



DIS Case Number: 15-1321-EL-CRS

Section A: Application Information

A-1. Provider type:

☐ Power Broker ☐ Aggregator ☒ Retail Generation Provider ☒ Power Marketer

A-2. Applicant's legal name and contact information.

Legal Name: Residents Energy, LLC **Country:** United States
Phone: 973-438- **Extension (if applicable):** **Street:** 520 Broad Street
3500 **City:** Newark **Province/State:** NJ
Website (if any): www.residentsenergy.com **Postal Code:** 07102

A-3. Names and contact information under which the applicant will do business in Ohio

Provide the names and contact information the business entity will use for business in Ohio. This does not have to be an Ohio address and may be the same contact information given in A-2.

Name	Type	Address	Active?	Proof
Residents Energy, LLC	Official Name	520 Broad Street Newark, NJ 07102	Yes	File

A-4. Names under which the applicant does business in North America

Provide all business names the applicant uses in North America, including the names provided in A-2 and A-3.

Name	Type	Address	Active?	Proof
------	------	---------	---------	-------

A-5. Contact person for regulatory matters

Avi Keilson
520 Broad Street 4th Floor



Public Utilities Commission

Newark, NJ 07102

US

akeilson@genieretail.com

9734383920

A-6. Contact person for PUCO Staff use in investigating consumer complaints

Alan Schwab

520 Broad Street

Newark, NJ 07102

US

aschwab@genieretail.com

9734384343

A-7. Applicant's address and toll-free number for customer service and complaints

Phone: 888-828-

7374

Extension (if

applicable):

Country: United States

Fax: 716-664-

2476

Extension (if applicable):

Street: PO Box 400

Email: contactus@residentsenergy.com

City: Jamestown

Province/State: NY

Postal Code: 14702

A-8. Applicant's federal employer identification number

27-2046457

A-9. Applicant's form of ownership

Form of ownership: Limited Liability Company (LLC)

A-10. Identify current or proposed service areas

Identify each service area in which the applicant is currently providing service or intends to provide service and identify each customer class that the applicant is currently serving or intends to serve.

Service area selection

AEP Ohio

DP&L

Duke Energy Ohio

FirstEnergy - Cleveland Electric Illuminating
FirstEnergy - Ohio Edison
FirstEnergy - Toledo Edison

Class of customer selection

Commercial
Industrial
Residential

A-11. Start date

Indicate the approximate start date the applicant began/will begin offering services: 11-01-2015

A-12. Principal officers, directors, and partners

Please provide all contacts that should be listed as an officer, director or partner.

Name	Email	Title	Address
Michael Stein	mstein@genie.com	CEO	520 Broad Street Newark, NJ 07102 US
Alan Schwab	aschwab@genieretail.com	President & COO	520 Broad Street Newark, NJ 07102 US
Avi Goldin	agoldin@genie.com	CFO	520 Broad St Newark, NJ 07102 US
Joyce Mason	jmason@genie.com	Secretary	520 Broad Street Newark, NJ 07102 US

A-13. Company history

Residents Energy, LLC has been an active retail energy supplier since 2014, and currently serves electric and/or natural gas customers in eight states. Residents Energy solicits customers through a variety of channels including direct mail, internet advertising, and the use of in-house and outside telemarketing and door-to-door marketing teams.

A-14. Secretary of State



Secretary of State Link:

Section B: Applicant Managerial Capability and Experience

B-1. Jurisdiction of operations

List all jurisdictions in which the applicant or any affiliated interest of the applicant is certified, licensed, registered or otherwise authorized to provide retail natural gas service or retail/wholesale electric service as of the date of filing the application..

File Attached

B-2. Experience and plans

Describe the applicant's experience in providing the service(s) for which it is applying (e.g., number and type of customers served, utility service areas, amount of load, etc.). Include the plan for contracting with customers, providing contracted services, providing billing statements and responding to customer inquiries and complaints in accordance with Commission rules adopted pursuant to Sections 4928.10 and/or 4929.22 of the Ohio Revised Code.

File(s) attached

B-3. Disclosure of liabilities and investigations

For the applicant, affiliate, predecessor of the applicant, or any principal officer of the applicant, describe all existing, pending or past rulings, judgments, findings, contingent liabilities, revocation of authority, regulatory investigations, judicial actions, or other formal or informal notices of violations, or any other matter related to competitive services in Ohio or equivalent services in another jurisdiction..

File Attached

B-4. Disclosure of consumer protection violations

Has the applicant, affiliate, predecessor of the applicant, or any principal officer of the applicant been convicted or held liable for fraud or for violation of any consumer protection or antitrust laws within the past five years?

No



B-5. Disclosure of certification, denial, curtailment, suspension or revocation

Has the applicant, affiliate, or a predecessor of the applicant had any certification, license, or application to provide retail natural gas or retail/wholesale electric service denied, curtailed, suspended, revoked, or cancelled or been terminated or suspended from any of Ohio's Natural Gas or Electric Utility's Choice programs within the past two years?

No

B-6. Environmental disclosures

Provide a detailed description of how the applicant intends to determine its generation resource mix and environmental characteristics, including air emissions and radioactive waste. Include the annual projection methodology and the proposed approach to compiling the quarterly actual environmental disclosure data. See 4901:1-21-09 of the Ohio Administrative Code for additional details of this requirement.

PJM disclosure option chosen

Section C: Applicant Financial Capability and Experience

C-1. Financial reporting

Provide a current link to the most recent Form 10-K filed with the Securities and Exchange Commission (SEC) or upload the form. If the applicant does not have a Form 10-K, submit the parent company's Form 10-K. If neither the applicant nor its parent is required to file Form 10-K, state that the applicant is not required to make such filings with the SEC and provide an explanation as to why it is not required.

File(s) attached

C-2. Financial statements

Provide copies of the applicant's two most recent years of audited financial statements, including a balance sheet, income statement, and cash flow statement. If audited financial statements are not available, provide officer certified financial statements. If the applicant has not been in business long enough to satisfy this requirement, provide audited or officer certified financial statements covering the life of the business. If the applicant does not have a



balance sheet, income statement, and cash flow statement, the applicant may provide a copy of its two most recent years of tax returns with **social security numbers and bank account numbers redacted**.

If the applicant is unable to meet the requirement for two years of financial statements, the Staff reviewer may request additional financial information.

Links to Financial Statement(s): The Audited Financials of Residents Energy's ultimate parent company, Genie Energy Ltd., as filed with the SEC, can be found at:
http://investors.genie.com/sec_filings/

C-3. Forecasted financial statements

Provide two years of forecasted income statements **based solely on the applicant's anticipated business activities in the state of Ohio**.

Include the following information with the forecast: a list of assumptions used to generate the forecast; a statement indicating that the forecast is based solely on Ohio business activities only; and the name, address, email address, and telephone number of the preparer of the forecast.

The forecast may be in one of two acceptable formats: 1) an annual format that includes the current year and the two years succeeding the current year; or 2) a monthly format showing 24 consecutive months following the month of filing this application broken down into two 12-month periods with totals for revenues, expenses, and projected net incomes for both periods. Please show revenues, expenses, and net income (revenues minus total expenses) that is expected to be earned and incurred in **business activities only in the state of Ohio** for those periods.

If the applicant is filing for both an electric certificate and a natural gas certificate, please provide a separate and distinct forecast for revenues and expenses representing Ohio electric business activities in the application for the electric certificate and another forecast representing Ohio natural gas business activities in the application for the natural gas certificate.

Preferred to file confidentially

C-4. Credit rating

Provide a credit opinion disclosing the applicant's credit rating as reported by at least one of the following ratings agencies: Moody's Investors Service, Standard & Poor's Financial Services, Fitch Ratings or the National Association of Insurance Commissioners. If the applicant does not



Public Utilities Commission

have its own credit ratings, substitute the credit ratings of a parent or an affiliate organization and submit a statement signed by a principal officer of the applicant's parent or affiliate organization that guarantees the obligations of the applicant. If an applicant or its parent does not have such a credit rating, enter 'Not Rated'.

This does not apply

C-5. Credit report

Provide a copy of the applicant's credit report from Experian, Equifax, TransUnion, Dun and Bradstreet or a similar credit reporting organization. If the applicant is a newly formed entity with no credit report, then provide a personal credit report for the principal owner of the entity seeking certification. At a minimum, the credit report must show summary information and an overall credit score. **Bank/credit account numbers and highly sensitive identification information must be redacted.** If the applicant provides an acceptable credit rating(s) in response to C-4, then the applicant may select 'This does not apply' and provide a response in the box below stating that a credit rating(s) was provided in response to C-4.

File(s) attached

C-6. Bankruptcy information

Within the previous 24 months, have any of the following filed for reorganization, protection from creditors or any other form of bankruptcy?

- Applicant
- Parent company of the applicant
- Affiliate company that guarantees the financial obligations of the applicant
- Any owner or officer of the applicant

No

C-7. Merger information

Is the applicant currently involved in any dissolution, merger or acquisition activity, or otherwise participated in such activities within the previous 24 months?

No

C-8. Corporate structure



Provide a graphical depiction of the applicant's corporate structure. Do not provide an internal organizational chart. The graphical depiction should include all parent holding companies, subsidiaries and affiliates as well as a list of all affiliate and subsidiary companies that supply retail or wholesale electricity or natural gas to customers in North America. If the applicant is a stand-alone entity, then no graphical depiction is required, and the applicant may respond by stating that it is a stand-alone entity with no affiliate or subsidiary companies.

File(s) attached

C-9. Financial arrangements

Provide copies of the applicant's financial arrangements to satisfy collateral requirements to conduct retail electric/natural gas business activities (e.g., parental guarantees, letters of credit, contractual arrangements, etc., as described below).

Renewal applicants may provide a current statement from an Ohio local distribution utility (LDU) that shows that the applicant meets the LDU's collateral requirements. The statement or letter must be on the utility's letterhead and dated within a 30-day period of the date the applicant files its renewal application.

First-time applicants or applicants whose certificate has expired must meet the requirements of C-9 in one of the following ways:

1. The applicant itself states that it is investment grade rated by Moody's Investors Service, Standard & Poor's Financial Services, or Fitch Ratings and provides evidence of rating from the rating agencies. If you provided a credit rating in C-4, reference the credit rating in the statement.
2. The applicant's parent company is investment grade rated (by Moody's, Standard & Poor's, or Fitch) and guarantees the financial obligations of the applicant to the LDU(s). Provide a copy of the most recent credit opinion from Moody's, Standard & Poor's or Fitch.
3. The applicant's parent company is not investment grade rated by Moody's, Standard & Poor's or Fitch but has substantial financial wherewithal **in the opinion of the Staff reviewer** to guarantee the financial obligations of the applicant to the LDU(s). The parent company's financials and a copy of the parental guarantee must be included in the application if the applicant is relying on this option.
4. The applicant can provide evidence of posting a letter of credit with the LDU(s) listed as the beneficiary, in an amount sufficient to satisfy the collateral requirements of the LDU(s).

File(s) attached

Section D: Applicant Technical Capacity

D-1. Operations

Power Marketers/Generators: Describe the operational nature of the applicant's business, specifying whether operations will include the generation of power for retail sales, the scheduling of retail power for transmission and delivery, the provision of retail ancillary services, as well as other services used to arrange for the purchase and delivery of electricity to retail customers.

Power Marketers/Generators: Describe the operational nature of the applicant's business, specifying whether operations will include the generation of power for retail sales, the scheduling of retail power for transmission and delivery, the provision of retail ancillary services, as well as other services used to arrange for the purchase and delivery of electricity to retail customers.

File(s) attached

D-2. Operations Expertise & Key Technical Personnel

Given the operational nature of the applicant's business, provide evidence of the applicant's experience and technical expertise in performing such operations. Include the names, titles, e-mail addresses, and background of key personnel involved in the operations of the applicant's business.

File(s) attached

D-3. FERC Power Marketer and License Number

Provide a statement disclosing the applicants FERC Power Marketer License Number (Power Marketers Only).

The applicant received market-based rate authority from FERC in Docket or Case Number ER13-802-000 as New Energy Services, LLC. The name change from New Energy Services, LLC to Residents Energy, LLC was recognized by FERC in ER 13-1244-000.



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Commission

Application Attachments

Downloads PDF file

Entity#	Name	Type	Filing Date	Exp. Date	Status	Location	County	State
2355501	RESIDENTS ENERGY, LLC	FOREIGN LIMITED LIABILITY COMPANY	01/07/2015	-	Active	-	-	NEW YORK

Exhibit B-1 “Jurisdictions of Operation”

Residents Energy, LLC

Delaware, Illinois, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania

Town Square Energy East, LLC

Maryland, New Jersey, Ohio, Pennsylvania

Town Square Energy, LLC

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Texas

IDT Energy, Inc.

District of Columbia, Illinois, Maryland, New Jersey, New York, Ohio, Pennsylvania

Diversegy, LLC

New Jersey, Pennsylvania, Massachusetts, Maine, Maryland, Illinois, Ohio, Delaware, District of Columbia, New Hampshire, Rhode Island, Virginia, Texas

IDT Energy Network, LLC

District of Columbia

Southern Federal Power, LLC

Texas

Mirabito Natural Gas, LLC

Florida

Exhibit B-2 "Experience & Plans"

Residents Energy, LLC (“Residents Energy”), has been an active retail energy supplier since 2014, and currently serves more than 80,000 electric and natural gas meters in eight states. Residents Energy leverages the considerable experience of its executive leadership team and its dedicated back-office operations staff as it develops its brand.

Residents Energy plans to continue marketing its products to Ohio customers through a variety of channels including direct mail, internet advertising, and the use of in-house and outside telemarketing and door-to-door marketing teams. Outside marketing vendors are cautiously selected after a substantial vetting process. The individual sales agents hired by the vendors for door-to-door marketing are subjected to criminal background checks. All sales agents are required to be properly trained before they are permitted to participate in any marketing campaigns on behalf of the applicant. Lists for telemarketing campaigns are appropriately scrubbed against the “do-not-call” registry. Marketing activities of all outside vendors are monitored by an in-house Quality Assurance team and an inspector in the field.

Misrepresentations or deceptive communications of Residents Energy’s products and offers, or any similar violations of the Commission’s rules, are not and will not be tolerated.

The enrollment of Ohio customers is done in accordance with the rules set forth in 4901:1-21-06. Door-to-door sales are validated by third-party verifications made after the sales agent leaves the premises of the customer. Telephonic enrollments are also validated by third-party verifications and the written terms and conditions are sent to the customer thereafter. Residents’ website is set up to accept internet enrollments as well.

With respect to customer billing, Residents Energy does not bill its customers directly. Rather, customers are billed by their local utility companies, pursuant to Commission-approved tariffs, for both the utility’s delivery charges and Residents Energy’s supply charges. EDI communications between Residents Energy and the utilities are handled by outside, experienced EDI providers.

With respect to customer inquiries and complaints, Residents Energy uses more than thirty Customer Service representatives who take calls from 9:00 am to 5:00 pm five days per week. There are representatives who are fluent in Spanish. Every effort will be made to resolve all customer complaints in the most expeditious and amicable manner.

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

FORM 10-K

X Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2020,

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

45-2069276

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification No.)

520 Broad Street, Newark, New Jersey 07102
(Address of principal executive offices, zip code)

(973) 438-3500
(Registrant's telephone number, including area code)

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically, 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 X No ☐

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

Large accelerated filer ☐

Accelerated filer X

Non-accelerated filer ☐

Smaller reporting company X

Emerging growth company ☐

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

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

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

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, 2020 (the last business day of the registrant's most recently completed second fiscal quarter) of the Class B common stock of \$7.36 per share, as reported on the New York Stock Exchange, was approximately \$126.9 million.

As of March 12, 2021, the registrant had outstanding 24,786,062 shares of Class B common stock and 1,574,326 shares of Class A common stock. Excluded from these numbers are 1,319,876 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 12, 2021, 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

Genie Energy Ltd. is a global provider of energy services that, through various subsidiaries and other ventures, supplies electricity, and natural gas to residential and small business customers in certain portions of the United States, Europe and Asia. Additionally, through its Genie Energy Services division, the Company provides commercial and industrial brokerage, commercial solar consultative services, design, supply and installation and community solar marketing services.

The Company owns 99.3% of its subsidiary, Genie Energy International Corporation ("GEIC"), which owns 100% of Genie Retail Energy ("GRE"), 100% of Genie Retail Energy International LLC ("GREI"), 100% of Genie Energy Services ("GES") 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, LLC and Town Square Energy East, LLC ("collectively, "TSE"), Southern Federal Power ("SFP") and Mirabito Natural Gas, ("Mirabito"). GRE's REP businesses resell electricity and natural gas to residential and small business customers. The majority of GRE's customers are located in the Eastern and Midwestern United States and Texas. Mirabito supplies only natural gas to commercial customers in Florida.

GREI holds the Company's REPs that serves retail customers in the United Kingdom under the name Orbit Energy and in Japan ("Genie Japan"). It holds a 92.5% controlling interest in Lumo Energia Oyj ("Lumo Finland"), a REP serving residential customers in Finland and 100.0% of Lumo Energi AB ("Lumo Sweden"), which serves retail customers in Sweden.

GES holds a 100% interest in Diversegy LLC (Diversegy), a retail energy advisory and brokerage company that serves commercial and industrial customers throughout the United States and manages our 60.0% controlling interest in Prism Solar Technology, Inc. ("Prism"), a solar solutions company that is engaged in solar project marketing, solar solutions consultation, installation design and project management services.

GOGAS has concluded its oil and gas exploration operations and is winding down its remaining operations. In December 2020, Afek Oil & Gas Ltd. ("Afek"), a subsidiary which had been operating an oil and gas exploration project in the Golan Heights in Northern Israel, completed the final tests on one of its completed exploratory wells. Analysis of the tests' results found no traces of light oil resources suitable for commercial development. As a result, Afek ceased its exploratory operations.

CORONAVIRUS DISEASE(COVID-19)

Starting in the first quarter of 2020, the world and the United States experienced the unprecedented impacts of the coronavirus disease 2019 (COVID-19) pandemic.

For the year ended December 31, 2020, the impacts of COVID-19 were evident in several key aspect of our business operations and the corresponding financial impact has been mixed. Our customers are predominantly residential, so we benefited from the increased demand for electricity as many customers are working from and spending more time in their homes. On the other hand, like other retail energy providers, the Company suspended its face-to-face customer acquisition programs in March 2020 as public health measures were implemented to combat COVID-19, resulting in a decrease in gross meter acquisitions. The reduction in gross meter acquisitions decreased customer acquisition expenses in 2020 and limited growth in domestic meters served. Churn in 2020 decreased in part, as our competitors also suspended their face-face marketing programs. COVID-19 public health restrictions relaxed in some of GRE's domestic market in the third quarter of 2020, facilitating a partial reactivation of the previously curtailed customer acquisition channels.

REPORTABLE SEGMENTS

In December 2020, we revised our reportable segments in connection with the conclusion of our final exploration activities of GOGAS, as discussed above. The assets, liabilities, results of operations and cash flows related to the activities of GOGAS were aggregated with corporate for all periods presented.

The change in reportable segments did not result in a reallocation of the Company's existing goodwill.

We now have three reportable business segments: GRE, GRE International and GES. Our reportable segments are distinguished by types of service, customers and customer geography. 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 (<https://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, GRE purchased Retail Energy Holdings, LLC, which operates REPs under the brand name Town Square Energy. The acquisition expanded GRE's serviceable markets into Connecticut, Massachusetts, New Hampshire, Rhode Island and new territories in Ohio.

In July 2017, through a joint venture with Energy Global Investments Pty Ltd. GRE launched Shoreditch to market 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 expanded GRE's serviceable markets into Florida.

In May 2018, GRE acquired Smile Energy G.K. (subsequently renamed as Genie Japan), a Japanese company licensed to provide electricity to end-use customers in Japan and in February 2019, began enrolling customers in Japan.

In October 2018, Genie acquired a 60.0% interest in Prism, a solar solutions company that is engaged in U.S.-based manufacturing of solar panels, solar installation design and project management.

In January 2019, GRE acquired an 80.0% interest in Lumo Finland, a provider of electricity to residential customers in Finland with approximately 32,000 residential customers in Finland.

RECENT DEVELOPMENTS

In January 2020, GREI increased its interest in Lumo Finland to 92.5%.

In April 2020, the Company acquired a license to sell natural gas to customers in the State of Georgia.

In second quarter of 2020, our Lumo Sweden subsidiary began enrolling customers.

In October 2020, the Company completed the sale of certain assets of Prism located in Highland, New York.

In October 2020, the Company acquired the remaining 23.0% interest in Shoreditch, its REP business operating in the U.K. as Orbit Energy, which increased the Company's interest to 100%.

In December 2020, Afek completed the final planned testing on one of its completed exploratory wells. After finding no traces of light oil, Afek began to shut down its operations.

In January and February of 2021, the Company experienced unprecedented price volatility in the Japanese and Texas markets. These events are expected to have an estimated adverse impact on our first quarter of 2021 consolidated results of operations of \$2.5 million in Japan and \$12.8 million to \$14.0 million in Texas.

DIVIDENDS

We pay a quarterly dividend on both of our common and preferred stock. The aggregate dividends paid in the year ended December 31, 2020 on our Class A and Class B common stock (the "Common Stock") was \$8.7 million, as follows:

- On April 3, 2020, we paid a quarterly dividend of \$0.075 per share on our Common Stock for the fourth quarter of 2019 to stockholders of record at the close of business on March 24, 2020.
- On May 29, 2020, we paid a quarterly dividend of \$0.085 per share on our Common Stock for the first quarter of 2020 to stockholders of record at the close of business on May 19, 2020.
- On August 26, 2020, we paid a quarterly dividend of \$0.085 per share on our Common Stock for the second quarter of 2020 to stockholders of record at the close of business on August 18, 2020.
- On December 11, 2020, we paid a quarterly dividend of \$0.085 per share on our Common Stock for the third quarter of 2020 to stockholders of record at the close of business on December 4, 2020.

As announced on March 11, 2021, we suspended our dividends on our common stock to rebuild our cash position in light of the losses incurred from the effects of Winter Storm Uri as discussed above.

The aggregate dividend paid in the year ended December 31, 2020 on our Preferred Stock was \$1.5 million, as follows:

- On February 15, 2020, we paid a quarterly Base Dividend of \$0.1594 per share on our Preferred Stock for the fourth quarter of 2019 to stockholders of record at the close of business on February 6, 2020 of our Preferred Stock.
- On May 15, 2020, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the first a quarter of 2020 to stockholders of record at the close of business on May 4, 2020 of our Preferred Stock.
- On August 14, 2020, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the second quarter of 2020 to stockholders of record at the close of business on August 6, 2020 of our Preferred Stock.
- On November 16, 2020, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the third quarter of 2020 to stockholders of record as of the close of business on November 6, 2020.

On February 16, 2020, we paid a quarterly Base Dividend of \$0.1594 per share on the Preferred Stock for the fourth quarter of 2020 to stockholders of record at the close of business on February 8, 2020 in the aggregate amount of \$0.4 million.

BUSINESS

Genie Retail Energy

Overview

GRE is comprised of REPs and related businesses. GRE's REP businesses purchase electricity and/or natural gas on the wholesale markets and resell these commodities to their residential and business customers in deregulated markets in the United States. 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 sixteen states in the United States: Connecticut, Delaware, Georgia, Illinois, Maryland, Michigan, Maine, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Florida, Rhode Island and Texas, as well as in Washington, D.C. As part of our ongoing business development efforts, we evaluate opportunities in other deregulated jurisdictions to accelerate the growth of our customer base and to reduce operational and regulatory risk associated with geographical concentration.

GRE's REP businesses operate under several brand names including IDT Energy, Residents Energy, Town Square Energy, Southern Federal Power and Mirabito. GRE's diverse offerings, in both the electricity and natural gas markets included either variable rate or fixed rate offerings or both. Throughout their electricity market, GRE's REPs offer green electricity. Green electricity supply is 100% matched with renewable energy certificates, or RECs that reflect the generation of electricity from renewable sources.

Historically, GRE has expanded its REP businesses through organic growth of its REPs 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, where authorized by state laws. These municipal aggregation contracts award participating residents' electricity supply to a single supplier at a fixed price that is typically established through a competitive bidding process.

GRE evaluates its customers base both in terms of the numbers of commodity meters served and the number of Residential Customer Equivalents ("RCEs") represented by these meters. An RCE is a unit of measure denoting the typical annual commodity consumption of a single-family residential customer. One RCE represents 1,000 therms of natural gas or 10,000 kWh of electricity.

Customer churn is a significant factor in the REP business. GRE's REPs monthly churn rates average between four and seven 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 typically have higher rates of churn than longer-tenured customers.

GRE's revenue comprises approximately 80.5% and 90.9% of our total consolidated revenue in 2020 and 2019, respectively. In 2020, GRE generated revenue of \$305.3 million comprised of \$270.9 million from sales of electricity, \$33.6 million from sales of natural gas, and a minimal amount of other revenue, as compared with revenue of \$286.6 million in 2019, comprised of \$246.7 million from the sales of electricity, \$39.9 million from the sales of natural gas and a minimal amount of other revenue. GRE's electricity sales as a percentage of total sales have increased in recent years.

GRE's REP revenue is seasonal. Approximately 47.7% and 46.9% of our natural gas revenues in 2020 and 2019, 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 31.8% of total revenues from electricity sales in 2020 and 2019, were generated in the third quarter when the demand for cooling peaks.

Unusual weather patterns can significantly impact GRE's financial results. For example, a polar vortex resulted in unusually sustained cold weather in the first quarter of 2014. This increased demand was characterized by extraordinarily large spikes in the wholesale prices GRE paid for its electricity and natural gas supplies. As a result, GRE's REP experience abnormally high rates of churn and the Company refunded a significant amount to its variable rate customers to cushion the impacts on their monthly bills. Potential changes in global climate may produce, among other possible conditions, unusual variations in temperature and weather patterns, resulting in unusual weather conditions, more intense, frequent and extreme weather events and other natural disasters. Some climatologists believe that these extreme weather events will become more common and more extreme which will have a greater impact on our operations.

As of December 31, 2020, GRE serviced 370,000 meters (305,000 electric and 65,000 natural gas), compared to 370,000 meters (297,000 electric and 73,000 natural gas) as of December 31, 2019.

REP Industry Overview

REPs operate in deregulated retail energy markets in the US. REPs purchase electricity and natural gas on the wholesale markets and resell these commodities to their customers including 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 revenue 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, 2020, there were thirty U.S. states in which there is some level of energy deregulation. We currently market in all the states where residential deregulation covers both electricity and natural gas and in some states where residential deregulation covers only one commodity. We are in the process of applying for licenses or setting up operations in certain such states and are constantly evaluating market opportunities in others.

Some competitors in certain REP markets have engaged in unfair business practices in order to recruit new customers. These practices can create an unfavorable impression about our industry with consumers, regulators or political bodies. Further, such practices can lead to regulatory action that negatively impact us and the industry.

Customers; Marketing

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 offerings include variable rate programs whose prices change month-to-month, fixed contracts whose unit price remains the same for the agreed upon term and renewable contracts. A significant portion of our customer base is enrolled in variable rate products, which enable us to recover our wholesale costs for electricity and natural gas by adjusting the rates we charge to our customers. The frequency and degree of these rate adjustments are determined by GRE. Variable rate products are available to all customers in all states served by GRE's REPs except for Connecticut.

As of December 31, 2020, customers on variable rate products constituted approximately 57.2% of our electric load. The balance comprised customers on fixed rate agreements.

GRE's REPs offer renewable or green energy supply options in all their markets. Renewable 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 customers, we perform our own billing and collection.

In many states, GRE's REPs' receivables are purchased by the utilities in their territories for a percentage of their face value. Over the course of 2020, the associated cost was approximately 1.2% of GRE's revenue in exchange, the utility accepts a first priority lien against the customer receivable without recourse to the REP. Programs operating within this framework are preferred to as purchase of receivables, or POR, programs, and they mitigate our credit risk. At December 31, 2020, 87.0% of GRE's net accounts receivables were under a POR program.

Certain utilities in Connecticut, Ohio, New York, Pennsylvania, Illinois, Washington, D.C., Massachusetts and Maryland offer POR programs, without recourse. these programs 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. 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 and Texas, there are no POR programs and the customers are billed directly.

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 commodity price 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 deregulated or deregulating markets in states where we do not yet operate to determine whether and under what conditions we could operate profitably. We may initiate the licensing process in a selected region to facilitate entry into that region contingent upon favorable deregulatory developments.

Certain of GRE's REPs are party to an Amended and Restated Preferred Supplier Agreement with BP Energy Company, or BP, through November 30, 2023. Under the agreement, the 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. 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, 2020, the Company was in compliance with such 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. For their natural gas supply, 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. For electricity supply, they, utilize 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. In Texas, SFP acquires power through the Electric Reliability Council of Texas (ERCOT).

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.

Competition

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.

Regulation

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 the parties agree to be bound by.

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, 2020, GRE's REPs operate in sixteen states and District of Columbia. The State of New York, the Commonwealth of Pennsylvania, the State of New Jersey, the State of Maryland, the State of Illinois, the State of Ohio, the State of Michigan, 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 State of Texas, the State of Georgia. 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, ERCOT and PJM) and indirectly by the Federal Energy Regulatory Commission, or FERC. Regulations applicable to electricity and natural gas have undergone substantial changes 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. On December 12, 2019, following the completion of the post-hearing briefings in the proceedings, the PSC issued orders adopting changes to the New York retail energy market, effective April 16, 2020 ("2020 Orders"). The 2020 Orders limits the types of services energy retailer marketers may offer new customers or renewals, in terms of pricing for non-renewable commodities, and renewable product offerings. Although the Company is working to ensure that its products and services are fully compatible with the 2020 Orders, such compliance may adversely impact customer acquisition and renewal revenue and profitability. The Company is evaluating its options, both by itself and in tandem with other industry participants, to challenge or petition for additional clarity and changes to the 2020 Orders. There is insufficient basis to deem any loss probable or to assess the amount of any possible loss based on the changes instituted by the 2020 Orders. As of December 31, 2020, New York represented 19.4% of GRE's total meters served and 14.7% of the total residential customer equivalents ("RCEs") of GRE's customer base. For the years ended December 31, 2020 and 2019, New York gross revenues were \$56.7 million and \$63.2 million, respectively.

A 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.

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 Connecticut Office of Consumer Counsel had 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. On June 17, 2020, the PURA or Authority notified Town Square that it was advancing its investigation by assigning Prosecutorial (PRO) staff for the purpose of investigating Town Square's compliance with licensed electric supplier billing, marketing, and licensing requirements, and, if appropriate, facilitating settlement discussions among the parties that contains, but is not limited to, an appropriate civil penalty, extensive retraining of the supplier's third-party agents, and retention of all sales calls with continued auditing. If a settlement is not achieved and PRO staff believe the Authority should take further action regarding alleged non-compliance, the Authority requests that PRO staff petition the Authority setting forth its recommendations citing to supporting facts and law. As of December 31, 2020, Town Square's Connecticut customer base represented 11.6% of GRE's total meters served and 12.8% of the total residential customer equivalents of GRE's customer base. As of December 31, 2020, no claims or demands have been made against Town Square by either agency, and there is insufficient basis to deem the loss probable or to assess the amount of any possible loss. Nevertheless, the parties have begun to engage in preliminary settlement discussions.

In the fourth quarter of 2020, the enforcement division of PURA contacted Residents Energy concerning customer complaints received in connection with alleged door-to-door marketing activities in violation of various rules and regulations, including a ban on door-to-door activities during the pertinent time period as a result of the COVID-19 pandemic. Residents Energy denies any allegations of wrongdoing. In January and February of 2021, Residents Energy responded to the limited information requests and discovery made by the enforcement division. On March 12, 2021, the enforcement division filed a motion against Resident Energy with the adjudicating body of PURA, seeking the assessment of \$1.5 million in penalties, along with a suspension of license for eighteen months, auditing of marketing practices upon reinstatement and an invitation for settlement discussions. As noted above, Residents Energy denies any wrongdoing, and there is insufficient basis to deem or assess the probable amount of any loss. For the years ended December 31, 2020 and 2019, gross revenues from sales in Connecticut were \$38.0 million and \$35.6 million, respectively.

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. Shortly thereafter, the Illinois Commerce Commission ("IL ICC") commenced a similar investigation. Although IDT Energy denies any wrongdoing in connection with those allegations, the parties (including IL ICC) settled the matter pursuant to a court approved consent decree that includes restitution payments in the amount of \$3.0 million, temporary suspension of all marketing activities directed at new customers through December 31, 2020, and implementation of various compliance and reporting procedures.

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, 2020, Illinois represented 2.5% of GRE's total meters served and 1.2% of the total residential customer equivalents of GRE's customer base. For the years ended December 31, 2020 and 2019, IDT Energy's gross revenues from sales in Illinois were \$7.0 million and \$10.1 million, respectively.

Employees

As of March 5, 2021, GRE employed 125 full time employees, 57 of whom are located in the Jamestown, New York office, 48 of whom are located in our New Jersey office, 13 of whom are located in our Arizona office and 7 is located in Texas with SFP.

GRE International

GRE International is comprised of REPs operating in the U.K., in Finland, through our 92.5% interest in Lumo Finland, in Japan, and in Sweden. GRE's REP businesses purchase electricity on the wholesale markets and resell these commodities to their residential customers through both variable rate and fixed rate programs.

GRE International's REP businesses operate under several brand names including Lumo Energia, Genie Energy Japan, and Orbit Energy (United Kingdom). Lumo Finland, Lumo Sweden and Genie Energy Japan resell electricity, while Orbit Energy supplies both electricity and natural gas.

On October 8, 2020, the Company acquired the remaining 23.0% interest in Orbit Energy that it did not previously own, which increased the Company's interest to 100%. Prior to October 8, 2020, GRE International accounted for its investments in Orbit Energy under the equity method of accounting.

As of December 31, 2020, GRE International's REPs, including Orbit Energy, served 195,000 meters, an increase from 127,000 meters as of December 31, 2019. The increase was due to the continuous investment in the growth of Lumo Finland, Orbit Energy and Genie Japan. The Company also started the commercial operations of Lumo Sweden in the second quarter of 2020. As of December 31, 2020, GRE International served 103,000 RCEs, an increase from 65,000 RCEs as of December 31, 2019. The increase in RCEs primarily resulted from the increase in meters served as discussed above.

Nordic Electricity Market

Lumo Finland and Lumo Sweden (together, Lumo) serve the Nordic electricity market.

The Nordic electricity system utilizes a mixture of generation sources. Hydro, nuclear biomass and wind power are among the main primary sources of electricity generation. The Nordic region has a large share of electricity heated houses, resulting in a consumption profile that is higher than in the rest of the European Union ("EU"). Electricity consumption is highly dependent on weather factors, with lower electricity demand in the summer and increased consumption in the wintertime.

Lumo's REPs generally have no significant fixed assets and low levels of capital expenditure. Their cost of revenue is incurred through the purchase of electricity and natural gas in their respective wholesale markets. Selling, general and administrative expenses are primarily related to customers acquisitions, customer retention, billing and collections.

Lumo Finland

Lumo Finland was founded in 2015 and began servicing customers in 2016. Lumo Finland operates in the Finnish electricity market. The Company acquired an 80.0% controlling interest of Lumo Finland in January 2019 and has since increased its ownership to 92.5%. Lumo Finland operates in all of Finland and sells electricity primarily to private consumers and small businesses.

Lumo Finland's revenue is seasonal. Approximately 62.8% of total revenues in 2020 were generated in the winter (28.4% in first quarter of 2020 and 34.4% in the fourth quarter of 2020) when the demand for heating is high. Approximately 64.1% of total revenues in 2019 were generated in the winter (31.4% in first quarter of 2019 and 32.7% in the fourth quarter of 2019).

Lumo Sweden

Lumo Sweden is a Swedish REP founded in October 2019. Lumo Sweden started its commercial operations in April 2020. Its customers are spread across Sweden, and are primarily residential with some being small business. In 2020, as a start-up year, Lumo Sweden mostly focused on growing its customer base and developing its strategy.

The Swedish electricity market is divided into four different price areas based on geographic location. The capital Stockholm region is the biggest market for Lumo Sweden. Historically, the price for supply in the northern price areas has been the cheaper compared to the other price areas in the southern part of the country, due to a number of hydroelectric power plants and lower demand. The price in the south, however, has been the higher due to a higher demand with lower local supply, mostly solar and wind.

Marketing

Lumo acquires customers primarily through branded and affiliated websites. Lumo's marketing efforts focus on digital channels such as search engine marketing, social media, display and email marketing. These digital channels are designed to drive traffic to Lumo's branded websites. Lumo's branded site offers customers variable rate and fixed rate products. Remarketing for customers who have already visited the website is done as display advertising on both social media and search engines.

The customers are also offered multiple billing and payment methods in order to make payment convenient. The customer can also access their consumption through an online portal where they can access their invoices, payments, contract and other documents.

Acquisition and Management of Electric Supply

The Nordic electricity market consists of various marketplaces that are "time windows" for physical trading in electricity: the day-ahead market, the intra-day market and the balancing market. In the Nordic countries, the vast majority of trading is done on the day-ahead market (spot market), and the "system price", which is the common Nordic price for all hours of the next following 24-hour period, is crucial for price formation within the other time windows (the intra-day and balancing markets and the financial market for long-term contracts).

The intra-day market is primarily a correction market, where participants have the opportunity to trade into balance, including adjusting any earlier trading. The intra-day market closes one hour before the delivery hour. The balancing market is trading in automatic and manual reserves used by the Nordic transmission system operators ("TSOs") in order to maintain power balance during the hour of operation. Nord Pool Spot is responsible for the day-ahead market and the intra-day market, while the TSOs are responsible for the balancing market.

For risk management purposes, Lumo typically employs put and call options as hedges against unfavorable fluctuations in market prices of electricity. The hedges are usually done 3 to 6 months ahead of delivery depending on estimated volumes.

Competition

There are dozens of registered REPs in Finland and Sweden, including those operated by energy producers, affiliates of local grid companies and independent contractors. In recent years, the REP industry has experienced consolidation resulting in larger REPs.

A significant portion of Finland's residential customer base continue to purchase its supply from their local grid company's affiliate REPs despite the proliferation of competitive suppliers. Most new REPs seek to build market share with aggressive pricing. The main focus of Lumo is to gain new customers, upgrading these customers to better margin products while controlling churn and balancing growth and profitability.

Regulation

Each REP in Finland or Sweden must be registered with each countries' Energy Authority in order to be able to operate. Although REPs enjoy certain freedom with respect to their operations (i.e. marketing and pricing), they must comply with various regulations and laws, including Finnish or Swedish Energy authority rules and regulation governing electricity supply pricing, marketing, types of offerings and contracts, as well as general guidelines set forth in the Finnish or Swedish Electricity Market Law.

Genie Energy Japan

The Japanese electricity market became deregulated in April 2016. Presently, there are approximately 750 REPs licensed in Japan. REPs purchase electricity 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. The local utilities continue to handle electricity transmission and distribution, line maintenance and meter reading with the REP's responsible for invoicing the customer and collecting payments for both the commodity and transmission and distribution portions of the services. The REPs remit the transmission and distribution portion of the bill to the utilities.

REPs in Japan 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 collections.

Genie Japan operates in nine of the ten deregulated electric utility territories in Japan, with Okinawa being the only territory where it does not operate. Genie Japan offers both variable rate and fixed rates to its customers.

In January 2021, the Company experienced unprecedented price volatility in the Japanese market. These events are expected to have an estimated adverse impact on our first quarter of 2021 consolidated results of operations of \$2.5 million.

Marketing

New customers are acquired through a combination of marketing and sales channels including door-to-door solicitation, telemarketing, affinity partner sales, and online and digital marketing. Products are made available to customers under several offerings with distinct terms and conditions. Similar to the United States, a significant portion of new customers are enrolled in variable rate programs via automatically renewing or month-to-month agreements, which enable us to adjust the cost of electricity to the rates charged to our customers. The frequency and degree of these rate adjustments is not restricted by regulation.

During 2020 physical sales were reduced due to Covid-19. From April to June 2020 a national state of emergency suspended door-to-door sales completely. In August 2020 and in January 2021, the government had declared state of emergencies and urged citizens to stay at home as much as possible. These periods resulted in reduced physical sales capabilities.

Genie Japan offers three payment types: credit card, auto bank draft, and convenience store payment for customers' convenience.

Acquisition and Management of Electric Supply

Genie Japan procures electricity for its customers through forward monthly supply transactions from wholesale electricity providers, as well as day-ahead spot electricity purchases on Japan Electric Power Exchange ("JEPX"). Currently, Genie Japan is acquiring electricity with five wholesale electricity supply companies. A third party vendor performs the scheduling of our forward supply purchases and makes purchases, or sales, on our behalf for any additional electricity needed for our customers on the day ahead JEPX market.

Electricity for our customers is scheduled through Organization for Cross-regional Coordination of Transmission Operators, Japan ("OCCTO"), which coordinates with the nine electric utility companies for the transmission and delivery of our electricity supply. These contracts are typically provided by wholesalers which purchase bulk generation supply and on-sell to retailers. In addition, wholesalers can also provide physical contracts that are backed by financial contracts traded on one of two futures exchanges. Genie Japan also can use trade over-the-counter swaps.

Our electricity purchases that are less, or greater, than our customers actual usage is settled through purchases, or sales, respectively, in the balancing market. Each of the nine utility companies will perform this balance service for the actual load of our customer and the supply delivered. The utilities invoice Genie Japan on a monthly basis for additional charges, or credits, resulting from these balancing.

For risk management purposes, Genie Japan utilize forward physical delivery contracts for portions of our purchases of electricity to reduce price risks.

Competition

Presently, there are approximately 750 REPs licensed in Japan. In some territories, competitor REPs are affiliated with local utilities. Genie Japan also competes with several large vertically integrated energy companies as well as smaller independent operators. Some of the REPs only operate regionally, while others, like Genie Japan, sell throughout Japan.

Many of the REPs pricing structure have a variable component that is based on an energy cost index from a trailing 3 or 6 months period, while Genie Japan pricing is based on future market expectations. In a downward moving commodity cost environment, our pricing typically becomes more competitive as we benefit from the lag that other REPs experience in reducing their sell rate to reflect the lower commodity costs, and we may benefit from decreases in margin pressure, improvements in the customer acquisition environment, and lower rates of churn. In a rising commodity cost environment, our variable rate products reflect real-time commodity costs, which will typically become less competitive, in the short-term with other REPs, and we may experience increased margin pressure, a more challenging customer acquisition environment and higher rates of customer churn.

Genie Japan's products were designed to be the most competitive for higher electricity use customers. Our pricing product offers increasing percentage of savings the more electricity a customer uses, while the pricing structure of other REPs have tiered pricing structure with higher pricing for the higher monthly usage tiers. Increasing our market share depends in part on our ability to find those higher use customers and persuade the pricing advantage of our price product versus the incumbent utility pricing. Other REPs have certain advantages such as name recognition, financial strength and long-standing relationships with customers. Persuading potential customers to switch to Genie Japan requires significant marketing and sales operations.

Regulation

REPs such as Genie Japan, must acquire a license from the Ministry of Economy, Trade and Industry ("METI"). METI regulates the industry and has one set of regulations and rules that govern the operations of REPs for the entire country.

Although the rates charged by REPs are not regulated by the METI 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 regulated through REP guidelines published by METI. Genie Japan must also comply with various monthly and annual reporting requirements to METI in order to maintain their eligibility to provide service. REPs are also required to collect from end users the Renewable Energy Generation Promotion Levy and remit this to the Green Investment Promotion Organization.

United Kingdom

GRE international holds a 100.0% interest in Shoreditch, which operates Orbit Energy, a REP that operates in the United Kingdom.

The Gas Act of 1986 led to the privatisation of British natural gas market while the Electricity Act of 1989 provided for the privatization of the electricity industry. The residential energy market was opened to competition between 1996 and 1999.

Orbit was incorporated in 2015 and is licensed to sell both electricity and natural gas in the United Kingdom. In July 2017, the Company entered into a joint venture in which it held a noncontrolling interest. Orbit started its commercial operations in January 2018. Orbit operates in the mainland United Kingdom, excluding Northern Ireland serving primarily residential customers. Orbit provides customers with a choice of fixed-price contracts, typically ranging in jurisdiction from one to three years, with the majority taking one-year fixed-price contracts. Orbit also provides variable price products to its customer. At December 31, 2020, approximately 40.0% of customers were on a variable price product. A small portion of the Orbit's customers are on a government mandated price cap.

Marketing

Before the start of the COVID-19 pandemic, Orbit used a wide range of marketing tools to acquire new customers including door-to-door sales, venue sales, telephone and digital through price comparison engines. Majority of the customers were acquired through the use of third-party marketing and sales companies. During the pandemic, however, Orbit closed down its door-to-door and venue sales operations and relied primarily on telephone marketing. The majority of customers are now acquired through the use of third-party marketing sales companies. Orbit is primarily targeting customers who are on a relatively high tariff with their existing suppliers presenting target customers with potential savings compared to their current suppliers.

Approximately 80.0% of the U.K. market is on credit meters. These customers typically pay on receipt of bill or through a monthly flat direct-debit ("DD") or credit card payment which is set to recover the annual consumptions. The other 20.0% of the customers pay for their energy consumptions using pre-payment meters. These meters are "topped" up using tokens and allow customers to only use what they paid for, thus enabling greater control on consumption.

Orbit is responsible for billing and collecting from its customers directly. Invoices and statements of account are sent on a monthly basis for credit customers and annual statements are delivered for its pre-pay customers. The majority of its customers receive their statements of account on a quarterly basis.

Approximately 90.0% of the credit customers have an active DD or credit card arrangement with Orbit and pay for their annual consumption through flat monthly payments.

Procurement and Management of Gas and Electricity

REPs in the United Kingdom 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 collections.

Orbit does not own electrical power generation, transmission, or distribution facilities, or natural gas production, pipeline or distribution facilities.

Orbit Energy has an exclusive contract with Shell U.K. Limited ("Shell") to provide electricity and natural gas to Orbit until June 2024, with an option (not an obligation) to extend through June 2027. Shell provides access to the forward market such that Orbit can enter into a forward hedge for its customers which protects Orbit from mark-to-market fluctuations. Shell also provides extended payment facilities of an additional 30 days compared to the U.K. payment terms up to a limit of £5.0 million at an interest of LIBOR plus 5.0%. Shell charges an additional £0.9 per therm of natural gas and Mwh of electricity for all delivered volume on top of the wholesale costs. The contract with Shell is secured by Orbit's shares. The contract is also subject to satisfaction of certain conditions including the maintenance of certain covenants which includes minimum levels of cash, gross margin, net worth, as defined in the contract, earnings before tax, as defined in the contract and provision for bad debts on accounts receivable. At December 31, 2020, we were in compliance with such covenants.

Orbit has the ability to purchase electricity from other sources through Shell, if lower costs are available.

Orbit currently contracts with the National Grid of United Kingdom and seven distribution companies that deliver electricity to fourteen regions in the United Kingdom.

Orbit also contracts with CNG Energy Ltd. to ship the natural gas from injection point to the customers. CNG is primarily an intermediary between Orbit and the gas pipeline companies.

Competition

GRE competes with other independent energy providers. More than 70.0% of the market is dominated by the "Big 6" energy companies in the United Kingdom with the rest of the market served by small and mid-size energy supplier similar to Orbit.

REPs compete on price, customer service, ease of switching service providers and other ancillary services.

Regulation

The energy market in the United Kingdom is regulated by the Office of Gas and Electricity Markets ("OFGEM"). OFGEM is a non-ministerial government department and an independent National Regulatory Authority, recognized by European Union Directives. The OFGEM's role was originally defined in the privatisation statutes (Gas Act of 1986 and Electricity Act of 1989) but was significantly changed by the Utilities Act of 2000, which gave OFGEM a new primary duty of protecting consumers wherever appropriate by promoting effective competition. One of its key secondary duties is to protect the interests of low-income customers. OFGEM regulates minimum levels of standards and how an energy company communicates with its customers with respect to timing of invoicing, price change communication, information that is provided on invoices, compensation and levels of smart meter installation. OFGEM also set a maximum price that a REP can charge a customer if the customer has not actively chosen a tariff or if they are on a variable tariff. U.K. REPs are required to provide a variety of reports to OFGEM including customer complaints, meter read performance and tariffs by customers to collect data on topics of interest or to check on compliance with the licence conditions. Inspection by OFGEM is done through these reports and monitoring public information like customer feedback on social media. In addition, OFGEM conducts quarterly review with our Orbits account manager. OFGEM also has the power to carry out ad-hoc inspections.

Employees

As of March 5, 2021, GRE International employed 64 employees, 21 of whom are located in Finland, 16 of whom are located in our Japan office and 27 of whom are located in United Kingdom.

Genie Energy Services

GES is comprised of businesses that market and provide energy solutions. GES currently consists of (i) our controlling interest in Prism (ii) Diversegy, and (iii) Genie Solar Energy.

Prism Solar Technologies

The Company acquired a 60.0% controlling interest in Prism in October 2018. On April 12, 2019, Prism restructured its ownership. The Company now holds 60.0% interest in Plus EnerG which owns 100% of Prism. In the second quarter of 2020, Prism renegotiated a contract with a customer which resulted in impairment of customer relationship of \$0.8 million included in the consolidated statements of operation. Prism also provided a full impairment of its remaining goodwill of \$0.4 million in the fourth quarter of 2020.

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 sunrooms (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 that Prism uses are 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 impacted 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. 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.

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.

Customers; Marketing

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.

Sources of Material and Manufacturing

We have designed our manufacturing processes to produce high quality products that meet our customers' requirements at competitive costs.

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.

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., 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.

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.

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.

In 2020, Diversegy accounted for 0.5% and 7.7% of the Company's consolidated revenue and GES segment's revenue, respectively. Diversegy operates as an energy broker and advisor to industrial, commercial and municipal across deregulated energy markets in the U.S. Most of our customers are enrolled 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 payments or as a residual over the life of the customers' contract.

Diversegy markets its services through an in-house sales force as well as independent third-party brokers.

Genie Solar Energy

Genie Solar Energy is a sales and general contracting organization. Genie Solar Energy sells rooftop solar system to commercial and industrial clients who benefit by either lower consumption, lower cost of energy and by accruing financial benefits from their respective states and the U.S government for investing in renewable energy. Genie Solar Energy acquires the customers, manages the procurement of materials and labor involved in installing the solar system and arranges for third party financing when the customer requires it.

Employees

As of March 5, 2021, GES employed 13 full time employees, all of whom are located in our New Jersey office.

Employees and Human Capital Resources

Attracting and retaining qualified personnel familiar with our businesses who head our different businesses units is critical to our success. As of March 5, 2021, we had 202 employees, 138 located in United States, 27 located in United Kingdom, 21 located in Finland and 16 located in Japan.

Our human capital resources objectives include, as applicable, identifying, recruiting, retaining, incentivizing and integrating our existing and new employees, advisors and consultants. To accomplish that, our compensation practices are designed to attract and retain qualified and motivated personnel and align their interests with the goals of the Company and with the best interests of our stockholders. Our compensation philosophy is to provide compensation to attract the individuals necessary for our current needs and growth initiatives, and provide them with the proper incentives to motivate those individuals to achieve our long-term plans, which includes among other things, equity and cash incentive plans that attract, retain and reward personnel through the granting of stock-based and cash-based compensation awards.

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.

Our business, results of operation and financial conditions could be adversely affected by the coronavirus COVID-19 pandemic and the restrictions put in place in connection therewith.

We are responding to the global outbreak of COVID-19 by taking steps to mitigate the potential risks to us posed by its spread and the impact of the restrictions put in place by governments to protect the population. We continue to execute our business continuity plan and have implemented a comprehensive set of actions for the health and safety of our customers, employees and business partners. We have implemented work from home policies where appropriate.

We continue to implement strong physical and cyber-security measures to ensure our systems remain functional to both serve our operational needs with a remote workforce and to provide uninterrupted service to our customers. We face challenges due to the need to operate with the remote workforce and are addressing those challenges so as to minimize the impact on our ability to operate.

For the year ended December 31, 2020, the impacts of COVID-19 on our operations and financial results have been mixed. Our consolidated revenues for year ended December 31, 2020, compared to 2019, increased by \$64.0 million equivalent to 20.3%. At December 31, 2020, global total meters served increased to 565,000 and RCEs increased to 440,000 representing increases of 14.0% and 9.1% respectively, compared to December 31, 2019. U.S. domestic meters served was flat at 370,000 and RCE increased to 337,000 representing a 9.8% increase compared to December 31, 2019 levels.

We benefited from the increased demand for electricity by residential customers due to more people working from their homes. On the other hand, like other retail providers, we suspended our face-to-face customer acquisition programs in March 2020 as public health measures were implemented to combat COVID-19, resulting in a decrease in gross meter acquisitions and a slight reduction in the U.S. domestic meters served. The reduction in gross meter acquisitions decreased our customer acquisition expense in the second quarter of 2020. Chum for the second quarter of 2020 decreased as our competitors suspended their face to face marketing programs.

In the last months of 2020 and first months of 2021, much of the world experienced a surge in new COVID-19 cases and the impact of that increase and public health measures that may be instituted or reinstituted are difficult to predict. If the COVID-19 pandemic continues for a prolonged period, or impact the territories we serve more significantly than it has today, our business, operations and financial condition could be impacted in more significant ways. The continued spread of COVID-19 and efforts to contain the virus could have the following impacts, in addition to exacerbating the impacts described above:

- Adversely impact our strategic business plans and growth strategy;
- Result in increases in purchase of receivable, or POR fees and allowance for credit bad debt expense as a result of delayed or non-payment from our customers, both of which could be magnified by federal or state government legislation that requires us to extend suspensions of disconnections for non-payment;
- Reduce the availability and productivity of our employees and third-party resources;
- Cause us to experience an increase in costs as a result of our emergency measures;
- Cause a deterioration of the credit quality of our counterparties, including power purchase agreement counterparties, contractors or retail customers, that could result in credit losses
- Cause impairment of long-lived assets; and
- Cause a deterioration in our financial metrics or the business environment that adversely impacts our credit ratings.

The situation remains fluid and it is difficult to predict with certainty the potential impact of COVID-19 on our business, results of operations, financial condition and cash flows.

Risks Related to Genie Retail Energy and GRE International

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 chum 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.

From time to time, various states may propose or modify legislation regulations which could adversely affect our marketing practices and ability to acquire and serve customers. The Company and the REP industry as a whole is working with government representatives, legislators, and advocacy interest groups to lobby for legislation and regulation that most effectively protects customer interests while preserving the competitive structure of deregulated markets. We also seek to expand and diversify into new markets with regulatory structures that are more favorable to the competitive retail supply of energy.

For example, in December 2017, the New York Public Service Commission ("PSC") held an evidentiary hearing to assess the retail energy market in New York. On December 12, 2019, following the completion of post-hearing briefings in the proceedings, the PSC issued an order adopting changes to the New York retail energy market, effective April 16, 2020 ("2020 Orders"). The 2020 Orders limit the types of the services energy retailer marketers may offer new customers or renewals, in terms of pricing for non-renewable commodities

and renewable product offerings. Although the Company is working to ensure that its products and services are fully compatible with the 2020 Orders, such compliance may adversely impact customer acquisition and renewal revenue and profitability. The Company is evaluating its options, both by itself and in tandem with other industry participants, to challenge or petition for additional clarity and changes to the 2020 Orders. As of December 31, 2020, New York represented 19.4% of GRE's total meters served and 14.7% of the total residential customer equivalents ("RCEs") of GRE's customer base. For the years ended December 31, 2020 and 2019, gross revenue from New York were \$56.7 million and \$63.2 million, respectively.

Any legislative or regulatory changes that negatively impacts the sale of fossil fuels or electricity derived therefrom would adversely affect the results of our operations and financial conditions.

Fixed Rate Products or Guaranteed Pricing Programs could result in losses or decreased profits if GRE fails to estimate future commodity prices and commodity consumption 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. Sudden spikes in commodity prices, particularly when coupled with rapid, unexpected increases in consumptions, expose us to the risk that we will incur significant unforeseen costs in performing fixed rate contracts. During the year ended December 31, 2020, GRE's meters enrolled in offerings with fixed rate characteristics constituted approximately 37.7% and 6.3% 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. We employ an active and robust hedging program. Within this exercise there are inherent assumptions about consumption and pricing. There is risk that volatility with take place outside of the range of potential outcomes contemplated by the program. In these instances, the hedge will not be sufficient to control for risk and losses may occur.

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.

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

We have recently entered the United Kingdom, Japanese, Finnish and Swedish markets. 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, which may become more commonplace, may have significant direct and indirect impacts on GRE's business and results of operations.

Potential changes in global climate may produce, among other possible conditions, unusual variations in temperature and weather patterns, resulting in unusual weather conditions, more intense, frequent and extreme weather events and other natural disasters.

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 \$5.0 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.

In certain markets, we contractually commit to provide customers with a fixed price, irrespective of our cost of supply in the wholesale energy markets. Even under variable contracts, we seek to manage customer price expectations by using reasonable efforts to avoid or mitigate potential pass-throughs related to unforeseeable weather events (even where such pass-throughs are contractually permissible). Although we use our best efforts to reasonably hedge our commodity positions to absorb weather-related cost spikes, we cannot always anticipate unforeseeable extreme weather events, and we may be forced to absorb these cost increases in order to serve our customers.

In January 2021, weather volatility and the lack of adequate gas reserves drove the prices on the JEPX to \$2,390 per megawatt hour for an extended period of time. Although our supply commitment for our customers in Japan was reasonably hedged for expected winter weather conditions, the extreme usage spike exposed us to further unexpected cost increases. The Company expects this event to adversely impact our first quarter of 2021 consolidated result of operations by approximately \$2.5 million.

In mid-February of 2021, the State of Texas experienced unprecedented cold weather and snow. With the grid overtaxed and rolling blackouts being enforced, by order of ERCOT, real-time commodity prices during the crisis escalated astronomically. Although our supply commitment for our customers in Texas was reasonably hedged for expected winter weather conditions, the extreme usage spike exposed us to further unexpected cost increases. Despite our cost increases related to the unprecedented price volatility in real-time electricity prices, we maintained customer rates under current agreements with customers.

Our current estimate is that the impact on our consolidated profitability will likely be in the range of \$12.8 million to \$14.0 million for the first quarter of 2021. The Company expects to disclose the full impact in its Quarterly Report on Form 10-Q for the period ending March 31, 2021 to be filed with the Securities and Exchange Commission in May 2021.

GRE is subject to litigation that may limit its operations.

In connection with the 2013-2014 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 was also 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. From time to time, IDT Energy is also subject to inquiries, investigation or action from public utility commissions or other governmental regulatory or law enforcement agencies related to compliance of its practices with statutory or regulatory schemes. These matters are more fully discussed in Note 16 of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K, including that IDT Energy entered into a settlement in connection with the three putative class actions, and with multiple regulators and governmental bodies 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 or in connection with any other practices that are subject to investigation or litigation. 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 litigation 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.

We face risks that are beyond our control due to our reliance on third parties both domestically and internationally 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, PJM Shell, Energia Suomi and Astmax. 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 has been modified and extended since 2009, and is scheduled to terminate on November 30, 2023 subject to renewal by agreement of the parties. 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 in which 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.

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

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.

Risk Related to Our Financial Condition and Reporting

We had a material weakness in our internal control over financial reporting in previous years 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 management's review of the income tax provision. Remediation of these weaknesses had not yet been completed, and therefore these deficiencies continued to exist as of December 31, 2020 (see *Item 9A Control and Procedures* in this Annual Report on Form 10-K).

We also reported in our Annual Report on Form 10-K as of December 31, 2018, a material weakness in internal control related to 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. During 2019, we completed the remediation measures related to the material weakness and concluded that our internal control over financial reporting was effective as of December 31, 2019. Completion of remediation does not provide assurance that our remediation or other controls will continue to operate properly.

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.

Eight trusts for the benefit of sons and daughters of Howard S. Jonas, our Chairman of the Board of Directors, hold shares that, in the aggregate, represent more than a majority of the combined voting power of our outstanding capital stock, which may limit the ability of other stockholders to affect our management.

Eight trusts for the benefit of children of Howard S. Jonas, (the "Trusts"), our Chairman of the Board, collectively have voting power over 5,121,214 shares of our common stock, (which is all the issued and outstanding shares of the Class A common stock), which are convertible into shares of our Class B common stock on a 1-for-1 basis, and 3,546,888 shares of our Class B common stock), representing approximately 68.0% of the combined voting power of our outstanding capital stock, as of March 9, 2021. In addition, as of March 9, 2021, Howard S. Jonas holds 3,328,601 shares of our Class B common stock. Each of the Trusts has a different, independent trustee.

Howard Jonas serves as our Chairman of the Board, which is not an officer position. However, he is our founder and served as an executive officer, including our Chief Executive Officer, for a very significant time period, and the members of the Board and management often look to him for guidance on major financial, operational and strategic matters.

Howard S. Jonas does not have the right to direct or control the voting of the shares of our common stock that is held by the Trusts, and the independent trustees hold sole voting and dispositive power over the common stock held by the Trusts. However, he is the trustor of the trusts and is the father of each of the beneficiaries of the Trusts and his views may be taken into account by the trustees and others related to the Trusts.

We are not aware of any voting agreement between or among any of the Trusts and/or Howard S. Jonas, but if such a voting agreement or other similar arrangement exists or were to be consummated, if all or several or all of the Trusts were to act in concert, or if we issued additional Class A common stock, certain or all of the Trusts and/or Howard S. Jonas along with holders of the Class A common stock would be able to control matters requiring approval by our stockholders, including the election of all of the directors, amendment of organizational documents and the approval of significant corporate transactions, 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 may be limited. In addition, our dual class structure has an anti-takeover effect, and accordingly, the holders of the shares of Class A common stock have the ability to prevent any change in control transactions that may otherwise be in the best interest of stockholders.

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. GRE's Texas office is located in Houston, Texas where we lease approximately 4,200 square feet.

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 3,143 square feet of space. Shoreditch's U. K. offices are located at st/ Dunstons House, 201 Borough High Street, London, SE1 1JA 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 16, *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 II

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

CLASS B COMMON STOCK

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

On March 9, 2021, there were 305 holders of record of our Class B common stock and 8 holders of record of our Class A common stock. All shares of Class A common stock are beneficially owned by eight trusts or the benefit of children of Howard Jonas, our Chairman of the Board. These numbers do not include the number of persons whose shares are in nominee or in "street name" accounts through brokers. On March 11, 2021, the last sales price reported on the New York Stock Exchange for the Class B common stock was \$7.20 per share.

PREFERRED STOCK

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.

On March 9, 2021, there were 4 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 11, 2021, the last sales price reported on the New York Stock Exchange for the Series 2012-A Preferred Stock was \$9.19 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 13 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, 2020, 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, 2020.

	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 (1) Programs
October 1 – 31, 2020	8,658	\$ 8.03	8,658	5,931,298
November 1 - 30, 2020	23,743(2)	\$ 8.33	—	5,931,298
December 1 – 31, 2020	—	\$ —	—	5,931,298
Total	32,401	\$ 8.25		

(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.

(2) Pertains to 23,743 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 Genie Retail Energy ("GRE"), Genie Retail Energy International ("GRE International") and Genie Energy Services ("GES").

GRE owns and operates retail energy providers ("REPs"), including IDT Energy, Residents Energy, Town Square Energy ("TSE"), Southern Federal and Mirabito Natural Gas. GRE's REP businesses resell electricity and natural gas primarily to residential and small business customers, with the majority of the customers in the Midwestern and Eastern United States and Texas.

GRE International holds the Company's REPs that serves retail customers in the United Kingdom under the name Orbit Energy and in Japan. It holds 92.5% controlling interest in Lumo Energia Oyj ("Lumo Finland"), a REP serving residential customers in Finland and 100.0% of Lumo Energi AB ("Lumo Sweden"), which serves retail customers in Sweden. In October 2020, the Company acquired the remaining 23.0% interest in Shoreditch which increased the Company's interest to 100%.

GES holds Diversegy, a retail energy advisory and brokerage company that serves commercial and industrial customers throughout U.S. and our 60.0% controlling interest in Prism Solar. Prism is a solar solutions company that is engaged in solar project marketing, solar solution consultation, installation design and project management services.

In December 2020, Afek Oil & Gas Ltd., the oil and gas exploration project in the Golan Heights in Northern Israel ("Afek"), completed the final planned testing on one of its completed exploratory wells. The test was conducted as prior analysis indicated that a zone within the well potentially contained evidence of hydrocarbons at levels sufficient to warrant additional testing. After analyzing the results of the test and subsequent activity, as no traces of light oil were found. As a result, Afek ceased its exploratory operations. The remaining assets and liabilities and the results of operations are included within the corporate segment for reporting purposes.

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.

Coronavirus Disease (COVID 19)

Starting in the first quarter 2020, the world and the United States experienced the unprecedented impacts of the coronavirus disease 2019 (COVID-19) pandemic.

For the year ended December 31, 2020, the impacts of COVID-19 are evident in several key aspects of our business operations and the corresponding financial impact has been mixed. Our consolidated revenues for the year ended December 31, 2020, compared to the same period in 2019, increased by \$64.0 million equivalent to 20.3%.

Our customer base is predominantly residential, so we benefited from the increased demand for electricity when customers are working from their homes. On the other hand, like other retail energy providers, we suspended our face-to-face customer acquisition programs in March 2020 as public health measures were implemented to combat COVID-19, resulting in a decrease in gross meter acquisitions and a flat growth in the U.S. domestic meters served. The reduction in gross meter acquisitions decreased our customer acquisition expense in the year ended December 31, 2020 compared to 2019. Churn the year ended December 31, 2020 decreased compared to 2019, in part, due to our competitors suspending face to face marketing programs.

We did not experience any significant changes in our workforce composition and were able to implement our business continuity plans with no significant impact to our ability to maintain our operations. We continue to maintain strong physical and cybersecurity measures in order to both serve our operational needs with a remote workforce and to ensure that we continue to provide services to our customers. We face challenges due to the need to operate with a remote workforce and are continuing to address those challenges so as to minimize the impact on our ability to operate.

Beginning the third quarter of 2020, public health restrictions have begun to ease in some of our markets which allow us to resume face-to-face sales and marketing. Looking ahead, we expect to see a modest rebound in meter acquisition, however, any reversal of the easing of restrictions would impact that expected rebound.

There are many uncertainties regarding the impacts of the COVID-19 pandemic, and we are closely monitoring those impacts of on all aspects of its business, including how it will impact our customers, employees, suppliers, vendors, and business partners. We are currently unable to predict the impact that COVID-19 will have on our financial position and operating results due to the complexities of the impacts and numerous uncertainties that are beyond the Company's control. We expect to continue to assess the evolving impact of COVID-19 on our business and assets and intend to make adjustments accordingly.

Genie Retail Energy

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, Texas, Rhode Island, and Washington, D.C. GRE's revenues represented approximately 80.5% and 90.9% of our consolidated revenues in the years ended December 31, 2020 and 2019, respectively

GRE's cost of revenues consists primarily of natural gas and electricity purchased for resale. Certain of GRE's REPs are party to an Amended and Restated Preferred Supplier Agreement with BP Energy Company, or BP, which is in effect through November 30, 2023. Those REPs 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 local distribution company, or 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 their 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.

Local utilities generally meter and deliver electricity and natural gas to GRE's REPs' customers. The local utilities also provide billing and collection services on GRE's REPs' behalf for most of customers and certain local utilities offer purchase of receivables, or POR, programs. GRE's REPs receive the proceeds less the utility's fees for purchase of receivables billing and other ancillary services, where applicable.

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 their 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. Selling, 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. Unseasonable temperatures in other periods may also impact demand levels. Potential changes in global climate may produce, among other possible conditions, unusual variations in temperature and weather patterns, resulting in unusual weather conditions, more intense, frequent and extreme weather events and other natural disasters. Some climatologists believe that these extreme weather events will become more common and more extreme which will have a greater impact on our operations. 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 47.7% and 46.9% of GRE's natural gas revenues for the relevant years were generated in the first quarter of 2020 and 2019, 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 31.8% of GRE's electricity revenues for 2020 and 2019, respectively, were generated in the third quarters of those years. 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.

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, some utility companies purchase those REPs' receivables and assume all credit risk without recourse to those REPs for those purchased receivables. GRE's REPs' primary credit risk with respect to those purchased receivables 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 during certain periods, and such concentrations increase our risk associated with nonpayment by those utility companies.

There was no single utility company or customer that accounted for 10% or greater of our consolidated revenues and gross trade accounts receivable for the year ended December 31, 2020 and at December 31, 2020 or 2019.

Purchase of Receivable

Utility companies offer purchase of receivable, or POR, programs in most of the service territories in which we operate. GRE's REPs reduce their customer credit risk by participating in 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. In the year ended December 31, 2020, the associated cost was approximately 1.0% of GRE's revenue. At December 31, 2020, 87.0% of GRE's net accounts receivables were under a POR program.

Class Action Lawsuits

Although GRE endeavors to maintain best sales and marketing practices, such practices have been the subject of certain class action lawsuits.

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. On November 17, 2020, IDT Energy settled with the named plaintiffs in exchange for a minimal payment and the case has been dismissed.

On February 18, 2020, named Plaintiff Danelle Davis filed a putative class action complaint against Residents Energy and GRE in United States District of New Jersey alleging violations of the Telephone Consumer Protection Act, 47 U.S.C § 227 et seq. Residents Energy denies allegations in the complaint 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, 2020. On or around October 9, 2020, Residents Energy filed a preliminary motion to dismiss one of the counts in the complaint, and to dismiss Genie Retail Energy as a named defendant.

See Notes 16, *Legal and Regulatory Proceedings*, in this Annual Report on Form 10-K, which is incorporated by reference.

Agency and Regulatory Proceedings

From time to time, the Company responds to 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. 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. See Notes 16, *Legal and Regulatory Proceedings*, in this Annual Report on Form 10-K, which is incorporated by reference, for further detail on agency and regulatory proceedings.

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. On December 12, 2019, following the completion of post-hearing briefings in the proceedings, the PSC issued orders adopting the changes to the New York retail energy market, effective April 16, 2020 ("2020 Orders"). The 2020 Orders limit the types of the services energy retailer marketers may offer new customers or renewals, in terms of pricing for non-renewable commodities and renewable product offerings. Although the Company is working to ensure that its products and services are fully compatible with the 2020 Orders, such compliance may adversely impact customer acquisition and renewal revenue and profitability. The Company is evaluating its options, both by itself and in tandem with other industry participants, to challenge or petition for additional clarity and changes to the 2020 Orders. There is insufficient basis to deem any loss probable or to assess the amount of any possible loss based on the changes instituted by the 2020 Orders. As of December 31, 2020, New York represented 19.4% of GRE's total meters served and 14.7% of the total residential customer equivalents ("RCEs") of GRE's customer base. For the years ended December 31, 2020 and 2019, gross revenue from New York was \$56.7 million and \$63.2 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.

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 Connecticut 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. On June 17, 2020, the PURA or Authority notified Town Square that it was advancing its investigation by assigning Prosecutorial (PRO) staff for the purpose of investigating Town Square's compliance with licensed electric supplier billing, marketing, and licensing requirements, and, if appropriate, facilitating settlement discussions among the parties that contains, but is not limited to, an appropriate civil penalty, extensive retraining of the supplier's third-party agents, and retention of all sales calls with continued auditing. If a settlement is not achieved and PRO staff believe the Authority should take further action regarding alleged non-compliance, the Authority requests that PRO staff petition the Authority setting forth its recommendations citing to supporting facts and law. As of December 31, 2020, Town Square's Connecticut customer base represented 11.6% of GRE's total meters served and 12.8% of the total residential customer equivalents of GRE's customer base. As of December 31, 2020, no claims or demands have been made against Town Square by either agency, and there is insufficient basis to deem the loss probable or to the assess the amount of any possible loss.

In the fourth quarter of 2020, the enforcement division of PURA contacted Residents Energy concerning customer complaints received in connection with alleged door-to-door marketing activities in violation of various rules and regulations, including a ban on door-to-door activities during the pertinent time period as a result of the COVID-19 pandemic. Residents Energy denies any allegations of wrongdoing. In January and February of 2021, Residents Energy responded to the limited information requests and discovery made by the enforcement division. On March 12, 2021, the enforcement division filed a motion against Resident Energy with the adjudicating body of PURA, seeking the assessment of \$1.5 million in penalties, along with a suspension of license for eighteen months, auditing of marketing practices upon reinstatement and an invitation for settlement discussions. As noted above, Residents Energy denies any wrongdoing, and there is insufficient basis to deem or assess the probably amount of any loss. For the years ended December 31, 2020 and 2019, gross revenues from sales in Connecticut were \$38.0 million and \$35.6 million, respectively.

For the years ended December 31, 2020 and 2019, gross revenues from sales in Connecticut were \$38.0 million and \$35.6 million, respectively.

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. Shortly thereafter, the Illinois Commerce Commission ("IL ICC") commenced a similar investigation. Although IDT Energy denies any wrongdoing in connection with those allegations, the parties (including IL ICC) settled the matter pursuant to a court approved consent decree that includes restitution payments in the amount of \$3.0 million, temporary suspension of all marketing activities directed at new customers through December 31, 2020, and implementation of various compliance and reporting procedures.

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, 2020, Illinois represented 2.5% of GRE's total meters served and 1.2% of the total residential customer equivalents of GRE's customer base. For the years ended December 31, 2020 and 2019, IDT Energy's gross revenues from sales in Illinois were \$7.0 million and \$10.1 million, respectively.

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 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

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. 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. GRE and Genie Japan 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 and historical trends. Revenues from Shoreditch are accrued based on industry data flows and National Grid data. Revenue calculated from sale of electricity and natural gas includes an estimate of the quantity in units of electricity or natural gas supplied to customers by profile class. The estimate is made using historical consumption patterns, industry estimated consumption rates, and takes into consideration industry reconciliation processes. The estimated revenue is superseded when customer meter reads are received; at which point estimates are adjusted to actual usage.

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 our REPs' 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.

We recognize the incremental costs of obtaining a contract with a customer as an asset if it expects the benefit of those costs to be received in a period longer than one year. We determined that certain sales commissions to acquire customers meet the requirements to be capitalized. For GRE, we apply a practical expedient to expense costs as incurred for sales commissions to acquire customers as the period would have been one year or less. Incremental customer acquisition cost GRE International entities are capitalized and amortized over a range of eighteen and twenty-four months. These costs and the related amortization are recorded within sales and marketing expenses. Total capitalized customer acquisition costs to obtain a contract was \$0.8 million for the years ended December 31, 2020 and 2019. At December 31, 2020, capitalized customer acquisition cost of \$0.6 million and \$0.2 million were included in other current assets and other assets, respectively, on the consolidated balance sheet. The Company continuously monitors its customer relationship periods to ensure compliance with the application of the standard.

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 \$8.8 million at December 31, 2020 and \$2.6 million at December 31, 2019. 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.

Acquisitions

The purchase price of each acquisition we consummate 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. Results of operations of acquired companies are included in our results of operations as of the respective acquisition dates.

The accounting for business combinations requires estimates and judgment as to expectations for future cash flows of the acquired business, and the allocation of those cash flows to identifiable intangible assets, in determining the estimated fair value for assets acquired and liabilities assumed. The fair values assigned to tangible and intangible assets acquired and liabilities assumed are based on management's estimates and assumptions, as well as other information compiled by management, including valuations that utilize customary valuation procedures and techniques. If the actual results differ from the estimates and judgments used in these estimates, the amounts recorded in the financial statements could result in a possible impairment of the intangible assets and goodwill, require acceleration of the amortization expense of finite lived intangible assets, or the recognition of additional consideration which would be expensed.

Goodwill

Our goodwill balances were \$25.9 million and \$12.1 million at December 31, 2020 and 2019, 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.

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.

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.

We perform our annual goodwill impairment test as of October 1. 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 2020, we elected to perform a qualitative analysis for our GRE and GRE International reporting units as of October 1, 2019. 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. 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. We performed quantitative impairment analysis for Prism reporting unit. As a result of this test, we concluded that the carrying value Prism reporting unit exceeded its fair value of reporting unit including the allocated goodwill. Therefore, we recognized a goodwill impairment charge of \$0.4 million. There is no goodwill allocated to other reporting units as of October 1, 2019.

The determination of the fair value of our reporting units is based on an income approach, that utilizes discounted cash flows for each reporting unit and other Level 3 inputs as specified in the fair value hierarchy in ASC Topic 820, *Fair Value Measurements and Disclosure*. Under the income approach, we determine fair value based on the present value of the most recent cash flow projections for the reporting unit as of the date of the analysis and calculate a terminal value utilizing a terminal growth rate. The significant assumptions under this approach include, among others: income projections, which are dependent on future sales, new customers, customer behavior, competitor pricing, operating expenses, the discount rate, and the terminal growth rate. The cash flows used to determine fair value are dependent on a number of significant management assumptions such as the expectations of future performance and the expected future economic environment, which are partly based upon our historical experience. The estimates are subject to change given the inherent uncertainty in predicting future results. Additionally, the discount rate and the terminal growth rate are based on judgment of the rates that would be utilized by a hypothetical market participant.

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 \$15.2 million and \$44.8 million at December 31, 2020 and 2019, respectively. We employ a tax strategy that enables us to currently deduct losses from our foreign subsidiaries against our profitable U.S. operations and we assess the realizability of deferred taxes quarterly. 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

Information regarding new accounting pronouncement are included in Note 1 — *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.

Year Ended December 31, 2020 compared to Year Ended December 31, 2019

Genie Retail Energy Segment

(amounts in thousands)	Year ended December 31,		Change	
	2020	2019	\$	%
Revenues:				
Electricity	\$ 270,888	\$ 246,685	\$ 24,203	9.8%
Natural gas	33,562	39,926	(6,364)	(15.9)
Others	815	—	815	nm
Total revenues	305,265	286,611	18,654	6.5
Cost of revenues	216,996	205,986	11,010	5.3
Gross profit	88,269	80,625	7,644	9.5
Selling, general and administrative	51,861	53,449	(1,588)	(3.0)
Income from operations	\$ 36,408	\$ 27,176	\$ 9,232	34.0

nm — not meaningful

Revenues. GRE's electricity revenues increased in 2020 compared to 2019. The increase in electricity revenues in 2020 compared to 2019 was the result of increase in electricity consumption partially offset by decrease in the average price charged to customers. Electricity consumption by GRE's REPs' customers increased 18.7% in 2020 compared to 2019. The increase in electricity consumption reflected an increase in average electricity consumption per meter, which increased by 12.3% in 2020 compared to 2019 and a 5.7% increase in average number of meters served. The increase in per meter consumption reflects a sustained focus on the acquisition of higher consumption meters, warmer weather during summer of 2020 compared to 2019 and increased residential electricity consumption resulting from COVID-19 "stay-at-home" orders. The average rate per kilowatt hour sold decreased by 7.5% in 2020 compared to 2019.

GRE's natural gas revenues decreased in 2020 compared to 2019. The decrease in natural gas revenues in 2020 compared to 2019 was a result of decreases in average meters served, natural gas consumptions, average rate per therm sold and average consumption per meter. Natural gas consumption of GRE's REP's customers decreased by 6.7% in 2020 compared to 2019. Average meters served, decreased 3.6% in 2020 compared to 2019 and average consumption per meter decreased by 3.1%. The average rate per therm sold decreased 9.9% in 2020 compared to 2019.

Other revenue in 2020 included commission from selling third-party products to customers.

(in thousands)	December 31, 2020	September 30, 2020	June 30, 2020	March 31, 2020	December 31, 2019
Meters at end of quarter:					
Electricity customers	305	309	310	313	297
Natural gas customers	65	67	64	71	73
Total meters	370	376	374	384	370

Gross meter acquisitions in 2020 were 212,000 compared to 308,000 in 2019.

The decreases reflect reduced sales activity in the second quarter of 2020 as a result of COVID-19 related public health restrictions on certain sales channels. Gross meter acquisitions in 2019 includes the impact of a municipal aggregation deal in New Jersey which added approximately 35,000 meters. The number of meters served was relatively flat at December 31, 2020 compared to December 31, 2019. In 2020, average monthly churn decreased to 4.4% compared to 5.3% in 2019. The reduction in churn reflects the impact of a shift in our customer mix related to channel, product and geography as well as continuing increase in the ratio of fixed rate to variable rate customers, where fixed rate customers generally have lower rates of churn. The reduction in churn also reflects decreased sales activity by competitors as a result of COVID-19 related restrictions.

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.

(in thousands)	December 31, 2020	September 30, 2020	June 30, 2020	March 31, 2020	December 31, 2019
RCEs at end of quarter:					
Electricity customers	284	294	288	272	248
Natural gas customers	53	56	55	58	61
Total RCEs	337	350	343	330	309

RCEs increased 9.1% at December 31, 2020 compared to December 31, 2019 primarily due to our recent focus on adding higher consumption meters, warmer than average weather in 2020 and COVID-19 driven shift to work-from-home which increased per-meter consumption.

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

(amounts in thousands)	Year ended December 31,		Change	
	2020	2019	\$	%
Cost of revenues:				
Electricity	\$ 197,038	\$ 180,161	\$ 16,877	9.4%
Natural gas	19,099	25,825	(6,726)	(26.0)
Others	859	—	859	nm
Total cost of revenues	\$ 216,996	\$ 205,986	\$ 11,010	5.3%

	Year ended December 31,		Change	
	2020	2019		
Gross margin percentage:				
Electricity	27.3%	27.0%		0.3%
Natural gas	43.1%	35.3%		7.8%
Others	-5.4%	—		-5.4%
Total gross margin percentage	28.9%	28.1%		0.8%

Cost of revenues for electricity increased in 2020 compared to 2019 primarily because of increases in electricity consumption partially offset by a decrease in the average unit cost of electricity. Electricity consumption by GRE's REPs' customers increased 18.7% in 2020 compared to 2019. The average unit cost of electricity decreased by 8.0% in 2020 compared to 2019. Gross margin on electricity sales increased in 2020 compared to 2019 because the average rate charged to customers decreased less than the decrease in the average unit cost of electricity.

Cost of revenues for natural gas decreased in 2020 compared to 2019 primarily because of decreases in total natural gas consumption and average unit cost of natural gas. Natural gas consumption by GRE's REPs' customers decreased by 6.7% in 2020 compared to 2019. The average unit cost of natural gas decreased 20.9% in 2020 compared to 2019. Gross margin on natural gas sales increased in 2020 compared to 2019 because the decrease in the average rate charged to customers decreased more than the average unit cost of natural gas.

Selling, General and Administrative. The decrease in selling, general and administrative expense in 2020 compared to 2019 was primarily due to decreases in marketing and customer acquisition costs and employee-related costs partially offset by increase in provision for doubtful accounts and costs related to POR programs. Marketing and customer acquisition expenses decreased by \$4.1 million in 2020 compared to 2019 due to reduced pace of customer acquisition activities related to COVID-19 related public health restrictions. Employee-related expenses slightly decreased by \$0.1 million in 2020 compared to 2019 primarily due to a reduction in the number of employees. Provision for doubtful accounts and costs related to POR programs increased by \$2.8 million in 2020 compared to 2019 as a result of entrance to non-POR markets (which led to an increase in the provision for doubtful accounts) and increase in revenue. As a percentage of GRE's total revenues, selling, general and administrative expense increased from 18.6% in 2020 to 17.0% in 2019.

GRE International

GRE International holds our stakes in REPs outside of North America. These businesses currently include our stake in Shoreditch, which operates as Orbit Energy in the U.K., Genie Japan, and our controlling stake in Lumo, which operates in certain portions of Scandinavia. In the second quarter of 2020, we started commercial operations in Sweden through a wholly owned entity.

On October 8, 2020, the Company acquired 23.0% interest in Shoreditch that it did not previously own. The results of operations of GRE International include the accounts of Shoreditch from the date of acquisition through December 31, 2020.

Prior to the acquisition of the remaining 23.0% of Shoreditch, we accounted for our investment in Shoreditch under the equity method of accounting. Under this method we recorded our share in the net income or loss of Shoreditch. Therefore, revenue generated, and expenses incurred were not reflected in our consolidated revenue and expenses. The accounts of Shoreditch are consolidated to the consolidated financial statements after the acquisition.

(amounts in thousands)	Year Ended December 31,		Change	
	2020	2019	\$	%
Revenues:				
Electricity	\$ 40,690	\$ 16,406	\$ 24,284	148.0%
Natural gas	8,320	—	8,320	nm
Others	638	189	449	237.6
Total revenues	49,648	16,595	33,053	199.2
Cost of revenue	42,488	16,267	26,221	161.2
Gross profit	7,160	328	6,832	nm
Selling, general and administrative expenses	14,792	8,461	6,331	74.8
Loss from operations	\$ (7,632)	\$ (8,133)	\$ 501	(6.2)%
Equity in net loss of joint venture	\$ 1,502	\$ 4,440	\$ (2,938)	(66.2)%

nm— not meaningful

Meters served by GRE International's REPs, including Shoreditch, increased to 195,000 at December 31, 2020 from 127,000 at December 31, 2019 primarily as a result growth in Shoreditch's and Lumo Finland's customer bases. The Company also started the commercial operations of Lumo Sweden and Genie Japan in second quarter of 2020 and second quarter of 2019, respectively.

RCEs of GRE International's REPs, including Shoreditch at December 31, 2020 increased to 103,000 from 65,000 at December 31, 2019 primarily from the increase in meters served as discussed above.

Revenue and Cost of Revenue. GRE International's revenues and cost of revenue increased in 2020 compared to 2019 primarily due to the consolidation of Shoreditch in October 2020, increase in meters served in Lumo Finland and the start of commercial operations of Lumo Sweden and Japan in the second quarter of 2020 and 2019,

respectively. Shoreditch increased GREI's revenue and cost of revenue in 2020 by \$22.4 million and \$19.8 million, respectively. Meters served by Lumo Finland increased by 73.5% at December 31, 2020 compared to December 31, 2019.

Selling, General and Administrative. The increase in selling, general and administrative expense in 2020 compared to 2019 was primarily due to the consolidation of Shoreditch in October 2020, increase in activity in level of operations in Lumo Finland and Japan and start of commercial operations of Lumo Sweden. Shoreditch increased GREI's selling, general and administrative expenses in 2020 by \$4.9 million.

Equity in net loss of joint venture. Prior to the acquisition of the controlling interest in Shoreditch in October 2020, we accounted our ownership interest in Shoreditch using the equity method since we had the ability to exercise significant influence over Shoreditch's operating and financial matters, although we did not control Shoreditch. As of October 7, 2020, the book value the Company's investment in Shoreditch was reduced to nil as a result of the Company's share in accumulated losses of Shoreditch using the equity method of accounting, and as result, the Company did not recognize a certain portion of its share in net losses Shoreditch prior to the acquisition in October 2020 as the Company had no obligation to fund the Shoreditch losses. The Company's share in Shoreditch's net loss in 2020 was \$1.5 million compared to \$4.4 million in 2019. The decrease is primarily due to decrease in capital contributions to Shoreditch for the period from January 1, 2020 to October 7, 2020 compared to the year ended December 31, 2019.

GES Segment

The GES segment is composed of Prism, in which we acquired a 60.0% controlling interest in October 2018, Diversegy and Genie Solar.

(amounts in thousands)	Year Ended December 31,		Change	
	2020	2019	\$	%
Revenue	\$ 24,399	\$ 12,085	\$ 12,314	101.9%
Cost of revenue	22,143	10,139	12,004	118.4
Gross profit	2,256	1,946	310	15.9
Selling, general and administrative expenses	3,330	4,442	(1,112)	(25.0)
Impairment of customer relationship and goodwill	1,397	400	997	249.3
Loss from operations	\$ (2,471)	\$ (2,896)	\$ 425	(14.7)%

Revenue. GES's revenues increased in 2020 compared to 2019. The increase in revenues was the result of the delivery of a large number of orders at Prism particularly in the first half of 2020. Prism discontinued the relationship with its principal customer in the second quarter of 2020 resulting to decrease in GES revenues by 91.7% in the second half of 2020 compared to the first half of 2020. 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 2020 compared to 2019. The increase in cost of revenues primarily the result of a significant increase in deliveries of solar panels in 2020. Cost of revenue related to Diversegy included commissions incurred by our energy brokerage and marketing services businesses.

Selling, General and Administrative and Impairment of Customer Relationship and Goodwill. Selling, general and administrative expenses decreased in 2020 compared to 2019 primarily because of the streamlining of operations of Prism in first quarter of 2020.

In March 2020, we initiated a plan to sell the property, plant and equipment of Prism. Prism's 4.75% notes payable to Catskill Hudson Bank are collateralized by Prism's land and building and improvements. Prism's property, plant and equipment with a net book value of \$2.8 million and notes payable with net book value of \$0.9 million were reclassified as assets and liabilities held for sale and reported at lower of fair value less cost to sell and net book value. In the first quarter of 2020, the Company recorded a \$0.2 million write-down to fair value of certain property and equipment.

In second quarter of 2020, Prism renegotiated a contract with a customer which resulted in impairment of customer relationship of \$0.8 million included in the consolidated statements of operation.

In October 2020, Prism completed the sale of all assets held for sales and recorded a net loss from disposal of \$0.3 million included in the selling, general and administrative expenses in the consolidated statements of operations. A portion of the net proceeds was used to settle the notes payable of Prism classified as liabilities held for sale at a carrying amount of \$0.8 million.

In the fourth quarter of 2020, we recognized impairment charge of \$0.4 million against the goodwill previously recognized when we acquired a controlling interest in Prism in October 2018 reducing the value of goodwill related to Prism to nil.

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.

(amounts in thousands)	Year Ended December 31,		Change	
	2020	2019	\$	%
General and administrative expense and loss from operations	\$ 6,968	\$ 6,323	\$ 645	10.2

The increase in Corporate general and administrative expense in 2020 compared to 2019 was primarily due to expenses incurred by GOGAS related to the final testing of exploratory well in Golan Heights as discussed above, partially offset by decreases in stock-based compensation and professional and consulting fees. As a percentage of our consolidated revenues, Corporate general and administrative expense decreased from 2.0% in 2019 to 1.8% in 2020.

Consolidated

Selling, General and Administrative. Stock-based compensation expense included in consolidated selling, general and administrative expense was \$1.1 in 2020 and 2019. At December 31, 2020, aggregate unrecognized compensation cost related to non-vested stock-based compensation was \$1.7 million. The unrecognized compensation cost expected to be recognized over the average service period of 2.4 years.

As a percentage of our consolidated revenues, selling, general and administrative expense decreased from 23.0% in 2019 to 20.3% in 2020.

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

(amounts in thousands)	Year Ended December 31,		Change	
	2020	2019	\$	%
Income from operations	\$ 19,337	\$ 9,825	\$ 9,512	96.8%
Interest income	190	448	(258)	(57.6)
Interest expense	(328)	(530)	202	(38.1)
Equity in the net loss of equity method investees	(1,443)	(4,830)	3,387	(70.1)
Gain on the consolidation of subsidiary	5,473	—	5,473	nm
Other income, net	639	1,066	(427)	(40.1)
Provision for from income taxes	(8,314)	(4,600)	(3,714)	80.7
Net income	15,554	1,379	14,175	1,027.9
Net (income) loss attributable to noncontrolling interests	(2,399)	2,796	(5,195)	(185.8)
Net income attributable to Genie Energy Ltd.	\$ 13,155	\$ 4,175	\$ 8,980	215.1%

nm — not meaningful

Interest Income. The decrease in interest income in 2020 compared to 2019 was primarily due to a decrease in interest rates on cash and cash equivalents.

Interest Expense. The decrease in interest expense in 2020 compared to 2019 was primarily due to the settlement of a revolving line of credit in April 2020.

Other Income, net. Other expense, net in 2020 and 2019 consisted primarily foreign currency transaction gains and losses.

Provision for Income Taxes. The increase in provision for income tax in 2020 compared to 2019 is primarily due to the higher taxable income of GRE in 2020 compared to 2019.

Net (Income) Loss Attributable to Noncontrolling Interests. Income attributable to noncontrolling interest in 2020 was mainly consist of noncontrolling interest share in income resulting from write-off of intercompany payable of GOGAS entities within the Company. The income was offset by the share of noncontrolling interest in the losses mainly from Prism, Lumo Finland and Citizens Choice Energy. Loss attributable to noncontrolling interest in 2020 is primarily from the losses of Prism, Lumo Finland and Citizens Choice Energy.

Gain on Consolidation of Subsidiary. Gain on consolidation of subsidiary in 2020 was from the acquisition of the controlling interest of Shoreditch in October 2020. The gain pertains to the estimated fair value of the noncontrolling interest to Shoreditch immediately prior to acquisition. The carrying value of our investment in Shoreditch immediately before the acquisition was nil.

LIQUIDITY AND CAPITAL RESOURCES

General

In February 2021, a series of severe winter storms (collectively, Winter Storm Uri) struck the mid-western United States. The storm triggered unprecedented increases in electricity demand in combination with significant reductions in supply within the Electric Reliability Council of Texas ("ERCOT") service area. Wholesale electricity prices reached or exceeded maximum allowed clearing prices for sustained periods and rolling blackouts impacted millions of residential and commercial customers across the State of Texas.

In January and February of 2021, the Company experienced unprecedented price volatility in the Japanese and Texas markets. These events are expected to have an estimated adverse impact on the first quarter of 2021 consolidated result of operations of \$2.5 million in Japan and \$12.8 million to \$14.0 million in Texas.

We currently expect that our cash flows from operations in the next twelve months and the \$36.9 million balance of unrestricted cash and cash equivalents that we held at December 31, 2020 will be sufficient to meet our currently anticipated cash requirements for at least the period from January 1, 2021 to March 16, 2022.

At December 31, 2020, we had working capital (current assets less current liabilities) of \$36.3 million.

(amounts in thousands)	Year ended December 31,	
	2020	2019
Cash flows provided by (used in):		
Operating activities	\$ 23,119	\$ 15,118
Investing activities	(3,027)	(5,773)
Financing activities	(15,194)	(15,623)
Effect of exchange rate changes on cash and cash equivalents	(268)	1
Increase (decrease) in cash and cash equivalents	\$ 4,630	\$ (6,277)

Operating Activities

Cash provided by continuing operating activities was \$23.1 million and \$15.8 million in the years ended December 31, 2020 and 2019, respectively. Net income from continuing operations after non-cash adjustments decreased cash flows by \$28.4 million for 2020 compared to \$15.7 million in 2019. The increase is primarily the result of favorable results of continuing operations in 2020 compared to the same period in 2019.

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 decreased cash flows by \$5.0 million for 2020, compared to 2019. Changes in other assets decreased cash flows by \$1.1 million for 2020, compared to 2019.

Certain of GREs REPs are party to an Amended and Restated Preferred Supplier Agreement with BP Energy Company, or BP, which is to be in effect through November 30, 2023. Under the agreement, the 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. 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, 2020, we were in compliance with such covenants. At December 31, 2020, restricted cash—short-term of \$0.5 million and trade accounts receivable of \$47.0 million were pledged to BP as collateral for the payment of trade accounts payable to BP of \$16.7 million at December 31, 2020.

We had purchase commitments of \$131.3 million at December 31, 2020, of which \$85.3 million was for purchases of electricity.

Orbit Energy has an exclusive contract with Shell U.K. Limited ("Shell") to provide electricity and natural gas to Orbit Energy until June 2024, with an option (not an obligation) to extend through June 2027. Shell provides access to the forward market such that Orbit Energy can enter into a forward hedge for its customers which protects Orbit Energy from mark-to-market fluctuations. Shell also provide extended payment facilities of an additional 30 days compared to the U.K. payment terms up to a limit of £5.0 million at an interest of LIBOR plus 5.0%. Shell charges an additional £0.9 per therm of natural gas and Mwh of electricity for all delivered volume on top of the wholesale costs. The contract with Shell is secured by Orbit Energy's shares. The contract is also subject to satisfaction of certain conditions including the maintenance of certain covenants which includes minimum levels of cash, gross margin, net worth, as defined in the contract, earnings before tax, as defined in the contract and provision for bad debts on accounts receivable. At December 31, 2020, Orbit Energy was in compliance with such covenants. At December 31, 2020, Shoreditch was in compliance with all such covenants. At December 31, 2020, Shoreditch total liability to Shell was \$7.0 million, which is included in trade accounts payable and accrued expenses in the consolidated balance sheet.

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

On July 17, 2017, the Company's subsidiary, Genie Energy UK Ltd. ("GEUK"), entered into a definitive agreement to launch 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. In 2020 and 2019, the Company contributed \$1.5 million and \$3.2 million, respectively, to Shoreditch.

On October 8, 2020, the Company entered into an agreement (the "Purchase Agreement") with Energy Global Investments Pty Ltd ("EGC") under which GEUK purchased EGC's remaining interest in Shoreditch, in exchange for a cash payment of £1.3 million (equivalent to \$1.7 million on the date of closing) offset by £0.2 million (equivalent to \$0.2 million on the date of closing) in amounts owing from EGC to the Company under a loan provided to EGC in 2018 related to EGC's capital contributions to Shoreditch. Prior to October 8, 2020, the net book value of the Company's investment in Shoreditch was nil. Following the transaction, Shoreditch is a wholly-owned subsidiary of GEUK. Shoreditch had \$2.7 million of cash at the date of acquisition.

In December 2020, the Company invested \$5.0 million in the Class B common stocks of Rafael Holdings, Inc., a publicly-traded company ("Rafael"). Rafael also issued warrants to purchase an additional 43,649 of Rafael's Class B common stock at \$22.91 per share up to June 6, 2022. The Company does not exercise significant influence over the operating or financial policies of Rafael.

In March 2020, the Company initiated a plan to sell the property, plant and equipment of Prism. Prism's 4.75% notes payable to Catskill Hudson Bank were collateralized by Prism's land, building and improvements. In the first quarter of 2020, Prism's property, plant and equipment and notes payable were reclassified as assets and liabilities held for sale and reported at lower of fair value less cost to sell. In the first quarter of 2020, the Company recorded a \$0.2 million write-down to the fair value of certain property and equipment.

In October 2020, the Prism completed the sale of all assets held for sale with an aggregate proceed \$2.7 million of and recorded a net loss from disposal of \$0.3 million included in the selling, general and administrative expenses in the consolidated statements of operations. In October 2020, Prism settled the 4.75% notes payable to Catskill Bank previously classified as liabilities held for sale with full payment of the principal amount of \$0.9 million.

Our capital expenditures were \$0.2 million and \$0.4 million in 2020 and 2019, respectively. We currently anticipate that our total capital expenditures in the year ending December 31, 2021 will be between \$0.5 million and \$1.0 million.

In connection with the acquisition of Lumo Finland in January 2019, the Company has a conditional 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 Lumo Finland Closing Date and ending three years later.

Financing Activities

In each of 2020 and 2019, 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 2020 and 2019 were \$1.5 million. On February 18, 2021, we paid a quarterly Base Dividend of \$0.1594 per share on our Series 2012-A Preferred Stock for the fourth quarter of 2020 to stockholders of record as of the close of business on February 6, 2021.

In 2020 and 2019, we paid aggregate dividends per share of \$0.33 and \$0.30, respectively, to stockholders of our Class A common stock and Class B common stock. The aggregate dividends paid in 2020 and 2019 were \$8.7 million and \$8.1 million, respectively.

As announced on March 11, 2021, we suspended our dividends on our common stock to rebuild our cash position in light of the losses incurred from the effects of Winter Storm Uri as discussed above.

In 2020, we received minimal proceeds from the exercise of stock options for which we issued 4,133 shares of our Class B common stock. In 2019, we received \$1.4 million from the exercise of stock options for which we issued 205,350 shares of our Class B common stock.

On March 11, 2013, our Board of Directors approved a program for the repurchase of up to an aggregate of 7.0 million shares of our Class B common stock. In 2020, we acquired 233,602 Class B common stock under the stock repurchase program for an aggregate amount of 1.7 million. In 2019, we acquired 732,869 Class B common stock under the repurchase program for an aggregate amount of \$5.6 million. At December 31, 2020, 5.9 million shares remained available for repurchase under the stock repurchase program.

On November 28, 2019, Genie Japan entered into a Loan Agreement with Tokyo Star Bank for a ¥100.0 million (equivalent to \$0.9 million) short-term credit facility. Genie Japan provided a letter of credit issued by JPMorgan Chase amounting to ¥100.0 million (equivalent to \$0.9 million) as collateral. The outstanding principal amount incurred interest at Tokyo Star Bank's short-term prime rate plus 0.25% per annum. Interest was payable monthly and all outstanding principal and any accrued and unpaid interest matured on May 13, 2020. Genie Japan settled the Loan agreement and paid the outstanding balance of ¥100.0 million (equivalent to \$0.9 million) on May 13, 2020.

On May 13, 2020, Genie Japan entered into a new Loan Agreement with Tokyo Star Bank for a ¥150.0 million (equivalent to \$1.4 million) short-term credit facility ("May 2020 Loan"). Genie Japan provided a letter of credit issued by JPMorgan Chase in the amount of ¥150.0 million (equivalent to \$1.4 million) as collateral. The outstanding principal amount incurs interest at 3.0% per annum. Interest is payable monthly and all outstanding principal and any accrued and unpaid interest matured on November 13, 2020. On November 13, 2020, Genie Japan and Tokyo Star Bank amended the May 2020 Loan to extend the maturity date to March 13, 2021. At September 30, 2020, \$1.4 million was outstanding under the May 2020 Loan. At December 31, 2020, the effective interest rate was 3.0%.

On December 5, 2019, we entered into the first amendment of Credit Agreement with JPMorgan Chase Bank ("Credit Agreement") to extend the maturity date to December 31, 2020. On December 8, 2020, we entered into the second amendment of its existing Credit Agreement to extend the maturity date to December 31, 2021. The Company continues to have the aggregate principal amount of \$5.0 million credit line facility ("Credit Line"). The Company pays a commitment fee of 0.1% per annum on unused portion of the Credit Line as specified in the Credit Agreement. The borrowed amounts will be in the form of letters of credit which will bear interest of 1.0% per annum. The Company will also pay a fee for each letter of credit that is issued equal to the greater of \$500 or 1.0% of the original maximum available amount of the letter of credit. We agreed to deposit cash in a money market account at JPMorgan Chase Bank as collateral for the line of credit equal to \$5.1 million. As of December 31, 2020, JP Morgan Chase Bank issued \$2.3 million letter of credit from the Credit Line. As of December 31, 2020, none of the letters of credits were drawn upon. At December 31, 2020, the cash collateral of \$5.2 million was included in restricted cash—short-term in the consolidated balance sheet.

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 \$20.0 million revolving loan facility. The borrowers consist of our 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 was payable monthly and all outstanding principal and any accrued and unpaid interest matured on April 3, 2020. In April 2020, the revolving line of credit expired and we paid outstanding balance of \$3.5 million.

On December 11, 2019, Prism refinanced the 5.95% notes payable to Catskill Hudson Bank that were due in November 2019. The outstanding balance of notes payable of \$0.9 million December 11, 2019 was payable in monthly equal installments for period of ten years. The outstanding principal amount incurred fixed interest at 4.75% per annum. The notes payable were secured by Prism's commercial property in Highland, New York. In March 2020, the outstanding balance of the notes payable was transferred to liabilities held for sale. On October 16, 2020, Prism settled the notes payable to Catskill Bank previously classified as liabilities held for sale with full payment of the principal amount of \$0.8 million.

In 2020, we paid \$0.5 million to repurchase 58,650 shares of our Class B common stock, and, in 2019, we paid \$0.5 million to repurchase 48,197 shares of our Class B common stock 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.

Series 2012-A Preferred Stock

At December 31, 2020, 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.

On March 21, 2020, the Board of Directors of the Company approved a program to redeem up to \$4.0 million worth of the Company's Preferred Stock in accordance with the Certificate of Designations for the preferred stock. There was no redemption under this program in 2020.

CONTRACTUAL OBLIGATIONS AND OTHER COMMERCIAL COMMITMENTS

The following table quantifies our future contractual obligations and other commercial commitments at December 31, 2020:

Payments Due by Period

(amounts in millions)	Total	Less than 1 year	1 – 3 years	4 – 5 years	After 5 years
Purchase obligations	\$ 85,283	\$ 51,223	\$ 33,178	\$ 882	\$ —
Renewable energy credits purchase obligations	45,968	18,195	26,643	1,130	—
Loan payable	1,453	1,453	—	—	—
Operating leases	5,387	1,517	2,340	458	1,072
(1)(2)(3) Other liabilities	30	30	—	—	—
(4)(5)(6)					
TOTAL CONTRACTUAL OBLIGATIONS	\$ 138,121	\$ 72,418	\$ 62,161	\$ 2,470	\$ 1,072

- (1) The above table does not include amounts related to call option in the amount of \$0.1 million in connection with the acquisition of Smile Energy due to the uncertainty of the amount and/or timing of any such payments.
- (2) The above table does not include amounts related to call option and a put option related to the noncontrolling interest in connection with the acquisition of Lumo Finland due to the uncertainty of the amount and/or timing of any such payments.
- (3) The above table does not include the financing made available to New Atid of up to \$0.4 million due to the uncertainty of the amount and/or timing of any financing to be provided.
- (4) The above table does not include an aggregate of \$13.7 million in performance bonds at December 31, 2020 due to the uncertainty of the amount and/or timing of any payments.
- (5) The above table does not include an aggregate of \$2.3 million in letters of credit issued by JP Morgan Chase to the Company as of December 31, 2020 due to the uncertainty of the amount and/or timing of any payments. None of the letters of credit were used as of December 31, 2019.
- (6) The above table does not include our unrecognized income tax benefits for uncertain tax positions at December 31, 2020 of \$2.5 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, 2020, the Company had outstanding aggregate performance bonds of \$13.7 million and \$2.3 million of unused letters of credit.

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, for our GRE segment, if our gross profit per unit in 2020 had remained the same as in 2019, due to changes in the price of natural gas and electricity, our gross profit from electricity sales would have increased by \$4.9 million in 2020 and our gross profit from natural gas sales would have decreased by \$1.3 million in 2020.

Hypothetically, for our GRE International segment, if our gross profit per unit in 2020 had remained the same as in 2019, our gross profit from electricity sales would have decreased by \$6.6 million in 2020.

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 5 – *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**

The Company, under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, conducted an evaluation of the effectiveness of the design and operation of the Company's "disclosure controls and procedures" (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")), as of December 31, 2020. Based on our evaluation, our principal executive officer and principal financial officer concluded that the Company's disclosure controls and procedures were ineffective as of December 31, 2020 due to the material weakness described below.

Management's Annual Report on Internal Control Over Financial Reporting

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 Exchange Act 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, 2020. 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, 2020. Based on our evaluation, our principal executive officer and principal financial officer concluded that the review of our income tax provision was not designed and maintained at an appropriate level of precision to prevent or detect a material misstatement on a timely basis. Accordingly, management has determined that this control deficiency constitutes a material weakness.

Because of this material weakness, management has concluded that our internal control over financial reporting was not effective as of December 31, 2020. 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, 2020 has been audited by BDO USA 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 implemented in the second quarter of 2021.

The preliminary plan includes:

- Engaging a third party tax consultant with specific expertise in international taxation and business acquisitions; and
- Perform a formal detailed review of tax implications for all business acquisitions as part of the management review and diligence process.

Acquisition of Shoreditch

We acquired a controlling interest in Shoreditch in October 2020. 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, 2020. Shoreditch constituted 24.8% and 12.9% of our total assets and net assets, respectively, as of December 31, 2020, and 5.9% of our consolidated revenue for the year then ended.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) or 15d-15(f) of the Exchange Act) that occurred during the fourth quarter period that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Item 9B. Other Information.

None.

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, 2020, 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, 2020, 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, 2020, 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, 2020, 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, 2020, 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:

1. Report of Independent Registered Public Accounting Firm on Internal Control Over Financial Reporting

Report of Independent Registered Public Accounting Firms on Consolidated Financial Statements

2. Financial Statement Schedules.

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, 10.02 and 10.03 are management contracts or compensatory plans or arrangements.

(b) Exhibits.

Exhibit Number	Description of Exhibits
3.01 ⁽¹⁾	Amended and Restated Certificate of Incorporation of the Registrant.
3.02 ⁽²⁾	Amended and Restated Certificate of Designation of Series 2012-A Preferred Stock of the Registrant.
3.03 ⁽³⁾	Fourth Amended and Restated By-Laws of the Registrant.
4.02*	Description of the Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934
10.01 ⁽⁴⁾	Third Amended and Restated Employment Agreement, effective as of January 1, 2021, between the Registrant and Avi Goldin.
10.02 ⁽⁵⁾	2011 Stock Option and Incentive Plan of Genie Energy Ltd., as Amended and Restated.
10.03 ⁽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 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
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* 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 March 19, 2021.
- (4) Incorporated by reference to Form 8-K, filed November 6, 2020.
- (5) Incorporated by reference to the Schedule 14A, filed April 28, 2020.

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 16, 2021

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
<u>/s/ Howard S. Jonas</u> Howard S. Jonas	Chairman of the Board and Director	March 16, 2021
<u>/s/ Michael Stein</u> Michael Stein	Chief Executive Officer (Principal Executive Officer)	March 16, 2021
<u>/s/ Avi Goldin</u> Avi Goldin	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	March 16, 2021
<u>/s/ James A. Courter</u> James A. Courter	Vice Chairman of the Board and Director	March 16, 2021
<u>/s/ W. Wesley Perry</u> W. Wesley Perry	Director	March 16, 2021
<u>/s/ Alan B. Rosenthal</u> Alan B. Rosenthal	Director	March 16, 2021
<u>/s/ Allan Sass</u> Allan Sass	Director	March 16, 2021

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

To the Board of Directors and Stockholders of
Genie Energy Ltd.
Newark, New Jersey

Opinion on Internal Control over Financial Reporting

We have audited Genie Energy Ltd.'s (the "Company's") internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). In our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on the COSO criteria.

We do not express an opinion or any other form of assurance on management's statements referring to any corrective actions taken by the Company after the date of management's assessment.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2020 and 2019, the related consolidated statements of operations, comprehensive income (loss), equity, and cash flows for each of the years in the period ended December 31, 2020 and 2019, and the related notes (collectively referred to as "the consolidated financial statements") and our report dated March 16, 2021, expressed an unqualified opinion thereon.

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 Item 9A. Controls and Procedures, 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.

We conducted our audit of internal control over financial reporting in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, 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.

As indicated in the accompanying "Item 9A. Controls and Procedures", management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Shoreditch Energy Limited ("Shoreditch"), which was acquired on October 8, 2020, and which is included in the consolidated balance sheet of the Company as of December 31, 2020, and the related consolidated statements of operations, comprehensive income (loss), equity, and cash flows for the period then ended. Shoreditch constituted 24.8% and 12.9% of total assets and net assets, respectively, as of December 31, 2020 and 5.9% of revenues, for the period then ended. Management did not assess the effectiveness of internal control over financial reporting of Shoreditch because of the timing of the acquisition. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of Shoreditch.

A material weakness is a deficiency, or a 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. A material weakness regarding management's failure to design and maintain controls over accounting for income taxes has been identified and described in management's assessment. This material weakness was considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2020 financial statements, and this report does not affect our report dated March 16, 2021 on those financial statements.

Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ BDO USA, LLP

Woodbridge, New Jersey
March 16, 2021

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.
Newark, New Jersey

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Genie Energy Ltd. (the "Company") as of December 31, 2020 and 2019, the related consolidated statements of operations, comprehensive income (loss), equity, and cash flows for each of the years then ended, 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 at December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the years 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, 2020, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") and our report dated March 16, 2021 expressed an adverse opinion thereon.

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 audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

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

Unbilled Revenue

As described in Note 1 to the consolidated financial statements, the Company recognizes revenue from units of electricity and natural gas delivered, but not invoiced ("unbilled revenue") based on estimated amounts customers will be billed for services rendered from the time meters were last read to the end of the reporting period. The unbilled revenue is estimated 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. Revenue from the sale of units of electricity and natural gas recognized for the year amounted to approximately \$353.5 million in 2020, including approximately \$26.0 million of unbilled revenue.

We identified estimated unbilled revenue as a critical audit matter. Our principal considerations included management's significant estimates and inputs, including 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. Because changes in those estimates could have a material effect on the amount of unbilled revenue, auditing these significant estimates and inputs involved a high degree of auditor judgement and effort in performing audit procedures.

The primary procedures we performed to address this critical audit matter included:

- Testing the design and operating effectiveness of certain controls related to management's process to estimate and record unbilled revenue.
- Assessing management's inputs in the estimate such as per day, year over year usage data, the number of unbilled days in the period and seasonality adjustments for reasonableness.
- Evaluating the reasonableness of the unbilled revenue during the year by comparing the estimated unbilled revenue from sale of units of electricity and natural gas to revenue billed in the subsequent period. In cases where estimated revenue by product was significantly higher or lower than expected, we obtained further explanations and corroborating supporting documentation to evaluate the impact to the estimated unbilled revenue.

/s/ BDO USA LLP

We have served as the Company's auditor since 2019.

BDO USA, LLP
Woodbridge, New Jersey
March 16, 2021

GENIE ENERGY LTD.

CONSOLIDATED BALANCE SHEETS

(in thousands, except per share amounts)	December 31	
	2020	2019
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 36,913	\$ 31,242
Restricted cash—short-term	6,271	6,792
Marketable equity securities	5,089	—
Trade accounts receivable, net of allowance for doubtful accounts of \$8,793 and \$2,631 at December 31, 2020 and 2019, respectively	60,778	49,822
Inventory	16,930	16,632
Prepaid expenses	4,633	6,318
Other current assets	3,206	2,133
TOTAL CURRENT ASSETS	133,820	112,939
Property and equipment, net	259	3,607
Goodwill	25,929	12,135
Other intangibles, net	11,645	6,837
Investment in equity method investees	747	675
Restricted cash—long-term	—	520
Deferred income tax assets, net	4,882	12,154
Other assets	10,057	7,377
TOTAL ASSETS	\$ 187,339	\$ 156,244
LIABILITIES AND EQUITY		
CURRENT LIABILITIES:		
Loans payable	\$ 1,453	\$ 921
Trade accounts payable	43,005	24,387
Accrued expenses	42,762	26,116
Contract liability	5,609	13,426
Income taxes payable	1,893	1,591
Due to IDT Corporation	257	381
Short-term revolving line of credit	—	2,514
Other current liabilities	2,494	2,820
TOTAL CURRENT LIABILITIES	97,473	72,156
Long-term notes payable	—	777
Other liabilities	3,787	2,381
TOTAL LIABILITIES	101,260	75,314
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, 2020 and 2019	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, 2020 and 2019	16	16
Class B common stock, \$0.01 par value; authorized shares – 200,000; 25,966 and 25,785 shares issued and 24,646 and 24,755 shares outstanding at December 31, 2020 and 2019, respectively	260	258
Additional paid-in capital	140,746	139,615
Treasury stock, at cost, consisting of 1,320 and 1,030 shares of Class B common at December 31, 2020 and 2019, respectively	(9,839)	(7,675)
Accumulated other comprehensive income	3,827	2,519
Accumulated deficit	(56,658)	(59,671)
Total Genie Energy Ltd. stockholders' equity	98,095	94,805
Noncontrolling interests:		
Noncontrolling interests	(12,016)	(13,875)
TOTAL EQUITY	86,079	80,930
TOTAL LIABILITIES AND EQUITY	\$ 187,339	\$ 156,244

See accompanying notes to consolidated financial statements.

GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except per share data)	Year ended December 31,	
	2020	2019
REVENUES:		
Electricity	\$ 311,578	\$ 263,091
Natural gas	41,881	39,926
Other	25,853	12,274
Total revenues	379,312	315,291
Cost of revenues	281,627	232,392
GROSS PROFIT	97,685	82,899
OPERATING EXPENSES AND LOSSES:		
Selling, general and administrative ⁽ⁱ⁾	76,951	72,674
Impairment of assets	1,397	400
Income from operations	19,337	9,825
Interest income	190	448
Interest expense	(328)	(530)
Equity in the net loss in equity method investees	(1,443)	(4,830)
Gain on acquisition of a subsidiary	5,473	—
Other income, net	639	1,066
Income before income taxes	23,868	5,979
Provision for income taxes	(8,314)	(4,600)
NET INCOME	15,554	1,379
Net (income) loss attributable to noncontrolling interests	(2,399)	2,796
NET INCOME ATTRIBUTABLE TO GENIE ENERGY LTD.	13,155	4,175
Dividends on preferred stock	(1,481)	(1,481)
NET INCOME ATTRIBUTABLE TO GENIE ENERGY LTD. COMMON STOCKHOLDERS	\$ 11,674	\$ 2,694
Earnings per share attributed to Genie Energy Ltd. common stockholder		
Basic	\$ 0.45	\$ 0.10
Diluted	\$ 0.44	\$ 0.10
Weighted-average number of shares used in the calculation of earnings per share		
Basic	26,109	26,607
Diluted	26,813	27,464
Dividends declared per common share	\$ 0.33	\$ 0.30
(i) Stock-based compensation included in selling, general and administrative expenses	\$ 1,134	\$ 1,102

See accompanying notes to consolidated financial statements.

GENIE ENERGY LTD.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

(in thousands)	Year ended December 31,	
	2020	2019
NET INCOME	\$ 15,554	\$ 1,379
Other comprehensive income (loss):		
Foreign currency translation adjustments	792	(519)
COMPREHENSIVE INCOME	16,346	860
Comprehensive (loss) income attributable to noncontrolling interests	(1,877)	3,243
COMPREHENSIVE INCOME ATTRIBUTABLE TO GENIE ENERGY LTD.	\$ 14,469	\$ 4,103

See accompanying notes to consolidated financial statements.

GENIE ENERGY LTD.
CONSOLIDATED STATEMENTS OF EQUITY (in thousands)

Genie Energy Ltd. Stockholders

Gene Energy Ltd. Stockholders													
	Preferred		Class A		Class B		Additional	Accumulated Other					Total
	Stock		Common Stock		Common Stock		Paid-In	Treasury	Comprehensive	Accumulated	Noncontrolling	Equity	
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Stock	Income	Deficit	Interests		
BALANCE AT DECEMBER													
31, 2018	2,322	\$ 19,743	1,574	\$ 16	25,544	\$ 255	\$ 136,629	\$ (1,624)	\$ 2,591	\$ (53,939)	\$ (11,009)	\$ 92,662	
Adoption of ASU 2018-07	—	—	—	—	—	—	312	—	—	(312)	—	—	
Dividends on preferred stock	—	—	—	—	—	—	—	—	—	(1,481)	—	(1,481)	
Dividends on common stock (\$0.30 per share)	—	—	—	—	—	—	—	—	—	(8,114)	—	(8,114)	
Purchase of Lumo	—	—	—	—	—	—	—	—	—	—	410	410	
Restricted Class B common stock purchased from employees	—	—	—	—	—	—	—	(467)	—	—	—	(467)	
Stock-based compensation	—	—	—	—	36	1	1,102	—	—	—	—	1,103	
Options issued to Howard S. Jonas	—	—	—	—	—	—	325	—	—	—	—	325	
Exercise of stock options	—	—	—	—	205	2	1,405	—	—	—	—	1,407	

GENIE ENERGY LTD.

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

Genie Energy Ltd. Stockholders

	Preferred Stock		Class A Common Stock		Class B Common Stock		Additional Paid-In	Treasury	Accumulated Other Comprehensive	Accumulated	Noncontrolling	Total
	Shares	Amount	Shares	Amount	Shares	Amount	Capital	Stock	Income	Deficit	Interests	Equity
Repurchase of Class B common stock from stock repurchase program	—	—	—	—	—	—	—	(5,584)	—	—	—	(5,584)
Purchase of equity of subsidiary	—	—	—	—	—	—	(158)	—	—	—	(33)	(191)
Other comprehensive loss	—	—	—	—	—	—	—	—	(72)	—	(447)	(519)
Net income for the year ended December 31, 2019	—	—	—	—	—	—	—	—	—	4,175	(2,796)	1,379
BALANCE AT DECEMBER 31, 2019	2,322	19,743	1,574	16	25,785	258	139,615	(7,675)	2,519	(59,671)	(13,875)	80,930
Dividends on preferred stock	—	—	—	—	—	—	—	—	—	(1,481)	—	(1,481)
Dividends on common stock (\$0.33 per share)	—	—	—	—	—	—	—	—	—	(8,661)	—	(8,661)
Deconsolidation of subsidiaries	—	—	—	—	—	—	—	—	(6)	—	(92)	(98)
Restricted Class B common stock purchased from employees	—	—	—	—	—	—	—	(460)	—	—	—	(460)
Stock-based compensation	—	—	—	—	22	2	1,132	—	—	—	—	1,134
Exercise of stock options	—	—	—	—	4	—	28	—	—	—	—	28
Repurchase of Class B common stock from stock repurchase program	—	—	—	—	—	—	—	(1,704)	—	—	—	(1,704)
Purchase of equity of subsidiaries	—	—	—	—	—	—	(29)	—	—	—	74	45
Other comprehensive loss	—	—	—	—	—	—	—	—	1,314	—	(522)	792
Net income for the year ended December 31, 2020	—	—	—	—	—	—	—	—	—	13,155	2,399	15,554
BALANCE AT DECEMBER 31, 2020	2,322	\$ 19,743	1,574	\$ 16	25,811	\$ 260	\$ 140,746	\$ (9,839)	\$ 3,827	\$ (56,658)	\$ (12,016)	\$ 86,079

See accompanying notes to consolidated financial statements.

GENIE ENERGY LTD.
CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	Year ended December 31,	
	2020	2019
OPERATING ACTIVITIES		
Net income	\$ 15,554	\$ 1,379
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	3,548	3,627
Deferred income taxes	7,272	3,471
Provision for doubtful accounts receivable	3,734	658
Impairment of assets	1,397	400
Stock-based compensation	1,134	1,102
Equity in the net loss of equity method investees	1,443	4,830
Loss on sale disposal of assets, net	262	—
Gain on consolidation of subsidiary	(5,473)	—
Unrealized gain on marketable equity securities and investment	(348)	—
Gain on deconsolidation of subsidiaries	(98)	—
Change in assets and liabilities, net of effect of acquisition:		
Trade accounts receivable	(6,681)	(12,041)
Inventory	(298)	(6,739)
Prepaid expenses	1,714	(124)
Other current assets and other assets	(3,208)	1,137
Trade accounts payable, accrued expenses and other current liabilities	15,950	5,506
Contract liability	(12,961)	12,271
Due to IDT Corporation	(124)	147
Income taxes payable	302	128
Net cash provided by operating activities	23,119	15,752
INVESTING ACTIVITIES		
Capital expenditures	(167)	(404)
Investments in notes receivable	—	(214)
Proceeds from sale of assets	2,672	—
Purchase of marketable equity security and investment	(5,000)	—
Cash acquired from acquisition of Shoreditch, net of cash payment	958	—
Payment for acquisition of Lumo Energia, net of cash acquired	—	(2,044)
Repayment of notes receivable	12	124
Investments in equity method investees	(1,502)	(3,235)
Net cash used in investing activities	(3,027)	(5,773)
FINANCING ACTIVITIES		
Dividends paid	(10,142)	(9,595)
Purchases of Class B common stock	(1,704)	(5,584)
Repayment of short-term debt—Lumo Energia	—	(2,260)
Repayment of notes payable	(867)	(45)
Proceeds from exercise of stock options	28	1,407
Proceeds from revolving line of credit	1,000	—
Repayment of revolving line of credit	(3,514)	—
Proceeds from loan	1,395	921
Repayment of loan payable	(930)	—
Repurchases of Class B common stock from employees	(460)	(467)
Net cash used in financing activities	(15,194)	(15,623)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(268)	1
Net increase (decrease) in cash, cash equivalents and restricted cash	4,630	(5,643)
Cash, cash equivalents and restricted cash at beginning of year	38,554	44,197
Cash, cash equivalents and restricted cash at end of year	\$ 43,184	\$ 38,554
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION		
Cash payments made for interest	\$ 333	\$ 529
Cash payments made for income taxes	\$ 741	\$ 702

See accompanying notes to consolidated financial statements.

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 100% of Genie Energy International Corporation ("GEIC"), which owns 100% of Genie Retail Energy ("GRE"), 100% of Genie Energy International LLC ("GRE International" or "GREI"), and 100% of Genie Energy Services ("GES"). The "Company" in these financial statements refers to Genie, GRE, GRE International and GES and their respective subsidiaries, on a consolidated basis.

GRE owns and operates retail energy providers ("REPs"), including IDT Energy, Inc. ("IDT Energy"), Residents Energy, LLC ("Residents Energy"), Town Square Energy, LLC and Town Square Energy East, LLC (collectively, "TSE"), Southern Federal Power, LLC ("Southern Power") and Mirabito Natural Gas ("Mirabito"). GRE's REP businesses resell electricity and natural gas to residential and small business customers primarily in the Eastern and Midwestern United States and Texas.

GRE International holds the Company's 100% interest (which was 77.0% prior to October 8, 2020) in Shoreditch Energy Limited (see *Note 2*), a REP that serves customers in the United Kingdom under the name Orbit Energy, and its 98.8% interest in venture in Japan, which launched commercial operations in second quarter of 2019, the Company's 92.5% controlling interest in Lumo Energia Oyj ("Lumo Finland"), a REP serving residential customers in Finland, and its 100% interest in Lumo Energi AB ("Lumo Sweden"), which was formed in 2019 to serve retail energy customers in Sweden.

GES oversees Diversegy LLC ("Diversegy"), a retail energy advisory and brokerage company that serves commercial and industrial customers throughout the United States, manages GRE's 60.0% interest in Prism Solar Technology, Inc. ("Prism"), a solar solutions company that is engaged in U.S. based manufacturing of solar panels, solar installation design and solar energy project management and Genie Solar Energy, a rooftop solar system sales and general contracting company.

In December 2020, Afek Oil & Gas Ltd., the oil and gas exploration project in the Golan Heights in Northern Israel ("Afek"), completed the final planned testing on one of its completed exploratory wells. The test was conducted as prior analysis indicated that a zone within the well potentially contained evidence of hydrocarbons at levels sufficient to warrant additional testing. After analyzing the results of the test and subsequent activity, as no traces of light oil were found. As a result, Afek ceased operations. The related assets, liabilities, results of operations and cash flows are combined with corporate for all periods presented.

Seasonality and Weather

The weather and the seasons, among other things, affect GRE's 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. Unseasonal temperatures in other periods may also impact demand levels. 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 47.7% and 46.9% of GRE's natural gas revenues for the relevant years were generated in the first quarters of 2020 and 2019, 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 31.8% of GRE's electricity revenues for the relevant years were generated in the third quarters of 2020 and 2019. 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 14). All significant intercompany accounts and transactions between the consolidated entities are eliminated. See Note 2, *Acquisitions*, for details of the new subsidiaries included in the consolidation.

Equity Method 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, marketable equity securities and other investments, 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.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Revenue Recognition

Revenues from the Sale of Electricity and Natural Gas

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. 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. GRE and Genie Japan 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 and historical trends.

Revenues from Shoreditch are accrued based on an estimate of the quantity in units of electricity or natural gas supplied to customers by profile class. The estimate is made using historical consumption patterns, industry estimated consumption rates, and takes into consideration industry reconciliation processes.

Utility companies in the U.S. 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 recognizes the incremental costs of obtaining a contract with a customer as an asset if it expects the benefit of those costs to be longer than one year. The Company determined that certain sales commissions to acquire customers meet the requirements to be capitalized. For GRE, the Company applies a practical expedient to expense costs as incurred for sales commissions to acquire customers as the period would have been one year or less. Incremental customer acquisition cost of certain GRE International entities are capitalized and amortized over the range of between eighteen and twenty-four months. These costs and the related amortization are recorded within sales and marketing expenses. Total capitalized customer acquisition costs to obtain a contract was \$0.8 million in each of the years ended December 31, 2020 and 2019. At December 31, 2020 and 2019 customer acquisition costs of \$0.6 million and \$0.2 million were included in other current assets and other assets, respectively, on the consolidated balance sheet. The Company recognized \$0.8 million and \$0.6 million of amortization of capitalized customer acquisition cost, for the years ended December 31, 2020 and 2019, respectively. The Company continuously monitors its customer relationship periods to ensure compliance with the application of the standard.

Revenues from Sale of Solar Panels

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 panels, 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.

Revenues from sales of solar panels are included under the Other Revenues in the consolidated statements of operations.

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

	Electricity	Natural Gas	Other	Total
	(in thousands)			
For the year ended December 31, 2020				
Fixed rate	\$ 145,370	\$ 12,837	\$ —	\$ 158,207
Variable rate	166,208	29,044	—	195,252
Other	—	—	25,853	25,853
Total	<u>\$ 311,578</u>	<u>\$ 41,881</u>	<u>\$ 25,853</u>	<u>\$ 379,312</u>
For the year ended December 31, 2019				
Fixed rate	\$ 108,523	\$ 4,001	\$ —	\$ 112,524
Variable rate	154,568	35,925	—	190,493
Other	—	—	12,274	12,274
Total	<u>\$ 263,091</u>	<u>\$ 39,926</u>	<u>\$ 12,274</u>	<u>\$ 315,291</u>

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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

	Electricity	Natural Gas	Other	Total
	(in thousands)			
For the year ended December 31, 2020				
Non-Commercial Channel	\$ 262,587	\$ 36,452	\$ —	\$ 299,039
Commercial Channel	48,991	5,379	—	54,370
Other	—	—	25,853	25,853
Total	<u>\$ 311,578</u>	<u>\$ 41,831</u>	<u>\$ 25,853</u>	<u>\$ 379,262</u>
For the year ended December 31, 2019				
Non-Commercial Channel	\$ 232,511	\$ 33,979	\$ —	\$ 266,490
Commercial Channel	30,580	5,947	—	36,527
Other	—	—	12,274	12,274
Total	<u>\$ 263,091</u>	<u>\$ 39,926</u>	<u>\$ 12,274</u>	<u>\$ 315,291</u>

Contract Liabilities

Certain revenue contracts in GES include provisions that require advance payment from customers. These advance payments received under revenue contracts are recognized as revenue as the Company satisfies the performance obligations to the other party. A portion of the transaction price allocated to the performance obligations to be satisfied in the future periods is recognized as contract liability.

Customers of Shoreditch can elect to be on a budget plan. Under this type of plan, a monthly installment amount is calculated based on estimated annual usage. Contract liabilities are adjusted monthly based on actual and estimated usage of the customers. Annually, the budget plan is reconciled to actual annual usage.

The following table summarized the changes in the liabilities for the years ended December 31, 2020 and 2019.

	December 31,	
	2020	2019
	(in thousands)	
Contract liability, beginning	\$ 13,426	\$ 1,137
Recognition of revenue included in the beginning of year contract liability	(13,147)	(635)
Contract liabilities from the acquisition of Shoreditch	5,152	—
Additions during the period, net of revenue recognized during the period	178	12,924
Contract liability, end	<u>\$ 5,609</u>	<u>\$ 13,426</u>

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.

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,	
	2020	2019
	(in thousands)	
Cash and cash equivalents	\$ 36,913	\$ 31,242
Restricted cash—short-term	6,271	6,792
Restricted cash—long-term	—	520
Total cash, cash equivalents, and restricted cash	<u>\$ 43,184</u>	<u>\$ 38,554</u>

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 16) and Credit Agreement with JPMorgan Chase (see Note 10).

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Marketable Equity Securities and Other Investment

Marketable equity securities that are traded in the public market are carried at fair value using the quoted price at the end of each reporting period. Investments in warrants to purchase additional equity securities are carried at their fair value using Black-Scholes valuation model. Changes in the fair value are recorded as unrealized gains or losses on investments in the consolidated statements of operations.

In December 2020, the Company invested \$5.0 million to purchase 218,245 shares of Class B common stocks of Rafael Holdings, Inc., a publicly-traded company ("Rafael"), also a related party (See *Note 17*). Rafael also issued warrants to purchase an additional 43,649 of Rafael's Class B common stock at \$22.91 per share up to June 6, 2022. The Company does not exercise significant influence over the operating or financial policies of Rafael. For the year ended December 31, 2020, the Company recognized unrealized gain on investment of \$0.3 million. At December 31, 2020, the carrying values of investments in the common stock and warrants were \$5.1 million and \$0.3 million, respectively. The investment in the warrants is included in the other current assets account in the consolidated balance sheet. For the year ended December 31, 2020, the Company recognized \$0.3 million unrealized gain from marketable securities and other investments, included in other income, net in the consolidated statement of operations.

The fair value of the warrants was estimated at December 31, 2020 using a Black-Scholes valuation model and the assumptions in the following table (dollar amount in thousands).

Risk-free interest rate	0.11%
Expected dividend yield	—
Expected volatility	72.71%
Expected term	0.75 year
Fair value of the warrants	\$ 5.93

In determining the value of the investment in the warrants, the Company considered that Rafael has never paid cash dividends and does not currently intend to pay cash dividends, and thus has assumed a 0% dividend yield. Expected volatilities are based on the historical volatility of Rafael's stock price. The expected life of the warrants is estimated based on the exercise period. The risk-free interest rates are derived from the U.S. Treasury yield curve in effect as of December 31, 2020 with a remaining terms similar to the expected life of the warrants.

Trade Accounts Receivable, Net

Trade accounts receivable, net is 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. The 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 net realizable value. 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.

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,	
	2020	2019
	(in thousands)	
Natural gas	\$ 1,021	\$ 1,052
Renewable credits	15,574	14,940
Solar Panels:		
Finished goods	335	424
Raw materials	—	216
Total solar panels inventory	335	640
Totals	\$ 16,930	\$ 16,632

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 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 5 to 20-year period; non-compete agreements are amortized on a straight-line basis over 2 to 3-year term; and customer relationships are amortized ratably over at 2 to 9-year period.

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.

For each acquisition, the Company undertakes a detailed review to identify other intangibles assets and a valuation is performed for all such identified assets. The Company uses several market participant measures to determine estimated value. This approach includes consideration of similar recent transactions, as well as utilizing discounted expected cash flow methodologies. A substantial portion of the intangible asset value that the Company acquired is the specialized know-how of the workforce, which is treated as part of goodwill and is not required to be valued separately. The majority of the value of the identifiable intangible assets acquired is derived from customer relationships, including the related customer contracts, non-compete agreements, trademarks, patents as well as licenses. If the actual results differ from the estimates, the amount recorded in the financial statements could result in a possible impairment of the intangible assets and goodwill, or require acceleration of the amortization expenses of finite-lived intangible assets.

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.

The Company has three reportable segments with four underlying reporting units: GRE, GRE International, and GES, which is comprised of Prism and Diversegy.

The fair value of each 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The Company performs its annual goodwill impairment test as of October 1. 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 determination of the fair value of our reporting units is based on an income approach, that utilizes discounted cash flows for each reporting unit and other Level 3 inputs as specified in the fair value hierarchy in ASC Topic 820, *Fair Value Measurements and Disclosure*. Under the income approach, we determine fair value based on the present value of the most recent cash flow projections for the reporting unit as of the date of the analysis and calculate a terminal value utilizing a terminal growth rate. The significant assumptions under this approach include, among others: income projections, which are dependent on future sales, new customers, customer behavior, competitor pricing, operating expenses, the discount rate, and the terminal growth rate. The cash flows used to determine fair value are dependent on a number of significant management assumptions such as the expectations of future performance and the expected future economic environment, which are partly based upon our historical experience. The estimates are subject to change given the inherent uncertainty in predicting future results. Additionally, the discount rate and the terminal growth rate are based on judgment of the rates that would be utilized by a hypothetical market participant.

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 on the type of hedging relationship.

Due to the volatility of electricity and natural gas prices, GRE and GRE International enter 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 and GRE International utilize forward physical delivery contracts for a portion of their purchases of electricity and natural gas, which are defined as commodity derivative contracts. Using the exemption available for qualifying contracts, GRE and GRE International apply the normal purchase and normal sale accounting treatment to its forward physical delivery contracts, thereby these contracts are not adjusted to fair value. GRE and GRE International also apply 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 and GRE International recognize 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 \$0.2 million and \$0.3 million were recorded in selling, general and administrative expense during the years ended December 31, 2020 and 2019, 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 consolidated balance sheets. Foreign currency transaction gains and losses are reported in "Other (expense) income, net" in the 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. In the years ended December 31, 2020 and 2019, advertising expense included in selling, general and administrative expense was \$6.8 million and \$4.1 million, respectively.

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 has a greater than 50 percent likelihood 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 issued and 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 and warrants 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,	
	2020	2019
	(in thousands)	
Basic weighted-average number of shares	\$ 26,109	\$ 26,607
Effect of dilutive securities		
Stock options and warrants	628	718
Non-vested restricted Class B common stock	76	139
Diluted weighted-average number of shares	\$ 26,813	\$ 27,464

The following shares were excluded from the diluted earnings per share computations:

(in thousands)	Year ended December 31,	
	2020	2019
Shares underlying stock options	112	126
Non-vested deferred stock units	610	—

Stock options were excluded from the diluted earnings per share computation in the years ended December 31, 2020 and 2019 because the exercise prices of the stock options were greater than the average market prices of the Company's Class B common stock during the periods.

Non-vested deferred stock units were excluded from the basic and diluted weighted average shares outstanding calculation because the market condition for vesting of those deferred stock units was not met as of December 31, 2020.

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. 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. Forfeitures of equity grants are recognized as incurred.

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, certain utility companies purchase those REPs' receivables and assume all credit risk without recourse to those REPs for those purchased receivables. GRE's REPs' primary credit risk with respect to those purchased receivables 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 during certain period, and such concentrations increase the Company's risk associated with nonpayment by those utility companies.

There was no single customer accounted for 10% or greater of the Company's consolidated gross trade accounts receivables and revenues at and for the years ended December 31, 2020 and 2019.

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)	Balance at end of period
Year ended December 31, 2020				
Reserves deducted from accounts receivable:				
Allowance for doubtful accounts	\$ 2,631	\$ 3,734	\$ 2,428	\$ 8,793
Year ended December 31, 2019				
Reserves deducted from accounts receivable:				
Allowance for doubtful accounts	\$ 2,003	\$ 658	(30)	\$ 2,631

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 June 2016, the FASB issued ASU No. 2016-13, *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, 2023. The Company is currently evaluating the requirements of this guidance and has not yet determined the impact of its adoption on the Company's consolidated financial position, results of operations and cash flows.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

In December 2020, the FASB issued ASU No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. The ASU eliminates certain exceptions and adds guidance to reduce complexity in accounting for income taxes. Specifically, this guidance: (1) removes the intraperiod tax allocation exception to the incremental approach; (2) removes the ownership changes in investments exception in determining when a deferred tax liability is recognized after an investor in a foreign entity transitions to or from the equity method of accounting and applies this provision on a modified retrospective basis through a cumulative-effect adjustment to retained earnings at the beginning of the period of adoption; and (3) removes the exception to using the general methodology for calculating income taxes in an interim period when a year-to-date loss exceeds the anticipated loss for the year. The ASU also simplifies accounting principles by making other changes, including requiring an entity to: (1) evaluate whether a step-up in tax basis of goodwill relates to a business combination or a separate transaction; (2) make a policy election to not allocate consolidated income taxes when a member of a consolidated tax return is not subject to income tax and to apply this provision retrospectively to all periods presented; and (3) recognize a franchise tax (or similar tax) that is partially based on income as an income-based tax and apply this provision either retrospectively for all periods presented or on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption. The provisions of this guidance (except as specifically mentioned above) are to be applied prospectively upon their effective date. The ASU is effective for annual reporting periods beginning after December 15, 2020, and interim periods within those years. Early adoption is permitted but requires simultaneous adoption of all provisions of this guidance. The adoption is not expected to have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Note 2 — Acquisitions

Acquisition of Controlling Interest of 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 U.K., under the trade name Orbit Energy. In second quarter of 2020, the Company contributed \$1.5 million to Shoreditch, which increased GEUK's total contribution to \$9.5 million as of October 8, 2020. Prior to October 8, 2020, the Company owns 77.0% of the outstanding equity of Shoreditch.

Prior to the Company acquiring the remaining 23.0% of Shoreditch, EGC had significant participation rights in the management of Shoreditch that limited GEUK's ability to direct the activities that most significantly impact Shoreditch's economic performance. GEUK, therefore, accounted for its ownership interest in Shoreditch using the equity method since GEUK had the ability to exercise significant influence over its operating and financial matters, although it did not control Shoreditch.

On October 8, 2020, the Company entered into an agreement (the "Purchase Agreement") with EGC under which GEUK purchased EGC's remaining interest in Shoreditch, in exchange for a cash payment of £1.3 million (equivalent to \$1.7 million on the date of closing) offset by £0.2 million (equivalent to \$0.2 million on the date of closing) in amounts owing from EGC to the Company under a loan provided to EGC in 2018 related to EGC's capital contributions to Shoreditch. Prior to October 8, 2020, the estimated fair value and net book value of the Company's investment in Shoreditch was \$5.5 million and nil, respectively. Following the transaction, Shoreditch is a wholly-owned subsidiary of GEUK.

Following the transaction, EGC has no rights in the management of Shoreditch and GEUK has complete control over the activities of Shoreditch.

The Company recorded revenue for Shoreditch of approximately \$22.4 million in its consolidated statements of operations and comprehensive income for the period from the acquisition date through December 31, 2020. 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.

The Company conducted a preliminary assessment of assets and liabilities related to the acquisition of Shoreditch. 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 (amounts in thousands):

Cash	\$	2,681
Trade accounts receivable		8,008
Other current assets		843
Intangible assets:		
Trademark (10-year useful life)		1,594
Non-compete agreements (2-year useful life)		1,956
Customer relationship (2-year useful life)		3,620
Goodwill		13,426
Other assets		657
Accounts payable and other current liabilities		(20,490)
Contract liabilities		(5,152)
Net assets	\$	7,143

Goodwill was allocated to the GRE International 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.

The Company recognized a gain of \$5.5 million upon consolidation of Shoreditch in the consolidated statement of operations for the year ended December 31, 2020, pertaining to the estimated fair value of the Company's noncontrolling interest prior to the acquisition, which is based on the amount paid by the Company for the remaining 23.0% of Shoreditch. The net book value of the Company's investments in Shoreditch was nil immediately prior to the acquisition.

Acquisition of Lumo Energia, Oyj

On January 2, 2019 (the "Lumo Closing Date"), pursuant to Stock Purchase Agreement dated December 17, 2018, the Company completed the purchase of an 80.0% controlling interest in Lumo Finland, a Finnish public limited company. The Company paid the sellers a total of €1.6 million (equivalent to \$1.9 million). The Company contributed €1.3 million (equivalent to \$1.5 million) as a capital loan to fund Lumo Finland's working capital requirements. The Company also provided Lumo Finland with a secured loan for €2.0 million (equivalent to \$2.3 million) to pay off and replace Lumo's remaining debt. The secured loan is payable in 4 years from inception and bears interest at annual rate of 4.0%, payable monthly. The Company also issued 176,104 shares of its class B common stock to certain of the sellers which are subject to restrictions as described in the agreement (the "Lumo Restricted Shares"). The Lumo Restricted Shares are subject to vesting conditions related to employment and services to be provided by the recipients of up to two years following the Lumo Closing Date. The Lumo Restricted Shares are accounted for as a share-based compensation and are amortized over the vesting period of two years.

In November 2019, the Company acquired an additional 9.0% interest in Lumo Finland for \$0.2 million, increasing its aggregate ownership to 89.0%. In January 2020, Lumo Finland paid off half of the secured loan to GREI through the issuance of additional shares which resulted in GREI's interest in Lumo Finland increasing to 92.5%.

Two-thirds of the remaining 7.5% noncontrolling interest retained by the sellers vested in January 2020 and 2021, with the balance subject to restrictions, which will lapse in January 2022, subject to employment and service conditions.

The Company has a conditional 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 Lumo Closing Date and ending three years later.

The sellers, as a group, have a one-time option to sell a portion or all of their Lumo Finland interests to the Company, which subject to certain conditions, may be exercised on one occasion only, at any time during the two-year period beginning at the fourth anniversary of the Lumo Closing Date.

The Company recorded revenue for Lumo Finland of approximately \$17.8 million and \$15.2 million in its consolidated statements of operations and comprehensive income for the years ended December 31, 2020 and 2019, respectively. 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.

The Company conducted an assessment of assets and liabilities related to the acquisition of Lumo Finland. 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)		
Cash	\$	1,539
Trade accounts receivable		2,520
Other current assets		411
Intangible assets:		
Trademark (5-year useful life)		294
Non-compete agreements (3-year useful life)		34
Customer relationship (2-year useful life)		1,924
Goodwill		1,744
Other assets		95
Accounts payable and other current liabilities		(2,403)
Short-term debts		(2,260)
Other liabilities		(97)
Noncontrolling interest		(410)
Net assets	\$	3,391

(in thousands)		
Supplemental information		
Cash paid to Sellers	\$	1,869
Cash contributed to Lumo		1,522
Total consideration	\$	3,391

Goodwill was allocated to the GRE International 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.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Pro Forma Results (unaudited)

The following unaudited pro forma financial information summarizes the results of operations for the years ended December 31, 2020 and 2019 as if the acquisitions of Shoreditch had been completed as of the beginning of 2019. 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 depreciation expense and intangible assets amortization, and (ii) timing of recognition for certain expenses that will not be recurring in the post-acquisition period. 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.

	Year ended December 31,	
	2020	2019
	(in thousands)	
Total revenues	\$ 430,718	\$ 346,092
Net income (loss)	1,473	(237)
Net (loss) income attributable to Genie Energy Ltd. common stockholders	(925)	1,077
Earnings (loss) per share attributable to Genie energy Ltd. common stockholders		
Basic	(0.09)	0.04
Diluted	(0.09)	0.04

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)	(1) Level 1	(2) Level 2	(3) Level 3	Total
December 31, 2020				
Assets:				
Marketable equity securities	\$ 5,089	\$ —	\$ —	\$ 5,089
Other current assets (Investment in warrants)	—	—	259	259
Derivative contracts	\$ 1,237	\$ 118	\$ —	\$ 1,355
Liabilities:				
Derivative contracts	\$ 286	\$ —	\$ —	\$ 286
December 31, 2019				
Assets:				
Derivative contracts	\$ 5	\$ 322	\$ —	\$ 327
Liabilities:				
Derivative contracts	\$ 1,569	\$ 410	\$ —	\$ 1,979

- (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 receivables, due to IDT Corporation and accounts payable. At December 31, 2020 and 2019, the carrying amount of these assets and liabilities approximated fair value due to short-term nature. The fair value estimate for restricted cash — short-term and long-term were classified as Level 1 and other current assets, due to IDT Corporation and other current liabilities were classified as Level 2 of the fair value hierarchy.

Other assets, revolving line of credit and notes payable. At December 31, 2020 and 2019, other assets included notes receivable. At December 31, 2020, the outstanding balance of the sellers of Lumo Finland's one-time option was not significant and was included in other liabilities account in the consolidated balance sheet. The carrying amounts of the note receivable, revolving line of credit and notes payable 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 items measured at fair value on a non-recurring basis:

(in thousands)	(1) Level 1	(2) Level 2	(3) Level 3	Total
December 31, 2020				
Impairment of long-lived assets	\$ —	\$ —	\$ 1,397	\$ 1,397
December 31, 2019				
Impairment of goodwill	\$ —	\$ —	\$ 400	\$ 400

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, 2020 and 2019.

The primary non-recurring fair value estimates typically involve business acquisitions (Note 2) which involve a combination of Level 2 and Level 3 inputs, goodwill impairment testing (Note 9), which involves Level 3 inputs, and asset impairments (Note 2) which utilize Level 3 inputs.

GENIE ENERGY LTD.

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 economic 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, 2020 and 2019, GRE's swaps and options were traded on the New York Mercantile Exchange. GRE International's swaps and options were traded through counterparties.

The summarized volume of GRE's outstanding contracts and options at December 31, 2020 was as follows (MWh – Megawatt hour and Dth – Decatherm):

Settlement Dates	Commodity	
	Electricity (In MWH)	Natural Gas (In Dth)
First quarter 2021	229,776	188,850
Second quarter 2021	51,200	127,850
Third quarter 2021	147,888	94,950
Fourth quarter 2021	16,800	90,000
First quarter 2022	—	85,000
Second quarter 2022	—	52,500
Third quarter 2022	—	17,890
Fourth quarter 2022	—	18,700
First quarter 2023	—	21,500
Second quarter 2023	—	9,450
Third quarter 2023	—	5,500
Fourth quarter 2023	—	5,400
First quarter 2024	—	1,100

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

		December 31,	
		2020	2019
Asset Derivatives	Balance Sheet Location	(in thousands)	
Derivatives not designated or not qualifying as hedging instruments:			
Energy contracts and options ⁽¹⁾	Other current assets	\$ 1,338	\$ 324
Energy contracts and options	Other assets	17	3
Total derivatives not designated or not qualifying as a hedging instruments — Assets		\$ 1,355	\$ 327
Liability Derivatives			
Derivatives not designated or not qualifying as hedging instruments:			
Energy contracts and options ⁽¹⁾	Other current liabilities	\$ 245	\$ 1,909
Energy Contracts and options	Other liabilities	41	70
Total derivatives not designated or not qualifying as a hedging instruments — Liabilities		\$ 286	\$ 1,979

(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)	Location of Loss Recognized on Derivatives	Amount of Loss Recognized on Derivatives	
		Year ended December 31, 2020	2019
Derivatives not designated or not qualifying as hedging instruments	Cost of revenues	\$ 26,814	\$ 24,810

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 5 — Leases

The Company entered into operating lease agreements primarily for offices in domestic and foreign locations where it has operations with lease periods expiring between 2021 and 2030. The Company has no finance leases.

The Company adopted ASU No. 2016-02, Leases (Topic 842) as of January 1, 2019 using a modified retrospective transition method. The financial results reported in periods prior to January 1, 2019 are not adjusted. At January 1, 2019, the Company recognized \$2.4 million of Right-of-Use ("ROU") assets related to the Company's operating leases. The Company also recognized \$0.4 million and \$2.0 million of current and noncurrent lease liabilities, included in other current liabilities and other liabilities in the consolidated balance sheets. ROU assets were included under other assets in the consolidated balance sheet.

The Company determines if a contract is a lease at inception. ROU assets and operating lease liabilities are recognized at the present value of the future lease payments at the lease commencement date. The interest rate used to determine the present value of the future lease payments is the incremental borrowing rate, because the interest rate implicit in most of our leases is not readily determinable. The incremental borrowing rate is estimated to approximate the interest rate on a fully collateralized and fully amortizing borrowing with maturity date the same length of the lease that is based on information available at the lease commencement date. ROU assets also include any prepaid lease payments and lease incentives. The lease terms include periods under options to extend or terminate the lease when it is reasonably certain that we will exercise that option. The Company use the base, non-cancelable, lease term when determining the lease assets and liabilities. Operating lease expense is recognized on a straight-line basis over the lease term.

	December 31,	
	2020	2019
	(in thousands)	
ROU assets	\$ 4,409	\$ 2,357
Current portion of operating lease liabilities	\$ 1,327	\$ 479
Noncurrent portion of operating lease liabilities	3,233	1,917
Total	\$ 4,560	\$ 2,396

At December 31, 2020, the weighted average remaining lease term is 5.0 years and the weighted average discount rate is 5.8%.

Supplemental cash flow information for ROU assets and operating lease liabilities for the years ended December 31, 2020 and 2019 are as follows:

	For the Year Ended	
	December 31, 2020	December 31, 2019
	(in thousands)	
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating activities	\$ 1,200	\$ 883
ROU assets obtained in the exchange for lease liabilities		
Operating leases	\$ 2,568	\$ 301

Future lease payments under operating leases as of December 31, 2020 were as follows:

(in thousands)	
2021	1,517
2022	1,185
2023	1,155
2024	225
2025	233
Thereafter	1,072
Total future lease payments	5,387
Less imputed interest	827
Total operating lease liabilities	\$ 4,560

Rental expenses under operating leases were \$1.2 million and \$0.9 million in the years ended December 31, 2020 and 2019, respectively.

Note 6 — Investments in Equity Method Investees

Investment in Shoreditch Energy Limited

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The following table summarizes the change in the balance of GEUK's investment in Shoreditch prior to October 8, 2020 (see Note 2):

	For the year ended December 31,	
	2020	2019
	(in thousands)	
Balance, beginning of period	\$ —	\$ 1,679
Capital contributions	1,502	2,735
Foreign currency translation adjustment	—	26
Equity in the net loss	(1,502)	(4,440)
Balance, end of period	\$ —	\$ —

In 2018, the Company extended a total of \$0.2 million in loans to EGC ("EGC Loan"), in connection with EGC's contribution to Shoreditch. The EGC Loan, which was secured by EGC's interest in Shoreditch, bore a fixed annual interest rate of 2.0% and was settled as part of the Company's acquisition of the controlling interest of Shoreditch (see Note 2).

Investment in New Atid 613

In September 2018, the Company divested a majority interest in Atid in exchange for 37.5% interest in Atid 613, a contracted drilling service Company in Israel ("Atid 613") which the Company accounts for using equity method of accounting. The remaining interests in Atid 613 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 Atid 613.

The following table summarizes the change in the balance of the Company's investment in Atid 613 for the years ended December 31, 2020 and 2019:

	December 31	
	2020	2019
	(in thousands)	
Balance, beginning of period	\$ 274	\$ 529
Equity in net loss	(187)	(291)
Foreign currency translation adjustments	13	36
Balance, end of period	\$ 100	\$ 274

On August 12, 2019, the Company, together with the other shareholders of Atid 613 signed a Funding Agreement to provide aggregate loans to Atid 613 in an amount of up to New Israeli Shekel or NIS 5.1 million (equivalent to \$1.5 million), including the Company's commitment to extend up to NIS1.9 million (equivalent to \$0.5 million) of such amount. In August 2019, the Company extended NIS 0.8 million (equivalent to \$0.2 million) in loans. The loans which are secured by Atid 613's assets bear no interest until March 1, 2020 and 5.5% after that date.

At December 31, 2020, there were \$0.2 million loan receivables from Atid 613, included in other current assets in the Company's consolidated balance sheet.

Atid 613 charges the Company for a portion of its costs related to certain of their employees that provide service to the Company. For the years ended December 31, 2020 and 2019, Atid 613 charged the Company \$0.4 million and \$0.6 million, respectively. At December 31, 2020 and 2019, the Company owed Atid 613, \$0.1 million and immaterial, respectively.

The Company also issued letters of credit in favor of Atid 613 of up to \$0.9 million. At December 31, 2020, the letters of credit had not been drawn upon.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 7 — Property and Equipment

	December 31,	
	2020	2019
	(in thousands)	
Land	\$ —	\$ 230
Building and improvements	56	2,349
Manufacturing equipment	—	1,434
Computer software	2,577	2,549
Computers and computer hardware	312	244
Office equipment and other	275	146
	<u>3,220</u>	<u>6,952</u>
Less: accumulated depreciation	<u>(2,961)</u>	<u>(3,345)</u>
Property and equipment, net	<u>\$ 259</u>	<u>\$ 3,607</u>

Depreciation expense of property and equipment was \$0.4 million and \$1.1 million in the years ended December 31, 2020 and 2019, respectively.

In March 2020, the Company initiated a plan to sell the property, plant and equipment of Prism. Prism's 4.75% notes payable to Catskill Hudson Bank were collateralized by Prism's land, building and improvements. In the first quarter of 2020, Prism's property, plant and equipment and notes payable with net book value of \$2.9 million and \$0.9 million, respectively, were reclassified as assets and liabilities held for sale and reported at lower of fair value less cost to sell. In the first quarter of 2020, the Company recorded a \$0.2 million write-down to the fair value of certain property and equipment. The Company used the market approach to estimate the fair values of assets and liabilities held for sale. The related inputs were corroborated by observable market data for similar assets and liabilities, therefore the estimated fair values were classified as Level 2 of the fair value hierarchy.

In October 2020, the Prism completed the sale of all assets held for sales and recorded a net loss from disposal of \$0.3 million included in the selling, general and administrative expenses in the consolidated statements of operations. In October 2020, Prism settled the 4.75% notes payable to Catskill Bank previously classified as liabilities held for sale with full payment of the principal amount of \$0.9 million (see Note 10).

Note 8 — Goodwill and Other Intangibles

The table below reconciles the change in the carrying amount of goodwill for the period from January 1, 2019 to December 31, 2020:

	GRE	GRE International	GES	Total
	(in thousands)			
Balance at January 1, 2019	\$ 9,998	\$ —	\$ 1,084	\$ 11,082
Acquisition of Lumo Finland (see Note 2)	—	1,744	—	1,744
Prism acquisition purchase price allocation adjustment	—	—	(280)	(280)
Impairment of Prism goodwill	—	—	(400)	(400)
Cumulative translation adjustment	—	(11)	—	(11)
Balance at December 31, 2019	<u>9,998</u>	<u>1,733</u>	<u>404</u>	<u>12,135</u>
Acquisition of controlling interest of Shoreditch (see Note 2)	—	13,426	—	13,426
Impairment of Prism goodwill	—	—	(404)	(404)
Cumulative translation adjustment	—	772	—	772
Balance at December 31, 2020	<u>\$ 9,998</u>	<u>\$ 15,931</u>	<u>\$ —</u>	<u>\$ 25,929</u>

The Company performs its annual goodwill impairment test as of October 1. The Company elected to perform a qualitative analysis for its GRE and GRE International reporting units. 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 on any reporting units other than Prism. The Company performed quantitative impairment analysis for its Prism reporting unit as a result of lower than expected results of operations in 2020. As a result of this test, the Company concluded that the carrying value Prism reporting unit exceeded its fair value of reporting unit including the allocated goodwill. Therefore, the Company recognized a goodwill impairment charge of \$0.4 million.

GENIE ENERGY LTD.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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

	Weighted Average Amortization Period	Gross Carrying Amount	Accumulated Amortization	Net Balance
December 31, 2020		(in thousands)		
Patents and trademarks	14.9 years	\$ 5,534	\$ 878	\$ 4,656
Non-compete agreement	2.0 years	2,096	75	2,021
Customer relationships	3.1 years	6,907	2,922	3,985
Licenses	10.0 years	1,224	241	983
TOTAL		\$ 15,761	\$ 4,116	\$ 11,645
December 31, 2019				
Trademark	17.1 years	\$ 3,842	\$ (560)	\$ 3,282
Non-compete agreement	1.6 years	148	(126)	22
Customer relationships	3.9 years	6,706	(3,941)	2,765
Licenses	10.0 years	895	(127)	768
TOTAL		\$ 11,591	\$ (4,754)	\$ 6,837

Amortization expense of intangible assets (including a minimal amount reported in cost of revenues) was \$3.0 million and \$2.5 million in the years ended December 31, 2020 and 2019, respectively. The Company estimates that amortization expense of intangible assets will be \$3.8 million, \$2.9 million, \$0.7 million, \$0.6 million, \$0.5 million and \$3.1 million in the years ending December 31, 2020, 2021, 2022, 2023, 2024 and 2025 and thereafter, respectively.

Note 9 — Accrued Expenses

Accrued expenses consisted of the following:

	December 31,	
	2020	2019
	(in thousands)	
Renewable energy	\$ 26,474	\$ 13,502
Liability to customers related to promotional and retention incentives	9,558	8,201
Payroll and employee benefits	3,534	2,758
Other accrued expenses	3,196	1,655
Total accrued expenses	\$ 42,762	\$ 26,116

Note 10 — Debt

Loan with Tokyo Star Bank

On November 28, 2019, Genie Japan entered into a Loan Agreement with Tokyo Star Bank for a ¥100.0 million (equivalent to \$0.9 million) short-term credit facility. Genie Japan provided a letter of credit issued by JPMorgan Chase amounting to ¥100.0 million (equivalent to \$0.9 million) as collateral. The outstanding principal amount incurred interest at Tokyo Star Bank's short-term prime rate plus 0.25% per annum. Interest was payable monthly and all outstanding principal and any accrued and unpaid interest matured on May 13, 2020. Genie Japan settled the Loan agreement and paid the outstanding balance of ¥100.0 million (equivalent to \$0.9 million) on May 13, 2020.

On May 13, 2020, Genie Japan entered into a new Loan Agreement with Tokyo Star Bank for a ¥150.0 million (equivalent to \$1.4 million) short-term credit facility ("May 2020 Loan") with a maturity date of November 13, 2020. On November 13, 2020, Genie Japan and Tokyo Star Bank amended the May 2020 Loan to extend the maturity date to May 13, 2021. Genie Japan provided a letter of credit issued by JPMorgan Chase in the amount of ¥150.0 million (equivalent to \$1.4 million) as collateral. The outstanding principal amount incurs interest at 3.0% per annum and is payable monthly. At December 31, 2020 \$1.4 million was outstanding under the loan agreement. At December 31, 2020, the effective interest rate was 3.0%.

Revolving Line of Credit with Vantage Commodities

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 \$20.0 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 incurred interest at LIBOR plus 4.5% per annum. Interest was payable monthly, and all outstanding principal and any accrued and unpaid interest was due on the maturity date of April 3, 2020. At December 31, 2019, \$2.5 million was outstanding under the revolving line of credit with an effective interest rate 6.41% per annum. In April 2020, the revolving line of credit expired and the Company paid the outstanding balance of \$3.5 million in exchange for the release and termination of any further obligations and security interest.

Credit Agreement with JPMorgan Chase Bank

On December 5, 2019, the Company entered into the first amendment of Credit Agreement with JPMorgan Chase Bank ("Credit Agreement") to extend the maturity date to December 31, 2020. On December 8, 2020, the Company entered into the second amendment of its existing Credit Agreement to extend the maturity date of December 31, 2021. The Company continues to have the aggregate principal amount of \$5.0 million credit line facility ("Credit Line"). The Company pays a commitment fee of 0.1% per annum on unused portion of the Credit Line as specified in the Credit Agreement. The borrowed amounts will be in the form of letters of credit which will bear interest of 1.0% per annum. The Company will also pay a fee for each letter of credit that is issued equal to the greater of \$500 or 1.0% of the original maximum available amount of the letter of credit. The Company agreed to deposit cash in a money market account at JPMorgan Chase Bank as collateral for the line of credit equal to \$5.1 million. As of December 31, 2020, JP Morgan Chase Bank issued \$2.3 million letters of credit from the Credit line. As of December 31, 2020, none of the letters of credits were drawn upon. At December 31, 2020, the cash collateral of \$5.2 million was included in restricted cash—short-term in the consolidated balance sheet.

Prism Notes Payable

On December 11, 2019, the Company refinanced the 5.95% notes payable to Catskill Hudson Bank that were due in November 2019. The outstanding balance of notes payable of \$0.9 million at December 11, 2019 was payable in monthly equal annual installments for period of ten years. The outstanding principal amount incurred fixed interest at 4.75% per annum. The notes payable were secured by Prism's commercial property in Highland, New York. In March 2020, the outstanding balance of the notes payable was transferred to liabilities held for sale (*see Note 8*). On October 16, 2020, Prism settled the notes payable to Catskill Bank previously classified as liabilities held for sale with full payment of the principal amount of \$0.9 million.

CARES Act

On March 27, 2020, the Coronavirus Aid, Relief, and Economic Security (CARES) Act was signed into U.S. federal law, which is aimed at providing emergency assistance and health care for individuals, families, and businesses affected by the coronavirus disease 2019 (COVID-19) pandemic and generally supporting the U.S. economy. The CARES Act, among other things, includes provisions related to refundable payroll tax credits, deferment of the employer portion of social security payments, net operating loss carryback periods, modifications to the net interest deduction limitations, and technical corrections to tax depreciation methods for qualified improvement property. For the year ended December 31, 2020, the CARES Act did not have a significant impact on the consolidated financial statements.

On April 22, 2020, the Company obtained a Paycheck Protection Program Loan (the "PPP Note") sponsored by the Small Business Administration (the "SBA") under the CARES Act through a bank, providing for \$2.4 million in proceeds, which were received on April 27, 2020. Based in part on additional guidance issued by the SBA, the Company returned the entire amount, plus minimal interest on May 6, 2020.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 11 — Income Taxes

The components of income before income taxes are as follows:

	Year ended December 31,	
	2020	2019
	(in thousands)	
Domestic	\$ 27,536	\$ 23,894
Foreign	(3,668)	(17,915)
INCOME BEFORE INCOME TAXES	\$ 23,868	\$ 5,979

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

	December 31,	
	2020	2019
	(in thousands)	
Deferred income tax assets (liabilities):		
Bad debt reserve	\$ 3,153	\$ 701
Accrued expenses	1,475	1,093
State taxes	66	80
Charitable contributions	201	173
Net operating loss	18,697	49,055
ROU assets		
	1,611	521
Lease liability	(1,616)	(474)
Stock options and restricted stock	321	520
Basis differential in subsidiary	(1,488)	—
Depreciation	(2,329)	5,241
Total deferred income tax assets	20,091	56,910
Valuation allowance	(15,209)	(44,756)
DEFERRED INCOME TAX ASSETS, NET	\$ 4,882	\$ 12,154

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

The Company recognizes a valuation allowance against deferred tax assets to the extent that it believes that the deferred tax assets are not 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 a portion of 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 nonconsolidated U.S. entities. In 2020, the Company wrote off the foreign net operating loss carry-forwards and the corresponding valuation allowance relating to the winding down of the exploration business.

The provision for income taxes consists of the following:

	Year ended December 31,	
	2020	2019
	(in thousands)	
Current:		
Federal	\$ —	\$ —
State and local	1,042	1,129
Foreign	—	—
	<u>1,042</u>	<u>1,129</u>
Deferred:		
Federal	5,889	2,808
State and local	1,383	663
Foreign	—	—
	<u>7,272</u>	<u>3,471</u>
PROVISION FOR INCOME TAXES	\$ 8,314	\$ 4,600

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

	Year ended December 31,	
	2020	2019
	(in thousands)	
U.S. federal income tax benefit at statutory rate	\$ 5,012	\$ 1,256
Valuation allowance	(29,547)	3,569
Nondeductible expense	67	(175)
Foreign tax rate differential	(44)	(13)
Provision for an uncertain tax position	2,110	—
Deferred tax adjustments	(1,097)	—
Net operating loss carry-forwards adjustment	31,228	(567)
State and local income tax, net of federal benefit	341	530
Others	244	—
PROVISION FOR INCOME TAXES	\$ 8,314	\$ 4,600

At December 31, 2020, the Company had U.S. federal net operating loss carry-forwards of approximately \$13.1 million. 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.

At December 31, 2020, the Company had foreign net operating loss carry-forwards of approximately \$20.9 million, after the \$23.1 million (tax effected) write-off of the net operating loss carry-forwards from wind-down of the exploration business, of which \$12.0 million will not expire, while the rest will start to expire in 2028.

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 \$37.5 million that begin to expire in 2025. During 2020, the Company wrote off \$8.1 million (tax effected) of state net operating loss carry-forwards related to the wind-down of the exploration business. Net operating loss carry-forwards in the amount of \$28.0 million relate to Prism may be subject to Internal Revenue Code Section 382 limitation at time of utilization. Current year losses of \$2.4 million will not expire.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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

	Balance at beginning of period	Additions charged to costs and expenses	Deductions	Balance at end of period
	(in thousands)			
Year ended December 31, 2020				
Reserves for valuation allowances deducted from deferred income taxes, net	\$ 44,756	\$ 1,278	\$ (30,825)	\$ 15,209
Year ended December 31, 2019				
Reserves for valuation allowances deducted from deferred income taxes, net	\$ 41,187	\$ 3,569	\$ —	\$ 44,756

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

	Year ended December 31,	
	2020	2019
	(in thousands)	
Balance at beginning of period	\$ 383	\$ 433
Additions based on tax positions related to the current period	7	84
Additions based on tax positions related to prior periods	2,186	—
Lapses of statutes of limitations	(80)	(134)
Balance at end of period	\$ 2,496	\$ 383

All of the unrecognized income tax benefits at December 31, 2020 and 2019 would have affected the Company's effective income tax rate if recognized. The Company recorded an out of period adjustment in the amount of \$2.2 million related to prior year uncertain income tax position during 2020. The Company does expect the total amount of unrecognized income tax benefits to significantly decrease within the next twelve months pending an election approval request by the Internal Revenue Services.

In the years ended December 31, 2020 and 2019, the Company recorded minimal amount of interest on income taxes. At December 31, 2020 and 2019, 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 2016 to 2019, state and local tax returns generally for 2015 to 2019 and foreign tax returns generally for 2015 to 2019.

Note 12 — 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 100% of the Liquidation Preference plus accrued and unpaid dividends.

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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, 2020, the Company paid aggregate cash dividends of \$0.33 per share on its Class A common stock and Class B common stock, equal to \$8.7 million in total dividends paid. In the year ended December 31, 2019, 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 each of the years ended December 31, 2020 and 2019, the Company paid aggregate cash dividends of \$0.4782 per share on its Preferred Stock, equal to \$1.5 million in dividends paid. On February 16, 2021, the Company paid a quarterly Base Dividend of \$0.1594 per share on its Preferred Stock for the fourth quarter of 2020 to stockholders of record as of the close of business on February 8, 2020.

The Delaware Corporation Law allows 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 program for the repurchase of up to an aggregate of 7.0 million shares of the Company's Class B common stock. In 2020, the Company acquired 233,602 Class B common stock under the stock repurchase program for an aggregate amount of \$1.7 million. In 2019, the Company acquired 731,869 Class B common stock under the stock repurchase program for an aggregate amount of \$5.6 million. At December 31, 2020, 5.9 million shares remained available for repurchase under the stock repurchase program.

In the year ended December 31, 2020, the Company paid \$0.5 million to repurchase 56,650 shares of its Class B common stock. In the year ended December 31, 2019, the Company paid \$0.5 million to repurchase 48,197 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.

As of December 31, 2020 and 2019, the Company held 1.3 million and 1.0 million shares of treasury stock, respectively, with respective costs of \$9.8 million and \$7.7 million, and a weighted average costs of \$7.46 per share.

On March 21, 2020, the Board of Directors of the Company approved a program to redeem up to \$4.0 million worth of the Company's Preferred Stock in accordance with the Certificate of Designations for the preferred stock. There was no redemption under this program in 2020.

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, 2020.

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, (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, 2020, 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 13 — Stock-Based Compensation

Stock-Based Compensation Plan

The Company's 2011 Stock Option and Incentive Plan (as amended, the "Plan") is intended to provide incentives to executives, employees, directors and consultants of the Company. Incentives available under the Plan 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 8, 2019 and June 4, 2020, the Company's stockholders approved amendments to the Plan to reserve an additional 372,000 shares and 300,000 shares of the Company's Class B common stock, respectively, for issuance thereunder. At December 31, 2020, the Company had 3.0 million shares of Class B common stock reserved for award under the Plan and 626,639 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	Weighted- Average Grant Date Fair Value
	(in thousands)	
Non-vested restricted shares at December 31, 2019	245	\$ 5.59
Granted	178	8.26
Vested	(166)	5.42
Forfeited	(1)	8.37
NON-VESTED RESTRICTED SHARES AT DECEMBER 31, 2020	256	\$ 7.31

At December 31, 2020, there was \$1.7 million of total unrecognized compensation cost related to non-vested restricted stock. The total unrecognized compensation cost is expected to be recognized over a weighted-average period of 2.4 years. The total grant date fair value of shares vested in the years ended December 31, 2020 and 2019 was \$0.5 million and \$0.4 million, respectively. The Company recognized compensation cost related to the vesting of the restricted stock of \$1.0 million in the years ended December 31, 2020.

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 February 11, 2019, the Company granted options to Howard S. Jonas to purchase 126,176 shares of the Company's Class B common stock at an exercise price of \$8.05 per share in lieu of a cash bonus of \$0.3 million earned in previous periods. These options vest in three equal annual installments beginning on February 11, 2020. There were no stock option grants in 2020.

The fair value of stock options granted in the years ended December 31, 2020 were estimated on the date of the grant using a Black-Scholes valuation model and the assumptions in the following table (dollar amount in thousands):

Average risk-free interest rate	2.5%
Expected dividend yield	3.7
Expected volatility	52.7
Expected term	4 years
Weighted-average grant date fair value of options granted	\$ 2.6

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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, 2019	556	\$ 5.96	3.1	\$ 1,065
Granted	—	—		
Exercised	(4)	6.85		
Cancelled/Forfeited	—	—		
OUTSTANDING AT DECEMBER 31, 2020	552	\$ 8.96	2.1	\$ 798
EXERCISABLE AT DECEMBER 31, 2020	358	\$ 6.42	1.8	\$ 355

The total intrinsic value of options exercised during the years ended December 31, 2020 and 2019 was minimal and \$0.8 million, respectively. At December 31, 2020, there was no unrecognized compensation cost related to non-vested stock options. The Company recognized minimal and \$0.1 million compensation cost related to the vesting of the options in the years ended December 31, 2020 and 2019, respectively. Cash received from option exercises were minimal and \$1.4 million for the years ended December 31, 2020 and 2019, respectively.

Lumo Finland Grant

In February 2020, Lumo Finland, granted 59,499 deferred stock units in Lumo Finland to certain Lumo Finland employee with a grant date fair value of €4.66 (equivalent to \$5.08). The deferred stock units vest in equal amounts on January 2021, 2022 and 2023. The cost is being recognized on a straight-line basis over the requisite service period, which approximates the vesting period. Lumo Finland recognized compensation costs related to the vesting of the Lumo Finland deferred stock units of \$0.1 million for the year ended December 31, 2020. At December 31, 2020, the unrecognized compensation cost relating to these grants was \$0.2 million and is expected to be recognized over a weighted-average period of 2.2 years.

Market Condition Awards

In February 2020, the Company granted certain employees including a member of its Board of Directors 305,000 deferred stock units, which are subject to vesting in two tranches upon the achievement of a specified thirty-day average closing price of its Class B common stock from the grant date to February 9, 2020 ("market conditions") and the satisfaction of service-based vesting conditions. Each deferred stock unit entitles the grantee to receive up to two shares of Class B common stock of the Company upon achievement of market conditions. At December 31, 2020, the Company determined that the achievement of the market condition is not probable. There was no expense recognized in 2020 for these awards.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 14 — 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 has 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 loss related to CCE and aggregate net funding repaid to (provided by) the Company were as follows:

	Year ended December 31,	
	2020	2019
	(in thousands)	
Net loss	\$ 1,452	\$ 490
Aggregate funding provided by the Company, net	\$ 1,524	\$ 649

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

	December 31,	
	2020	2019
	(in thousands)	
ASSETS		
Cash, cash equivalents and restricted cash	\$ 491	\$ 250
Trade accounts receivable	433	586
Prepaid expenses and other current assets	416	381
Other assets	359	359
TOTAL ASSETS	\$ 1,699	\$ 1,576
LIABILITIES AND NONCONTROLLING INTERESTS		
Current liabilities	\$ 518	\$ 467
Due to IDT Energy	4,122	2,598
Noncontrolling interests from CCE	(2,941)	(1,489)
TOTAL LIABILITIES AND NONCONTROLLING INTERESTS	\$ 1,699	\$ 1,576

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 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. On November 17, 2020, IDT Energy settled with the named plaintiffs in exchange for a nominal payment and the case has been dismissed.

On February 18, 2020, named Plaintiff Danelle Davis filed a putative class action complaint against Residents Energy and GRE in United States District of New Jersey alleging violations of the Telephone Consumer Protection Act, 47 U.S.C § 227 et seq. Residents Energy denies allegations in the complaint and plans to vigorously defend this action. On or around October 9, 2020, Residents Energy filed a preliminary motion to dismiss one of the counts in the complaint, and to dismiss Genie Retail Energy as a named defendant. 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, 2020.

On July 23, 2019, the Chapter 7 Trustee of the Aspirity Holdings, LLC bankruptcy filed an adversary complaint against Diversified Trading Company, LLC (f/k/a Kreiger Enterprises, LLC, "Kreiger") and its subsidiaries and affiliates in connection with a note payable by Kreiger to Aspirity. GRE purchased Retail Energy Holdings, LLC ("REH") which owns the TSE entities (which were subsidiaries of Kreiger prior to the purchase) from Kreiger in November 2016. One of the several counts in the complaints alleges that as subsidiaries of Kreiger at the time, REH and TSE, together with several other defendants, guaranteed Kreiger's obligations under the note. The Trustee was seeking combined damages of unpaid principal of approximately \$16.0 million with unpaid accrued interest. The Company denies all allegations in the complaint and does not believe that REH or the TSE entities are liable for Kreiger's obligations to Aspirity. On February 6, 2020, REH and the Trustee agreed to settle the dispute (withdrawal with full releases) in exchange for payment of \$0.2 million by REH. On April 6, 2020, the parties signed a settlement agreement which was later approved by the Court. The Company has accrued \$0.2 million in the fourth quarter of 2019 and paid the settlement amount in June 2020.

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.

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. On December 12, 2019, following the completion of post-hearing briefings in the proceedings, the PSC issued an order adopting the changes to the New York retail energy market, effective April 16, 2020 ("2020 Orders"). The 2020 Orders limits the types of services energy retailer marketers may offer new customers or renewals, in terms of pricing for non-renewable commodities and renewable product offerings. Although the Company is working to ensure that its products and services are fully compatible with the 2020 Order, such compliance may adversely impact customer acquisition and renewal revenue and profitability. The Company is evaluating its options, both by itself and in tandem with other industry participants, to challenge or petition for additional clarity and changes to the 2020 Orders. There is insufficient basis to deem any probable loss or to assess any amount of any possible loss based on the changes instituted by the 2020 Orders. For the years ended December 31, 2020 and 2019, New York gross revenues was \$56.7 million and \$63.2 million, respectively.

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 to their respective incumbent utilities in the three months ended March 31, 2018.

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 Connecticut 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. On June 17, 2020, the Public Utilities Regulatory Authority (PURA or Authority) notified Town Square that it was advancing its investigation by assigning Prosecutorial (PRO) staff for the purpose of investigating Town Square's compliance with licensed electric supplier billing, marketing, and licensing requirements, and, if appropriate, facilitating settlement discussions among the parties that contains, but is not limited to, an appropriate civil penalty, extensive retraining of the supplier's third-party agents, and retention of all sales calls with continued auditing. If a settlement is not achieved and PRO staff believe the Authority should take further action regarding alleged non-compliance, the Authority requests that PRO staff petition the Authority setting forth its recommendations citing to supporting facts and law. As of December 31, 2020, no claims or demands have been made against Town Square by either agency, and there is insufficient basis to deem the loss probable or to assess the amount of any possible loss. Nevertheless, the parties have begun to engage in preliminary settlement discussions.

In the fourth quarter of 2020, the enforcement division of PURA contacted Residents Energy concerning customer complaints received in connection with alleged door-to-door marketing activities in violation of various rules and regulations, including a ban on door-to-door activities during the pertinent time period as a result of the COVID-19 pandemic. Residents Energy denies any allegations of wrongdoing. In January and February of 2021, Residents Energy responded to the limited information requests and discovery made by the enforcement division. On March 12, 2021, the enforcement division filed a motion against Resident Energy with the adjudicating body of PURA, seeking the assessment of \$1.5 million in penalties, along with a suspension of license for eighteen months, auditing of marketing practices upon reinstatement and an invitation for settlement discussions. As noted above, Residents Energy denies any wrongdoing, and there is insufficient basis to deem or assess the probable amount of any loss.

For the years ended December 31, 2020 and 2019, gross revenues from sales in Connecticut were \$38.0 million and \$35.6 million, respectively.

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.* Shortly thereafter, the Illinois Commerce Commission ("IL ICC") commenced a similar investigation. Although IDT Energy denies any wrongdoing in connection with those allegations, the parties (including IL ICC) settled the matter pursuant to a court-approved consent decree that includes restitution payments in the amount of \$3.0 million, temporary suspension of all marketing activities directed at new customers through December 31, 2020, and implementation of various compliance and reporting procedures.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

In 2018, the Company recorded a liability of \$3.0 million, and in third quarter of 2019, the Company paid the liability.

Other Informal Reviews or Investigations

From time to time regulators may initiate informal reviews, compliance checks or issue subpoenas for information as means to evaluate the Company and its subsidiaries' compliance with applicable laws, rule, regulations and practices.

The Massachusetts Department of Public Utilities opened an informal review and information requests to determine whether the disproportionate number of low-income customers of Town Square, Residents Energy and several other energy retailers in the industry evidences a pattern of misconduct. In response to the information provided, the Department has closed its review of Town Square and Residents.

On October 25, 2019, the Office of the IL AG notified Residents Energy (by way of subpoena) that it is conducting an investigation to assess compliance with the Illinois Consumer Fraud and Deceptive Business Practices Act. The notice was issued in the form of a subpoena in the course of the foregoing. The Company, which has responded in part, has challenged the merits of the subpoena and investigation which it believes is precluded by the broader settlement with IDT Energy. The IL AG is seeking to compel Residents Energy's response to its subpoena. Residents Energy denies any wrongdoing on its part. As of December 31, 2020, no claims or demands have been made against Residents Energy by the IL AG, and there is insufficient basis to deem any loss probable or to assess the amount of any possible loss.

In response to certain customer complaints, the State of Maine Public Utility Commission ("MPUC") has opened a review of the door to door marketing practices of Town Square. In connection with the review, the MPUC has requested information from Town Square demonstrating compliance in the form of an order to show cause as to why its marketing practices are in compliance and it should be permitted to continue licensed operations in Maine. Town Square has responded to the request and is cooperating with the MPUC's review. As of December 31, 2020, no claims or demands have been made against Residents Energy by the IL AG, and there is insufficient basis to deem any loss probable or to assess the amount of any possible loss.

Note 16 — Commitments and Contingencies

Purchase Commitments

The Company had purchase commitments of \$131.3 million at December 31, 2020, of which \$85.3 million was for future purchases of electricity. The purchase commitments outstanding at December 31, 2020 are expected to be paid as follows (in thousands):

2021	\$	69,418
2022		39,387
2023		20,435
2024		1,953
2025		58
Thereafter		—
Total payments	\$	131,251

In 2020, the Company purchased \$68.1 million and \$13.1 million of electricity and renewable energy credits, respectively, under these purchase commitments. In 2019, the Company purchased \$27.6 million and \$16.1 million of electricity and renewable energy credits, respectively, under these purchase commitments.

Renewable Energy Credits

GRE's REPs must obtain a certain percentage or amount of their electricity from renewable energy sources in order to meet the requirements of renewable portfolio standards in the states in which they operate. 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, 2020, GRE had commitments to purchase renewable energy credits of \$46.0 million.

Performance Bonds and Unused Letters of Credit

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, 2020, GRE had aggregate performance bonds of \$13.7 million outstanding and unused letters of credit of \$2.3 million.

BP Energy Company Preferred Supplier Agreement

Certain of GRE's REPs are party to an Amended and Restated Preferred Supplier Agreement with BP, which is to be in effect through November 30, 2023. Under the agreement, the 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. 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, 2020, the Company was in compliance with such covenants. At December 31, 2020, restricted cash — short-term of \$0.5 million and trade accounts receivable of \$47.0 million were pledged to BP as collateral for the payment of trade accounts payable to BP of \$16.7 million at December 31, 2020.

Shell Exclusive Supply Contract with Orbit Energy

Orbit Energy has an exclusive contract with Shell U.K. Limited ("Shell") to provide electricity and natural gas to Orbit Energy until June 2024, with an option (not an obligation) to extend through June 2027. Shell provide access to the forward market such that Orbit Energy can enter into a forward hedge for its customers which protects Orbit Energy from mark-to-market fluctuations. Shell also provides extended payment facilities of an additional 30 days compared to the U.K. payment terms up to a limit of £5.0 million at an interest of LIBOR plus 5.0%. Shell charges an additional £0.9 per therm of natural gas and Mwh of electricity for all delivered volume on top of the wholesale costs. The contract with Shell is secured by Orbit Energy's shares. The contract is also subject to satisfaction of certain conditions including the maintenance of certain covenants which includes minimum levels of cash, gross margin, net worth, as defined in the contract, earnings before tax, as defined in the contract and provision for bad debts on accounts receivable. At December 31, 2020, Orbit Energy were in compliance with such covenants. At December 31, 2020, Shoreditch total liability to Shell was \$7.0 million included in trade accounts payable and accrued expenses accounts in the consolidated balance sheet.

COVID 19

Starting in the first quarter of 2020, the world and the United States experienced the unprecedented impacts of the COVID-19 pandemic.

For the year ended December 31, 2020, the impacts of COVID-19 were evident in several key aspect of the Company's operations and the corresponding financial impact has been

mixed. The Company's customers are predominantly residential, so the Company benefited from the increased demand for electricity as many customers are working from and spending more time in their homes. On the other hand, like other retail energy providers, the Company suspended its face-to-face customer acquisition programs in March 2020 as public health measures were implemented to combat COVID-19, resulting in a decrease in gross meter acquisitions. The reduction in gross meter acquisitions decreased customer acquisition expenses in 2020 and limited growth in domestic meters served. Churn in 2020 decreased in part, as the competitors also suspended their face-to-face marketing programs. COVID-19 public health restrictions relaxed in some of GRE's domestic market in the third quarter of 2020, facilitating a partial reactivation of the previously curtailed customer acquisition channels.

There are many uncertainties regarding the impacts of the COVID-19 pandemic, and the Company is closely monitoring those impacts on all aspects of its business, including how it will impact the customers, employees, suppliers, vendors, and business partners.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

Note 17 — Related Party Transactions

On December 7, 2020, the Company entered into a Securities Purchase Agreement ("SPA") for the purchase of 218,245 shares of the Rafael's Class B common stock at a price per share of \$22.91 (which was the closing price for the Class B common stock on the New York Stock Exchange on December 4, 2020 the trading day immediately preceding the date of the SPA) for a purchase price of \$5.0 million. In connection with the purchases, the Company was granted warrants to purchase twenty percent (20%) of the shares of Class B common stock purchased by the Company. The warrants have an exercise price of \$22.91 per share and expire on June 6, 2022 (see Note 1).

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 12).

The Company was formerly a subsidiary of IDT Corporation ("IDT"). On October 28, 2011, the Company was spun-off by IDT to IDT's stockholders. 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 and its affiliates. Also, the Company provides specified administrative services to certain of IDT's foreign subsidiaries. Howard Jonas is the Chairman and controlling stockholder of IDT.

The Company leases office space and parking in New Jersey and Israel from Rafael. Howard S. Jonas is the Chairman of the Board of Directors and Chief Executive Officer of Rafael. The leases expire in April 2025.

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.

	Year ended December 31,	
	2020	2019
	(in thousands)	
Amount IDT charged the Company	\$ 1,282	\$ 1,142
Amount the Company charged IDT	\$ 155	\$ 160
Amount Rafael charged the Company	\$ 225	\$ 222

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

	December 31,	
	2020	2019
	(in thousands)	
Due to IDT	\$ 299	\$ 434
Due from IDT	\$ 40	\$ 45
Due to Rafael	\$ —	\$ —

The Company had notes receivable outstanding from employees aggregating \$0.1 million and \$0.2 million at December 31, 2020 and 2019, respectively, which were included in "Other assets" in the accompanying consolidated balance sheet.

The Company had nominal 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 were nominal amounts due from Zedge at December 31, 2020 and 2019.

On August 31, 2018, the Company entered extended a loan to a former employee for \$0.1 million. the Loan agreement requires a scheduled payments starting on December 31, 2020 until December 31, 2052. The loan bears the same interest equivalent to a minimum rate, in effect from time to time required by local regulations and is compounded annually. The Company recorded nominal amounts of interest income for the years ended December 31, 2020 and 2019 related to the loan. The outstanding balance of loan receivable, including accrued interest was \$0.1 million as of December 31, 2020.

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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 million for the years ended December 31, 2020 and 2019 related to premium of various insurance policies that were brokered by IGM. There was no outstanding payable to IGM as of December 31, 2020. 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.

See Note 6, *Investments in Equity Method Investees*, for details of notes receivables from Atid 613.

Note 18 — Business Segment and Geographic Information

Following the discontinuance of operations of GOGAS in December 2020, the remaining assets and results of operations of GOGAS were combined with corporate. There are no other changes in other reportable segments

The Company has three reportable business segments: GRE, GRE International and GES. GRE owns and operates REPs, including IDT Energy, Residents Energy, TSE, Southern Federal and Mirabito. Its REP businesses resell electricity and natural gas to residential and small business customers in the Eastern and Midwestern United States and Texas. GRE International, operates REPs in Japan, Finland and Sweden and recently acquired controlling interest in Shoreditch in the U.K. GES designs, manufactures and distributes solar panels and also offers energy brokerage and advisory services. 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:

	GRE	GRE International	GES	Corporate	Total
	(in thousands)				
Year ended December 31, 2020					
Revenues	\$ 305,265	\$ 49,648	\$ 24,399	\$ —	\$ 379,312
Income (loss) from continuing operations	36,408	(7,632)	(2,471)	(6,968)	19,337
Depreciation and amortization	465	2,650	326	107	3,548
Impairment of assets	—	—	1,397	—	1,397
Equity in the net (loss) income of equity method investees	—	(1,502)	—	59	(1,443)
Provision for (benefit from) income taxes	10,350	(478)	—	(1,558)	8,314
Year ended December 31, 2019					
Revenues	\$ 286,611	\$ 16,595	\$ 12,085	\$ —	\$ 315,291
Income (loss) from continuing operations	27,176	(1,201)	(2,895)	(5,295)	9,825
Depreciation and amortization	703	1,819	1,047	1	3,627
Write-off of capitalized exploration costs	—	—	(400)	—	(400)
Equity in the net loss of Shoreditch	—	(4,440)	—	(390)	(4,830)
Provision for (benefit from) income taxes	6,773	(1,254)	—	(919)	4,600

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)

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

	December 31,	
	2020	2019
	(in thousands)	
GRE	\$ 101,904	\$ 105,937
GRE International	62,180	11,468
GES	3,171	19,383
Corporate	28,851	19,456
Total assets	\$ 196,106	\$ 156,244

Investment in equity method investees for the business segments of the Company were as follows:

	GRE	GRE International	GES	Corporate	Total
	(in thousands)				
December 31, 2020	\$ —	\$ —	\$ —	\$ 747	\$ 747
December 31, 2019	—	—	—	675	675

Geographic Information

Revenues from customers located outside of the United States, which are located primarily in Finland, Sweden, Japan and United Kingdom were as follows:

	United States	Foreign Countries	Total
	(in thousands)		
Year ended December 31, 2020	\$ 329,664	\$ 49,648	\$ 379,312
Year ended December 31, 2019	298,696	16,595	315,291

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

	United States	United Kingdom	Other Foreign Countries	Total
	(in thousands)			
December 31, 2020				
Long-lived assets, net	\$ 15,623	\$ 23,532	\$ 3,070	\$ 42,225
Total assets	132,066	25,937	29,336	187,339
December 31, 2019				
Long-lived assets, net	\$ 17,498	\$ —	\$ 4,440	\$ 21,938
Total assets	143,738	—	12,506	156,244

Long-lived assets consist of property and equipment, net, right-of-use assets, intangibles and other long-term assets.

Note 19 — Subsequent Event

In January 2021, weather volatility and the lack of adequate gas reserves drove the prices on the JEPX to \$2,390 per megawatt hour for an extended period of time. Although our supply commitment for our customers in Japan was reasonably hedged for expected winter weather conditions, the extreme usage spike exposed us to further unexpected cost increases. The Company expects this event to impact our first quarter 2021 consolidated result of operations by approximately \$2.5 million.

In mid-February of 2021, the State of Texas experienced unprecedented cold weather and snow. With the grid overtaxed and rolling blackouts being enforced, by order of ERCOT, real-time commodity prices during the crisis escalated astronomically. Although our supply commitment for our customers in Texas was reasonably hedged for expected winter weather conditions, the extreme usage spike exposed us to further unexpected cost increases. Despite our cost increases related to the unprecedented price volatility in real-time electricity prices, we maintained customer rates under current agreements with customers. Our current estimate is that the impact on our consolidated profitability will likely be in the range of \$12.8 million to \$14.0 million for the first quarter of 2021.

In March 2021, the Company suspended the dividends to its common stock to rebuild cash position in light of the losses incurred from the effects of events discussed above.

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

Our authorized capital stock consists of (i) 35 million shares of Class A common stock, (ii) 200 million shares of Class B common stock, and (iii) 10 million shares of Preferred Stock.

The following description of our classes of authorized stock does not purport to be complete and is subject to and qualified in its entirety by reference to our charter and bylaws, copies of which are filed as exhibits to the Annual Report on Form 10-K to which this Exhibit 4.2 is a part.

Class A Common Stock

Holders of shares of our Class A common stock are entitled to three votes for each share on all matters to be voted on by the stockholders. Holders of our Class A common stock are entitled to share ratably in dividends, if any, as may be declared from time to time by the Board of Directors in its discretion from funds legally available therefor. Each share of our Class A common stock may be converted, at any time and at the option of the holder, and automatically converts upon transfers to unaffiliated parties, into one fully paid and non-assessable share of our Class B common stock.

As of March 12, 2021, there were 1,574,326 shares of our Class A common stock outstanding.

Class B Common Stock

Holders of shares of our Class B common stock are entitled to one tenth of one vote for each share on all matters to be voted on by the stockholders. Holders of our Class B common stock are entitled to share ratably in dividends, if any, as may be declared from time to time by the Board of Directors in its discretion from funds legally available therefor. Our Class B common stock is listed on the NYSE.

As of March 12, 2021, there were 24,786,062 shares of our Class B common stock outstanding.

Preferred Stock

The Board of Directors has the authority to fix the price, rights, preferences, privileges and restrictions, including voting rights, of those shares without any further vote or action by the stockholders.

The Series 2012-A preferred stock was established by resolutions of the Board of Directors of the Company on July 30, 2012. Holders of our Series 2012-A Preferred Stock are entitled to one tenth of one vote for each share on all matters to be voted on by the stockholders. Our Series 2012-A preferred stock is listed on the NYSE.

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.

As of March 12, 2021, there were 2,322,699 shares of our Series 2012-A preferred stock outstanding.

Anti-Takeover Effects of Our Charter and By-Laws

Some provisions of Delaware law and our Certificate of Incorporation and By-Laws could make the following more difficult:

- acquisition of us by means of a tender offer;
- acquisition of us by means of a proxy contest or otherwise; or
- removal of our incumbent officers and directors.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions also are designed to encourage persons seeking to acquire control of us to first negotiate with our Board of Directors. We believe that the benefits of increased protection give us the potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us and outweigh the disadvantages of discouraging those proposals because negotiation of them could result in an improvement of their terms.

Certificate of Incorporation; By-Laws

Our Certificate of Incorporation and By-Laws contain provisions that could make more difficult the acquisition of us by means of a tender offer, a proxy contest or otherwise. These provisions are summarized below.

Undesignated Preferred Stock. The authorization of our undesignated preferred stock makes it possible for our Board of Directors to issue our preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes of control of our management.

Size of Board and Vacancies. Our Certificate of Incorporation provides that the number of directors on our Board of Directors will be fixed exclusively by our Board of Directors. Newly created directorships resulting from any increase in our authorized number of directors or any vacancies in our Board of Directors resulting from death, resignation, retirement, disqualification, removal from office or other cause will be filled solely by the vote of our remaining directors in office.

Stockholder Meetings. Under our By-Laws, only our (i) Chairman of the Board, (ii) Chief Executive Officer, (iii) President or (iv) Corporate Secretary may call special meetings of our stockholders.

DOMESTIC SUBSIDIARIES

Name

American Shale Oil Corporation (DE)

American Shale Oil, LLC (DE), Assumed Name in TX: AMSO, LLC

AMSO Holdings I, Inc. (DE)

AMSO Holdings, LLC (DE)

DMS Promotions, LLC (DE)

CityCom Essential Services, Inc.

CityCom Solar, LLC (DE)

CCP Genie Community Solar, LLC (DE)

Diversegy Consultant Program, LLC (TX)

Diversegy, LLC (TX)

DiversegyPro, LLC (DE)

Evergreen Gas & Electric, LLC (DE)

Genie Energy International Corporation (DE)

Genie Energy Services, LLC (DE)

Genie Georgia GP, LLC (DE)

Genie Georgia P2, LLC (DE)

Genie Georgia, LLC (DE)

Genie Japan, LLC (DE)

Genie Nordic, LLC (DE)

Genie Mongolia, Inc. (DE)

Genie Oil and Gas, Inc. (DE)

Genie Retail Energy, Inc. (DE)

Genie Retail Energy International, LLC (DE)

Genie Solar Energy LLC (DE)

IDT Energy, Inc. (DE)

IntelliMark Services, LLC (DE)

Mirabito Natural Gas, LLC (DE)

North American Energy, Inc. (DE)

Plus EnergG, Inc. (DE)

Prism Solar Technologies, Inc. (DE)

Residents Energy, LLC (NY)

Retail Energy Holdings LLC (MN)

Southern Federal Power, LLC (DE)

Town Square Energy, LLC (DE)

Town Square Energy East, LLC (DE)

Town Square Energy Georgia, LP (DE)

Virtual Power Hedging, LLC (DE)

FOREIGN SUBSIDIARIES

Name	Country of Formation
Genie Dutch Holdings B.V.	Netherlands
Genie Energie B.V.	Netherlands
Town Square Energy Canada, Ltd.	Canada
Genie Energy UK Ltd	United Kingdom
Genie Energy GK (f/k/a Smile Energy GK	Japan
Lumo Energia Oyj	Finland
Lumo Energy AB	Sweden
Genie Energy Israel Ltd.	Israel
Genie IP B.V.	Netherlands
Genie Israel Holdings Ltd.	Israel
Afek Oil & Gas Ltd.	Israel
Atid Drilling Ltd.	Israel
Israel Energy Initiatives Ltd.	Israel
Orbit Energy Limited (f/k/a Thistle Energy Supply Limited)	United Kingdom
Petrocycle, Ltd.	Israel
Shoreditch Energy Limited	United Kingdom

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Genie Energy Ltd.
Newark, New Jersey

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-222856) and Form S-8 (No. 333-225703, 333-202800, 333-177565 and 333-231976) of Genie Energy Ltd. of our reports dated March 16, 2021, relating to the consolidated financial statements and the effectiveness of the Genie Energy Ltd.'s internal control over financial reporting, which appears in this Form 10-K. Our report on the effectiveness of internal control over financial reporting expresses an adverse opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2020.

/s/ BDO USA, LLP

Woodbridge, New Jersey
March 16, 2021

Certification of Chief Executive Officer
pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Michael Stein, certify that:

1. I have reviewed this Annual Report on Form 10-K of Genie Energy Ltd.;
2. Based on my knowledge, this Report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this Report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 16, 2021

/s/ Michael Stein

Michael Stein
Chief Executive Officer

Certification of Principal Financial Officer
pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Avi Goldin, certify that:

1. I have reviewed this Annual Report on Form 10-K of Genie Energy Ltd.;
2. Based on my knowledge, this Report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this Report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 16, 2021

/s/ Avi Goldin

 Avi Goldin
 Chief Financial Officer

GENIE ENERGY LTD.

Certification Pursuant to
18 U.S.C. Section 1350
(as Adopted Pursuant to Section 906 of
the Sarbanes-Oxley Act Of 2002)

In connection with the Annual Report of Genie Energy Ltd. (the "Company") on Form 10-K for the annual period ended December 31, 2020 as filed with the Securities and Exchange Commission (the "Report"), I, Howard S. Jonas, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 16, 2021

/s/ Michael Stein

Michael Stein
Chief Executive Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Genie Energy Ltd. and will be retained by Genie Energy Ltd. and furnished to the Securities and Exchange Commission or its staff upon request.

GENIE ENERGY LTD.

Certification Pursuant to
18 U.S.C. Section 1350
(as Adopted Pursuant to Section 906 of
the Sarbanes-Oxley Act Of 2002)

In connection with the Annual Report of Genie Energy Ltd. (the "Company") on Form 10-K for the annual period ended December 31, 2020 as filed with the Securities and Exchange Commission (the "Report"), I, Avi Goldin, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 16, 2021

/s/ Avi Goldin

Avi Goldin
Chief Financial Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Genie Energy Ltd. and will be retained by Genie Energy Ltd. and furnished to the Securities and Exchange Commission or its staff upon request.

Disclosure of Liabilities and Investigations

Residents Energy LLC (“Residents Energy”) and its affiliates have been, or are currently, involved in the following matters:

Pennsylvania Public Utility Commission (“PaPUC”) Bureau of Investigation & Enforcement (I&E) vs. Residents Energy, LLC - Docket No. M-2017-2511372

In September 2015, a customer filed an informal complaint with the PaPUC alleging that his account was “slammed” by a sales agent working for a third-party contractor hired by Residents Energy. After conducting an internal investigation, Residents Energy instructed the third-party contractor to prohibit the agent from participating in any future marketing activities on its behalf and issued a refund to the effected customer. Rather than file a formal complaint against Residents Energy for the alleged slamming violation, I&E entered into a settlement agreement with Residents Energy calling for Residents Energy to pay a civil penalty of \$6,000.00, make an additional refund to the customer, and file quarterly reports with the Bureau of Technical Utility Services, for one year, regarding any customer complaints filed against it. The settlement agreement was approved by the PaPUC in an order issued on July 12, 2018.

People of the State of Illinois vs. Residents Energy, LLC – Docket No. 2019 CH 14720

On October 25, 2019, the Office of the Attorney General of the State of Illinois (“OAG”) issued a *Subpoena Duces Tecum* to Residents Energy, LLC (“Residents Energy”), containing a Request for Documents and Interrogatories pertaining to Residents Energy’s services in Illinois. Residents Energy produced materials in response to the subpoena, but the OAG has petitioned the court to compel further production.

PURA Docket No. 19-08-21 – Investigation into Residents Energy, LLC

On March 26, 2021, the Office of Education, Outreach and Enforcement of the Connecticut Public Utilities Regulatory Authority (“PURA”) issued a Notice of Violation and Assessment of Civil Penalty against Residents Energy alleging, amongst other things, that Residents Energy had conducted door-to-door marketing in Connecticut at a time when it was prohibited to do so because of the pandemic. Residents Energy contested the allegations. The parties, including the Office of Consumer Counsel, entered into settlement negotiations which resulted in the execution of a settlement agreement that was approved by PURA on June 22, 2021. The settlement agreement called for Residents Energy to make a voluntary payment of \$300,000 to a social services organization named Operation Fuel, and to voluntarily withdraw from the Connecticut electric supplier market for a period of 36 months.

In the Matter of TOWN SQUARE ENERGY EAST, LLC – PUCO Case No. 18-1785-EL-UNC

Staff of the Public Utility Commission of Ohio (“PUCO”) opened an investigation into Town Square Energy East, LLC (“TSEE”), an affiliate of Residents Energy, in connection with its “table-top” marketing practices. After a brief investigation, TSEE and the PUCO Staff entered into a settlement agreement which was approved by the PUCO Commissioners on February 27, 2019.

Under the terms of the agreement, TSEE paid a forfeiture of \$150,000 to the State of Ohio. In addition, TSEE agreed to 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.

PURA Docket No. 10-03-11RE03 – Investigation into Town Square Energy, LLC

On September 19, 2018, the Connecticut Public Utilities Regulatory Authority (“PURA”) commenced an investigation into Town Square Energy, LLC (“TSE”), an affiliate of Residents Energy, in light of customer complaints alleging misleading and deceptive sales practices by TSE’s sales representatives. The Office of Consumer Counsel joined in the investigation. The parties, and the Office of the Attorney General, entered into settlement discussions which ultimately resulted in the execution of an Assurance of Voluntary Compliance (“AVC”). The AVC, which was approved by the Commissioner of the Department of Consumer Protection on July 28, 2021, called for TSE to, (i) voluntarily cease all in-person marketing in Connecticut for a period of 15 months, (ii) make a voluntary payment of \$400,000 to a Connecticut social services organization named Operation Fuel, and (iii) file quarterly reports, for a period of two years, either certifying that no violations of law, regulation or policy had been committed by TSE or listing all such violations committed.

MPUC Docket No. 2017-00144 – Town Square Energy, LLC

On August 4, 2020, the Maine Public Utility Commission (“MPUC”) issued an Order to Show Cause to TSE in response to customer complaints about TSE’s door-to-door marketing activities in Maine. TSE responded to the Order to Show Cause in a timely manner. The parties then entered into settlement negotiations and executed a Stipulation of Settlement on August 12, 2021. The Stipulation calls for TSE to voluntarily refrain from door-to-door marketing in Maine for twenty-four months commencing and to refrain from telemarketing to residential customers in Maine for a period of six months.

People of the State of Illinois vs. IDT Energy, Inc. – Docket No. 2018 CH 14380

On November 19, 2018, the Office of the Attorney General of the State of Illinois filed a complaint against IDT Energy, Inc. (“IDTE”), an affiliate of Residents Energy, alleging 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 IDTE denied any wrongdoing in connection with those allegations, the parties negotiated a settlement that was memorialized in a Consent Decree entered in the Circuit Court of Cook County on June 18, 2019.

The Consent Decree called for IDTE to refrain from marketing to residential electric customers in Illinois until December 1, 2020, to refund a total of \$3,000,000.00 to its current and former residential customers in Illinois, to make a voluntary contribution of \$50,000.00 to the Attorney General Court Ordered and Voluntary Compliance Payment Projects Fund, and to provide quarterly compliance reports to the Attorney General’s office for three years following the resumption of marketing in Illinois.

In the Matter of IDT ENERGY, INC. – NJ BPU Docket No. EO17080888U

In October 2015, the New Jersey Board of Public Utilities and the New Jersey Department of Law and Public Safety, Division of Consumer Affairs, commenced an investigation into IDTE's activities in New Jersey. Although no formal complaint was ever filed, in May 2018, IDTE entered into a consent order with the investigating authorities, without any admission of wrongdoing. IDTE agreed to make certain modifications to its business practices and to make the following payments: \$1,225,722.21 in restitution payments to its New Jersey customers, \$100,000 in civil penalties and \$38,775 in reimbursement of the State's attorneys' fees and costs.



AEP Ohio
303 Marconi Blvd, Suite 300,
Columbus OH 43215

September 23, 2021

520 Broad Street
Newark, NJ 07102

Re: Residents Energy, LLC (“CRES Supplier”)/CRES Supplier Contact: Avi Keilson
CRES Supplier’s posted collateral in the form of a cash as of 9/23/2021

To CRES Supplier:

In reference to the following specific provisions of Ohio Power Company’s Distribution Tariff filed pursuant to Order dated April 25, 2018 in Case No. 16-1852-EL-SSO, namely Paragraph 32, Section: *Supplier Terms and Conditions of Service*, Paragraph 32.9 Section: *CRES Provider Credit Requirements* (See 5th Revised Sheet No. 103-33D of PUCO No. 20 Terms and Conditions of Open Access Distribution Service) and CRES Supplier’s available load data through September 22, 2021, AEP Ohio has undertaken a limited review of posted collateral through this date, subject to the limitations set forth below, and AEP Ohio believes that the CRES Supplier is current with the specifically identified collateral requirements through September 23, 2021.

Please note AEP Ohio is not undertaking a separate review of CRES Supplier’s financial wherewithal, the status of pending invoices or invoices for amounts that are yet to be billed or due, nor are we evaluating or taking a position as to whether the CRES Supplier will, on a prospective basis, remain in compliance with the identified collateral requirements or other Tariff requirements. This review was limited to the specific collateral requirements identified above, and does not include a review of whether the CRES Supplier is in compliance with any other Tariff requirements or PUCO rules and regulations binding upon CRES suppliers, and further, does not account for any PJM rebillings or settlements that may occur at a later time.

This letter is effective only as of the date hereof, and we are not assuming any responsibility for updating this letter, nor is AEP Ohio waiving any rights or remedies it may be entitled to under Ohio law, its Tariff or any CRES Supplier agreements. This letter is intended solely for the benefit of the addressees and may not be relied upon by such addressees or any other person or entity for any other purpose.

Sincerely,

Cynthia Mora

Business Information Report Snapshot

RESIDENTS ENERGY, LLC

D-U-N-S: 96-183-9813
ADDRESS: 520 Broad St, Newark, NJ, 07102, United States
Date: 09/13/2021

RISK ASSESSMENT

SCORES AND RATINGS				
Max. Credit Recommendation	PAYDEX® SCORE	Delinquency Predictor Percentile	Financial Stress Percentile	Supplier Evaluation Risk Rating
US\$ 7,500	UNAVAILABLE	20 MODERATE-HIGH RISK	63 MODERATE RISK	3 LOW RISK

MAXIMUM CREDIT RECOMMENDATION

Overall Business Risk

LOW

LOW-MODERATE

MODERATE

MODERATE-HIGH

HIGH

Maximum Credit Recommendation

US\$ 7,500

The recommended limit is based on a moderate probability of severe delinquency.

Dun & Bradstreet Thinks...

- Overall assessment of this organization over the next 12 months: SOME PAYMENT BEHAVIOR CONCERNS
- Based on the predicted risk of business discontinuation: LIKELIHOOD OF CONTINUED OPERATIONS
- Based on the predicted risk of severely delinquent payments: HEIGHTENED POTENTIAL FOR SEVERELY DELINQUENT PAYMENTS

PAYDEX® SUMMARY

We are unable to display Paydex® data for this company. Please try again at a later time. If the problem persists, please call 1-866-584-0283.

PAYDEX®

Based on 24 months of data

We are unable to display Paydex® data for this company. Please try again at a later time. If the problem persists, please call 1-866-584-0283.

DELINQUENCY PREDICTOR SCORE

Low Risk (100)

20

High Risk (1)

Based on a D&B Delinquency Predictor Percentile of 20

- No payment experiences reported
- Higher risk region based on delinquency rates for this region
- Limited time under present management control
- Higher risk industry based on delinquency rates for this industry

Level of Risk
MODERATE-HIGH

Raw Score
472

Probability of Delinquency
9.12%

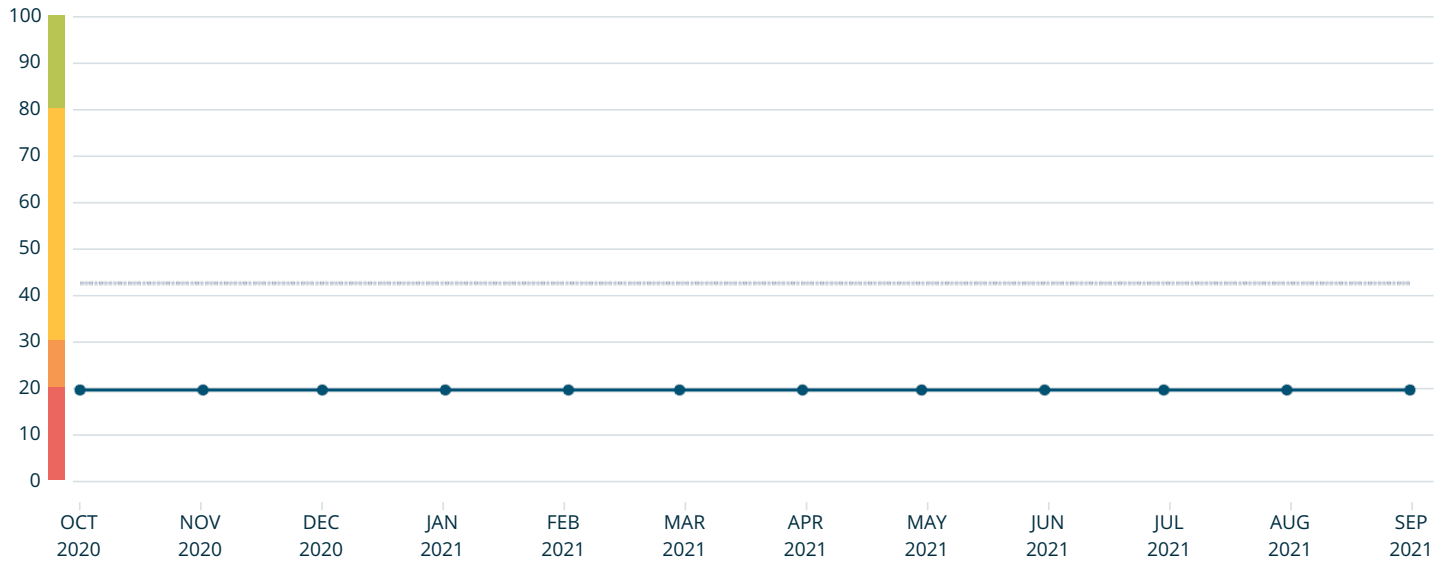
Compared to Businesses in D&B
10.2%

Business and Industry Trends

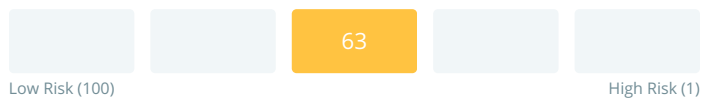
8748 - Business consulting services

Industry Median

RESIDENTS ENERGY, LLC



FINANCIAL STRESS SCORE



- Higher risk legal structure
- UCC Filings reported

Based on a D&B Financial Stress Percentile of 63

Level of Risk
MODERATE

Raw Score
1501

Probability of Failure
0.16%

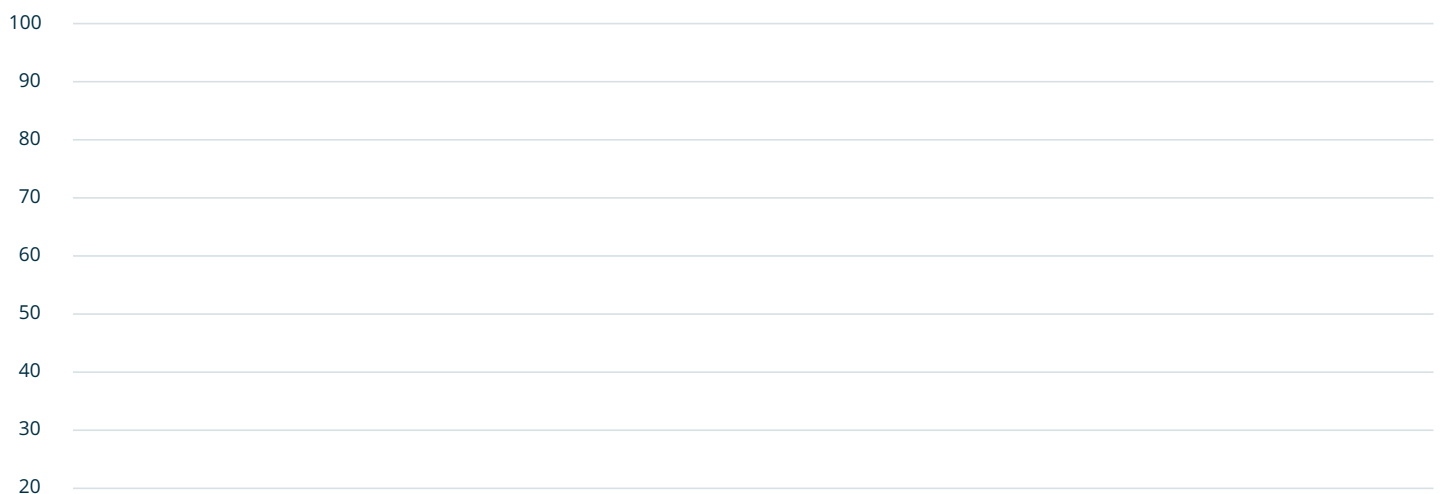
Compared to Businesses in D&B
0.48%

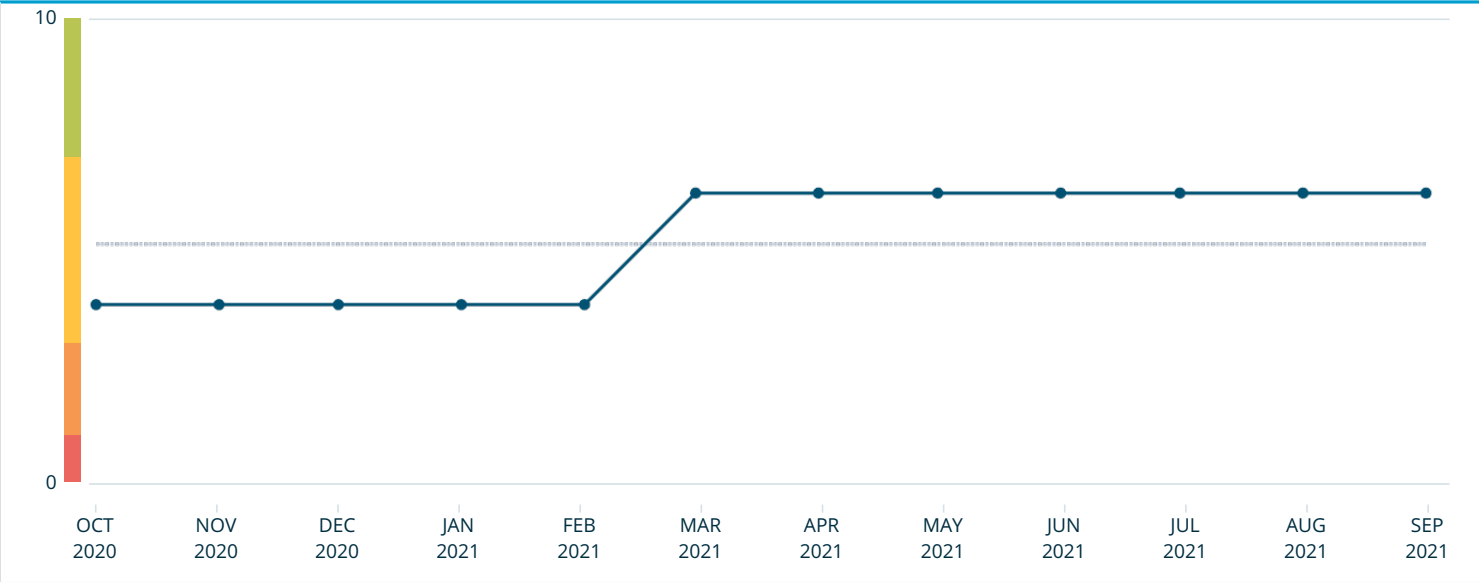
Business and Industry Trends

8748 - Business consulting services

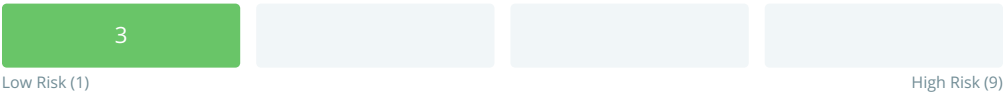
Industry Median

RESIDENTS ENERGY, LLC





SUPPLIER EVALUATION RISK RATING

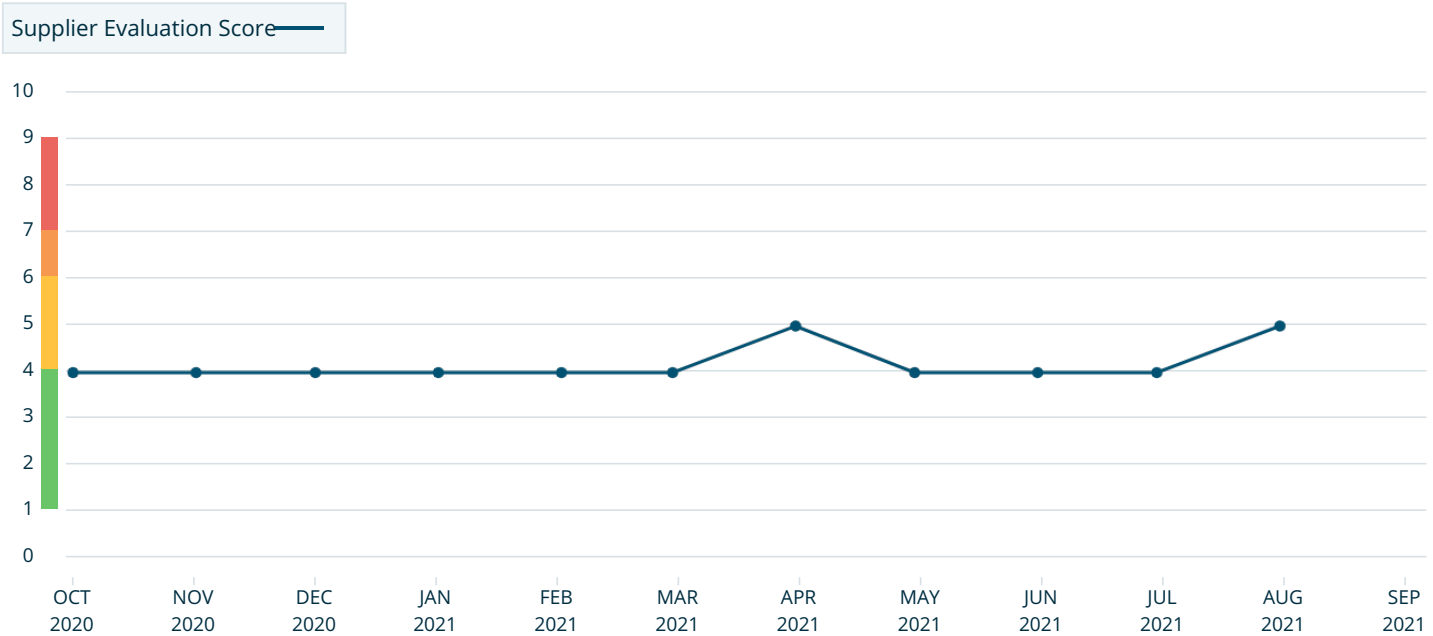


Based on a Supplier Evaluation Risk Rating of 3

Factors Affecting Your Score

- Limited business activity signals reported in the past 12 months
- Proportion of slow payment experiences to total number of payment experiences reported

Business and Industry Trends 8748 - Business consulting services



D&B RATING

Current Rating as of 04-19-2021		Previous Rating	
Employee Size	Risk Indicator	Employee Size	Risk Indicator
2R: 1 to 9 employees	3: Moderate Risk	2R: 1 to 9 employees	4: Higher than Average Risk

TRADE PAYMENTS

TRADE PAYMENTS SUMMARY			Based on 24 months of data
<div>Overall Payment Behavior</div> <div>UNAVAILABLE</div> <div>Days Beyond Terms</div> <div>Highest Now Owing: US\$ 0</div>	<div>% of Trade Within Terms</div> <div>UNAVAILABLE</div> <div>Total Trade Experiences: 5</div> <div>Largest High Credit: US\$ 500</div> <div>Average High Credit: UNAVAILABLE</div>	<div>Highest Past Due</div> <div>US\$ 0</div> <div>Total Unfavorable Comments : 0</div> <div>Largest High Credit: US\$ 0</div> <div>Total Placed in Collections: 0</div> <div>Largest High Credit: US\$ 0</div>	

TRADE PAYMENTS BY CREDIT EXTENDED			
\$ CREDIT EXTENDED	% OF PAYMENTS WITHIN TERMS	# PAYMENT EXPERIENCES	TOTAL & DOLLAR AMOUNT
OVER 100,000	UNAVAILABLE	UNAVAILABLE	UNAVAILABLE
50,000 - 100,000	UNAVAILABLE	UNAVAILABLE	UNAVAILABLE
15,000 - 49,999	UNAVAILABLE	UNAVAILABLE	UNAVAILABLE
5,000 - 14,999	UNAVAILABLE	UNAVAILABLE	UNAVAILABLE
1,000 - 4,999	UNAVAILABLE	UNAVAILABLE	UNAVAILABLE
UNDER 1,000	UNAVAILABLE	UNAVAILABLE	UNAVAILABLE

TRADE PAYMENTS BY INDUSTRY	
We are unable to display Trade Payments By Industry data for this company. Please try again at a later time. If the problem persists, please call 1-866-584-0283.	

TRADE LINES						
Date of Experience	Payment Status	Selling Terms	High Credit (US\$)	Now Owes (US\$)	Past Due (US\$)	Months Since Last Sale
10/2020	-	-	50	-	-	1 Month
09/2020	-	Cash Account	500	-	-	Between 2 and 3 Months
04/2020	-	Cash Account	100	-	-	1 Month

12/2019	-	Cash Account	100	-	-	Between 6 and 12 Months
11/2019	-	Cash Account	50	-	-	Between 6 and 12 Months

EVENTS

LEGAL EVENTS			
The following Public Filing data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.			
SUITS	JUDGEMENTS	LIENS	UCC FILINGS
TOTAL0	TOTAL0	TOTAL0	TOTAL22
LAST FILING DATE-	LAST FILING DATE-	LAST FILING DATE-	LAST FILING DATE01/17/2019

General: The public record items contained in this report may have been paid, terminated, vacated or released prior to the date this was reported. This information may not be reproduced in whole or in part by any means of reproduction.

UCC Filings: There may be additional UCC Filings in the D&B file on this company which are available by contacting 1-800-234-3867.

Suits, Liens, Judgements: There may be additional suits, liens, or judgements in D&B's file on this company available in the U.S. Public Records Database that are also covered under your contract. If you would like more information on this database, please contact the Customer Resource Center at 1-800-234-3867.

Lien: A lien holder can file the same lien in more than one filing location. The appearance of multiple liens filed by the same lien holder against a debtor may be indicative of such an occurrence.

EVENTS	
UCC Filing - Original	
Filing Date	2017-02-03
Filing Number	1702030054290
Received Date	2017-02-20
Collateral	Assets and proceeds - Account(s) and proceeds - Computer equipment and proceeds
Secured Party	BP ENERGY COMPANY, HOUSTON, TX
Debtors	RESIDENTS ENERGY, LLC
Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY
UCC Filing - Original	
Filing Date	2016-11-21
Filing Number	1611210553445
Received Date	2016-12-09
Collateral	Account(s) and proceeds
Secured Party	AMEREN SERVICES COMPANY, AS DESIGNATED AGENT, ST. LOUIS, MO
Debtors	RESIDENTS ENERGY, LLC

Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY
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UCC Filing - Original

Filing Date	2016-11-21
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Filing Number	1611210553433
---------------	---------------

Received Date	2016-12-09
---------------	------------

Collateral	Account(s) and proceeds
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Secured Party	AMEREN SERVICES COMPANY, AS DESIGNATED AGENT, ST. LOUIS, MO
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Debtors	RESIDENTS ENERGY, LLC
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Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY
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UCC Filing - Original

Filing Date	2016-08-25
-------------	------------

Filing Number	1608250408843
---------------	---------------

Received Date	2016-09-05
---------------	------------

Collateral	Accounts receivable including proceeds and products - Account(s) including proceeds and products - General intangibles(s) including proceeds and products
------------	---

Secured Party	MASSACHUSETTS ELECTRIC COMPANY, WALTHAM, MA
---------------	---

Secured Party	NANTUCKET ELECTRIC COMPANY, WALTHAM, MA
---------------	---

Secured Party	NATIONAL GRID, WALTHAM, MA
---------------	----------------------------

Debtors	RESIDENTS ENERGY, LLC
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Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY
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UCC Filing - Original

Filing Date	2014-04-02
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Filing Number	1404020173882
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Received Date	2014-04-14
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Collateral	Negotiable instruments and proceeds - Accounts receivable and proceeds - Account(s) and proceeds - General intangibles(s) and proceeds - Contract rights and proceeds
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Secured Party	KEYSPAN GAS EAST CORPORATION, HICKSVILLE, NY
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Secured Party	NATIONAL GRID, HICKSVILLE, NY
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Debtors	RESIDENTS ENERGY, LLC
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Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY
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UCC Filing - Original

Filing Date	2014-03-25
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Filing Number	1403250155436
Received Date	2014-04-04
Collateral	Accounts receivable including proceeds and products - Account(s) including proceeds and products
Secured Party	NATIONAL GRID, SYRACUSE, NY
Secured Party	NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, NY
Debtors	RESIDENTS ENERGY, LLC
Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY

UCC Filing - Original

Filing Date	2014-03-25
Filing Number	1403250155412
Received Date	2014-04-04
Collateral	Accounts receivable including proceeds and products - Account(s) including proceeds and products
Secured Party	NATIONAL GRID, SYRACUSE, NY
Secured Party	NIAGARA MOHAWK POWER CORPORATION, SYRACUSE, NY
Debtors	RESIDENTS ENERGY, LLC
Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY

UCC Filing - Original

Filing Date	2014-03-17
Filing Number	1403170139360
Received Date	2014-03-27
Collateral	Negotiable instruments and proceeds - Accounts receivable and proceeds - Account(s) and proceeds - General intangibles(s) and proceeds - Contract rights and proceeds
Secured Party	NATIONAL GRID NY, BROOKLYN, NY
Secured Party	THE BROOKLYN UNION GAS COMPANY, BROOKLYN, NY
Debtors	RESIDENTS ENERGY, LLC
Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY

UCC Filing - Original

Filing Date	2013-03-04
Filing Number	1303048091165
Received Date	2013-03-10
Collateral	Negotiable instruments and proceeds - Accounts receivable and proceeds - Account(s) and proceeds - Contract rights and proceeds - General intangibles(s) and proceeds

Secured Party	NATIONAL GRID NY, BROOKLYN, NY
Secured Party	THE BROOKLYN UNION GAS COMPANY, BROOKLYN, NY
Debtors	NEW ENERGY SERVICES LLC
Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY

UCC Filing - Original

Filing Date	2012-11-19
Filing Number	1211198403594
Received Date	2012-11-27
Collateral	Negotiable instruments and proceeds - Accounts receivable and proceeds - Account(s) and proceeds - Contract rights and proceeds - General intangibles(s) and proceeds
Secured Party	KEYSPAN GAS EAST CORPORATION, HICKSVILLE, NY
Secured Party	NATIONAL GRID, HICKSVILLE, NY
Debtors	NEW ENERGY SERVICES LLC
Filing Office	SECRETARY OF STATE/UCC DIVISION, ALBANY, NY

COMPANY EVENTS

The following information was reported on: 11-14-2019

Incorporated in the State of New York on March 4, 2010.

On February 24, 2015, the New York Secretary of State verified that the business name has changed from New Energy Services LLC to Residents Energy, LLC.

Business started 2010.

GEOFFREY ROCHWARGER. Antecedents are unknown.

ALAN SCHWAB. Antecedents are unknown.

TERRENCE STRONZ. Antecedents are unknown.

JOYCE MASON. Antecedents are unknown.

Business address has changed from 41 Madison Ave 29th Fl, New York , NY, 10010 to 165 Remsen St, Brooklyn, NY, 11201.

Business address has changed from 165 Remsen St, Brooklyn, NY, 11201 to 520 Broad St, Newark, NJ, 07102.

SPECIAL EVENTS

04-19-2021

A Rating change has occurred on this company.

02-24-2015

Business name changed from New Energy Services LLC to Residents Energy, LLC.

Invalid date

Business address has changed from 165 Remsen St, Brooklyn, NY, 11201 to 520 Broad St, Newark, NJ, 07102.

Invalid date

The Chief Executive Officer is now Geoffrey Rochwarger, CEO- Pres.

06-16-2013

Source(s) indicate the address shown above may no longer be used by this business.

11-06-2012 HURRICANE SANDY 2012:

This business is located in a FEMA designated disaster zone impacted by the effects of Hurricane Sandy. It is reported that millions of people and businesses along the East Coast experienced power outages up to 10 days. The extent of impact to this business is currently unknown, additional information may be provided as it becomes available.

07-14-2011

Business address has changed from 41 Madison Ave 29th Fl, New York , NY, 10010 to 165 Remsen St, Brooklyn, NY, 11201.

Financials

D&B currently has no financial information on file for this company.

COMPANY PROFILE

COMPANY OVERVIEW		
D-U-N-S 96-183-9813	Mailing Address 520 Broad St, Newark NJ 07102, US	Annual Sales -
Business Form Partnership	Telephone (973) 438-3920	Employees 3
Date Incorporated -	Fax -	Age (Year Started) 11 years (2010)
State of Incorporation -	Website -	Named Principal GEOFFREY ROCHWARGER, CEO- PRES
Ownership -	Line of Business Business consulting services	SIC 8748

OWNERSHIP

FAMILY TREE SUMMARY		
Members in the Tree	Subsidiaries of this Company	Branches of this Company
31	28	2



-  **S** **Idt Energy, Inc.** 009070495 Newark, NJ
 - B** **Idt Energy, Inc.** 802862131 Jamestown, NY
 - S** **Southern Federal Power, Llc** 116953943 Chandler, AZ
 - S** **Diversegypro, Llc** 117260873 Newark, NJ
 - S** **Evergreen Gas & Electric, Llc** 117262615 Newark, NJ
 - S** **Genie Nordic, Llc** 117264156 Newark, NJ
 - S** **Dms Promotions, Llc** 117310075 Newark, NJ

Genie Energy Ltd. Corporate Structure

as of July 16, 2021

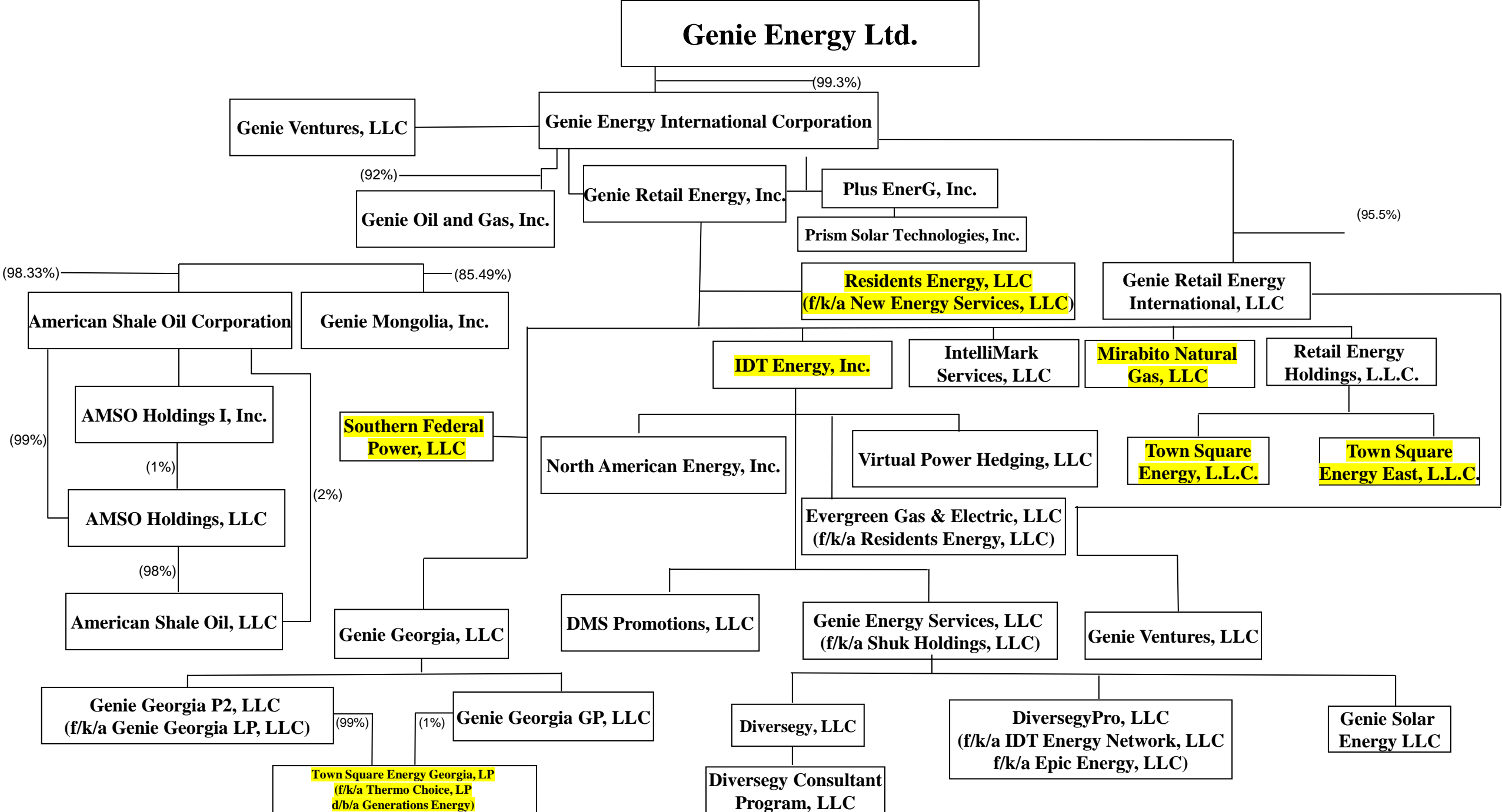


Exhibit D-1 “Operations”

Residents Energy’s business is the supply of electricity and natural gas to residential, small commercial and some large commercial customers. Residents Energy does not generate its own power. In addition to supplying electricity and natural gas to customers in Ohio, Residents Energy is currently also supplying electricity and/or natural gas to customers in Delaware, Illinois, Massachusetts, Michigan, New Jersey, New York and Pennsylvania.

Residents Energy has a long-standing Key Supplier Agreement (“KSA”) in place with BP Energy that covers the activities of Residents Energy. Pursuant to the KSA, BP is the financially responsible party and the scheduling entity for Residents Energy’s load. BP is responsible for scheduling electricity on a daily basis and securing ancillary services to support the load.

Exhibit D-2 “Operations Expertise and Key Technical Personnel”

Residents Energy’s management team has been effectively running and building Residents Energy’s electricity and natural gas supply business since 2014. The company has expanded into new markets with each passing year so that it is now active in eight states. All of Residents Energy’s key personnel have significant experience in the field as described more fully in their biographical sketches below.

Michael Stein, CEO

mstein@genieretail.com

973-438-3018

Michael Stein is the CEO of Genie Retail Energy, Inc. and its subsidiaries, including Residents Energy, LLC. Previously, he served as Executive Vice President of Operations and then Senior Vice President of Operations of Genie Energy Ltd. Prior to assuming responsibility for the energy related initiatives, Mr. Stein was Senior Vice President of Business Development of IDT Telecom and was an analyst at Belstar Investment Management. He holds a BA in Psychology from Yeshiva University.

Alan Schwab, President and Chief Operating Officer

aschwab@genieretail.com

973-438-4343

Alan Schwab is the President and Chief Operating Officer (COO) of Genie Retail Energy, Inc. and its subsidiaries, including Residents Energy, LLC. As President and COO, Alan is responsible for the day-to-day operations of the businesses including sales, operations, compliance, customer service and technology. Under his leadership, Residents Energy expanded its customer base into Delaware, Illinois, Massachusetts, Michigan, Ohio and Pennsylvania..

Prior to his foray into energy, Alan excelled in a succession of senior operations positions at IDT Corporation beginning at IDT Telecom, which he joined in 1996. As SVP at IDT Telecom, Alan managed the routing, provisioning and switching translations for IDT’s global telecommunications network.

Alan subsequently was named COO of IDT Capital, the division of IDT responsible for new business initiatives and incubation. In that capacity, he directed the development of over a dozen successful start-ups, including IDT Energy.

Alan holds an MBA from Barry University in Miami, Florida.

Avi Goldin, CFO

agoldin@genie.com

973-438-4075

Avi Goldin has served as Chief Financial Officer of Genie Energy Ltd. since August 2011. He now also serves as CFO of Genie Retail Energy, Inc. and its subsidiaries, including Residents Energy, LLC. Prior to assuming these roles, Avi served as Vice President of Corporate Development of IDT Corporation from May 2009 through October 2011. He originally joined IDT in January 2004 and held several positions within IDT and its affiliates before leaving in January 2008 to join CayComm Media Holdings, a telecommunications acquisition fund, where he served as Vice President, Finance. Avi rejoined IDT in May 2009 as Vice President of Corporate Development. Prior to joining IDT, Avi served as an Investment Analyst at Dreman Value Management, a \$7 billion asset management firm and as an Associate in the Satellite Communications group at Morgan Stanley & Co.

Avi holds an MBA from the Stern School of Business of New York University, a B.A. in Finance from the Syms School of Business of Yeshiva University and is a Chartered Financial Analyst (CFA).

Brad Martin, VP of Marketing

bmartin@genieretail.com

973-438-3184

Brad Martin is Vice President of Marketing for Genie Retail Energy, Inc. and its subsidiaries, including Residents Energy, LLC. He is responsible for the companies' marketing and customer acquisition strategy, including on- and off-line media plans, media partner development and new consumer offers.

Brad previously served as Senior Director of Marketing Programs at RCN Telecommunications, where he managed marketing, product development, sales, customer care, project management and back-office operations. Brad rose through the leadership ranks in RCN's marketing group while serving various senior positions, earning the CEO's Award for Marketing Performance in 2005.

Prior to joining RCN, Brad was Marketing Director at SmartServ Online and i3 Mobile, both developers of mobile telephony applications. During his tenure he successfully launched applications with every major wireless carrier in North America.

Brad established his marketing career at Columbia House, Co. where he directed product management, business development and customer acquisition programs for one of the largest consumer software and video gaming clubs in North America.

Brad graduated with a Bachelor of Science in Marketing and Management Information Systems from Yeshiva University in New York.

Sam Ritter, Director of Supply

sritter@genie.com

973-438-3338

Sam Ritter came to Genie Retail Energy, Inc. with more than twelve years of significant experience in the retail energy industry. Sam held a number of diverse positions with retail energy suppliers, energy trading companies and energy consulting companies. He is an expert in physical and financial commodity purchasing and in hedging risk through the use of swaps, futures, options, and other derivatives. At Genie Retail Energy, Sam has been overseeing and developing the commodity supply and risk reporting aspects of the business for the company's subsidiaries, including Residents Energy, LLC. His duties include managing daily scheduling and forecasting, procurement, settlements, pricing models and risk management.

Sam earned an MS in Operations Research Engineering from Columbia University and a BS in Physics & Mathematics from Yeshiva University.

Competitive Retail Electric Service Affidavit

County of Essex:

State of New Jersey:

Alan Schwab, Affiant, being duly sworn/affirmed, hereby states that:

1. The information provided within the certification or certification renewal application and supporting information is complete, true, and accurate to the best knowledge of affiant, and that it will amend its application while it is pending if any substantial changes occur regarding the information provided.
2. The applicant will timely file an annual report of its intrastate gross receipts, gross earnings, and sales of kilowatt-hours of electricity pursuant to Sections 4905.10(A), 4911.18(A), and 4928.06(F), Ohio Revised Code.
3. The applicant will timely pay any assessment made pursuant to Sections 4905.10, 4911.18, and 4928.06(F), Ohio Revised Code.
4. The applicant will comply with all applicable rules and orders adopted by the Public Utilities Commission of Ohio pursuant to Title 49, Ohio Revised Code.
5. The applicant will cooperate fully with the Public Utilities Commission of Ohio, and its Staff on any utility matter including the investigation of any consumer complaint regarding any service offered or provided by the applicant.
6. The applicant will fully comply with Section 4928.09, Ohio Revised Code regarding consent to the jurisdiction of Ohio Courts and the service of process.
7. The applicant will comply with all state and/or federal rules and regulations concerning consumer protection, the environment, and advertising/promotions.
8. The applicant will use its best efforts to verify that any entity with whom it has a contractual relationship to purchase power is in compliance with all applicable licensing requirements of the Federal Energy Regulatory Commission and the Public Utilities Commission of Ohio.
9. The applicant will cooperate fully with the Public Utilities Commission of Ohio, the electric distribution companies, the regional transmission entities, and other electric suppliers in the event of an emergency condition that may jeopardize the safety and reliability of the electric service in accordance with the emergency plans and other procedures as may be determined appropriate by the Commission.
10. If applicable to the service(s) the applicant will provide, it will adhere to the reliability standards of (1) the North American Electric Reliability Council (NERC), (2) the appropriate regional reliability council(s), and (3) the Public Utilities Commission of Ohio.
11. The Applicant will inform the Public Utilities Commission of Ohio of any material change to the information supplied in the application within 30 days of such material change, including any change in contact person for regulatory purposes or contact person for Staff use in investigating consumer complaints.

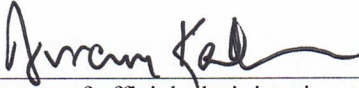
12. The facts set forth above are true and accurate to the best of his/her knowledge, information, and belief and that he/she expects said applicant to be able to prove the same at any hearing hereof.

13. Affiant further sayeth naught.



Alan Schwab, President

Affirmed and subscribed before me this 14th day of September, 2021



Signature of official administering oath

Print Name and Title



My commission expires on _____

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

9/23/2021 6:14:12 PM

in

Case No(s). 15-1321-EL-CRS

Summary: In the Matter of the Application of Residents Energy, LLC