,726)	14,102	(817.0)
Net income (loss)	21,400	(8,648)	30,048	(347.5)
Net loss (income) attributable to noncontrolling interests	1,385	1,654	(269)	(16.3)
Net income (loss) attributable to Genie Energy Ltd.	\$ 22,785	\$ (6,994)	\$ 29,779	(425.8)%

nm — not meaningful

Interest Expense. On April 4, 2017, we entered into a Credit Agreement with Vantage Commodities Financial Services II, LLC, or Vantage, for a \$20 million revolving line of credit. The increase in interest expense in 2018 compared to 2017 was primarily due to increase in average outstanding balance on the revolving line of credit in 2018 compared to 2017.

Equity in net loss of joint venture. GEUK accounts for its ownership interest in Shoreditch using the equity method since GEUK has the ability to exercise significant influence over its operating and financial matters, although it does not control Shoreditch. Shoreditch is a variable interest entity, however, GEUK has determined that it is not the primary beneficiary, as GEUK does not have the power to direct the activities that most significantly impact Shoreditch's economic performance. In December 2017, Shoreditch commenced initial customer acquisition in the United Kingdom under the mandated three-month Controlled Market Entry framework in which new entrants can acquire a limited number of customers in a test environment. Shoreditch uses the trade name Orbit Energy. The controlled market entry was successfully completed and Shoreditch's customer acquisition program has commenced. The Company's share in Shoreditch's net loss in 2018 was \$3.0 million compared to \$0.6 million in 2017.

Divestment of Atid. As a result of our decision to suspend our oil and gas exploration drilling activities, in June 2018, we initiated a plan to sell primarily all of Atid's assets and liabilities. In the three and nine months ended September 30, 2018, we recorded a write-down to fair value of Atid's assets held for sale in the amount of \$0.5 million and \$2.7 million for the three and nine months ended September 30, 2018, respectively. On September 1, 2018, Genie Israel Holdings Ltd., a wholly-owned subsidiary of GOGAS ("Genie Israel") contributed to a newly formed drilling services company in Israel with net book value of \$1.0 million as of September 1, 2018 in exchange for 37.5%

interest. The remaining interest in the newly formed drilling services company in Israel are held by Howard Jonas, our Chairman (37.5%) and by Geoffrey Rochwarger, our former Vice Chairman (25.0%). We recorded an impairment loss of \$2.7 million related to the drilling equipment of Atid prior to the divestment.

Other (Expense) Income, net. Other expense, net in 2018 and 2017 consisted primarily foreign currency transaction gains and losses.

Provision for Income Taxes. The benefit from taxes in 2018 was primarily due to the release the of valuation allowance of deferred tax assets of 15.1 million due to reduction in spending in the oil and gas exploration and the profitable outlook for the Company. .

On December 22, 2017 the U.S. enacted the Tax Cuts and Jobs Act, which makes various changes to the U.S. tax code, including a reduction in the corporate tax rate from 35% to 21% effective January 1, 2018. We have completed our accounting for the income tax effects of the enactment of the Tax Cuts and Jobs Act. At December 31, 2017, we adjusted our deferred income tax assets and related valuation allowance in equal and offsetting amounts to reflect the new rate. There was no impact to our provision for income taxes from this adjustment.

Net Loss Attributable to Noncontrolling Interests. The change in the net loss attributable to noncontrolling interests in 2018 compared to 2017 was primarily due to reduction in the net loss of Afek and improvement of results of operations of CCE, partially offset by net loss in Prism. Afek's net loss in 2018 was \$1.0 million compared to \$8.5 million in 2017. CCE's net income in 2018 was \$1.2 million compared to net loss of \$0.1 million in 2017.

LIQUIDITY AND CAPITAL RESOURCES

General

We currently expect that our cash flows from operations in the next twelve months and the \$29.9 million balance of unrestricted cash and cash equivalents that we held at December 31, 2018 will be sufficient to meet our currently anticipated cash requirements for at least the year ending December 31, 2019.

At December 31, 2018, we had working capital (current assets less current liabilities) of \$35.4 million.

(in millions)	Year ended December 31,	
	2018	2017
Cash flows provided by (used in):		
Operating activities	\$ 19,374	\$ 9,380
Investing activities	(2,938)	(16,528)
Financing activities	(4,155)	(8,146)
Effect of exchange rate changes on cash and cash equivalents	(11)	169
Increase (decrease) in cash and cash equivalents	\$ 12,270	\$ (15,125)

Operating Activities

Cash provided by operating activities was \$19.4 million and \$9.4 million in years ended December 31, 2018 and 2017, respectively. Net income after non-cash adjustments increase cash flows by \$21.4 million for the year ended December 31, 2018, compared to \$6.2 million the same period in 2017. The increase mainly resulted from reductions in customer acquisition costs and legal accruals in 2018 as discussed above.

Our cash flow from operations varies significantly from quarter to quarter and from year to year, depending on our operating results and the timing of operating cash receipts and payments, specifically trade accounts receivable and

trade accounts payable. Changes in working capital decrease cash flows by \$9.3 million for the year ended December 31, 2018, compared to the same period in 2017. Changes in other assets increase cash flows by \$4.0 million for the year ended December 31, 2018, compared to the same period in 2017.

As of November 19, 2015, certain of GRE's REPs entered into an Amended and Restated Preferred Supplier Agreement with BP Energy Company, or BP, which was amended as of June 7, 2018. The agreement's termination date is November 30, 2021, except any party may terminate the agreement on November 30, 2020 by giving the other parties notice by May 31, 2019. The obligations to BP are secured by a first security interest in deposits or receivables from utilities in connection with their purchase of the REPs' customer's receivables, and in any cash deposits or letters of credit posted in connection with any collateral accounts with BP. In addition, the REPs must pay an advance payment of \$2.0 million to BP each month that BP will apply to the next invoiced amount due to BP. The ability to purchase electricity and natural gas under this agreement is subject to satisfaction of certain conditions including the maintenance of certain covenants. At December 31, 2018, we were in compliance with such covenants. At December 31, 2018, restricted cash—short-term of \$1.6 million and trade accounts receivable of \$37.8 million were pledged to BP as collateral for the payment of trade accounts payable to BP of \$14.4 million at December 31, 2018

From time to time, we receive inquiries or requests for information or materials from public utility commissions or other governmental regulatory or law enforcement agencies related to investigations under statutory or regulatory schemes, and we respond to those inquiries or requests. We cannot predict whether any of those matters will lead to claims or enforcement actions.

Investing Activities

Our capital expenditures were \$0.6 million and \$3.3 million in 2018 and 2017, respectively. In 2017, our subsidiary, purchased a drilling rig and associated drilling equipment for \$2.0 million. Atid provided drilling services to Afek for its sixth exploratory well. We had purchase commitments of \$107.8 million at December 31, 2018, of which \$90.1 million was for future purchases of electricity. We currently anticipate that our total capital expenditures in the year ending December 31, 2019 will be between \$0.5 million and \$1.0 million.

In August 2018 to October 2018, the Company extended an aggregate of \$1.3 million bridge loans to Prism. The bridge loans, were secured by a subordinated security interest in Prism's assets as well as a second mortgage and assignment of rents on Prism's plant and facility, bore fixed annual interest rate of 12%. On October 25, 2018, the Company completed a transaction to acquire a 60.0% controlling interest in Prism in exchange for a total consideration of \$4.0 million, which include (i) the conversion of \$1.4 million of principal amount of bridge loans, including accrued interest, into equity of Prism, (ii) \$0.8 million cash contribution to Prism, (iii) \$0.3 million payment to previous minority shareholders and (iv) an obligation to fund Prism an additional \$1.5 million within 60 days.

On June 7, 2018, Genie Japan, LLC, or Genie Japan, a wholly-owned indirect subsidiary of ours, acquired 100% of the equity of Smile Energy G.K., or Smile Energy, from Capital Sixty, LLC, or Capital Sixty, and Flower Denryoku, or Flower. Smile Energy is a Japanese company licensed to provide electricity to end-use customers in Japan. The aggregate purchase price was \$0.7 million. In addition, Capital Sixty received an option to purchase a 5% membership interest in Genie Japan at an exercise price of \$1. The option is exercisable on the earlier of 18 months from the start of enrolling retail energy customers in Japan or June 7, 2020. At any time before exercise, Genie Japan may cancel the option in exchange for a payment of \$0.03 million to Capital Sixty. Smile Energy entered into a Power Service Agreement with Flower, pursuant to which, Flower will provide certain services to Smile Energy including wholesale power supply and electricity sales service. Smile Energy incurred set-up fees of \$0.4 million for the implementation of the Power Service Agreement. The Power Service Agreement has an initial term of three years.

In 2017, we used cash of \$5.5 million for investments in Afek's unproved oil and gas property in the Golan Heights in Northern Israel. There were no such investments in 2018.

On August 10, 2017, GRE acquired Mirabito for cash of \$3.9 million, net of \$0.1 million cash acquired.

On July 17, 2017, the Company's subsidiary, GEUK, entered into a definitive agreement with EGC to launch Shoreditch, a joint venture to offer electricity and natural gas service to residential and small business customers in the U. K., using the trade name Orbit Energy. In August 2018, the parties confirmed that the relevant conditions described in the JV Agreement were satisfied, triggering additional funding obligations, albeit at a lower level than in the JV Agreement due to revised budgets and forecasts. In September and December 2018, the Company contributed a total of \$1.3 million to Shoreditch, which increased GEUK's total contribution to \$5.3 million as of December 31, 2018. In connection with the revised contributions and obligations, the GEUK's ownership of Shoreditch increased from 65% to 67% and EGC's ownership reduced from 35% to 33% as effective September 2018.

Financing Activities

In each of 2018 and 2017, we paid aggregate Base Dividends per share of \$0.6376 on our Series 2012-A Preferred Stock. The aggregate preferred stock dividends paid in each of 2018 and 2017 were \$1.5 million. On February 15, 2019, we paid a quarterly Base Dividend of \$0.1594 per share on our Series 2012-A Preferred Stock for the fourth quarter of 2018 to stockholders of record as of the close of business on February 6, 2019.

In 2018 and 2017, we paid aggregate dividends per share of \$0.30, to stockholders of our Class A common stock and Class B common stock. The aggregate dividends paid in 2018 and 2017 were \$7.7 million and \$7.4 million, respectively. In March 6, 2019, our Board of Directors declared a quarterly dividend of \$0.075 per share on our Class A common stock and Class B common stock for the fourth quarter of 2018 to stockholders of record as of the close of business on March 25, 2019. The dividend will be paid on or about March 29, 2019.

In the year ended December 31, 2017, GOGAS purchased from employees of Afek a 1.15% fully vested interest in Afek for \$0.3 million in cash.

On June 8, 2018, we sold to Howard S. Jonas, our Chairman (1) 1,152,074 shares of our Class B common stock, at a price of \$4.34 per share for an aggregate sales price of \$5.0 million, and (2) warrants to purchase an additional 1,048,218 shares of our Class B common stock at an exercise price of \$4.77 per share for an aggregate exercise price of \$5.0 million. The warrants will expire in June 2023. In addition, on June 12, 2018, we sold to a third-party investor (1) 230,415 treasury shares of our Class B common stock, at a price of \$4.34 per share for an aggregate sales price of \$1.0 million, and (2) warrants to purchase an additional 209,644 shares of our Class B common stock at an exercise price of \$4.77 per share for an aggregate exercise price of \$1.0 million.

On April 4, 2017, GRE, IDT Energy, and other GRE subsidiaries entered into a Credit Agreement with Vantage Commodities Financial Services II, LLC, or Vantage, for a \$20 million revolving loan facility. The borrowers consist of our subsidiaries that operate REP businesses, and those subsidiaries' obligations are guaranteed by GRE. On April 4, 2017, the borrowers borrowed \$4.3 million under this facility, which included \$1.7 million that was previously outstanding under the credit facility between REH and Vantage. The REH Credit Agreement with Vantage was terminated in connection with the entry into this credit agreement. The borrowers have provided as collateral a security interest in their receivables, bank accounts, customer agreements, certain other material agreements and related commercial and intangible rights. Outstanding principal amount incurs interest at LIBOR plus 4.5% per annum. Interest is payable monthly and all outstanding principal and any accrued and unpaid interest is due on the maturity date of April 3, 2020. The borrowers are required to comply with various affirmative and negative covenants, including maintaining a target tangible net worth during the term of the credit agreement. To date, we are in compliance with such covenants. In 2018m there were no amounts borrowed or repaid under the line of credit. In 2017, including the prior REH Credit Agreement, GRE borrowed \$14.5 million under the revolving line of credit and repaid \$12.7 million. At December 31, 2018, \$2.5 million was outstanding under the revolving line of credit and the effective interest rate was 6.81% per annum.

On May 31, 2017, our Loan Agreement with JPMorgan Chase Bank for a revolving line of credit expired. There were no amounts outstanding under the line of credit. Cash collateral of \$10.0 million that was included in “Restricted cash—short-term” in the consolidated balance sheet was released.

We received proceeds from the exercise of our stock options of \$0.1 million 2017. In 2017 we issued 15,855 shares of our Class B common stock for the exercise of the stock options. There we no stock options exercises in 2018.

In 2018, we paid \$0.9 million to repurchase 149,058 shares of our Class B common stock. In 2017, we paid \$0.8 million to repurchase 129,898 shares of our Class B common stock. These shares were tendered by our employees to satisfy tax withholding obligations in connection with the lapsing of restrictions on awards of restricted stock. Such shares were repurchased by us based on their fair market value on the trading day immediately prior to the vesting date.

In August 2018, we issued 310,467 shares of our Class B common stock in exchange for vested deferred stock units of GRE. The aggregate fair value of the shares of our Class B common stock issued was \$1.9 million.

On March 11, 2013, our Board of Directors approved a stock repurchase program for the repurchase of up to an aggregate of 7.0 million shares of our Class B common stock. There were no repurchases under the program in 2018 and 2017. At December 31, 2018, 6.9 million shares remained available for repurchase under the stock repurchase program.

Series 2012-A Preferred Stock

At December 31, 2018, there were 2.3 million shares of our Series 2012-A Preferred Stock issued and outstanding with an aggregate liquidation preference of \$19.7 million. Each share of our Series 2012-A Preferred Stock has a liquidation preference of \$8.50 (the “Liquidation Preference”), and is entitled to receive an annual dividend per share equal to the sum of (i) \$0.6375 (the “Base Dividend”) plus (ii) seven and one-half percent (7.5%) of the quotient obtained by dividing (A) the amount by which the EBITDA for a fiscal year of our retail energy provider business exceeds \$32 million by (B) 8,750,000 (the “Additional Dividend”), payable in cash. EBITDA consists of income (loss) from operations exclusive of depreciation and amortization and other operating gains (losses).

The Series 2012-A Preferred Stock is redeemable, in whole or in part, at our option following October 11, 2017 at 101% of the Liquidation Preference plus accrued and unpaid dividends, and 100% of the Liquidation Preference plus accrued and unpaid dividends following October 11, 2018.

During any period when we have failed to pay a dividend on the Series 2012-A Preferred Stock and until all unpaid dividends have been paid in full, we are prohibited from paying dividends or distributions on our Class B or Class A common stock.

The Base Dividend is payable (if declared by our Board of Directors, and accrued, if not declared) quarterly on each February 15, May 15, August 15 and November 15, and to the extent that there is any Additional Dividend payable with respect to a fiscal year, it will be paid to holders of Series 2012-A Preferred Stock with the May dividend. With respect to the payment of dividends and amounts upon liquidation, dissolution or winding up, the Series 2012-A Preferred Stock is equal in rank to all other equity securities we issue, the terms of which specifically provide that such equity securities rank on a parity with the Series 2012-A Preferred Stock with respect to dividend rights or rights upon our liquidation, dissolution or winding up; senior to our common stock; and junior to all of our existing and future indebtedness.

Each share of Series 2012-A Preferred Stock has the same voting rights as a share of Class B common stock, except on certain matters that only impact our common stock, as well as additional voting rights on specific matters or upon the occurrence of certain events.

CONTRACTUAL OBLIGATIONS AND OTHER COMMERCIAL COMMITMENTS

The following table quantifies our future contractual obligations and other commercial commitments at December 31, 2018:

Payments Due by Period

(in millions)	Total	Less than 1 year	1 – 3 years	4 – 5 years	After 5 years
Purchase obligations	\$ 90,145	\$ 57,936	\$ 32,209	\$ —	\$ —
Renewable energy credits purchase obligations	17,696	10,152	6,997	547	—
Revolving credit loan payable ⁽¹⁾	2,516	—	2,516	—	—
Notes payable	923	923	—	—	—
Operating leases	3,300	527	805	438	1,530
Other liabilities ⁽²⁾⁽³⁾	755	755	—	—	—
TOTAL CONTRACTUAL OBLIGATIONS ⁽⁴⁾⁽⁵⁾	\$ 115,335	\$ 70,293	\$ 42,527	\$ 985	\$ 1,530

(1) The above table includes principal outstanding at December 31, 2018 plus estimated interest and fees.

(2) The above table does not include estimated call option of \$0.3 million in connection with the acquisition of Smile Energy due to the uncertainty of the amount and/or timing of any such payments.

(3) The above table does not include the financing extended to New Atid of up to \$0.4 million due to the uncertainty of the amount and/or timing of any payments.

(4) The above table does not include an aggregate of \$12.5 million in performance bonds at December 31, 2018 due to the uncertainty of the amount and/or timing of any payments.

(5) The above table does not include our unrecognized income tax benefits for uncertain tax positions at December 31, 2018 of \$0.4 million due to the uncertainty of the amount and/or timing of any such payments. Uncertain tax positions taken or expected to be taken on an income tax return may result in additional payments to tax authorities. We are not currently able to reasonably estimate the timing of any potential future payments. If a tax authority agrees with the tax position taken or expected to be taken or the applicable statute of limitations expires, then additional payments will not be necessary.

OFF-BALANCE SHEET ARRANGEMENTS

We do not have any “off-balance sheet arrangements,” as defined in relevant SEC regulations that are reasonably likely to have a current or future effect on our financial condition, results of operations, liquidity, capital expenditures or capital resources, other than the following. GRE has performance bonds issued through a third party for the benefit of certain utility companies and for various states in order to comply with the states’ financial requirements for retail energy providers. At December 31, 2018, GRE had aggregate performance bonds of \$12.5 million outstanding.

Item 7A. Quantitative and Qualitative Disclosures about Market Risks.

We are a smaller reporting company as defined by Rule 12b-2 of the Securities Exchange Act of 1934 and are not required to provide the information under this item.

Our primary market risk exposure is the price applicable to our natural gas and electricity purchases and sales. The sales price of our natural gas and electricity is primarily driven by the prevailing market price. Hypothetically, if our gross profit per unit in 2018 had remained the same as in 2017, due to changes in the price of natural gas and electricity, our gross profit from electricity sales would have increased by \$11.3 million in 2018 and our gross profit from natural gas sales would have decreased by \$1.3 million in 2018.

The energy markets have historically been very volatile, and we can reasonably expect that electricity and natural gas prices will be subject to fluctuations in the future. In an effort to reduce the effects of the volatility of the cost of electricity and natural gas on our operations, we have adopted a policy of hedging electricity and natural gas prices from time to time, at relatively lower volumes, primarily through the use of put and call options and swaps. While the use of these hedging arrangements limits the downside risk of adverse price movements, it also limits future gains from favorable movements. We do not apply hedge accounting to these swaps or options, therefore the mark-to-market change in fair value is recognized in cost of revenue in our consolidated statements of operations. Refer to Note 4 – *Derivative Instruments*, for details of the hedging activities.

Item 8. Financial Statements and Supplementary Data.

Our Consolidated Financial Statements and supplementary data and the report of the independent registered public accounting firm thereon set forth starting on page F-1 herein are incorporated herein by reference.

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

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

We, the management of Genie Energy Ltd. and subsidiaries (the “Company”), are responsible for establishing and maintaining adequate internal control over financial reporting of the Company.

The Company’s internal control over financial reporting is defined in Rule 13a-15(f) and 15d-15(f) promulgated under the Securities Exchange Act of 1934 as a process designed by, or under the supervision of, the Company’s principal executive and principal financial officers and effected by the Company’s board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Company’s financial statements for external purposes in accordance with generally accepted accounting principles in the United States and includes those policies and procedures that:

1. Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of assets of the Company;
2. Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and
3. Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company’s assets that could have a material effect on the financial statements.

Management has assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2018. In making this assessment, the Company's management used the criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO").

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of our internal control over financial reporting, as prescribed above, as of December 31, 2018. Based on our evaluation, our principal executive officer and principal financial officer concluded that deficiencies in the design and operating effectiveness of the Company's internal controls aggregated to a material weakness in the Company's internal control over financial reporting and, therefore, the Company did not maintain effective controls over the change management process and segregation of duties within applications and databases used by the Company to process and record transactions related to customer enrollment, customer programs and price plans, rebate programs, sales commissions, invoicing, and invoice payment information.

Because of this material weakness, management has concluded that our internal control over financial reporting was not effective as of December 31, 2018. This material weakness could result in misstatements of financial statement accounts and disclosures that would result in a material misstatement of the consolidated financial statements that would not be prevented or detected.

Notwithstanding the material weaknesses discussed below, our management has concluded that the consolidated financial statements included in this Annual Report on Form 10-K fairly present in all material respects our financial condition, results of operations and cash flows for the periods presented in conformity with generally accepted accounting principles.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2018 has been audited by Marcum LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Management Action Plan and Progress to Date

In response to the material weaknesses, we have taken certain actions and will continue to take further steps to strengthen our control processes and procedures in order to remediate such material weaknesses. We will continue to evaluate the effectiveness of our internal controls and procedures on an ongoing basis and will take further action as appropriate. Management has formed multiple aspects of an overall remediation plan, which will be completed by the third quarter of 2019.

The plan includes:

Implementation of a new software development toolkit and change managements process;

Revamp of the internal roles and privileges infrastructure with enhanced access controls; and

Installation of a new database monitoring protocol with monitoring reports reviewed by an independent reviewer.

Management has also developed and implemented compensating controls to independently validate the data within the application. The compensating controls were implemented and applied to the November and fourth quarter of 2018 and are expected to be further refined and expanded in 2019.

Acquisition of Prism

We acquired 60% controlling interest in Prism in October 2018. Management has excluded the operations of this business from our evaluation of, and conclusion on, the effectiveness of our internal controls over financial reporting as of December 31, 2018. Prism constituted 3.1% and 2.4% of total assets and net assets, respectively, as of December 31, 2018, and 1.2% and 2.3% of revenues and net loss, respectively, for the year then ended. Management plans to fully integrate the operations of this business into its assessment of the effectiveness of our internal control over financial reporting in 2019.

Changes in Internal Control over Financial Reporting

None

Item 9B. Other Information.

None.

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Part III

Item 10. Directors, Executive Officers and Corporate Governance.

The following is a list of our directors and executive officers along with the specific information required by Rule 14a-3 of the Securities Exchange Act of 1934:

Executive Officers

Howard S. Jonas — Chairman of the Board

Michael Stein — Chief Executive Officer

Avi Goldin — Chief Financial Officer

Directors

Howard S. Jonas — Chairman of the Board of the Company

James A. Courter — Vice Chairman of the Board of the Company

W. Wesley Perry — Owner and operator of S.E.S. Investments, Ltd., an oil and gas investment company

Alan B. Rosenthal — Founder and managing partner of ABR Capital Financial Group LLC, an investment fund

Allan Sass — Former President and Chief Executive Officer of Occidental Oil Shale Corporation, a subsidiary of Occidental Petroleum

The remaining information required by this Item will be contained in our Proxy Statement for our Annual Stockholders Meeting, which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2018, and which is incorporated by reference herein.

Corporate Governance

We have included as exhibits to this Annual Report on Form 10-K certificates of our Chief Executive Officer and Chief Financial Officer certifying the quality of our public disclosure.

We make available free of charge through the investor relations page of our web site (www.idt.net/ir) 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, and all beneficial ownership reports on Forms 3, 4 and 5 filed by directors, officers and beneficial owners of more than 10% of our equity, as soon as reasonably practicable after such reports are electronically filed with the Securities and Exchange Commission. We have adopted codes of business conduct and ethics for all of our employees, including our principal executive officer, principal financial officer and principal accounting officer. Copies of the codes of business conduct and ethics are available on our web site.

Our web site and the information contained therein or incorporated therein are not intended to be incorporated into this Annual Report on Form 10-K or our other filings with the SEC.

Item 11. Executive Compensation.

The information required by this Item will be contained in our Proxy Statement for our Annual Stockholders Meeting, which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2018, and which is incorporated by reference herein.

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

The information required by this Item will be contained in our Proxy Statement for our Annual Stockholders Meeting, which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2018, and which is incorporated by reference herein.

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

The information required by this Item will be contained in our Proxy Statement for our Annual Stockholders Meeting, which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2018, and which is incorporated by reference herein.

Item 14. Principal Accounting Fees and Services.

The information required by this Item will be contained in our Proxy Statement for our Annual Stockholders Meeting, which will be filed with the Securities and Exchange Commission within 120 days after December 31, 2018, and which is incorporated by reference herein.

Part IV

Item 15. Exhibits, Financial Statement Schedules.

(a) The following documents are filed as part of this Report:

- Report of Independent Registered Public Accounting Firm on Internal Control Over Financial Reporting
1. Reports of Independent Registered Public Accounting Firms on Consolidated Financial Statements
Financial Statement Schedules.
 2. All schedules have been omitted since they are either included in the Notes to Consolidated Financial Statements or not required or not applicable.
 3. The exhibits listed in paragraph (b) of this item. Exhibit Numbers 10.01, 10.03, 10.04 and 10.05 are management contracts or compensatory plans or arrangements.

(b) Exhibits.

Exhibit Number	Description of Exhibits
3.01(1)	<u>Amended and Restated Certificate of Incorporation of the Registrant.</u>
3.02(2)	<u>Amended and Restated Certificate of Designation of Series 2012-A Preferred Stock of the Registrant.</u>
3.03(3)	<u>Amended and Restated By-Laws of the Registrant.</u>
10.01(4)	<u>Third Amended and Restated Employment Agreement, effective as of November 1, 2017, between the Registrant and Howard S. Jonas.</u>
10.02(*)	<u>Amendment No. 1 to the Third Amended and Restated Employment Agreement between the Registrant and Howard S. Jonas, dated as March 15, 2019.</u>
10.03(5)	<u>Restricted Stock Agreement between the Registrant and Howard Jonas, dated August 7, 2017.</u>
10.04(6)	<u>Second Amended and Restated Employment Agreement, effective as of January 1, 2018, between the Registrant and Avi Goldin.</u>
10.05(7)	<u>Employment Agreement, dated June 17, 2015, between the Registrant, Genie Energy E&P Ltd. and Geoffrey Rochwarger.</u>
10.06(8)	<u>2011 Stock Option and Incentive Plan of Genie Energy Ltd.</u>

- 10.07(1) Preferred Supplier Agreement between IDT Energy, Inc. and BP Energy Company, dated June 29, 2009, as amended.
- 21.01* Subsidiaries of the Registrant.
- 23.01* Consent of Marcum LLP
- 23.02* Consent of BDO USA, LLP
- 31.01* Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
- 31.02* Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
- 32.01* Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
- 32.02* Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

Exhibit Number	Description of Exhibits
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* filed herewith.

- (1) Incorporated by reference to Form 10-12G/A, filed October 7, 2011.
- (2) Incorporated by reference to Exhibit 99(A)(1)(A) to Schedule TO, filed May 22, 2014.
- (3) Incorporated by reference to Form 8-K filed August 9, 2012.
- (4) Incorporated by reference to Form 8-K/A, filed November 6, 2017.
- (5) Incorporated by reference to Form 10-Q, filed November 9, 2017.
- (6) Incorporated by reference to Form 8-K/A, filed January 2, 2018.
- (7) Incorporated by reference to Form 8-K/A, filed June 23, 2015.
- (8) Incorporated by reference to Form 10-12G/A, filed October 27, 2011.

Item 16. Form 10-K Summary

None.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

GENIE ENERGY LTD.

By: /s/ Michael Stein
Chief Executive Officer

Date: March 18, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Signature	Titles	Date
/s/ Howard S. Jonas Howard S. Jonas	Chairman of the Board and Director	March 18, 2019
/s/ Michael Stein Michael Stein	Chief Executive Officer (Principal Executive Officer)	March 18, 2019
/s/ Avi Goldin Avi Goldin	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 18, 2019
/s/ James A. Courter James A. Courter	Vice Chairman of the Board and Director	March 18, 2019
/s/ W. Wesley Perry W. Wesley Perry	Director	March 18, 2019
/s/ Alan B. Rosenthal Alan B. Rosenthal	Director	March 18, 2019
/s/ Allan Sass Allan Sass	Director	March 18, 2019

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
ON INTERNAL CONTROL OVER FINANCIAL REPORTING

To the Board of Directors and Stockholders of

Genie Energy Ltd.

Adverse Opinion on Internal Control over Financial Reporting

We have audited Genie Energy, LTD. (the “Company”) internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (the “COSO criteria”). In our opinion, because of the effect of the material weakness described in the following paragraph on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

A material weakness is a control deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weakness has been identified and included in “Management's Annual Report on Internal Control Over Financial Reporting:”

Basis for Opinion

The Company’s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying “Management’s Report on Internal Control over Financial Reporting”. Our responsibility is to express an opinion on the Company’s internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

The Company did not maintain effective controls over the change management process and segregation of duties within applications and databases used by the Company to process and record transactions related to customer enrollment, customer programs and price plans, rebate programs, sales commissions, invoicing, and customer payments. These deficiencies, combined with inadequate compensating review controls, create a reasonable possibility that a material misstatement to the consolidated financial statements may not be prevented or detected on a timely basis and represent a material weakness in the Company’s internal control over financial reporting.

This material weakness was considered in determining the nature, timing and extent of audit tests applied in our audit of the fiscal December 31, 2018 consolidated financial statements, and this report does not affect our report dated March 18, 2019 on those consolidated financial statements.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets as of December 31, 2018 and the related consolidated statements of operations, comprehensive loss, statements of equity and cash flows for the year then ended of the Company and our report dated March 18, 2019 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying "Management Annual Report on Internal Control Over Financial Reporting." Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

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

prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

/s/ Marcum, LLP

Marcum LLP

New York, NY
March 18, 2019

GENIE ENERGY LTD.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

**To the Board of Directors and Shareholders of
Genie Energy Ltd.**

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of Genie Energy LTD. and Subsidiaries (the “Company”) as of December 31, 2018, and the related consolidated statements of operations, comprehensive income, equity and cash flows for the year then ended, and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018, and the results of its operations and its cash flows for the year then ended, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company's internal control over financial reporting as of December 31, 2018, based on the criteria established in *Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 2013 and our report dated March 18, 2019, expressed an adverse opinion on the effectiveness of the Company’s internal control over financial reporting because of the existence of a material weakness.

Basis for Opinion

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

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

/s/ Marcum LLP

We have served as the Company's auditor since 2018.

Marcum LLP

New York, NY
March 18, 2019

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Shareholders and Board of Directors
Genie Energy Ltd.
Newark, New Jersey

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of Genie Energy, Ltd. (the “Company”) and subsidiaries as of December 31, 2017, the related consolidated statements of operations, comprehensive loss, equity and cash flows for the year ended December 31, 2017, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company and subsidiaries at December 31, 2017, and the results of their operations and their cash flows for the year ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audit. 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audit 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 audit 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 audit provides a reasonable basis for our opinion.

/s/ BDO USA, LLP

We served as the Company's auditor from 2013-2018.

Woodbridge, New Jersey

March 16, 2018, except for the effects of the change in segments described in Note 1, as to which the date is March 18, 2019

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GENIE ENERGY LTD.

CONSOLIDATED BALANCE SHEETS

December 31 (in thousands, except per share amounts)	2018	2017
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 41,601	\$ 29,913
Trade accounts receivable, net of allowance for doubtful accounts of \$2,003 and \$1,099 at December 31, 2018 and 2017, respectively	35,920	44,629
Inventory	9,893	3,986
Prepaid expenses	6,167	6,131
Other current assets	4,323	5,503
TOTAL CURRENT ASSETS	97,904	90,162
Property and equipment, net	4,301	4,020
Goodwill	11,082	9,998
Other intangibles, net	6,321	4,859
Investment in equity method investees	2,208	3,450
Restricted cash – long-term	943	1,496
Deferred income tax assets, net	15,625	2,141
Other assets	8,480	9,652
TOTAL ASSETS	\$ 146,864	\$ 125,778
LIABILITIES AND EQUITY		
CURRENT LIABILITIES:		
Notes payable	\$ 923	\$ —
Trade accounts payable	18,508	21,068
Accrued expenses	25,242	28,069
Income taxes payable	1,463	2,204
Due to IDT Corporation	234	228
Other current liabilities	4,416	3,172
TOTAL CURRENT LIABILITIES	50,786	54,741
Revolving line of credit	2,516	2,513
Other liabilities	900	1,396
TOTAL LIABILITIES	54,202	58,650
Commitments and contingencies (Note 15 and Note 16)		
EQUITY:		
Genie Energy Ltd. stockholders' equity:		
Preferred stock, \$0.01 par value; authorized shares – 10,000:		
Series 2012-A, designated shares – 8,750; at liquidation preference, consisting of 2,322 shares issued and outstanding at December 31, 2018 and 2017	19,743	19,743
Class A common stock, \$0.01 par value; authorized shares – 35,000; 1,574 shares issued and outstanding at December 31, 2018 and 2017	16	16
Class B common stock, \$0.01 par value; authorized shares – 200,000; 25,544 and 23,601 shares issued and 25,294 and 23,270 shares outstanding at December 31, 2018 and 2017, respectively	255	236
Additional paid-in capital	136,629	130,870

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Treasury stock, at cost, consisting of 250 and 331 shares of Class B common at December 31, 2018 and 2017, respectively	(1,624)	(2,428)
Accumulated other comprehensive income	2,591	3,045
Accumulated deficit	(53,939)	(67,469)
Total Genie Energy Ltd. stockholders' equity	103,671	84,013
Noncontrolling interests:		
Noncontrolling interests	(11,009)	(16,885)
TOTAL EQUITY	92,662	67,128
TOTAL LIABILITIES AND EQUITY	\$ 146,864	\$ 125,778

See accompanying notes to consolidated financial statements.

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GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except per share data)	Year ended December 31,	
	2018	2017
REVENUES:		
Electricity	\$ 227,883	\$ 222,171
Natural gas	46,560	40,098
Other	5,866	1,933
Total revenues	280,309	264,202
Cost of revenues	203,762	178,693
GROSS PROFIT	76,547	85,509
OPERATING EXPENSES AND LOSSES:		
Selling, general and administrative	61,583	80,122
Exploration	244	4,879
Write-off of capitalized exploration costs	—	6,483
Impairment of assets (Note 2)	2,742	—
Income (loss) from operations	11,978	(5,975)
Interest income	557	295
Interest expense	(401)	(310)
Equity in the net loss in equity method investees	(3,430)	(565)
Gain on extinguishment of liability	164	—
Other income (expense), net	156	(367)
Income (loss) before income taxes	9,024	(6,922)
Benefit from (provision for) income taxes	12,376	(1,726)
NET INCOME (LOSS)	21,400	(8,648)
Net loss attributable to noncontrolling interests	1,385	1,654
NET INCOME (LOSS) ATTRIBUTABLE TO GENIE ENERGY LTD.	22,785	(6,994)
Dividends on preferred stock	(1,481)	(1,481)
NET INCOME (LOSS) ATTRIBUTABLE TO GENIE ENERGY LTD. COMMON STOCKHOLDERS	\$ 21,304	\$ (8,475)
Earnings (loss) per share attributed to Genie Energy Ltd. common stockholder		
Basic	\$ 0.85	\$ (0.36)
Diluted	\$ 0.83	\$ (0.36)
Weighted-average number of shares used in calculation of earnings (loss) per share		
Basic	25,154	23,531
Diluted	25,695	23,531
Dividends declared per common share	\$ 0.30	\$ 0.30
(i) Stock-based compensation included in selling, general and administrative expenses	\$ 4,523	\$ 5,213

See accompanying notes to consolidated financial statements.

GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(in thousands)	Year ended December	
	31, 2018	2017
NET INCOME (LOSS)	\$ 21,400	\$ (8,648)
Other comprehensive income:		
Foreign currency translation adjustments	3	917
COMPREHENSIVE INCOME (LOSS)	21,403	(7,731)
Comprehensive loss attributable to noncontrolling interests	930	2,317
COMPREHENSIVE INCOME (LOSS) ATTRIBUTABLE TO GENIE ENERGY LTD.	\$ 22,333	\$ (5,414)

See accompanying notes to consolidated financial statements.

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GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF EQUITY (in thousands)

Genie Energy Ltd. Stockholders										
	Preferred		Class A		Class B		Additional	Treasury	Accumulated	Accumulated
	Stock	Amount	Common	Common	Common	Common	Paid-In	Stock	Comprehensive	Income
	Shares		Shares	Amount	Shares	Amount	Capital		Income	Deficit
BALANCE AT DECEMBER 31, 2016	2,322	19,743	1,574	16	23,274	233	128,243	(1,599)	1,465	(51,560)
Dividends on preferred stock	—	—	—	—	—	—	—	—	—	(1,481)
Dividends on common stock (\$0.30 per share)	—	—	—	—	—	—	—	—	—	(7,427)
Restricted Class B common stock purchased from employees	—	—	—	—	—	—	—	(829)	—	—
Stock-based compensation	—	—	—	—	24	—	3,090	—	—	—
Exercise of stock options	—	—	—	—	16	—	108	—	—	—
Purchases of equity of subsidiary	—	—	—	—	—	—	(746)	—	—	—

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GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF EQUITY (in thousands) — (Continued)

Genie Energy Ltd. Stockholders									
	Preferred		Class A		Class B		Additional	Treasury	Accumul Other
	Stock Shares	Amount	Common Shares	Stock Amount	Common Shares	Stock Amount	Paid-In Capital	Stock	Compreh Income
Class B common stock issued for GRE deferred stock units	—	—	—	—	287	3	1,842	—	—
Receivable for issuance of equity of subsidiary written-off	—	—	—	—	—	—	(1,667)	—	—
Other comprehensive income	—	—	—	—	—	—	—	—	1,580
Net loss for the year ended December 31, 2017	—	—	—	—	—	—	—	—	—
BALANCE AT DECEMBER 31, 2017	2,322	19,743	1,574	16	23,601	236	130,870	(2,428)	3,045
Dividends on preferred stock	—	—	—	—	—	—	—	—	—
Dividends on common stock (\$0.30 per share)	—	—	—	—	—	—	—	—	—
Restricted Class B common stock purchased from employees	—	—	—	—	—	—	—	(889)	—
Stock-based compensation	—	—	—	—	439	4	3,721	—	—
Sale of Class B common stock and warrants	—	—	—	—	1,152	12	4,295	1,693	—
Purchases of equity of subsidiary	—	—	—	—	42	—	(4,140)	—	—
Class B common stock issued for GRE deferred stock units	—	—	—	—	310	3	1,883	—	—
	—	—	—	—	—	—	—	—	—

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Noncontrolling interest from acquisition of Prism									
Other comprehensive income	—	—	—	—	—	—	—	—	(454)
Net loss for the year ended December 31, 2018	—	—	—	—	—	—	—	—	—
BALANCE AT DECEMBER 31, 2018	2,322	\$ 19,743	1,574	\$ 16	25,544	\$ 255	\$ 136,629	\$ (1,624)	\$ 2,591

See accompanying notes to consolidated financial statements.

GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	Year ended December 31,	
	2018	2017
OPERATING ACTIVITIES		
Net income (loss)	\$ 21,400	\$ (8,648)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Depreciation and amortization	2,062	2,140
Deferred income taxes	(13,483)	(360)
Provision for doubtful accounts receivable	904	762
Stock-based compensation	4,523	5,213
Gain on sale disposal of property and equipment	(18))	—
Gain on extinguishment of liability	(164))	—
Write-off of capitalized exploration costs	—	6,483
Impairment of assets	2,742	—
Equity in the net loss of equity method investees	3,430	565
Change in assets and liabilities, net of effect of acquisition:		
Trade accounts receivable	7,817	(8,024)
Inventory	(4,764)	2,003
Prepaid expenses	219	(2,027)
Other current assets and other assets	2,726	(3,703)
Trade accounts payable, accrued expenses and other current liabilities	(7,299)	15,110
Due to IDT Corporation	20	88
Income taxes payable	(741)	(222)
Net cash provided by operating activities	19,374	9,380
INVESTING ACTIVITIES		
Capital expenditures	(584))	(3,292)
Investments in capitalized exploration costs – unproved oil and gas property	—	(5,531)
Proceeds from disposal of property	62	—
Payment for acquisition of license in Japan	(745))	—
Cash transferred to Atid	(209))	—
Payment for acquisition, net of cash acquired	(250))	(4,180)
Repayment of notes receivable	94	445
Investments in equity method investees	(1,306))	(3,970)
Net cash used in investing activities	(2,938)	(16,528)
FINANCING ACTIVITIES		
Dividends paid	(9,256)	(8,908)
Purchases of equity of subsidiary	—	(312)
Proceeds from revolving line of credit and loan payable	—	14,450
Repayment of revolving line of credit and loan payable	—	(12,655)
Repayment of notes payable	(10)	—
Proceeds from exercise of stock options	—	108
Proceeds from sales of Class B common stock and warrants	6,000	—

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Repurchases of Class B common stock from employees	(889)	(829)
Net cash used in financing activities	(4,155)	(8,146)
Effect of exchange rate changes on cash and cash equivalents	(11)	169
Net increase (decrease) in cash and cash equivalents	12,270	(15,125)
Cash and cash equivalents at beginning of year	31,927	47,052
Cash and cash equivalents at end of year	\$ 44,197	\$ 31,927
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION		
Cash payments made for interest	\$ 400	\$ 310
Cash payments made for income taxes	\$ 1,771	\$ 2
SUPPLEMENTAL SCHEDULE OF NON-CASH FINANCING AND INVESTING ACTIVITIES		
Class B common stock issued for GRE deferred stock units	\$ 1,886	\$ 1,845
Receivable for issuance of equity written-off	\$ —	\$ 1,667
Purchase of equity of subsidiary (Note 12)	\$ (4,140)	\$ —
Carrying value of assets contributed to New Atid (Note 2)	\$ 1,000	\$ —
See accompanying notes to consolidated financial statements.		

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GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1 — Description of Business and Summary of Significant Accounting Policies

Description of Business

Genie Energy Ltd. (“Genie”), a Delaware corporation, was incorporated in January 2011. Genie owns 99.3% of its subsidiary, Genie Energy International Corporation (“GEIC”), which owns 100% of Genie Retail Energy (“GRE”), 100% of Genie Energy Services (“GES”), 60% of Prism Solar Technology, Inc. (“Prism”) and 97% of Genie Oil and Gas, Inc. (“GOGAS”). The “Company” in these financial statements refers to Genie, GRE, GES and GOGAS, and their respective subsidiaries, on a consolidated basis.

Genie, owns and operates retail energy providers (“REPs”), including IDT Energy, Inc. (“IDT Energy”), Residents Energy, LLC (“Residents Energy”), Town Square Energy (“TSE”), and Mirabito Natural Gas (“Mirabito”). Its REP businesses resell electricity and natural gas to residential and small business customers in the Eastern and Midwestern United States. Internationally, GRE manages our interest in joint venture that serves retail customers customers in the United Kingdom (“U. K.”) and our venture in Japan recently launched commercial operations (see Note 2 and 6).

GES oversees Diversegy LLC (“Diversegy”), a retail energy advisory and brokerage company that serves commercial and industrial customers throughout the United States (“U.S.”) and manages GRE's 60% interest in Prism (see Note 2), a solar solutions company that is engaged in U.S. based manufacturing of solar panels, solar installation design and project management.

GOGAS is an oil and gas exploration company and owns an interest in a contracted drilling services operation. GOGAS holds an 86.1% interest in Afek Oil and Gas, Ltd. (“Afek”), an oil and gas exploration project in the Golan Heights in Northern Israel. GOGAS also holds controlling interests in inactive oil and gas projects. Until September 2018, GOGAS owned Atid Drilling Ltd., a drilling services company operating in Israel. In September 2018, the Company divested a majority interest in Atid in exchange for a 37.5% interest in a newly formed contracted drilling services company in Israel (see Note 2).

As of December 31, 2018, Genie Retail Energy International, LLC (“GREI”), a subsidiary of GRE which holds the Company's ventures in U. K., Japan and Finland and GRES has outstanding deferred stock units granted to officers, employees and a contractor that represent an aggregate interest of 4.0% and 4.5% of the equity of GEIC and GRES,

respectively. The deferred stock units are subject to vesting up to 2020.

Seasonality and Weather

The weather and the seasons, among other things, affect GRE's REPs' revenues. Weather conditions have a significant impact on the demand for natural gas used for heating and electricity used for heating and cooling. Typically, colder winters increase demand for natural gas and electricity, and hotter summers increase demand for electricity. Milder winters and/or summers have the opposite effect. Natural gas revenues typically increase in the first quarter due to increased heating demands and electricity revenues typically increase in the third quarter due to increased air conditioning use. Approximately 50% and 45% of GRE's natural gas revenues for the relevant years were generated in the first quarters of 2018 and 2017, respectively, when demand for heating was highest. Although the demand for electricity is not as seasonal as natural gas (due, in part, to usage of electricity for both heating and cooling), approximately 30% of GRE's electricity revenues for the relevant years were generated in the third quarters of 2018 and 2017. GRE's REPs' revenues and operating income are subject to material seasonal variations, and the interim financial results are not necessarily indicative of the estimated financial results for the full year.

Basis of Consolidation

The method of accounting applied to long-term investments, whether consolidated, equity or cost, involves an evaluation of the significant terms of each investment that explicitly grant or suggest evidence of control or influence over the operations of the investee and also includes the identification of any variable interests in which the Company is the primary beneficiary. The consolidated financial statements include the Company's controlled subsidiaries and the variable interest entity in which the Company is the primary beneficiary (see Note 13). All significant intercompany accounts and transactions between the consolidated entities are eliminated. See Note 2, *Acquisitions and Divestment*, for details of the new subsidiaries included in the consolidation.

Accounting for Investments

Investments in businesses that the Company does not control, but in which the Company has the ability to exercise significant influence over operating and financial matters, are accounted for using the equity method. The Company periodically evaluates its equity method investments for impairment due to declines considered to be other than temporary. If the Company determines that a decline in fair value is other than temporary, then a charge to earnings is recorded, and a new basis in the investment is established.

Use of Estimates

The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP”) requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant estimates affecting amounts reported or disclosed in the consolidated financial statements include revenues, accounts receivables, allowances for doubtful accounts receivable, net realizable value of inventories, valuation of intangible assets, depreciation and amortization periods for long-lived assets, valuation allowances recorded against deferred tax assets, the valuation of stock-based compensation, valuation of derivative instruments, valuation of debt instruments and loss contingencies. These estimates are based on historical experience and on various other assumptions that are believed to be reasonable under the current circumstances. Actual results may differ from those estimates.

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GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Revenue Recognition

Revenue Recognition under ASC 606

Revenues from Sale of Electricity and Natural Gas

On January 1, 2018, the Company adopted Accounting Standard Update ("ASU") No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* (referred to as "ASC 606"). The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services, and the guidance defines a five-step process to achieve this core principle.

The Company adopted ASC 606, using the modified retrospective method applied to those contracts that were not completed as of January 1, 2018. Results for the reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period results are not adjusted and continue to be reported in accordance with its historic accounting under ASC Topic 605. The Company determined that the new standard did not have a material impact on revenue recognition and measurement in its consolidated financial statements. Variable quantities in requirements contracts are considered to be options for additional goods and services because the customer has a current contractual right to choose the amount of additional distinct goods. Revenue from the single performance obligation to deliver a unit of electricity and/or natural gas is recognized as the customer simultaneously receives and consumes the benefit. The Company records unbilled revenues for the estimated amount customers will be billed for services rendered from the time meters were last read to the end of the respective accounting period. The unbilled revenue is estimated each month based on available per day usage data, the number of unbilled days in the period adjusted for seasonality based cooling and heating degree-days and historical trends.

Utility companies offer purchase of receivable, or POR, programs in most of the service territories in which the Company operates, and GRE's REPs participate in POR programs for a majority of their receivables. The Company estimates variable consideration related to its rebate programs using the expected value method and a portfolio approach. The Company's estimates related to rebate programs are based on the terms of the rebate program, the customer's historical electricity and natural gas consumption, the customer's rate plan, and a churn factor. Taxes that

are imposed on the Company's sales and collected from customers are excluded from the transaction price.

The Company's performance obligations are generally pursuant to contracts for which the estimated customer relationship periods are currently less than one year. Therefore, in accordance with ASC 606, the Company generally expenses sales commissions to acquire customers when incurred because the amortization period would have been one year or less. These costs are recorded within sales and marketing expenses. The Company continuously monitors its customer relationship periods to ensure compliance with the application of the practical expedient.

Revenues from Sale of Solar Panels

The revenue sales of solar panels are recognized at a point in time following the transfer of control of the solar panels to the customer, which typically occurs upon shipment or delivery depending on the terms of the underlying contracts. For sales contracts that contain multiple performance obligations, such as the shipment or delivery of solar modules, we allocate the transaction price to each performance obligation identified in the contract based on relative standalone selling prices, or estimates of such prices, and recognize the related revenue as control of each individual product is transferred to the customer, in satisfaction of the corresponding performance obligations.

The following table shows the Company's revenues disaggregated by pricing plans offered to customers:

(in thousands)	Electricity	Natural Gas	Other	Total
For the year ended December 31, 2018				
Fixed rate	\$ 77,383	\$ 2,781	\$ —	\$ 80,164
Variable rate	150,500	43,779	—	194,279
Other	—	—	5,866	5,866
Total	\$ 227,883	\$ 46,560	\$ 5,866	\$ 280,309
For the year ended December 31, 2017				
Fixed rate	\$ 61,973	\$ 1,866	\$ —	\$ 63,839
Variable rate	160,198	38,232	—	198,430
Other	—	—	1,933	1,933
Total	\$ 222,171	\$ 40,098	\$ 1,933	\$ 264,202

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following table shows the Company's revenues disaggregated by non-commercial and commercial channels:

(in thousands)	Electricity	Natural Gas	Other	Total
For the year ended December 31, 2018				
Non-Commercial Channel	\$ 217,019	\$ 43,383	\$ —	\$ 260,402
Commercial Channel	10,864	3,177	—	14,041
Other	—	—	5,866	5,866
Total	\$ 227,883	\$ 46,560	\$ 5,866	\$ 280,309
For the year ended December 31, 2017				
Non-Commercial Channel	\$ 219,984	\$ 37,623	\$ —	\$ 257,607
Commercial Channel	2,187	2,475	—	4,662
Other	—	—	1,933	1,933
Total	\$ 222,171	\$ 40,098	\$ 1,933	\$ 264,202

Revenue Recognition Under ASC 605, Revenue Recognition

Until December 31, 2018, revenues from GRE's sale of electricity and natural gas are recognized under the accrual method based on deliveries of electricity and natural gas to customers. Revenues from electricity and natural gas delivered but not billed are estimated and recorded as accounts receivable. Cash received in advance from customers under billing arrangement is reported as deferred revenue and is included in "Accrued expenses" in the accompanying consolidated balance sheets. GOGAS does not yet generate revenues.

Oil and Gas Exploration Costs

The Company accounts for its oil and gas activities under the successful efforts method of accounting. Under this method, the costs of drilling exploratory wells and exploratory-type stratigraphic test wells are capitalized, pending determination of whether the well has found proved reserves. Other exploration costs are charged to expense as incurred. Unproved properties are assessed for impairment, and if considered impaired, are charged to expense when such impairment is deemed to have occurred (see Note 5).

Cash, Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments with an original maturity of three months or less when purchased to be cash equivalents.

Restricted cash represents cash that is not available for use in the Company's operations.

On January 1, 2018, the Company adopted ASU No. 2016-18 related to the classification and presentation of changes in restricted cash in the statement of cash flows. The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported in the consolidated balance sheet that equals the total of the same amounts reported in the consolidated statement of cash flows:

	December 31,	
	2018	2017
	(in thousands)	
Cash and cash equivalents	\$ 41,601	\$ 29,913
Restricted cash—short-term included in other current assets	1,653	518
Restricted cash—long-term	943	1,496
Total cash, cash equivalents, and restricted cash	\$ 44,197	\$ 31,927

Restricted cash—short-term includes amounts set aside in accordance with the Amended and Restated Preferred Supplier Agreement with BP Energy Company (“BP”) (see Note 17). Restricted cash—long-term includes Afek’s security deposits for its exploration license from the Government of Israel, and its customs and other import duties for the import of exploration equipment.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Trade Accounts Receivable, Net

Trade accounts receivable, net are reported in the balance sheet as gross outstanding amounts adjusted for doubtful accounts.

Inventories

Inventory consists of natural gas, renewable energy credits and solar panels.

Natural Gas

Natural gas inventory is stored at various third parties' underground storage facilities and is stated at lower of cost or net realizable value. Company's natural gas inventory was valued at weighted average cost, which was based on the purchase price of the natural gas and the cost to transport, plus or minus injections or withdrawals.

Renewable Energy Credits

GRE must obtain a certain percentage or amount of its power supply from renewable energy sources in order to meet the requirements of renewable portfolio standards in the states in which it operates. This requirement may be met by obtaining renewable energy credits that provide evidence that electricity has been generated by a qualifying renewable facility or resource. GRE holds renewable energy credits for both sale and use, and treats the credits as a government incentive to encourage the construction of renewable power plants. Renewable energy credits are valued at the lower of cost and market, where cost is the purchase price. Gains and losses from the sale of renewable energy credits are recognized in cost of revenues when the credits are transferred to the buyer.

Solar Panels

Inventories related to solar panels are stated at the lower of cost or net realizable value. The cost is determined using the first-in, first-out basis and includes both the costs of acquisition and the costs of manufacturing. These costs include direct material, direct labor, and indirect manufacturing costs, including depreciation and amortization. The capitalization of costs into inventory is based on the normal utilization of our plant. If the plant utilization is abnormally low, the portion of the indirect manufacturing costs related to the abnormal utilization level are expensed as incurred.

The Company regularly reviews the cost of inventories against their estimated net realizable value and records write-downs if any inventories have costs in excess of their net realizable values. The Company also regularly evaluates the quantities and values of inventories, in light of current market conditions and trends among other factors and records write-downs for any quantities in excess of demand or for any obsolescence. This evaluation considers the use of modules in the systems business, expected demand, anticipated sales prices, strategic raw material requirements, new product development schedules, the effect new products might have on the sale of existing products, product obsolescence, product merchantability, and other factors. Market conditions are subject to change, and actual consumption of our inventory could differ from forecasted demand.

Inventories consisted of the following:

	December 31,	
	2018	2017
	(in thousands)	
Natural gas	\$ 1,116	\$ 975
Renewable credits	8,654	3,011
Solar Panels:		
Finished goods	40	—
Raw materials	83	—
Total solar panels inventory	123	—
Totals	\$ 9,893	\$ 3,986

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Long-lived Assets

Property, plant and equipment - net is stated at historical cost less accumulated depreciation and any impairment. The Company provides for depreciation using a straight-line method over estimated useful life of the assets. Any leasehold improvements are amortized over the lesser of the lease term or the useful life. The cost of major additions and improvements are capitalized, while maintenance and repair costs that do not improve or extend the lives of the respective assets are charged to operations as incurred.

The estimated useful life of property plant and equipment as as follows:

	Years	
Building and improvements		4 - 27
Machinery and equipment		2 - 9
Computer software and development		2 - 5
Computers and computer hardware	2 - 5	
Office equipment and other		5 - 7

The fair value of patents and trademarks, non-compete agreements and customer relationships acquired in a business combination accounted for under the purchase method are amortized over their estimated useful lives as follows: patents and trademarks are amortized on a straight-line basis over 10 to 20-year period of expected cash flows; non-compete agreements are amortized on a straight-line basis over their 2 year term; and customer relationships are amortized ratably over the 2 or 9 year period of expected cash flows.

The Company tests the recoverability of its long-lived assets with finite useful lives whenever events or changes in circumstances indicate that the carrying value of the asset may not be recoverable. The Company tests the recoverability based on the projected undiscounted cash flows to be derived from such asset. If the projected undiscounted future cash flows are less than the carrying value of the asset, the Company will record an impairment loss based on excess of carrying value over fair value of the assets. The Company generally measures fair value by considering sale prices for similar assets or by discounting estimated future cash flows from such asset using an appropriate discount rate. Cash flow projections and fair value estimates require significant estimates and assumptions by management. Should the estimates and assumptions prove to be incorrect, the Company may be required to record

impairments in future periods and such impairments could be material.

Acquisitions

Results of operations of acquired companies are included in the Company's results of operations as of the respective acquisition dates. The purchase price of each acquisition is allocated to the net assets acquired based on estimates of their fair values at the date of the acquisition. Any purchase price in excess of these net assets is recorded as goodwill. The allocation of purchase price in certain cases may be subject to revision based on the final determination of fair values during the measurement period, which may be up to one year from the acquisition date.

Goodwill and Indefinite Lived Intangible Assets

Goodwill is the excess of the acquisition cost of businesses over the fair value of the identifiable net assets acquired. Goodwill and other indefinite lived intangible assets are not amortized. These assets are reviewed annually (or more frequently under various conditions) for impairment using a fair value approach.

In the fourth quarter of 2018 the Company revised its reportable segments in connection with the acquisition of Prism and reduced exploration activities. Specifically, the Company separated Genie Energy Services ("GES") from GRE, into a separate reportable segment which includes Prism. The Company also integrated GOGAS and Afek into one reportable segment. The change in reportable segments did not result in the reallocation of the Company's existing goodwill since all existing goodwill before the revision of the reportable segments were allocated to GRE. Segment information from the prior year's financial statements have been reclassified in order to conform to the current year's presentation (see Note 18).

The Company has three reportable segments with four underlying reporting units: GRE, Diversegy and Prism, which are in the GES segment, and GOGAS.

The fair value of the reporting unit is estimated using discounted cash flow methodologies, as well as considering third party market value indicators. Calculating the fair value of the reporting units requires significant estimates and assumptions by management. Should the estimates and assumptions regarding the fair value of the reporting units prove to be incorrect, the Company may be required to record impairments to its goodwill in future periods and such impairments could be material.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The Company performed its annual goodwill impairment test as of October 1, 2018. In reviewing goodwill for impairment, the Company has the option, for any or all of its reporting units that carry goodwill - to first assess qualitative factors to determine whether the existence of events or circumstances leads to a determination that it is more likely than not (i.e. greater than 50%) that the estimated fair value of a reporting unit is less than its carrying amount. If the Company elects to perform a qualitative assessment and determines that an impairment is more likely than not, the Company is then required to perform the quantitative impairment test, otherwise no further analysis is required. The Company also may elect not to perform the qualitative assessment and, instead, proceed directly to quantitative impairment test. The ultimate outcome of the goodwill impairment review for a reporting unit should be the same whether the Company chooses to perform the qualitative assessment or proceeds directly to the quantitative impairment test. The Company elected to perform a qualitative analysis for its GRE reporting units as of October 1, 2018. There is no goodwill allocated to other reporting units as of October 1, 2018. The Company determined, after performing a qualitative analysis, that there was no evidence that it is more likely than not that the fair value of any identified reporting unit was less than the carrying amounts, therefore, it was not necessary to perform a quantitative impairment test.

Derivative Instruments and Hedging Activities

The Company records its derivatives instruments at their respective fair values. The accounting for changes in the fair value (that is, gains or losses) of a derivative instrument is dependent upon whether the derivative has been designated and qualifies as part of a hedging relationship and further, on the type of hedging relationship.

Due to the volatility of electricity and natural gas prices, GRE enters into futures contracts, swaps and put and call options as hedges against unfavorable fluctuations in market prices of electricity and natural gas and to reduce exposure from price fluctuations. The Company does not designate its derivative instruments to qualify for hedge accounting, accordingly the futures contracts, swaps and put and call options are recorded at fair value as a current asset or liability and any changes in fair value are recorded in “Cost of revenues” in the consolidated statements of operations.

In addition to the above, GRE utilizes forward physical delivery contracts for a portion of its purchases of electricity and natural gas, which are defined as commodity derivative contracts. Using the exemption available for qualifying contracts, GRE applies the normal purchase and normal sale accounting treatment to its forward physical delivery contracts, thereby these contracts are not adjusted to fair value. GRE also applies the normal purchase and normal sale

accounting treatment to forward contracts for the physical delivery of electricity in nodal energy markets that result in locational marginal pricing charges or credits, since this does not constitute a net settlement, even when legal title to the electricity is conveyed to the ISO during transmission. Accordingly, GRE recognizes revenue from customer sales, and the related cost of revenues, at the contracted price, as electricity and natural gas is delivered to retail customers.

Shipping and Handling Fees and Costs

Amounts billed to customers for shipping and handling are included in revenues. The related minimal amount of shipping and freight charges incurred by the Company are included in cost of goods sold. Distribution and handling costs of \$0.1 million and \$0.2 million were recorded in selling, general and administrative expense during the years ended December 31, 2018 and 2017, respectively.

Foreign Currency

Assets and liabilities of foreign subsidiaries denominated in foreign currencies are translated to U.S. Dollars at end-of-period rates of exchange, and their monthly results of operations are translated to U.S. Dollars at the average rates of exchange for that month. Gains or losses resulting from such foreign currency translations are recorded in “Accumulated other comprehensive income” in the accompanying consolidated balance sheets. Foreign currency transaction gains and losses are reported in “Other (expense) income, net” in the accompanying consolidated statements of operations.

Advertising Expense

Cost of advertising for customer acquisitions is charged to selling, general and administrative expense in the period in which it is incurred. Most of the advertisements are in print, over the radio, or direct mail. In the years ended December 31, 2018 and 2017, advertising expense included in selling, general and administrative expense was \$2.4 million and \$2.1 million, respectively.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Income Taxes

The Company recognizes deferred tax assets and liabilities for the future tax consequences attributable to temporary differences between the financial statements carrying amounts of existing assets and liabilities and their respective tax bases. A valuation allowance is provided when it is more likely than not that some portion or all of a deferred tax asset will not be realized. The ultimate realization of deferred tax assets depends on the generation of future taxable income during the period in which related temporary differences become deductible. The Company considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in its assessment of a valuation allowance. Deferred tax assets and liabilities are measured using the enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date of such change.

The Company uses a two-step approach for recognizing and measuring tax benefits taken or expected to be taken in a tax return. The Company determines whether it is more-likely-than-not that a tax position will be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, the Company presumes that the position will be examined by the appropriate taxing authority that has full knowledge of all relevant information. Tax positions that meet the more-likely-than-not recognition threshold are measured to determine the amount of tax benefit to recognize in the financial statements. The tax position is measured at the largest amount of benefit that is greater than 50 percent likely of being realized upon ultimate settlement. Differences between tax positions taken in a tax return and amounts recognized in the financial statements will generally result in one or more of the following: an increase in a liability for income taxes payable, a reduction of an income tax refund receivable, a reduction in a deferred tax asset, or an increase in a deferred tax liability.

The Company classifies interest and penalties on income taxes as a component of income tax expense.

Contingencies

The Company accrues for loss contingencies when both (a) information available prior to issuance of the financial statements indicates that it is probable that a liability had been incurred at the date of the financial statements and (b) the amount of loss can reasonably be estimated. When the Company accrues for loss contingencies and the reasonable

estimate of the loss is within a range, the Company records its best estimate within the range. When no amount within the range is a better estimate than any other amount, the Company accrues the minimum amount in the range. The Company discloses an estimated possible loss or a range of loss when it is at least reasonably possible that a loss may have been incurred.

Earnings Per Share

Basic earnings per share is computed by dividing net income or loss attributable to all classes of common stockholders of the Company by the weighted average number of shares of all classes of common stock outstanding during the applicable period. Diluted earnings per share is determined in the same manner as basic earnings per share, except that the number of shares is increased to include restricted stock still subject to risk of forfeiture and to assume exercise of potentially dilutive stock options using the treasury stock method, unless the effect of such increase is anti-dilutive.

The weighted-average number of shares used in the calculation of basic and diluted earnings per share attributable to the Company's common stockholders consists of the following:

	Year ended December 31,	
	2018	2017
	(in thousands)	
Basic weighted-average number of shares	\$ 25,154	\$ 23,531
Effect of dilutive securities		
Stock options and warrants	130	—
Non-vested restricted Class B common stock	411	—
Diluted weighted-average number of shares	\$ 25,695	\$ 23,531

The following shares were excluded from the diluted earnings per share computations because their inclusion would have been anti-dilutive:

	Year ended December 31,	
(in thousands)	2018	2017
Stock options	341	383
Non-vested restricted Class B common stock	—	762
Shares excluded from the calculation of diluted earnings per share	341	1,145

The diluted loss per share equals basic loss per share in the years ended December 31, 2017 because the Company had a net loss and the impact of the assumed exercise of stock options and vesting of restricted stock would have been anti-dilutive.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Stock-Based Compensation

The Company recognizes compensation expense for grants of stock-based awards to its employees based on the estimated fair value on the grant date. Stock based awards granted to nonemployees are marked-to-market until the vesting of the award. Compensation cost for awards is recognized using the straight-line method over the requisite service period, which approximates the vesting period. Stock-based compensation is included in selling, general and administrative expense.

Vulnerability Due to Certain Concentrations

Financial instruments that potentially subject the Company to concentration of credit risk consist principally of cash, cash equivalents, restricted cash, certificates of deposit and trade accounts receivable. The Company holds cash, cash equivalents and restricted cash at several major financial institutions, which may exceed FDIC insured limits. Historically, the Company has not experienced any losses due to such concentration of credit risk. The Company's temporary cash investments policy is to limit the dollar amount of investments with any one financial institution and monitor the credit ratings of those institutions. While the Company may be exposed to credit losses due to the nonperformance of the holders of its deposits, the Company does not expect the settlement of these transactions to have a material effect on its results of operations, cash flows or financial condition.

GRE's REPs reduce their customer credit risk by participating in purchase of receivable, or POR, programs for a majority of their receivables. In addition to providing billing and collection services, utility companies purchase those REPs' receivables and assume all credit risk without recourse to those REPs. GRE's REPs' primary credit risk is therefore nonpayment by the utility companies. Certain of the utility companies represent significant portions of the Company's consolidated revenues and consolidated gross trade accounts receivable balance and such concentrations increase the Company's risk associated with nonpayment by those utility companies.

The following table summarizes the percentage of consolidated revenues from customers by utility company that equal or exceed 10% of consolidated revenues in the period (no other single utility company accounted for more than 10% of consolidated revenues in these periods):

	Year ended December 31,		2017	
	2018			
Con Edison	11	%	15	%
ComEd	na	%	10	%

na – less than 10% of consolidated revenue in the period

The following table summarizes the percentage of consolidated gross trade accounts receivable by utility company that equal or exceed 10% of consolidated gross trade accounts receivable at December 31, 2018 and 2017 (no other single utility company accounted for 10% or greater of the Company's consolidated gross trade accounts receivable at December 31, 2018 or 2017):

	2018		2017	
December 31				
Con Edison	na	%	11	%

na – less than 10% of consolidated gross trade accounts receivable

Allowance for Doubtful Accounts

The allowance for doubtful accounts reflects the Company's best estimate of probable losses inherent in the accounts receivable balance. The allowance is determined based on known troubled accounts, historical experience and other currently available evidence. Doubtful accounts are written-off upon final determination that the trade accounts will not be collected. The change in the allowance for doubtful accounts was as follows:

(in thousands)	Balance at beginning of period	Additions charged (reversals credited) to expense	Additions (deductions) ⁽¹⁾	Balance at end of period
Year ended December 31, 2018				
Reserves deducted from accounts receivable:				
Allowance for doubtful accounts	\$ 1,099	\$ 904	\$ —	\$ 2,003
Year ended December 31, 2017				
Reserves deducted from accounts receivable:				
Allowance for doubtful accounts	\$ 171	\$ 762	\$ 166	\$ 1,099

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

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GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Fair Value Measurements

Fair value of financial and non-financial assets and liabilities is defined as an exit price, which is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The three-tier hierarchy for inputs used to measure fair value, which prioritizes the inputs to valuation techniques used to measure fair value, is as follows:

- Level 1 ~~—~~ quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2 ~~—~~ quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument.
- Level 3 ~~—~~ unobservable inputs based on the Company's assumptions used to measure assets and liabilities at fair value.

A financial asset or liability's classification within the hierarchy is determined based on the lowest level input that is significant to the fair value measurement. The assessment of the significance of a particular input to the fair value measurement requires judgment, and may affect the valuation of the assets and liabilities being measured and their placement within the fair value hierarchy.

Accounting Standards Updates

In May 2014, the Financial Accounting Standards Board ("FASB") issued ASC 606. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To achieve that core principle, an entity should 1) identify the contract(s) with a customer, 2) identify the performance obligations in the contract, 3) determine the transaction price, 4) allocate the transaction price to the performance obligations in the contract, and 5) recognize revenue when (or as) the entity satisfies a performance obligation. This update became effective for all annual periods and interim reporting periods beginning after December 15, 2017. The Company adopted Topic 606 as of January 1, 2018 using the modified retrospective method. See discussion above under Revenue Recognition, for further details.

In January 2016, the FASB issued ASU No. 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities*, to provide more information about recognition, measurement, presentation and disclosure of financial instruments. The amendments in the ASU include, among other changes, the following: (1) equity investments (except those accounted for under the equity method or that result in consolidation) will be measured at fair value with changes in fair value recognized in net income, (2) a qualitative assessment each reporting period to identify impairment of equity investments without readily determinable fair values, (3) financial assets and financial liabilities will be presented separately by measurement category and form of financial asset on the balance sheet or the notes to the financial statements, and (4) an entity should evaluate the need for a valuation allowance on a deferred tax asset related to available-for-sale securities in combination with the entity's other deferred tax assets. Entities will no longer be able to recognize unrealized holding gains and losses on equity securities classified as available-for-sale in other comprehensive income. In addition, a practicability exception will be available for equity investments that do not have readily determinable fair values and do not qualify for the net asset value practical expedient. These investments may be measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for an identical or similar investment of the same issuer. Entities will have to reassess at each reporting period whether an investment qualifies for this practicability exception. The Company adopted the amendments in this ASU on January 1, 2018. This ASU did not have a significant impact on the Company's consolidated financial statements.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*, related to the accounting for leases. The new standard establishes a right-of-use ("ROU") model that requires a lessee to record a ROU asset and a lease liability on the balance sheet for all leases with terms longer than 12 months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the income statement. Subsequent to the issuance of ASU 2016-02, in July 2018, the FASB issued Accounting Standards Update No. 2018-10, Codification Improvements to Topic 842, Leases ("ASU 2018-10") and Accounting Standards Update No. 2018-11, Leases (Topic 842): Targeted Improvements ("ASU 2018-11"). The amendments in ASU 2018-10 clarify, correct or remove inconsistencies in the guidance provided under ASU 2016-02 related to sixteen specific issues identified. The amendments in ASU 2018-11 provide entities with an additional (and optional) transition method to adopt the new leases standard. Under the new transition method, an entity initially applies the new leases standard at the adoption date and recognizes a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. Consequently, an entity's reporting for the comparative periods presented in the financial statements in the period of adoption will continue to be in accordance with ASC 840, Leases ("ASC 840"). An entity that elects this additional (and optional) transition method must provide the required disclosures under ASC 840 for all periods that continue to be in accordance with ASC 840. ASU 2018-11 also provides lessors with a practical expedient, by class of underlying asset, to not separate nonlease components from the associated lease component and, instead, to account for those components as a single component if certain criteria are met. The effective date and transition requirements for these two standards are the same as the effective date and transition requirements of ASU 2016-02. The standards were effective for the Company beginning after December 15, 2018. The Company did not early adopt these standards and adopted these standards using the optional transition method.

The Company will adopt the new standard on January 1, 2019. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements, with certain practical expedients available. As a lessee, the most significant impact of the standards relates to the recognition of the ROU assets and lease liabilities for the operating leases in the balance sheet. The Company is in the final process of implementing a new lease accounting policy and updating its controls and procedures for maintaining and accounting for its lease portfolio under the new guidance. Upon adoption of Topic 842, the Company expects recognition of additional assets and corresponding liabilities pertaining to its operating leases on its consolidated balance sheets. The Company does not expect the

adoption of the new standard to have a significant impact on its consolidated statements of operations and cash flows.

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GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

In June 2016, the FASB issued ASU No. 2916-13, *Measurement of Credit Losses on Financial Instruments*, that changes the impairment model for most financial assets and certain other instruments. For receivables, loans and other instruments, entities will be required to use a new forward-looking “expected loss” model that generally will result in the earlier recognition of allowance for losses. For available-for-sale debt securities with unrealized losses, entities will measure credit losses in a manner similar to current practice, except the losses will be recognized as allowances instead of reductions in the amortized cost of the securities. In addition, an entity will have to disclose significantly more information about allowances, credit quality indicators and past due securities. The new provisions will be applied as a cumulative-effect adjustment to retained earnings. The Company will adopt the new standard on January 1, 2020. The Company is evaluating the impact that the new standard will have on its consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, *Restricted Cash*, that includes specific guidance on the classification and presentation of changes in restricted cash and cash equivalents in the statement of cash flows. The amendments in this ASU require that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Amounts generally described as restricted cash or restricted cash equivalents will be included with cash and cash equivalents when reconciling the beginning of the period and end of the period total amounts shown on the statement of cash flows. The ASU will be applied using a retrospective transition method to each period presented.

The Company adopted the amendments in this ASU on January 1, 2018. For the year ended December 31, 2017, \$0.1 million and \$10.0 million of changes in restricted cash balances that was previously presented within operating and financing activities, respectively, in the consolidated statement of cash flows has been excluded from the cash flows used in operating and financing activities and the effect of exchange rate changes increased by \$0.6 million due to the retrospective adoption of ASU 2016-18. Restricted cash of \$2.0 million and \$11.9 million at December 31, 2017 and 2016, respectively, have been included with the cash and cash equivalents when reconciling the beginning of year and end of year total amounts on the consolidated statement of cash flows for the year ended December 31, 2017.

The adoption did not have a material impact on the Company's consolidated balance sheets, results of operations and cash flows, other than the impact discussed above.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations*, to clarify the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. Under the current guidance, there are three elements of a business—inputs, processes, and outputs. While an integrated set of assets and activities (collectively referred to as a “set”)

that is a business usually has outputs, outputs are not required to be present. In addition, all the inputs and processes that a seller uses in operating a set are not required if market participants can acquire the set and continue to produce outputs, for example, by integrating the acquired set with their own inputs and processes. The amendments in this ASU provide a screen to determine when a set is not a business. The screen requires that when substantially all of the fair value of the gross assets acquired (or disposed of) is concentrated in a single identifiable asset or a group of similar identifiable assets, the set is not a business. This screen reduces the number of transactions that need to be further evaluated. If the screen is not met, the amendments in this ASU (1) require that to be considered a business, a set must include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create output and (2) remove the evaluation of whether a market participant could replace missing elements. The amendments provide a framework to assist entities in evaluating whether both an input and a substantive process are present. The framework includes two sets of criteria to consider that depend on whether a set has outputs. Although outputs are not required for a set to be a business, outputs generally are a key element of a business; therefore, the FASB has developed more stringent criteria for sets without outputs. Lastly, the ASU narrows the definition of the term output. The new standard will be effective for all annual periods beginning after December 15, 2017. Early adoption was permitted. The Company adopted ASU 2017-01 effective January 1, 2018. The Company accounted for the Smile Energy G.K. ("Smile Energy") acquisition as an asset acquisition (see Note 2, *Acquisitions and Divestitures*). The adoption did not have a material impact on the Company's consolidated balance sheets, results of operations and cash flows, other than the impact discussed above.

In August 2017, the FASB issued ASU No. 2017-12, *Derivatives and Hedging (Topic 815)*, intended to improve the financial reporting of hedging relationships to better portray the economic results of an entity's risk management activities in its financial statements. In addition, the ASU includes certain targeted improvements to simplify the application of hedge accounting guidance in U.S. GAAP. The amendments in this ASU are effective for the Company on January 1, 2019. Early application is permitted. Entities will apply the amendments to cash flow and net investment hedge relationships that exist on the date of adoption using a modified retrospective approach. The presentation and disclosure requirements will be applied prospectively. The Company does not expect the adoption of this ASU to have a material impact its consolidated financial statements.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

In June 2018, the FASB issued ASU No. 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, to simplify several aspects of the accounting for nonemployee share-based payment transactions by expanding the scope of Topic 718, *Compensation—Stock Compensation*, to include share-based payment transactions for acquiring goods and services from nonemployees. An entity should apply the requirements of Topic 718 to nonemployee awards except for specific guidance on inputs to an option pricing model and the attribution of cost (that is, the period of time over which share-based payment awards vest and the pattern of cost recognition over that period). The amendments specify that Topic 718 applies to all share-based payment transactions in which a grantor acquires goods or services to be used or consumed in a grantor's own operations by issuing share-based payment awards. The amendments also clarify that Topic 718 does not apply to share-based payments used to effectively provide (1) financing to the issuer or (2) awards granted in conjunction with selling goods or services to customers as part of a contract accounted for under Topic 606, *Revenue from Contracts with Customers*. The amendments in this ASU are effective for the Company on January 1, 2019. The Company does not expect the adoption of this ASU to have a material impact its consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-13, *Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, that eliminates certain disclosure requirements for fair value measurements for all entities, requires public entities to disclose certain new information and modifies some disclosure requirements. The amendments in this ASU are effective for the Company on January 1, 2020. Early application is permitted. The guidance on changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 measurements, the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements, and the narrative description of measurement uncertainty should be applied prospectively. All other amendments should be applied retrospectively. The Company is evaluating the impact that this ASU will have on its consolidated financial statements.

In November 2018, the FASB issued ASU No. 2018-13, *Targeted Improvements to Related Party Guidance for Variable Interest Entities*, that changes how entities apply the variable interest entity ("VIE") guidance evaluate decision-making fees. The ASU provides guidance on whether these fees represent a variable interest, an entity considers indirect interests held through related parties under common control on a proportionate basis rather than in their entirety. When evaluating whether decision-making fees are a variable interest, indirect interest will be evaluated in a similar manner to how they are considered when identifying the primary beneficiary of a VIE. The new guidance in this ASU are effective for the Company on January 1, 2020. Early adoption is permitted. The Company is evaluating the impact of this ASU will have on its consolidated financial statements.

Note 2 — Acquisitions and Divestiture

Acquisition of Prism

In August 2018 to October 2018, the Company extended an aggregate of \$1.3 million bridge loans to Prism. The bridge loans, were secured by a subordinated security interest in Prism's assets as well as a second mortgage and assignment of rents on Prism's plant and facility, bore fixed annual interest rate of 12%.

On October 25, 2018, the Company completed a transaction to acquire a 60.0% controlling interest in Prism in exchange for a total consideration of \$4.0 million, which include (i) the conversion of \$1.4 million of principal amount of bridge loans, including accrued interest, into equity of Prism, (ii) \$1.1 million cash contribution to Prism, and (iii) an obligation to fund Prism an additional \$1.5 million within 60 days.

Prism is a solar solutions company that is engaged in US based panel manufacturing, solar installation design and project management. Prism's solar panels feature high efficiency N-type silicon solar cells designed into bifacial solar modules which result in systems with a reduction in the average cost per kilowatt hour, while their glass-on-glass design increases the durability and lifetime value of Prism's panels.

The Company recorded revenue for Prism of approximately \$3.3 million in the consolidated statements of operations and comprehensive income for year ended December 31, 2018. The net income or loss attributable to this acquisition cannot be identified on a stand-alone basis because it is in the process of being integrated into the Company's operations.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The impact of the acquisition's preliminary purchase price allocations on the Company's consolidated balance sheet and the acquisition date fair value of the total consideration transferred were as follows:

(in thousands)		
Cash	\$	931
Trade accounts receivable		11
Inventories		1,142
Other current assets		260
Property plant and equipment (19-year weighted average useful life)		3,564
Intangible assets:		
Trademark (10-year useful life)		290
Patent (10-year useful life)		320
Customer contract (3-year useful life)		1,400
Goodwill		1,084
Accounts payable accrued expenses		(1,723)
Notes payable — current portion		(63)
Other current liabilities		(1,164)
Notes payable — net of current portion		(885)
Noncontrolling interest		(2,667)
Net assets	\$	2,500

(in thousands)

Supplemental information

Cash contributed to Prism	\$	899
Notes receivable from Prism, including accrued interest, converted to Prism's equity		1,351
Cash payment to previous equity holders of Prism		250
		2,500
Notes payable issued to Prism		1,500
Total considerations	\$	4,000

As of December 31, 2018, certain amounts relating to the valuation of intangible assets have not been finalized. The finalization of these matters may result in changes to goodwill.

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Goodwill was allocated to the GES segment. Goodwill is the excess of the consideration transferred over the net assets recognized and represents the expected revenue and cost synergies of the combined company and assembled workforce. Goodwill recognized as a result of the acquisition is not deductible for income tax purposes.

Prism's noncurrent notes payable consisted of the following:

	October 25, 2018	December 31, 2018
	(in thousands)	
5.95% note payable, due in monthly payments of \$7,184 including interest, through November 2019 when the balloon payment is due, collateralized by Prism's assets	\$ 918	\$ 893
20.00% demand note payable, uncollateralized	30	30
	948	923
Less: Current maturities	63	923
Noncurrent portion	\$ 885	\$ —

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GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Acquisition of Smile Energy G.K.

On June 7, 2018, Company subsidiary Genie Japan, LLC (“Genie Japan”), acquired Smile Energy G.K., (“Smile Energy”) from Capital Sixty, LLC (“Capital Sixty”) and Flower Denryoku (“Flower”). Smile Energy is a Japanese company licensed to provide electricity to end-use customers in Japan. The aggregate purchase price was \$0.7 million. In addition, Capital Sixty received an option to purchase a 5% membership interest in Genie Japan at an exercise price of \$1. The option is exercisable on the earlier of 18 months from the start of enrolling retail energy customers in Japan or June 7, 2020. At any time before exercise, Genie Japan may cancel the option in exchange for a payment of \$0.3 million to Capital Sixty. The estimated fair value of the option on the date of grant was not material.

The Company accounted for the Smile Energy acquisition as an asset acquisition. The aggregate purchase price was recorded as license to operate as a REP in Japan. The carrying value of the license is included in “Other intangibles, net” in the accompanying consolidated balance sheet. The carrying value of the license will be amortized on a straight-line basis over its estimated 10-year life.

Acquisition of Lumo Energia, Oyj

On December 17, 2018, the Company through its subsidiary Genie Nordic, LLC entered into a binding Stock Purchase Agreement with Melanko Ventures Oy (“Melanko”), Martin Gustafsson (“Gustafsson”) and Otto Sasvasti (“Sasvasti”), together, the “Sellers”, to purchase 80.0% of the outstanding equity of Lumo Energia Oyj. (“Lumo”), a Finnish public limited company (the, “Lumo Purchase Agreement”). The closing of the Lumo Purchase Agreement is subject to certain conditions described in the Lumo Purchase Agreement.

On January 2, 2019 (“Closing Date”), the Company completed the purchase of an 80% controlling interest in Lumo. The Company paid the Seller €1.3 million (equivalent to \$1.5 million) and paid €0.2 million (equivalent to \$0.2 million) to repay a portion of Lumo's outstanding debt. The Company contributed €1.5 million (equivalent to \$1.7 million) as a capital loan to fund Lumo's working capital requirements and provided Lumo with a secured loan for €2.0 million (equivalent to \$2.3 million) to pay off and replace its remaining debt. The secured loan is payable in 4 years and bears interest at annual rate of 4.0%, which is payable on a monthly basis. The Company also issued 176,104 shares of Class B common stock to the Sellers which are subject to restrictions as described in the Lumo Purchase Agreement

(“Restricted Shares”). The Restricted shares are subject to vesting conditions related to employment and services to be provided by the Sellers of up to three years as described in the Lumo Purchase Agreement.

The remaining 20.0% noncontrolling interest retained by the Sellers are subject to restrictions and vesting as described in the Lumo Purchase Agreement with 7.5% vesting at Closing Date and the remaining 12.5% vesting in three annual installments subject to employment and service conditions described in the Lumo Purchase Agreement.

The Company has a continuing call option to purchase a portion or the entire noncontrolling interest from the Sellers during the period beginning at the third anniversary of the Closing Date and ending three years later, subject to conditions described in the Lumo Purchase Agreement.

The Sellers, as a group, have a one-time option to sell a portion or all of their noncontrolling interest to the Company which may be exercised on one occasion only at any time during the two-year period beginning at the fourth anniversary of the Closing Date, subject to conditions described in the Lumo Purchase Agreement.

The acquisition of Lumo will be accounted for using the acquisition method of business combination under ASC 805, *Business Combinations*. The initial accounting for the business combination is incomplete due to the timing of the acquisition, therefore, the Company is unable to disclose certain information required by ASC 805. The Company will provide preliminary purchase price allocation information in the Company’s Quarterly Report on Form 10-Q for period ending March 31, 2019.

Divestiture of Majority Interest in Atid Drilling Ltd.

Following the Company’s decision to suspend its oil and gas exploration drilling activities, in June 2018, the Company initiated a plan to sell primarily all of Atid’s assets and liabilities. In the year ended December 31, 2018, the Company recorded a write-down to fair value of Atid’s assets held for sale in the amounts of \$2.7 million. On September 1, 2018, Genie Israel Holdings Ltd., a wholly-owned subsidiary of GOGAS (“Genie Israel”) contributed to a newly formed contracted drilling services company in Israel, the equity of Atid with net book value of \$1.0 million as of September 1, 2018 in exchange for 37.5% interest in New Atid. The remaining interests in New Atid are held by Howard Jonas, the Company’s Chairman (37.5%) and by Geoffrey Rochwarger, the Company’s former Vice Chairman (25.0%) and the Chief Executive Officer of the newly formed contracted drilling services company in Israel.

Genie Israel also entered into a Shareholder Agreement with the newly formed contracted drilling services company in Israel and the other shareholders of the new company to govern certain issues regarding management of the new company. Under the Shareholder Agreement, among other things, Genie Israel has agreed to make available New Atid a working capital financing up to \$0.4 million (“Credit Facility”). The Credit Facility bears a variable interest rate as defined in the Shareholder Agreement.

As of December 31, 2018, there was no outstanding balance on the Credit Facility and the Company has a minimal amount of accounts payable to the newly formed contracted drilling services company in Israel.

The divestiture of a majority interest in Atid does not represent a strategic shift that is expected to have a major effect on the Company's operations or financial statements.

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GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Genie Israel accounts for its investments in the newly formed contracted drilling services company in Israel using the equity method of accounting. At December 31, 2018, the Company's maximum exposure to loss as a result of its involvement with the newly formed contracted drilling services company in Israel was its carrying value of investment of \$0.5 million, excluding the undrawn balance of the Credit Facility, since there were no other arrangements, events or circumstances that could expose the Company to additional loss.

Acquisition of Mirabito Natural Gas

On August 10, 2017, GRE acquired Mirabito Natural Gas, a Ft. Lauderdale, Florida-based natural gas supplier, from Angus Partners, LLC ("Angus") for an aggregate cash payment of \$4.0 million. Mirabito serves commercial and government customers throughout Florida. Mirabito's operating results from the date of acquisition, which were not significant, are included in the Company's consolidated financial statements.

Also on August 10, 2017, GRE and Angus entered into a Management Agreement pursuant to which Angus will provide any and all functions required to run and operate Mirabito. The Management Agreement terminates in August 2021, unless otherwise terminated by GRE for failure to achieve the business profit thresholds contained in the Management Agreement. Angus will receive an annual management fee from GRE equal to the greater of 30% of the business profits of Mirabito, as defined, or \$250,000.

The impact of the acquisition's purchase price allocations on the Company's consolidated balance sheet and the acquisition date fair value of the total consideration transferred were as follows:

(in thousands)		
Trade accounts receivable	\$	509
Prepaid expenses		60
Non-compete agreement		5
Customer relationships (9-year useful life)		1,100
Patents and trademarks		760
Goodwill		1,270
Other assets		465

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Trade accounts payable		(299)
Accrued expenses		(2)
Net assets excluding cash acquired	\$	3,868	
Supplemental information:			
Cash paid	\$	3,955	
Cash acquired		(87)
Total consideration, net of cash acquired	\$	3,868	

The goodwill resulting from the acquisition is primarily attributable to the existing workforce of the acquired entities and synergies expected from the combination of GRE and Mirabito's REP businesses. This goodwill is deductible for income tax purposes.

Pro Forma Results (unaudited)

The following unaudited pro forma financial information summarizes the results of operations for the years ended December 31, 2018 and 2017 as if the acquisitions of Prism and Mirabito and divestiture of majority interest in Atid, had been completed as of the beginning 2017. The pro forma results are based upon certain assumptions and estimates, and they give effect to actual operating results prior to the acquisitions and adjustments to reflect (i) the change in interest expense, depreciation expense and intangible asset amortization, (ii) timing of recognition for certain expenses that will not be recurring in the post-acquisition period, (iii) impairment of assets related to Atid, and (iv) income taxes at a rate consistent with the Company's statutory rate at the date of the acquisitions. No effect has been given to other cost reductions or operating synergies. As a result, these pro forma results do not necessarily represent results that would have occurred if the acquisitions had taken place on the basis assumed above, nor are they indicative of the results of future combined operations.

(in thousands)	Year ended December 31,	
	2018	2017
Total revenues	\$ 281,847	\$ 269,800
Net income (loss)	21,524	(9,239)
Net income (loss) attributable to Genie Energy Ltd. common stockholders	22,511	(8,976)
Earnings (loss) per share attributable to Genie energy Ltd. common stockholders		
Basic	0.89	0.38
Diluted	0.88	0.38

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 3 — Fair Value Measurements

The following table presents the balance of assets and liabilities measured at fair value on a recurring basis:

(in thousands)	Level 1 ⁽¹⁾	Level 2 ⁽²⁾	Level 3 ⁽³⁾	Total
December 31, 2018				
Assets:				
Derivative contracts	\$ 1,107	\$ 467	\$ —	\$ 1,574
Liabilities:				
Derivative contracts	\$ 2,100	\$ 248	\$ —	\$ 2,348
December 31, 2017				
Assets:				
Derivative contracts	\$ 3,091	\$ 1,267	\$ —	\$ 4,358
Liabilities:				
Derivative contracts	\$ 693	\$ 535	\$ —	\$ 1,228

(1) quoted prices in active markets for identical assets or liabilities

(2) observable inputs other than quoted prices in active markets for identical assets and liabilities

(3) no observable pricing inputs in the market

The Company's derivative contracts consist of natural gas and electricity put and call options and swaps. The underlying asset in the Company's put and call options is a forward contract. The Company's swaps are agreements whereby a floating (or market or spot) price is exchanged for a fixed price over a specified period.

Fair Value of Other Financial Instruments

The estimated fair value of the Company's other financial instruments was determined using available market information or other appropriate valuation methodologies. However, considerable judgment is required in interpreting this data to develop estimates of fair value. Consequently, the estimates are not necessarily indicative of the amounts that could be realized or would be paid in a current market exchange.

Restricted cash — short-term and long-term, trade accounts receivables, due to IDT Corporation and other current liabilities. At December 31, 2018 and 2017, the carrying amount of these assets and liabilities approximated fair value because of the short period to maturity. The fair value estimate for restricted cash — short-term and long-term were classified as Level 1 and due to IDT Corporation and other current liabilities were classified as Level 2 of the fair value hierarchy.

Other assets, revolving line of credit, notes payable and other liabilities. At December 31, 2018 and 2017, other assets included an aggregate of \$0.5 million and \$0.6 million, respectively, in notes receivable. The carrying amounts of the notes receivable, revolving line of credit and other liabilities approximated fair value. The fair values were estimated based on the Company's assumptions, and were classified as Level 3 of the fair value hierarchy.

The following table presents the balance of assets and liabilities measured at fair value on a non-recurring basis:

(in thousands)	Level 1 ⁽¹⁾	Level 2 ⁽²⁾	Level 3 ⁽³⁾	Total
December 31, 2018				
Impairment of assets	\$ —	\$ —	\$ 2,742	\$ 2,742
December 31, 2017				
Write-off of capitalized exploration costs	\$ —	\$ —	\$ 6,483	\$ 6,483

The Company did not have any transfers of assets or liabilities between Level 1, Level 2 or Level 3 of the fair value measurement hierarchy during the years ended December 31, 2018 and 2017.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 4 — Derivative Instruments

The primary risk managed by the Company using derivative instruments is commodity price risk, which is accounted for in accordance with Accounting Standards Codification 815 — Derivatives and Hedging. Natural gas and electricity put and call options and swaps are entered into as hedges against unfavorable fluctuations in market prices of natural gas and electricity. The Company does not apply hedge accounting to these options or swaps, therefore the changes in fair value are recorded in earnings. By using derivative instruments to mitigate exposures to changes in commodity prices, the Company exposes itself to credit risk and market risk. Credit risk is the failure of the counterparty to perform under the terms of the derivative contract. When the fair value of a derivative contract is positive, the counterparty owes the Company, which creates credit risk. The Company minimizes the credit or repayment risk in derivative instruments by entering into transactions with high-quality counterparties. At December 31, 2018 and 2017, GRE's swaps and options were traded on the New York Mercantile Exchange.

The summarized volume of GRE's outstanding contracts and options at December 31, 2018 was as follows (MWh – Megawatt hour and Dth – Decatherm):

Commodity	Settlement Dates	
	Electricity (In MWH)	Natural Gas (In Dth)
First quarter 2019	244,032	2,370,000
Second quarter 2019	10,240	338,450
Third quarter 2019	31,360	73,900
Fourth quarter 2019	22,090	1,146,000
First quarter 2020	186,560	1,081,832
Second quarter 2020	5,120	55,800
Third quarter 2020	22,800	26,100
Fourth quarter 2020	5,120	27,650
First quarter 2021	—	27,250
Second quarter 2021	—	21,350
Third quarter 2021	—	15,200
Fourth quarter 2021	—	8,100

The fair value of outstanding derivative instruments recorded in the accompanying consolidated balance sheets were as follows:

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December 31 (in thousands)		2018	2017
Asset Derivatives	Balance Sheet Location		
Derivatives not designated or not qualifying as hedging instruments:			
Energy contracts and options ⁽¹⁾	Other current assets	\$ 1,116	\$ 4,358
Energy contracts and options	Other assets	458	—
Total derivatives not designated or not qualifying as a hedging instruments — Assets		\$ 1,574	\$ 4,358
Liability Derivatives			
Derivatives not designated or not qualifying as hedging instruments:			
Energy contracts and options ⁽¹⁾	Other current liabilities	\$ 2,028	\$ 1,228
Energy Contracts and options	Other liabilities	320	—
Total derivatives not designated or not qualifying as a hedging instruments — Liabilities		\$ 2,348	\$ 1,228

(1) The Company classifies derivative assets and liabilities as current based on the cash flows expected to be incurred within the following 12 months.

The effects of derivative instruments on the consolidated statements of operations were as follows:

(in thousands)		Amount of Gain (Loss) Recognized on Derivatives Year ended December 31,	
		2018	2017
Derivatives not designated or not qualifying as hedging instruments	Location of Loss Recognized on Derivatives		
Energy contracts and options	Cost of revenues	\$ (2,013)	\$ (1,291)

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 5 — Afek Oil and Gas Exploration Activities

In 2013, the Government of Israel awarded Afek of an exclusive petroleum exploration license covering a certain portion of the Golan Heights in Northern Israel. The license was extended to April 2018 to conduct an up to ten-well oil and gas exploration program. In 2016 after drilling five wells in the Southern region of its license area, Afek determined that it did not have a clear path to demonstrate probable or possible reserves in the Southern region of its license area and wrote off the \$41.0 million of capitalized exploration costs incurred in the Southern region. In 2017, Afek drilled its sixth exploratory well at a site in the Northern portion of its license are and announced that the preliminary analysis of results from the completed well at the Northern site suggested that the well's target zone does not contain commercially producible quantities of oil or natural gas, and that it was suspending drilling operations pending further analysis, and wrote off the \$6.5 million of capitalized exploration costs incurred in the Northern region.

Subsequent analysis indicates that a zone within the well contains evidence of hydrocarbons at levels sufficient to warrant additional testing. Accordingly, Afek requested and received a renewal of its exploratory license from the Ministry of Energy for the Northern portion of its former license area. Afek is in the process of securing the permits and other regulatory approvals needed to perform the testing.

Note 6 — Investment in Equity Method Investees

Investment in Shoreditch Energy Limited

On July 17, 2017, the Company's subsidiary, Genie Energy UK Ltd. ("GEUK"), entered into a definitive agreement with Energy Global Investments Pty Ltd ("EGC") to launch Shoreditch Energy Limited ("Shoreditch"), a joint venture to offer electricity and natural gas service to residential and small business customers in the United Kingdom, using the trade name Orbit Energy (the "JV Agreement"). In August 2018, the parties confirmed that the relevant conditions described in the JV Agreement were satisfied, triggering additional funding obligations, albeit at a lower level than in the JV Agreement due to revised budgets and forecasts. In September and December 2018, the Company contributed an total of \$1.3 million to Shoreditch, which increased GEUK's total contribution to \$5.3 million as of December 31, 2018. In connection with the revised contributions and obligations, the GEUK's ownership of Shoreditch increased from 65% to 67% and EGC's ownership reduced from 35% to 33% as effective September 2018.

GEUK appoints three members and EGC appoints two members to Shoreditch's Board of Directors. EGC has several significant participating rights in the management of Shoreditch that limits GEUK's ability to direct the activities that most significantly impact Shoreditch's economic performance. GEUK therefore accounts for its ownership interest in Shoreditch using the equity method since GEUK has the ability to exercise significant influence over its operating and financial matters, although it does not control Shoreditch. Shoreditch is a variable interest entity, however, the Company has determined that it is not the primary beneficiary, as the Company does not have the power to direct the activities of Shoreditch that most significantly impact Shoreditch's economic performance.

In September and December 2018, the Company extended a total of \$0.2 million loan to EGC ("EGC Loan"), in connection with EGC's contribution to Shoreditch. The EGC Loan, which is secured by EGC's interest in Shoreditch, bears a fixed annual interest rate of 2% and is due, together with the principal amount on September 17, 2023. As of December 31, 2018, the outstanding balance, including accrued interest, of the EGC Loan was \$0.2 million.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following table summarizes the change in the balance of GEUK's investment in Shoreditch (in thousands):

	For the year ended December 31,	
	2018	2017
Balance, beginning of period	\$ 3,450	\$ —
Capital contributions	1,306	3,970
Cumulative foreign currency translation adjustment	(87)	45
Equity in the net loss	(2,990)	(565)
Balance, end of period	\$ 1,679	\$ 3,450

At December 31, 2018, the Company's maximum exposure to loss as a result of its involvement with Shoreditch was its \$1.7 million investment, excluding the balance of EGC Loan, since there were no other arrangements, events or circumstances that could expose the Company to additional loss.

Investment in New Atid

As discussed in Note 2, Acquisitions and Divestitures, in September 2018, the Company divested a majority interest in Atid and retained 37.5% interest which the Company accounts for using equity method of accounting.

The following table summarizes the change in the balance of the Company's investment in New Atid for the period from September 1, 2018 to December 31, 2018 (in thousands):

Balance, beginning of period	\$		—
Capital contributions		1,000	
Equity in net loss		(440)
Cumulative foreign currency translation adjustments		(31)
Balance, end of period	\$		529

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 7 — Property and Equipment

December 31 (in thousands)	2018		2017
Land	\$	230	\$ —
Building and improvements		2,291	29
Manufacturing equipment		1,403	3,833
Computer software		2,229	1,912
Computers and computer hardware		237	246
Office equipment and other		270	414
		6,660	6,434
Less: accumulated depreciation		(2,359)	(2,414)
Property and equipment, net	\$	4,301	\$ 4,020

Depreciation expense of property and equipment was \$0.8 million and \$0.8 million in the years ended December 31, 2018 and 2017, respectively.

Note 8 — Goodwill and Other Intangibles

The table below reconciles the change in the carrying amount of goodwill for the period from January 1, 2017 to December 31, 2018:

(in thousands)	GRE	GES	Total
Balance at January 1, 2017	\$ 8,728	\$ —	\$ 8,728
Acquisition of Mirabito (see Note 2)	1,270	—	1,270
Balance at December 31, 2017	9,998	—	9,998
Acquisition of Prism (see Note 2)	—	1,084	1,084
Balance at December 31, 2018	\$ 9,998	\$ 1,084	\$ 11,082

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The table below presents information on the Company's other intangible assets:

(in thousands)	Weighted Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Net Balance
December 31, 2018				
Patents and trademarks	17.3 years	\$ 3,470	\$ (288)	\$ 3,182
Non-compete agreement	2.0 years	115	(112)	3
Customer relationships	4.0 years	4,612	(2,334)	2,278
Licenses	10.0 years	895	(37)	858
TOTAL		\$ 9,092	\$ (2,771)	\$ 6,321
December 31, 2017				
Trademark	20.0 years	\$ 2,860	\$ (135)	\$ 2,725
Non-compete agreement	2.0 years	115	(65)	50
Customer relationships	4.4 years	3,200	(1,266)	1,934
Licenses	—	150	—	150
TOTAL		\$ 6,325	\$ (1,466)	\$ 4,859

Amortization expense of intangible assets (including minimal amount reported in cost of revenues) was \$1.3 million and \$1.3 million in the years ended December 31, 2018 and 2017, respectively. The Company estimates that amortization expense of intangible assets will be \$0.9 million, \$0.9 million, \$0.9 million, \$0.4 million, \$0.4 million and \$2.8 million in the years ending December 31, 2019, 2020, 2021, 2022, 2023 and 2024 and thereafter, respectively.

Note 9 — Revolving Lines of Credit

On April 4, 2017, GRE, IDT Energy, and other GRE subsidiaries entered into a Credit Agreement with Vantage Commodities Financial Services II, LLC (“Vantage”) for a \$20 million revolving loan facility. The borrowers consist of the Company's subsidiaries that operate REP businesses, and those subsidiaries' obligations are guaranteed by GRE. The borrowers have provided as collateral a security interest in their receivables, bank accounts, customer agreements, certain other material agreements and related commercial and intangible rights. The outstanding principal amount incurs interest at LIBOR plus 4.5% per annum. Interest is payable monthly and all outstanding principal and any accrued and unpaid interest is due on the maturity date of April 3, 2020. At December 31, 2018 and 2017 \$2.5 million was outstanding under the revolving line of credit. At December 31, 2018 and 2017, the effective interest rate was

7.24% and 5.99% per annum, respectively. The borrowers are required to comply with various affirmative and negative covenants, including maintaining a target tangible net worth during the term of the credit agreement. To date, the Company is in compliance with such covenants.

The Company and IDT Energy had a Loan Agreement with JPMorgan Chase Bank for a revolving line of credit for up to a maximum principal amount of \$25.0 million. The principal outstanding incurred interest at the lesser of (a) the LIBOR rate multiplied by the statutory reserve rate established by the Board of Governors of the Federal Reserve System plus 1.0% per annum, or (b) the maximum rate per annum permitted by whichever of applicable federal or Texas laws permit the higher interest rate. Interest was payable at least every three months and any outstanding principal and accrued and unpaid interest was due on the maturity date of May 31, 2017. The Company agreed to deposit cash in a money market account at JPMorgan Chase Bank as collateral for the line of credit equal to the greater of (a) \$10.0 million or (b) the sum of the amount of letters of credit outstanding plus the outstanding principal under the revolving note. At December 31, 2016, there were no amounts borrowed under the line of credit, and cash collateral of \$10.0 million was included in “Restricted cash—short-term” in the consolidated balance sheet. In addition, at December 31, 2016, letters of credit of \$8.1 million were outstanding. On May 31, 2017, the \$10.0 million cash collateral was released upon expiration of the Loan Agreement.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 10 — Income Taxes

On December 22, 2017, the U.S. government enacted “An Act to Provide for Reconciliation Pursuant to Titles II and V of the Concurrent Resolution on the Budget for Fiscal Year 2018”, which is commonly referred to as “The Tax Cuts and Jobs Act” (the “Tax Act”). The Tax Act provides for comprehensive tax legislation that reduces the U.S. federal statutory corporate tax rate from 35.0% to 21.0% effective January 1, 2018, broadens the U.S. federal income tax base, requires companies to pay a one-time repatriation tax on earnings of certain foreign subsidiaries that were previously tax deferred (“transition tax”), and creates new taxes on certain foreign sourced earnings.

On December 22, 2017, the SEC issued Staff Accounting Bulletin No. 118 (“SAB 118”), expressing its views regarding the FASB’s Accounting Standards Codification 740, Income Taxes, in the reporting period that includes the enactment date of the Tax Act. SAB 118 recognizes that a registrant’s review of certain income tax effects of the Tax Act may be incomplete at the time financial statements are issued for the reporting period that includes the enactment date, including interim periods therein. Specifically, SAB 118 allows a company to report provisional estimates in the reporting period that includes the enactment date if the company does not have the necessary information available, prepared, or fully analyzed for certain income tax effects of the Tax Act. The provisional estimates would be adjusted during a measurement period not to exceed 12 months from the enactment date of the Tax Act, at which time the accounting for the income tax effects of the Tax Act is required to be completed.

The Company has completed its accounting for the income tax effects of the enactment of the Tax Act and made no changes to the provisional amounts previously recorded. The table below in this footnote reflects the new income tax rate.

The transition tax is based on total post-1986 earnings and profits which were previously deferred from U.S. income taxes. At December 31, 2018, the Company did not have any undistributed earnings of our foreign subsidiaries. As a result, no additional income or withholding taxes have been provided for. The Company does not anticipate any impacts of the global intangible low taxed income (“GILTI”) and base erosion anti-abuse tax (“BEAT”) and as such, the Company has not recorded any impact associated with either GILTI or BEAT.

The Company anticipates that its assumptions and estimates could change as a result of future guidance and interpretation from the Internal Revenue Service, the SEC, the FASB, and various other taxing jurisdictions. In particular, the Company anticipates that the U.S. state jurisdictions will continue to determine and announce their conformity with or decoupling from the Tax Act. The Company will continue to evaluate the impact of the Tax Act on its financial statements and will record the effect of any reasonable changes in its estimates and adjustments.

The components of income (loss) before income taxes are as follows:

(in thousands)	Year ended December 31,	
	2018	2017
Domestic	\$ 15,246	\$ 7,122
Foreign	(6,222)	(14,044)
INCOME (LOSS) BEFORE INCOME TAXES	\$ 9,024	\$ (6,922)

Significant components of the Company's deferred income tax assets consist of the following:

December 31 (in thousands)	2018	2017
Deferred income tax assets:		
Bad debt reserve	\$ 543	\$ 302
Accrued expenses	2,629	4,425
State taxes	91	117
Charitable contributions	189	265
Net operating loss	46,632	37,435
Stock options and restricted stock	519	908
Depreciation	6,209	7,026
Total deferred income tax assets	56,812	50,478
Valuation allowance	(41,187)	(48,337)
DEFERRED INCOME TAX ASSETS, NET	\$ 15,625	\$ 2,141

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The Company recognizes deferred tax assets to the extent that it believes that these assets are more likely than not to be realized. In making such a determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. If the Company determines that it would be able to realize its deferred tax assets in the future in excess of their net recorded amount, the Company would make an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes. The Company released the valuation allowance of \$15.0 million in 2018 to reflect the anticipated utilization of the U.S. deferred tax assets. The company maintains the valuation allowance on the foreign deferred tax assets as well as the deferred tax assets relating to the nonconsolidated U.S. entities.

The (provision for) benefit from income taxes consists of the following:

(in thousands)	Year ended December 31,	
	2018	2017
Current:		
Federal	\$ —	\$ —
State and local	(1,107)	(1,366)
Foreign	—	—
	(1,107)	(1,366)
Deferred:		
Federal	13,609	—
State and local	(126)	(360)
Foreign	—	—
	(13,483)	(360)
BENEFIT FROM (PROVISION FOR) INCOME TAXES	\$ 12,376	\$ (1,726)

The differences between benefit from (provision for) income taxes expected at the U.S. federal statutory income tax rate and income taxes provided are as follows:

(in thousands)	Year ended December 31,	
	2018	2017
U.S. federal income tax benefit at statutory rate	\$ (1,895)	\$ 2,423
Valuation allowance	15,113	11,694

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Nondeductible expense	(12)	—
Foreign tax rate differential	1,493	(2,610)
Tax law change	—	(11,070)
Deferred income tax adjustment	(1,093)	(1,250)
Other	(81)	66
State and local income tax, net of federal benefit	(1,149)	(979)
BENEFIT FROM (PROVISION FOR) INCOME TAXES	\$ 12,376	\$ (1,726)

At December 31, 2018, the Company had U.S. federal and state net operating loss carry-forwards of approximately \$25.9 million and \$125.3 million, respectively. These carry-forward losses are available to offset future U.S. federal and state taxable income and are not subject to Section 382 limitations. The federal net operating loss carry-forwards will start to expire in 2034. The state net operating loss carry-forwards will start to expire in 2030, with the year ended December 31, 2018's loss expiring in 2038.

At December 31, 2018, the Company had foreign net operating loss carry-forwards of approximately \$104.6 million, of which \$103.6 million will not expire.

The Company includes certain entities that are not included in the Company's consolidated tax return. The entities have separate U.S. federal and state net operating loss carry-forwards of \$29.7 million that begin to expire in 2025. The NOL of \$25.7 million related to Prism, our recent acquisition and maybe subject to Internal Revenue Code Section 382 limitation at time of utilization. The Company will determine any limitation in the near future.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The change in the valuation allowance for deferred income taxes was as follows:

(in thousands)	Balance at beginning of period	Additions charged to costs and expenses	Deductions	Balance at end of period
Year ended December 31, 2018				
Reserves for valuation allowances deducted from deferred income taxes, net	\$ 48,337	\$ 7,963	\$ (15,113)	\$ 41,187
Year ended December 31, 2017				
Reserves for valuation allowances deducted from deferred income taxes, net	\$ 52,978	\$ 7,053	\$ (11,694)	\$ 48,337

The table below summarizes the change in the balance of unrecognized income tax benefits:

(in thousands)	Year ended December 31,	
	2018	2017
Balance at beginning of period	\$ 558	\$ 632
Additions based on tax positions related to the current period	98	100
Additions for tax positions of prior periods	—	1
Lapses of statutes of limitations	(223)	(175)
Balance at end of period	\$ 433	\$ 558

All of the unrecognized income tax benefits at December 31, 2018 and 2017 would have affected the Company's effective income tax rate if recognized. The Company does not expect the total amount of unrecognized income tax benefits to significantly increase or decrease within the next twelve months.

In the years ended December 31, 2018 and 2017, the Company recorded minimal amount of interest on income taxes. At December 31, 2018 and 2017, accrued interest included in current income taxes payable was minimal.

The Company currently remains subject to examinations of its tax returns as follows: U.S. federal tax returns for 2015 to 2018, state and local tax returns generally for 2014 to 2018 and foreign tax returns generally for 2014 to 2018.

Note 11 — Equity

Class A Common Stock and Class B Common Stock

The rights of holders of Class A common stock and Class B common stock are identical except for certain voting and conversion rights and restrictions on transferability. The holders of Class A common stock and Class B common stock receive identical dividends per share when and if declared by the Company's Board of Directors. In addition, the holders of Class A common stock and Class B common stock have identical and equal priority rights per share in liquidation. The Class A common stock and Class B common stock do not have any other contractual participation rights. The holders of Class A common stock are entitled to three votes per share and the holders of Class B common stock are entitled to one-tenth of a vote per share. Except as required by law or under the terms of the Series 2012-A Preferred Stock (the "Preferred Stock"), the holders of Class A and Class B common stock and the Preferred Stock vote together as a single class on all matters submitted to a vote of the Company's stockholders. Each share of Class A common stock may be converted into one share of Class B common stock, at any time, at the option of the holder. Shares of Class A common stock are subject to certain limitations on transferability that do not apply to shares of Class B common stock.

Series 2012-A Preferred Stock

Each share of Preferred Stock has a liquidation preference of \$8.50 (the "Liquidation Preference"), and is entitled to receive an annual dividend per share equal to the sum of (i) \$0.6375 (the "Base Dividend") plus (ii) seven and one-half percent (7.5%) of the quotient obtained by dividing (A) the amount by which the EBITDA for a fiscal year of the Company's retail energy provider business exceeds \$32 million by (B) 8,750,000 (the "Additional Dividend"), payable in cash. EBITDA consists of income (loss) from operations exclusive of depreciation and amortization and other operating gains (losses). During any period when the Company has failed to pay a dividend on the Preferred Stock and until all unpaid dividends have been paid in full, the Company is prohibited from paying dividends or distributions on the Company's Class B or Class A common stock.

The Preferred Stock is redeemable, in whole or in part, at the option of the Company following October 11, 2017 at 101% of the Liquidation Preference plus accrued and unpaid dividends, and 100% of the Liquidation Preference plus accrued and unpaid dividends following October 11, 2018.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The Base Dividend is payable (if declared by the Company's Board of Directors, and accrued, if not declared) quarterly on each February 15, May 15, August 15 and November 15, and to the extent that there is any Additional Dividend payable with respect to a fiscal year, it will be paid to holders of Preferred Stock with the May dividend. With respect to the payment of dividends and amounts upon liquidation, dissolution or winding up, the Preferred Stock is equal in rank to all other equity securities the Company issues, the terms of which specifically provide that such equity securities rank on a parity with the Preferred Stock with respect to dividend rights or rights upon the Company's liquidation, dissolution or winding up; senior to the Company's common stock; and junior to all of the Company's existing and future indebtedness.

Each share of Preferred Stock has the same voting rights as a share of Class B common stock, except on certain matters that only impact the Company's common stock, as well as additional voting rights on specific matters or upon the occurrence of certain events.

Dividend Payments

In the year ended December 31, 2018, the Company paid aggregate cash dividends of \$0.30 per share on its Class A common stock and Class B common stock, equal to \$7.7 million in total dividends paid. In the year ended December 31, 2017, the Company paid aggregate cash dividends of \$0.30 per share on its Class A common stock and Class B common stock, equal to \$7.4 million in total dividends paid. In March 6, 2019, the Company's Board of Directors declared a quarterly dividend of \$0.075 per share on the Company's Class A common stock and Class B common stock for the fourth quarter of 2017 to stockholders of record as of the close of business on March 25, 2019. The dividend will be paid on or about March 29, 2019.

In each of the years ended December 31, 2018 and 2017, the Company paid aggregate cash dividends of \$0.6376 per share on its Preferred Stock, equal to \$1.5 million in dividends paid. On February 15, 2019, the Company paid a quarterly Base Dividend of \$0.1594 per share on its Preferred Stock for the fourth quarter of 2018 to stockholders of record as of the close of business on February 6, 2019.

The State of Delaware, allow companies to declare dividends out of its "Surplus," which is calculated by deducting the par value of the company's stock from the difference between total assets less total liabilities. The Company elected to

record dividends declared against accumulated deficit.

Stock Repurchases

On March 11, 2013, the Board of Directors of the Company approved a stock repurchase program for the repurchase of up to an aggregate of 7.0 million shares of the Company's Class B common stock. There were no repurchases under the program in the years ended December 31, 2018 and 2017. At December 31, 2017, 6.9 million shares remained available for repurchase under the stock repurchase program.

In the year ended December 31, 2018, the Company paid \$0.9 million to repurchase 149,000 shares of its Class B common stock. In the year ended December 31, 2017, the Company paid \$0.8 million to repurchase 129,898 shares of its Class B common stock. These shares were tendered by the Company's employees to satisfy tax withholding obligations in connection with the lapsing of restrictions on awards of restricted stock. Such shares were repurchased by the Company based on their fair market value on the trading day immediately prior to the vesting date.

Repurchase Right on Sale of Shares to Howard S. Jonas

On July 30, 2014, the Company entered into a Second Amended and Restated Employment Agreement and a Restricted Stock Sale Agreement with Howard S. Jonas, the Company's Chairman of the Board and former Chief Executive Officer. Pursuant to these agreements, among other things, in 2014, the Company sold an aggregate of 3.6 million shares of the Company's Class B common stock to Mr. Jonas at a price of \$6.82 per share (the closing price per share of the Class B common stock on the day that the arrangement was approved by the Company's Board of Directors and Compensation Committee). Upon certain terminations of Mr. Jonas' employment by the Company, 0.6 million of the Class B shares are subject to repurchase by the Company at \$6.82 per share, which repurchase right lapsed on December 31, 2018.

Sales of Shares and Warrants

On June 8, 2018, the Company sold to Howard S. Jonas, the Chairman of the Company's Board of Directors and a principal owner, (1) 1,152,074 shares of the Company's Class B common stock, at a price of \$4.34 per share for an aggregate sales price of \$5.0 million, and (2) warrants to purchase an additional 1,048,218 shares of the Company's Class B common stock at an exercise price of \$4.77 per share for an aggregate exercise price of \$5.0 million. The warrants will expire in June 2023. In addition, on June 12, 2018, the Company sold to a third-party investor (1) 230,415 treasury shares of the Company's Class B common stock, at a price of \$4.34 per share for an aggregate sales price of \$1.0 million, and (2) warrants to purchase an additional 209,644 shares of the Company's Class B common stock at an exercise price of \$4.77 per share for an aggregate exercise price of \$1.0 million. As of December 31, 2018, there were outstanding 1,257,862 warrants to purchase the Company's Class B common stock at \$4.77 per share which

will expire on in June 2023.

Purchases of Equity of Subsidiary

In June 2018, an entity affiliated with Lord (Jacob) Rothschild exercised its option to exchange its 5% equity interest in GOGAS for 41,667 shares of the Company's Class B common stock. The fair value of the shares of Class B common stock at the time of the exchange was \$0.22 million. The Company's ownership of GOGAS increased from 92% to 97% upon the completion of the exchange.

In the year ended December 31, 2017 GOGAS purchased from employees of Afek a 1.15% fully vested interest in Afek for \$0.3 million in cash.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 12 — Stock-Based Compensation

Stock-Based Compensation Plan

The Company's 2011 Stock Option and Incentive Plan is intended to provide incentives to executives, employees, directors and consultants of the Company. Incentives available under the 2011 Stock Option and Incentive Plan may include stock options, stock appreciation rights, limited rights, deferred stock units, and restricted stock. The plan is administered by the Compensation Committee of the Company's Board of Directors. On May 7, 2018, the Company's stockholders approved an amendment to the Company's 2011 Stock Option and Incentive Plan to reserve an additional 974,199 shares of the Company's Class B common stock for issuance thereunder. At December 31, 2018, the Company had 2.3 million shares of Class B common stock reserved for award under its 2011 Stock Option and Incentive Plan and 275,000 shares were available for future grants.

Restricted Stock

The fair value of restricted shares of the Company's Class B common stock is determined based on the closing price of the Company's Class B common stock on the grant date. Share awards generally vest on a graded basis over three years of service following the grant.

A summary of the status of the Company's grants of restricted shares of Class B common stock is presented below:

	Number of Non-vested Shares (in thousands)	Weighted- Average Grant Date Fair Value
Non-vested shares at December 31, 2017	163	\$ 6.19
Granted	285	5.30
Vested	(78)	5.44
Forfeited	(3)	5.37
NON-VESTED SHARES AT DECEMBER 31, 2018	367	\$ 5.46

At December 31, 2018, there was \$1.7 million of total unrecognized compensation cost related to non-vested stock-based compensation arrangements. The total unrecognized compensation cost is expected to be recognized over a weighted-average period of 2.3 years. The total grant date fair value of shares vested in the years ended December 31, 2018 and 2017 was \$0.4 million and \$0.4 million, respectively. The Company recognized compensation cost related to the vesting of the restricted stock of \$3.4 million and \$3.1 million in the years ended December 31, 2018 2017, respectively.

Stock Options

Option awards are generally granted with an exercise price equal to the market price of the Company's stock on the date of grant. Option awards generally vest on a graded basis over three years of service and have ten-year contractual terms. Expected volatility is based on historical volatility of the Company's Class B common stock and other factors. The Company uses historical data on exercise of stock options, post vesting forfeitures and other factors to estimate the expected term of the stock-based payments granted. The risk free rate is based on the U.S. Treasury yield curve in effect at the time of grant.

On May 7, 2018, the Company's stockholders approved a grant of options to Howard S. Jonas to purchase 256,818 shares of the Company's Class B common stock at an exercise price of \$4.34 per share in lieu of a cash bonus of \$0.3 million earned in previous periods. These options vest in five equal annual installments beginning on February 15, 2019.

The fair value of stock options granted in the years ended December 31, 2018 was estimated on the date of the grant using a Black-Scholes valuation model and the assumptions in the following table (dollar amount in thousands). No option awards were granted in the year ended December 31, 2017 .

Average risk-free interest rate	2.6	%
Expected dividend yield	6.9	%
Expected volatility	55.8	%
Expected term	5	years
Weighted-average grant date fair value of options granted	\$ 1.27	

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

A summary of stock option activity for the Company is as follows:

	Number of Options (in thousands)	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2017	383	\$ 6.85	3.8	\$ —
Granted	257	4.34		
Exercised	—	—		
Cancelled/Forfeited	(43)	6.85		
OUTSTANDING AT DECEMBER 31, 2018	597	\$ 5.77	3.5	\$ 434
EXERCISABLE AT DECEMBER 31, 2018	312	\$ 6.85	2.8	\$ —

The total intrinsic value of options exercised during the years ended 2017 was minimal. At December 31, 2018, there was a minimal amount of unrecognized compensation cost related to non-vested stock options, which is expected to be recognized over a weighted-average period of 0.8 years. The Company recognized minimal compensation cost related to the vesting of the options in the years ended December 31, 2018 and 2017.

Subsidiary Equity Grants Reclassified to Liability

On May 5, 2015, the Compensation Committee of the Company's Board of Directors approved the grant of deferred stock units in GRE representing an aggregate of 3.9% of the outstanding equity in GRE to certain of the Company's officers and employees. The deferred stock units vest in equal amounts on the first, second and third anniversaries of the date of grant. The fair value of the GRE deferred stock units on the date of grant was \$3.3 million, which is being recognized on a straight-line basis over the requisite service period, which approximates the vesting period. GRE has the right to issue shares of the Company's Class B common stock or pay cash to satisfy its obligations to issue common stock of GRE upon the vesting of the deferred stock units. GRE elected to pay cash for the deferred stock units that vested in June and July 2016. Because of the cash settlement, the Company determined that the remaining GRE deferred stock units should be classified as a liability.

In August 2017, GRE elected to exchange shares of the Company's Class B common stock for the vested deferred stock units based on the relative fair value of the shares exchanged. The Company issued 287,233 shares of its Class B common stock in exchange for 26.1 vested deferred stock units of GRE. The aggregate fair value of the shares of the Company's Class B common stock issued was \$1.8 million. The Company acquired 129,898 shares of Class B Common Stock with aggregate cost of \$0.8 million, tendered by the Company's officers and employees to satisfy tax withholding obligations related to the vesting of the deferred stock units.

In August 2018, the Company issued 310,467 shares of the Company's Class B common stock in exchange for vested deferred stock units of GRE. The aggregate fair value of the shares of the Company's Class B common stock issued was \$1.9 million. The Company acquired 128,865 shares of Class B Common Stock with aggregate cost of \$0.8 million, tendered by the Company's officers and employees to satisfy tax withholding obligations related to the vesting of the deferred stock units.

The Company recognized aggregate compensation cost related to the vesting of the deferred stock units and other subsidiary equity interests that were granted in prior years of \$1.1 million, and \$2.1 million in the years ended December 31, 2018 and 2017, respectively. At December 31, 2018, there was no unrecognized compensation cost related to non-vested subsidiary equity interests.

GRES and GREI Equity Grants

In August 2017, Genie Retail Energy International, LLC ("GREI"), a subsidiary of GRE, which holds the Company's interests in ventures in the U. K., Japan and Finland, granted deferred stock units in GREI representing an aggregate of 4.0% of the outstanding equity in GREI to certain of the Company's officers and a consultant. The deferred stock units vest in equal amounts on the first, second and third anniversaries of the date of grant. The fair value of the GREI deferred stock units on the date of grant was minimal, which is being recognized on a straight-line basis over the requisite service period, which approximates the vesting period. GREI recognized compensation costs related to the vesting of the GREI deferred stock units of \$0.1 million and nil for the year ended December 31, 2018 and 2017, respectively. At December 31, 2018, the unrecognized compensation cost relating to these grants was \$0.1 million, which is expected to be recognized over the a period of 1.6 years.

In August 2017, Genie Retail Energy Services, LLC ("GRES"), a subsidiary of GRE, granted deferred stock units in GES representing an aggregate of 4.5% of the outstanding equity in GRES to certain of the Company's officers and a consultant. The deferred stock units vest in equal amounts on the first, second and third anniversaries of the date of grant. The fair value of the GRES deferred stock units on the date of grant was minimal, which is being recognized on a straight-line basis over the requisite service period, which approximates the vesting period. GRES recognized compensation costs related to the vesting of the GRES deferred stock units of minimal amount and nil for the year ended December 31, 2018 and 2017, respectively. At December 31, 2018, the unrecognized compensation cost relating to these grants was \$0.1 million, which is expected to be recognized over the a period of 1.6 years.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 13 — Variable Interest Entity

Citizens Choice Energy, LLC (“CCE”) is a REP that resells electricity and natural gas to residential and small business customers in the State of New York. The Company does not own any interest in CCE. Since 2011, the Company provided CCE with substantially all of the cash required to fund its operations. The Company determined that it has the power to direct the activities of CCE that most significantly impact its economic performance and it has the obligation to absorb losses of CCE that could potentially be significant to CCE on a stand-alone basis. The Company therefore determined that it is the primary beneficiary of CCE, and as a result, the Company consolidates CCE within its GRE segment. The net income or loss incurred by CCE was attributed to noncontrolling interests in the accompanying consolidated statements of operations.

In October 2015, GRE paid \$0.2 million to the owner of the limited liability company interests in CCE, and loaned CCE \$0.5 million in exchange for an option to purchase 100% of the issued and outstanding limited liability company interests of CCE for one dollar plus the forgiveness of the \$0.5 million loan. The option expires on October 22, 2023.

Net income (loss) related to CCE and aggregate net funding repaid to (provided by) the Company were as follows:

(in thousands)	Year ended December 31,	
	2018	2017
Net (loss) income	\$ (1,197)	\$ 112
Aggregate funding (provided by) repaid to the Company, net	(809)	158

Summarized consolidated balance sheet amounts related to CCE are as follows:

December 31 (in thousands)	2018	2017
ASSETS		
Cash and cash equivalents	\$ 70	\$ 83
Trade accounts receivable	623	1,031
Prepaid expenses	377	451

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Other current assets	34	31
Other assets	359	439
TOTAL ASSETS	\$ 1,463	\$ 2,035
LIABILITIES AND NONCONTROLLING INTERESTS		
Current liabilities	\$ 513	\$ 698
Due to IDT Energy	1,949	1,140
Noncontrolling interests from CCE	(999)	197
TOTAL LIABILITIES AND NONCONTROLLING INTERESTS	\$ 1,463	\$ 2,035

The assets of CCE may only be used to settle obligations of CCE, and may not be used for other consolidated entities. The liabilities of CCE are non-recourse to the general credit of the Company's other consolidated entities.

Note 14 — Accumulated Other Comprehensive Income

The accumulated balances for other comprehensive income were as follows:

(in thousands)	Foreign currency translation
Balance at December 31, 2016	\$ 1,465
Other comprehensive income attributable to Genie	1,580
Balance at December 31, 2017	3,045
Other comprehensive loss attributable to Genie	(454)
Balance at December 31, 2018	\$ 2,591

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 15 — Legal and Regulatory Proceedings

Legal Proceedings

On October 5, 2018, named plaintiffs Scott Mackey and Daniel Hernandez filed a putative class action complaint against IDT Energy in the United States District Court for the Northern District of Illinois alleging violations of the Telephone Consumer Protection Act, 47 U.S.C. § 227 et seq. The named plaintiffs filed the suit on behalf of: (1) a putative Cell Phone class consisting of all persons in the U.S. to whom IDT Energy and/or a third party acting on IDT Energy's behalf allegedly made one or more telemarketing calls promoting IDT Energy's goods or services to their cellular telephone number through the use of an automatic telephone dialing system or an artificial or prerecorded voice within the four year period preceding the filing of the complaint and (2) a putative Do-Not-Call class consisting of all persons in the U.S. who allegedly received more than one call from IDT Energy and/or some party acting on IDT Energy's behalf promoting IDT Energy's goods or services in a 12-month period on their cellular phone or residential telephone line and whose number appears on the National Do-Not-Call registry within the four year period preceding the filing of the complaint. On November 30, 2018, IDT Energy filed its Answer and Defenses to the complaint and the parties will now proceed to engage in discovery in accordance with a scheduling order entered by the Court on January 18, 2019. IDT Energy denies the allegations in the complaint, which it believes to be completely, meritless and plans to vigorously defend this action. Based upon the Company's preliminary assessment of this matter, a loss is not considered probable, nor is the amount of loss, if any, estimable as of December 31, 2018.

On March 13, 2014, July 2, 2014 and July 15, 2014, named plaintiffs in Pennsylvania, New York and New Jersey commenced three separate putative class-action lawsuits against IDT Energy, GRE, GEIC, and Genie (collectively, "IDTE") contending, among other things, that they and other former and current customers of IDTE were injured as a result of IDTE's allegedly unlawful sales and marketing practices. The Company denied any basis for those allegations and/or wrongdoing. On July 5, 2017, the Company entered into a settlement of all three actions to further its efforts to address its customers' concerns. On July 31, 2018, the Magistrate Court issued a report and recommendation recommending approval of the settlement and reduction of the attorneys' fees. On October 18, 2018, the Court entered a final order approving the Settlement Agreement.

Under the Settlement Agreement, the Company has agreed to pay certain amounts to resolve the lawsuits and obtain a release of claims that were, or could have been, asserted in the lawsuits or that are related to, or arise out of the conduct alleged in the lawsuits or similar conduct, wherever it may have occurred. The settlement payment includes payments to customers who timely made a claim, class counsel, and the named plaintiffs, as well as the cost of a claims administrator for administrating the claims process. In 2017, the Company estimated, based in part on

historical participation rates, that its total settlement payment would be approximately \$9.0 million, and in the second quarter of 2017, the Company recorded a liability in that amount for the settlement. The period for class members to make claims has since expired, and in first quarter of 2018, based on the claims received and related administrative costs, the Company estimated that the total settlement payment will be approximately \$7.6 million.

For the year ended December 31, 2018, the Company reduced the liability for the settlement payment by \$3.4 million, reversed \$1.7 million of the related revenue reduction recorded in 2017 and reversed \$1.7 million of the related legal settlement fees that is included in selling, general and administrative expense in the statement of operations. At December 31, 2018, the remaining balance of the liability related to the class-action lawsuit was \$2.3 million included in other current liabilities in the consolidated balance sheet.

In addition to the matters disclosed above, the Company may from time to time be subject to legal proceedings that arise in the ordinary course of business. Although there can be no assurance in this regard, the Company does not expect any of those legal proceedings to have a material adverse effect on the Company's results of operations, cash flows or financial condition.

Agency and Regulatory Proceedings

From time to time, the Company receives inquiries or requests for information or materials from public utility commissions or other governmental regulatory or law enforcement agencies related to investigations under statutory or regulatory schemes, and the Company responds to those inquiries or requests. The Company cannot predict whether any of those matters will lead to claims or enforcement actions or whether the Company and the regulatory parties will enter into settlements before a formal claim is made.

New Jersey Attorney General and New Jersey Board of Public Utilities

On May 22, 2018, IDT Energy entered into a Consent Order with the New Jersey Attorney General and the New Jersey Board of Public Utilities to resolve an investigation related to IDT Energy's pricing and business practices during the winter of 2014. Under the terms of the Consent Order, IDT Energy agreed to make payments totaling \$1.4 million, including \$1.2 million in restitution to consumers who received electricity and/or natural gas supply from IDT Energy in January, February and/or March of 2014. IDT Energy will also implement certain modifications to its sales, marketing and customer service processes, along with additional compliance and reporting requirements. In the third quarter of 2017, the Company accrued \$1.5 million for this matter. IDT Energy has made full payment of the amount agreed upon in the Consent Order to a settlement administrator, who will process the restitution payments.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

New York Public Service Commission Orders

In December 2017, the New York Public Service Commission (“PSC”) held an evidentiary hearing to assess the retail energy market in New York. The parties recently completed post-hearing briefing in the proceedings. The Company is evaluating the potential impact of any new order from the PSC that may follow from the evidentiary process, while preparing various contingencies for operation in compliance with any new requirements that may be imposed. Depending on the final language of any new order, as well as the Company’s ability to modify its relationships with its New York customers, an order could have a substantial impact upon the operations of GRE’s REPs in New York. As of December 31, 2018, New York represented 32.4% of GRE’s total meters served and 24.8% of the total residential customer equivalents (“RCEs”) of GRE’s customer base. For the year ended December 31, 2018 and 2017, New York gross revenues were \$74.2 million and \$91.0 million, respectively.

An RCE represents a natural gas customer with annual consumption of 100 mmbtu or an electricity customer with annual consumption of 10 MWh. Because different customers have different rates of energy consumption, RCEs are an industry standard metric for evaluating the consumption profile of a given retail customer base.

On December 16, 2016, the PSC issued an order (the “2016 Order”) prohibiting REPs to service to customers enrolled in New York’s utility low-income assistance programs. Temporary stays of the 2016 Order expired, and REPs were required to return service of their low-income customers to the relevant local incumbent utility on the modified schedule set forth in the PSC’s 2016 Order. The 2016 Order required GRE’s REPs to transfer customer accounts comprising approximately 18,700 meters, representing approximately 10,600 RCEs, to their respective incumbent utilities in 2018.

On March 27, 2018, the New York Court of Appeals granted Motions for Leave to Appeal the question of whether the New York Legislature ever imparted to the PSC the authority to regulate the rates that private, non-monopoly REPs charge their customers. The Court of Appeals is now set to review a 2017 decision entered by the Appellate Division, Third Department, concerning the issue of the scope of the PSC’s authority over REPs under the Public Service Law, and to pronounce New York law on that issue. The Court of Appeals has scheduled oral argument in the jurisdictional appeal for March 19, 2019.

Ohio Public Utilities Commission

In August and November of 2017, the Public Utilities Commission of Ohio (“PUCO”) commenced investigations into the marketing and enrollment practices of the Company’s subsidiary Town Square Energy. The PUCO’s investigations arose from customer complaints that representatives of Town Square allegedly engaged in misleading and deceptive sales practices in connection with Town Square’s table top marketing campaign. Town Square has and continues to cooperate fully with the PUCO’s investigation. Pending the outcome of the investigations, and in response to the PUCO’s recommendation, Town Square temporarily ceased further marketing activity in Ohio. Town Square also undertook various remedial measures which included retraining its vendors. Subsequently, on January 16, 2018, the PUCO issued its findings that Town Square was in probable non-compliance with various sections of the Ohio Administrative Code and proposed various corrective actions which included agent retraining, development of an effective quality assurance program and advising customers that they have the option to enroll with Town Square or switch their service to the regular utilities. Following settlement discussions, Town Square and the PUCO entered into a settlement agreement which was approved by the PUCO on February 27, 2019. Under the terms of the agreement, Town Square will pay a forfeiture of \$0.2 million to the State of Ohio. In addition, Town Square will work with the PUCO and take steps to ensure full compliance with PUCO rules and orders, including updating customers, providing the PUCO with updated information, and submitting quarterly reports for a one-year period. In connection with the foregoing, the Company has accrued \$0.2 million in third quarter of 2018. As of December 31, 2018, Town Square in Ohio represented 0.3% of GRE’s total meters served and 0.4% of the total residential customer equivalents of GRE’s customer base. For the years ended December 31, 2018 and 2017, Town Square in Ohio gross revenues were \$1.4 million and \$2.1 million, respectively.

State of Connecticut Public Utilities Regulatory Authority

On September 19, 2018, the State of Connecticut Public Utilities Regulatory Authority (“PURA”) commenced an investigation into Town Square following customer complaints of allegedly misleading and deceptive sales practices on the part of Town Square. The Office of Consumer Counsel has joined in the investigation. Although Town Square denies any basis for those complaints and any wrongdoing on its part, it is cooperating with the investigation and responding to subpoenas for discovery. As of December 31, 2018, Town Square’s Connecticut customer base represented 8.2% of GRE’s total meters served and 9.5% of the total residential customer equivalents of GRE’s customer base. For the years ended December 31, 2018 and 2017, Town Square’s gross revenues from sales in Connecticut were \$24.8 million and \$20.8 million, respectively. Based upon the Company’s preliminary assessment of this matter, a loss is not considered probable, nor is the amount of loss, if any, estimable as of December 31, 2018.

State of Illinois Office of the Attorney General

In response to complaints that IDT Energy enrolled consumers without their express consent and misrepresented the amount of savings those consumers would receive, the Office of the Attorney General of the State of Illinois (“IL AG”) has been investigating the marketing practices of IDT Energy and has alleged violations of the Consumer Fraud and Deceptive Business Practices Act, 815 ILCS 505/1 *et seq.* and the Illinois Telephone Solicitations Act, 815 ILCS 413/1 *et seq.* Although IDT Energy denies any wrongdoing in connection with those allegations, the parties had previously engaged in discussions aimed at settling the matter pursuant to a proposed consent decree that would have included restitution payments in the amount of \$3.0 million, temporary suspension of all marking activities

directed at new customers, and implementation of various compliance and reporting procedures. Following discussions, IDT Energy signed a proposed consent decree which it rescinded shortly thereafter when the IL AG unilaterally issued a press release which IDT Energy believes violated the spirit and substance of the consent order and discussions. At this juncture, however, the parties have been unable to resolve their dispute and on November 19, 2018, the IL AG filed a Complaint for Injunctive and Other Relief (“Complaint”) against IDT Energy in the Chancery Division of the Circuit Court of Cook County. On March 13, 2018, the IL AG filed a motion to enforce the settlement rescinded by IDT Energy. A court conference is currently scheduled for March 19, 2019.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

In third quarter of 2018, the Company recorded a liability of \$3.0 million recorded as a reduction of electricity revenues in the consolidated statement of operations. As of December 31, 2018, Illinois represented 5.7% of GRE's total meters served and 4.5% of the total residential customer equivalents of GRE's customer base. For the years ended December 31, 2018 and 2017, IDT Energy's gross revenues from sales in Illinois were \$16.5 million and \$25.9 million, respectively.

Note 16 — Commitments and Contingencies

Purchase Commitments

The Company had purchase commitments of \$107.8 million at December 31, 2018, of which \$90.1 million was for future purchases of electricity. The purchase commitments outstanding at December 31, 2018 are expected to be paid as follows:

(in thousands)

Year ending December 31:

2019	\$	68,088
2020		35,655
2021		3,551
2022		547
Total payments	\$	107,841

Renewable Energy Credits

GRE must obtain a certain percentage or amount of its power supply from renewable energy sources in order to meet the requirements of renewable portfolio standards in the states in which it operates. This requirement may be met by obtaining renewable energy credits that provide evidence that electricity has been generated by a qualifying renewable facility or resource. At December 31, 2018, GRE had commitments to purchase renewable energy credits of \$17.7 million.

Performance Bonds

GRE has performance bonds issued through a third party for certain utility companies and for the benefit of various states in order to comply with the states' financial requirements for REPs. At December 31, 2018, GRE had aggregate performance bonds of \$12.5 million outstanding.

Lease Commitments

The future minimum payments for operating leases at December 31, 2018 are as follows:

(in thousands)

Year ending December 31:

2019	\$	527
2020		428
2021		377
2022		217
2023		221
Thereafter		1,530
Total payments	\$	3,300

Rental expense under operating leases was \$0.7 million and \$0.8 million in the years ended December 31, 2018 and 2017, respectively.

A portion of the Prism facility is being rented out to other tenants. The rent income generated from the lease contracts are not significant to the consolidated financial statements.

BP Energy Company Preferred Supplier Agreement

As of November 19, 2015, certain of GRE's REPs entered into an Amended and Restated Preferred Supplier Agreement with BP Energy Company ("BP"), which was amended as of June 7, 2018. The agreement's termination date is November 30, 2021, except either party may terminate the agreement on November 30, 2020 by giving the other party notice by May 31, 2019. Under the agreement, REPs purchase electricity and natural gas at market rate plus a fee. The obligations to BP are secured by a first security interest in deposits or receivables from utilities in connection with their purchase of the REP's customer's receivables, and in any cash deposits or letters of credit posted in connection with any collateral accounts with BP. In addition, the REPs must pay in advance payment of \$2.0 million to BP each month that BP will apply to the next invoice amount due to BP. The ability to purchase electricity and

natural gas under this agreement is subject to satisfaction of certain conditions including the maintenance of certain covenants. At December 31, 2018, the Company was in compliance with such covenants. At December 31, 2018, restricted cash — short-term of \$1.6 million and trade accounts receivable of \$37.8 million were pledged to BP as collateral for the payment of trade accounts payable to BP of \$14.4 million at December 31, 2018.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 17 — Related Party Transactions

On June 8, 2018, the Company sold shares of its Class B common stock and warrants to purchase shares of its Class B common stock to Howard S. Jonas (see Note 11).

The Company was formerly a subsidiary of IDT Corporation (“IDT”). On October 28, 2011, the Company was spun-off by IDT. The Company entered into various agreements with IDT prior to the spin-off including an agreement for certain services to be performed by the Company and IDT. Also, the Company provides specified administrative services to certain of IDT’s foreign subsidiaries.

The Company leases office space and parking in Rafael’s building and parking from Rafael Holdings, Inc. (“Rafael”) Howard Jonas is Chairman of the Board of Directors and Chief Executive Officer of Rafael. The leases expire in April 2025 with an option to extend to April 2030.

The charges for services provided by IDT to the Company, and rent charged by Rafael, net of the charges for the services provided by the Company to IDT, are included in “Selling, general and administrative” expense in the consolidated statements of operations.

(in thousands)	Year ended December 31,	
	2018	2017
Amount IDT charged the Company	\$ 1,340	\$ 1,773
Amount the Company charged IDT	\$ 355	\$ 471
Amount Rafael charged the Company	\$ 161	\$ —

The following table presents the balance of receivables and payables to IDT and Rafael:

December 31,

(in thousands)	2018	2017
Due to IDT	\$ 267	\$ 1,773
Due from IDT	\$ 33	\$ 471
Due to Rafael	\$ —	\$ —

The Company had notes receivable outstanding from employees aggregating \$0.2 million and \$0.6 million at December 31, 2018 and 2017, respectively, which were included in “Other assets” in the accompanying consolidated balance sheet.

The Company had minimal transactions with Zedge, Inc. (“Zedge”) related to certain employees of the Company providing services to Zedge. Zedge was a subsidiary of IDT and was spun-off in June 2016 and Howard Jonas is a current director. There is minimal amount due from Zedge at December 31, 2018 and 2017.

On August 31, 2018, the Company settled an option issued to an employee to purchase shares of the Company’s various subsidiaries with a net book value of \$1.0 million and was included as other liabilities in the consolidated balance sheet. The Company paid the employee \$0.8 million and recognized a gain from extinguishment of liability of \$0.2 for the year ended December 31, 2018.

From 2012 to 2015, the Company extended a series of loans to an employee with an aggregate principal amount of \$0.5 million (“Promissory Notes”). The Promissory Notes bore interest equivalent to a minimum rate, in effect from time to time required by local regulations. The Notes and the related unpaid accrued interest were due on May 1, 2019. On August 31, 2018, the Company entered into a Loan Modification Agreement with the employee to restructure the Promissory Notes with outstanding balance of \$0.5 million including \$0.1 million of accrued interest. Based on the Loan Modification Agreement, the employee will pay \$0.4 million and the remaining outstanding balance of \$0.1 million of the Promissory Notes and the related accrued interest will be restated in a single promissory note (“New Note”). The New Note requires scheduled payments starting on December 31, 2020 until December 31, 2052. The New Note bears the same interest as the Promissory Notes and will be compounded annually. The Company recorded minimal amounts of interest income for the years ended December 31, 2018 and 2017 related to the Promissory Notes and New Notes. The outstanding balance of the New Notes, including accrued interest was \$0.1 million as of December 31, 2018.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The Company obtains insurance policies from several insurance brokers, one of which is IGM Brokerage Corp. (“IGM”). IGM is owned by the mother of Howard S. Jonas and Joyce Mason, the Company’s Corporate Secretary. Jonathan Mason, husband of Joyce Mason and brother-in-law of Howard S. Jonas, provides insurance brokerage services via IGM. Based on information the Company received from IGM, the Company believes that IGM received commissions and fees from payments made by the Company (including payments from third party brokers). The Company paid a total of \$0.3 and \$0.2 million, for the years ended December 31, 2018 and 2017, respectively, related to premium of various insurance policies that were brokered by IGM. There was no outstanding payable to IGM as of December 31, 2018. Neither Howard S. Jonas nor Joyce Mason has any ownership or other interest in IGM other than via the familial relationships with their mother and Jonathan Mason.

Note 18 — Business Segment and Geographic Information

The Company owns 99.3% of its subsidiary, GEIC, which owns 100% of GRE and 92% of GOGAS. In the fourth quarter of 2018 the Company revised its reportable segments in connection with the acquisition of Prism and reduced exploration activities (see Note 1 for further details). The Company has three reportable business segments: GRE, GES and GOGAS. GRE owns and operates REPs, including IDT Energy, Residents Energy, Town Square Energy, and Mirabito. Its REP businesses resell electricity and natural gas to residential and small business customers in the Eastern and Midwestern United States. GES designs, manufactures and distributes solar panels and also offers energy brokerage and advisory services. The GOGAS segment is comprised of the Company’s 86.1% interest in Afek, an oil and gas exploration project in the Golan Heights in Northern Israel, whose operations have been suspended, while waiting for an additional license from the government of Israel. GOGAS segment also owns inactive oil shale projects and Atid, a drilling service company operating in Israel. In September 2018, the Company divested a majority interest in Atid (See Note 2). Corporate costs include unallocated compensation, consulting fees, legal fees, business development expenses and other corporate-related general and administrative expenses. Corporate does not generate any revenues, nor does it incur any cost of revenues.

The Company’s reportable segments are distinguished by types of service, customers and methods used to provide their services. The operating results of these business segments are regularly reviewed by the Company’s chief operating decision maker.

The accounting policies of the segments are the same as the accounting policies of the Company as a whole. The Company evaluates the performance of its business segments based primarily on income (loss) from operations. There

are no significant asymmetrical allocations to segments.

Operating results for the business segments of the Company were as follows:

(in thousands)	GRE	GES	GOGAS	Corporate	Total
Year ended December 31, 2018					
Revenues	\$ 274,443	\$ 5,696	\$ 170	\$ —	\$ 280,309
Income (loss) from operations	27,787	(982)	(6,532)	(8,295)	11,978
Depreciation and amortization	1,538	178	345	1	2,062
Exploration	—	—	244	—	244
Impairment of assets	—	—	2,742	—	2,742
Equity in the net loss of equity method investees	2,990	—	440	—	3,430
Year ended December 31, 2017					
Revenues	\$ 262,318	\$ 1,884	\$ —	\$ —	\$ 264,202
Income (loss) from operations	17,371	(785)	(13,291)	(9,835)	(6,540)
Depreciation and amortization	1,718	22	399	1	2,140
Exploration	—	—	4,879	—	4,879
Write-off of capitalized exploration costs	—	—	6,483	—	6,483
Equity in the net loss of Shoreditch	565	—	—	—	565

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Total assets for the business segments of the Company were as follows:

(in thousands)	GRE	GES	GOGAS	Corporate	Total
Total assets:					
December 31, 2018	\$ 117,572	\$ 11,519	\$ 15,375	\$ 2,398	\$ 146,864
December 31, 2017	110,450	2,071	10,475	2,782	125,778

Geographic Information

Revenues from customers located outside of the United States were not material for all periods presented.

Net long-lived assets and total assets held outside of the United States, which are located primarily in Israel, were as follows:

(in thousands)	United States	Foreign Countries	Total
December 31, 2018			
Long-lived assets, net	\$ 20,529	\$ 1,409	\$ 21,938
Total assets	141,336	5,528	146,864
December 31, 2017			
Long-lived assets, net	\$ 696	\$ 3,352	\$ 4,048
Total assets	115,605	10,173	125,778

Note 19 — Subsequent Event

Acquisition of Lumo

On January 2, 2019, the Company completed the purchase of 80% controlling interest of Lumo. Refer to Note 2 - *Acquisition and Divestiture*, for details of the transaction.

Note 20 — Selected Quarterly Financial Data (Unaudited)

The Company is a smaller reporting company as defined by Rule 12b-2 of the Securities and Exchange Act of 1934 and are not required to provide the information under this item.

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